HISTORY OF AGRICULTURE
IN KASHMIR
(PRE-GREEN REVOLUTION ERA)

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Certified that the present research work entitled **History of Agriculture in Kashmir (Pre-Green Revolution Era)** submitted by Mr. Abdul Waheed Bhat for the award of the degree of Doctor of Philosophy, is an original piece of research work to be considered for the award of Ph.D degree. I recommend that the dissertation be placed before the examiners for evaluation.

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The preparation of this dissertation has engaged me for not less than three years. And this period has been really a testing time for me. However, thank Almighty during these hard times I enjoyed the company of some noble souls who encouraged me and thus enabled me for the submission of this project. I feel bound to record my thankfulness to all those people who helped me throughout the course of this research journey.

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Thanks are due to the library staff of the ICHR, JNU, AMU, Sapru House and ICSS [New Delhi] for they gave me easy access to the material crucial to my topic. Besides visiting these reputed knowledge centers I sometimes came across a book so relevant to my topic lying unattended on the stalls of hawkers selling second hand books in Pahar Ganj [Delhi] and Sunday market Srinagar. They compensated the visit to some big institutions or persons. One must acknowledge the services of these people who don’t know what is written on the pages of the books they are selling.

Truly speaking I feel indebted to a long list of respondents residing in various parts of Kashmir from Khanbal to Khadanyar. As their number is lot, here due to the constraints of space I am helpless to mention their name one by one. However I must admit that if my dissertation is worth submission it is mainly because of the information they provided to me. They listen me patiently,
spent precious time with me and shared the valuable experiences of their life and calling with me. The more I sat with them the more I was enriched. For me their deeply sunk eyes spoke volumes and their life long experiences provided a readily available orientation of the times they lived in. In certain cases these living sources supplied the whole material required for a chapter where even big libraries returned me empty handed.

Besides the external support it is pertinent to mention here that it was the support that my family gave me in the course of my study that shaped my career. Parents sacrificed their preferences for my priorities and always prayed for my academic excellence. The pen that my mother, like other mothers, got from the shrine of Mukhdoom sahib, her daily tiffs to persuade me for school, her utmost care to reserve coins in the corner of her scarf for my fee and fine so that I do not have any excuse for truancy; And at the latter stage, in the midst of my studies her arrival in my room unnoticeably without any knock, leaving mutely with out saying a word, returning a little latter with a cup of tea; watching my belongings with warmth and affection in my absence. These are important landmarks of my academic journey. Really she is ‘to me like heavens caring arms’ [Poem My Mother, Wings of Fire. A P J Abdul Kalam]. Father was all the more helpful. For him education is first priority. He left me free for the pursuit of education and didn’t demand for my help at the field even at the peak seasons of sowing or harvesting when as per peasants say ‘the mere shadow of a canine near the field is a matter of encouragement’. Besides he served a mine of information on agriculture. He gave ready replies to the enquiries that surfaced in my mind during the course of my research.

Sisters vied with each other to congratulate me when ever I met with success in the struggle of my carrier. My wife Naseema, little Zain-ul-abidin, Ashob and Zulkarnain proved great source of strength for me; though the fact remains that they didn’t get the care that was due to them since the ‘itch’ of research kept me tensely engaged in collection of material, reading, writing, canceling, reshaping and waiting for submission of the thesis that sometimes seemed a distant dream impossible to get a practical shape. The frequent reminders of fellow scholars, friends and colleagues regarding the submission of
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This note of acknowledgement would be incomplete if I do not say a word of thanks to the people serving or having served the University of Kashmir, who as a policy matter believe in ‘quality oriented research programmes’. They rose to the occasion, expanded the frontiers of research aspirants and for that matter amended the statutes, turned them flexible and thus made the part-time research permissible. That way they accommodated the genuine demand of a section of student’s community interested in pursuing research on part-time basis. In this regard my parent department [Department of School Education Kashmir] was no less magnanimous. I am highly obliged to Directorate of School Education Kashmir J&K Government for the ‘grant of permission to undergo Ph.D course on part-time basis.’ It certainly facilitated the completion of this long cherished dream.

Abdul Waheed Bhat
INTRODUCTION

Ninety six percent people of Kashmir lived in countryside and drew their sustenance from land during the period of our study.¹ This countryside was dotted by villages situated near a spring or a stream. Around existed a vast expanse of land and this land supplied the required food by a technological system generally known as agriculture. This phenomenon has been in operation from ages together. It has been so common that treated as a routine it was never taken note of. With the result its common prevalence become an easy cause of its record-lessness.

How this system originated and evolved, what are its dynamics. How land framed the contours of local agriculture, how the slopes were terraced and swamps reclaimed for cultivation, when where streams diverted to different areas for irrigation, what tools were employed to till the soil and exploit its capacities or how the fertility of the soil was restored after its exhaustion, what crops were sowed and why, which animals were domesticated, what were storage techniques, academia never attended or addressed these crucial questions, not at least in commensurate with its significance. As a matter of fact those who wielded pen had a disdain for agriculture. They minutely recorded details regarding religious ceremonies and court procedures but forget about the major preoccupation of silent majority. With the result we are badly lacking a written record of so crucial a subject which has been referred by Gordon Childe as ‘the first great transition’², as ‘the basis of culture’ by Will Durant³ or as ‘the foundation of civilization’ by David Rindos.⁴

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3. Will Durant, The Story of Civilization; Our Oriental Heritage, p. 57
Given to this dearth of information about so important a subject of Kashmir history the present study makes an attempt to bring together and preserve in a documented form the scattered information pertaining to the history of agriculture in Kashmir.

It has rightly been said by E. H. Carr that ‘the division of history into periods is not a fact but a necessary hypothesis or tool of thought, valid in so far as it is illuminating…. ’.\(^5\) As a ‘necessary hypothesis’ we selected pre-green revolution era of agriculture which ends around the seventies of the 20\(^{th}\) century. Needless to say after this date agriculture in Kashmir witnessed tremendous changes. The introduction of package technology, mechanization and usage of chemical fertilizers gave a new shape to the farming sector. Needless to say mechanization of agriculture has altogether different social implications which widely differ with traditional system. In order to avoid this confusion we reasonably stopped where the traditional system gave way to the mechanization. Thus limiting our study to a particular period is self explanatory.

Ibn Khaldun the 14\(^{th}\) century philosopher historian in ‘the greatest work of its kind’ i.e. *Muqaddimah*, remarks that ‘the [writing of history] requires numerous sources and much varied knowledge. It also requires a good speculative mind and thoroughness, which lead the historian to the truth and keep him from slips and errors’\(^6\). In pursuance of this inspiring guidance an attempt has been made to cover all possible material pertaining to agriculture so that its past is reconstructed as accurately as possible. Our primary and ‘capital sources’ include archeological findings, written records, field work, participant observation, travelogues and face to face deliberations with the people involved in this sector. Fortunately a good number of these ‘ordinary participants’ of pre-

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modern phase of agriculture still survive in our society and possess the invaluable information required for the reconstruction of this vibrant theme of Kashmir history.\textsuperscript{7} No less inspiration has been drawn from the parallel or secondary works throwing light on the agriculture of the bordering areas of Kashmir. Besides sharing knowledge of their agriculture system they greatly guide in the adoption of methodology required to tackle such a vast and complicated subject where one has to wait for long time just to decide where to start and how to begin.

So far as remote past or pre-recorded period is concerned we mainly relay on archeological sources. Needless to say archeology and particularly agriculture archeology of Kashmir is quite rich in composition and dates back to several millennia’s. The chief archeological sites include Burzohom, Semthan, Gofkral, Harwan, Parihaspora [8\textsuperscript{th} century AD] and Avantipora [9\textsuperscript{th} century AD]. The excavation conducted on these sites during ‘Operation Jehlum’ changed the whole perception about the past of Kashmir.\textsuperscript{8} Besides other things it has tremendous palaeoethnobotanical significance. It is here that for the first time we come across carbonized grains of wheat, barley, rice, specimens of dry fruits such as nuts, engravings of grapes and tools like harvesters. This at least resolves the debate regarding the beginning of agriculture in this part of the globe.

Next to archeological evidence we have been greatly benefited by the recorded material or written word. Our written accounts date back to 6th century AD. The earliest is Nilamata Purana written in verses. It is actually a mythological work suggesting the followers of Hinduism what rituals should be performed while proceeding to the pilgrimage of different \textit{tirthas} [sacred sites]. However certain verses throw much valuable light on economic life of Kashmir. References pertaining to agriculture are also enclosed in a few verses. For

\textsuperscript{7} For a detailed discussion on Participant Observer and Ordinary Participant see \textit{Participant Observation}, Spradley P. James, pp. 53-62.
\textsuperscript{8} The project was launched by ASI during 1960. See S.L. Shali, \textit{Kashmir History and Archaeology}
example, “filled with the rows of rice fields, fully thriving and endowed with
good fruits,” lauds Nilamata Purana, “Kashmir is devoid of the fear of famines”.9
We also get information about some millets and fruits. The preparation of rice in
milk is mentioned time and again which speaks about the paramount importance
of this cereal in social life.

In 631 AD a world renowned Buddhist scholar Hieun Tsang visited
Kashmir in pursuance of Buddhist studies. He has left behind a valuable account
of his observations. About the agricultural conditions of Kashmir he writes, “The
soil is fit for producing cereals, and abounds with fruits and flowers. Among the
fruits grown are the pear (li), the wild plum (nai), the peach (t’au), the apricot
(hang or muia) and the grape (po-tan).”10

Of our all the written sources pertaining to the ancient period
Rajatarangini of Kalhana enjoys a special importance. To quote one of his
introductory verse, ‘who else but poets resembling Prajapatis [in creative power]
and able to bring forth lovely productions, can place the past times before the
eyes of men?’ and ‘that noble minded [poet] is alone worthy of praise whose
word, like that of a judge, keeps free from love and hatred in relating the facts of
the past.’ Definitely he has placed the past times before us.11 As is clear by its
name Rajatarangini is actually an account of the rajas and rulers of Kashmir. The
author has mainly discussed the political developments of the country up to the
middle of the 12th century. However while discussing the court politics he did not
forget the pathetic condition of the rural populace majority of whom tilled soil
for their overlords. While he praises the production of Kashmir on one side, on
the other hand he provides gloomy scenes of frequent floods and recurrent
famines that wrought havoc to the demographic structure of the Valley. How

Lalitaditya and Avantivarman strengthened the production capacities of the land by expanding the network of canals, by reclaiming new land and raising embankments and how a few rulers levied intolerable tolls and taxes on farming community all this we come to know through this source. He calls Suya, Avantivarman’s councilor, ‘annapati [lord of the food]’ for his contribution in promoting the rice production.  

A huge mass of historical material was produced during medieval times. Here we shall discuss only those works which have referred to agriculture. These works include Zainatarangini by Jonaraja, Zainatarangini by Shrivara and Rajatarangini of Wali Pataka by Prajayabhatta and Shuka. Shrivara the court historian of Zain-ul-abidin provides a long list of canals constructed by his patron and its resultant impact on the economy of the state. It is he who says that Bud Shah introduced floating fields in Kashmir.

No less important sources are the poetical works of the saints and sants. The intellectual resurgence witnessed by medieval times produced famous personalities who propagated progressive ideals. Nund Reshi and Lalla are the best representatives of this movement. They not only emphasized on hard labour for fruitful results but also voiced the concerns of the marginalized sections.

Another important work Tarikh-i-Rashidi of Mirza Haider Dughlut gives a detailed account of the people and production of Kashmir. He has classified the land of Kashmir in different categories. Haider Dughlat writes;

“In this region all land is divided into four kinds. The cultivation is: (1) by irrigation, (2) on land not needing artificial irrigation, (3) gardens and (4) level ground where the river banks abound in the excessive moisture.” A graphic description of fruit cultivation is presented. “As for fruits—pears,

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12. Ibid., book iv, no. 190, 318, 319.
mulberries, sweet cherries and sour cherries are met with, but the apples are particularly good. Fruit is plentiful that it is rarely bought and sold. The holder of a garden and the man that has no garden are alike; for the gardens have no walls and it is not usual to hinder anyone from taking the fruit.”  

In 1586 AD Kashmir became a part of Mughal Empire. The temperate climate and scenic beauty of Kashmir left rulers of the ‘conquest state’ astounded. No wonder then that all Mughal kings made it a point to visit this paradise and get relief from scorching heat of the plains of northern India and royal responsibilities of the court. They had long sojourns in the valley and for their comfortable stay a network of sarais, gardens and garrisons were made in Kashmir. Mughal emperors, court historians and travelers left behind viewed accounts of Kashmir. Some of the well-known accounts include Ain-i-Akbari, Tuzuk-i-Jahangiri and travels of Bernier.

Ain-i-Akbari of Abu Fazl Allami contains useful information regarding Kashmir. As for agriculture is concerned he has discussed it on several occasions in his account. He refers to various fruits like pear, grapes, almonds and wild vegetables such as uplhak [a wild vegetable] and kangachhu [morel]. These fruits and potherbs, it may be mentioned here, were greatly cherished in the Mughal court. Besides he has also discussed in detail the cultivation of saffron which was a ‘state monopoly’.  

Emperor Jahangir [1606-1628] had great liking for Kashmir. No wonder then he visited Valley not less than six times in his reign of twenty two years. It is worth to mention here that he passed away in Kashmir while returning back to the capital. Whatever Jahangir observed in Kashmir during his sojourns all that has been recorded in his Tuzuk-i-Jahangiri. Regarding agriculture he testifies the

brisk cultivation of cherries, apricot, pears, apples, grapes, pomegranates, watermelons and melons. Further he also gives information about the technique of grafting.\textsuperscript{15}

Francois Bernier, a French physician, arrived in Kashmir in 1665 AD with Emperor Aurangzeb. He writes;

“the whole ground is enameled with our European flowers and plants and covered with our apple, plum, apricot and walnut trees all bearing fruits in great abundance. The private gardens are full of melons, radishes, most of our potherbs and others with which we are unacquainted. The fruit is certainly inferior to our own. Nor is it in much variety; but this I am satisfied, is not attributable to soil, but merely to the comparative ignorance of the gardeners, for they do not understand the culture and grafting of trees as we do in France.”\textsuperscript{16}

Kashmir assumed a special importance for imperial powers in early 19\textsuperscript{th} century. The desire to subjugate this strategically important territory to their global game plan drove the ideologues of expansion to study the geography, history, polity, society and other aspects of local culture. Thus we find a chain of Europeans visiting Kashmir right from the early 19\textsuperscript{th} century. Among these pioneering foreigners was Moorcroft who set his foot in the Valley in 1822 AD. His travel account gives detailed information about the arts and crafts of Kashmir. During his long stay he keenly took notice of the agricultural activities. He wrote about floating fields, fruits like nuts, grape, and rice. Other crops that he mentioned in his account include wheat, barley, buckwheat, millet, amaranths, cotton and crocus.\textsuperscript{17}

\textsuperscript{15} Tuzuk-i-Jahangiri, trans. by Alexander Rogers, p. 146.
\textsuperscript{16} Travels in Mogul Empire, trans. by Constable and Archibald, p. 397
\textsuperscript{17} Moorcroft, Travels, Vol. II, pp. 132-152.
Among all the foreigners who came to Kashmir no one is as popular as Walter R Lawrence. In fact he is a household name in rural Kashmir and so popular that villagers have named their agricultural fields after his name. The secret of his popularity is simply the contribution that he made in the land settlement of Kashmir. Lawrence was basically a land settlement commissioner who rendered his services in Kashmir in 1889 AD. During the six years which he spent in Kashmir he visited each and every village and closely studied the local culture as a participant observer. His book ‘The Valley of Kashmir’ is the collection of these very experiences and observations. It has discussed almost all aspects including geography, demography, economy, society, flora and fauna. Lawrence spent his whole time measuring land and working among village people. He has critically evaluated the local farming techniques, showered praise wherever due and made suggestions where ever he felt necessary. He provides valuable information about the agricultural practices of Kashmir. This book is in fact indispensable for any research student working on Kashmir. It provides an orientation to the study of pre-modern society of Kashmir.18

Gulzar-i-Kashmir of Diwan Kripa Ram, a persian work written in 1890s, occupies a paramount importance so far as local sources are concerned. In fact it is the first attempt to record the agricultural wealth of Kashmir. All fruits, cereals, tools have been mentioned. Tarikh-i-Hassan by Peer Ghulam Hassan Quihami is another important source that sheds light on the agricultural products of Kashmir.

Recently a book entitled ‘Land Laws in Jammu and Kashmir’ compiled by Justice Hakim Imtiyaz Hussain has come in the market. This bilingual book comprising of two volumes is greatly informative. It highlights the legalities involved in the possession of land, its ownership, sale, inheritance, distribution

18. Lawrence, The Valley of Kashmir, pp. 319-370.
and its gradation as per social requirements.

It has rightly been said that ‘history can not be written unless the historian can achieve some kind of contact with the mind of those about whom he is writing’. And in case of our problem this ‘contact’ can be achieved by consulting the ‘living witnesses’ involved in agriculture. Keeping in view the crucial importance of this research prerequisite I visited almost all agricultural areas (tarfiat) of the Valley, talked to the people and observed the peculiarities of each area. Needless to say the Valley of Kashmir is a country which according Walter R. Lawrence ‘a horseman can cover in a day’ but within it is considerably diverse and after a mile or so landscape altogether changes. Thus this contacting proved immensely helpful.

Besides I have attempted to take full advantage of the traditional knowledge pertaining to different aspects of the theme of my investigation. Aged people are the repository of this treasure. In this regard the linguistic assets such as idioms, adages, riddles, puns, poetry, stories, marriage and cultivation songs, social record books, proverbs and saying and certain community ceremonies that continue despite the tremendous impact of modernism and extreme secularization of social institutions have been extremely useful. They guide us to those very crucial areas which are beyond the scope of other sources. Sometimes apparently a simple pun or proverb contains an ocean of meaning.

THE FACE OF THE LAND

Nature itself when creating the great valley of Kashmir and its enclosing wall of mountains, seems to have assured to this territory not only a distinct geographical character, but also a historical existence of marked individuality.

[M. A. Stein]

From where should one initiate the description of the land of Kashmir? It is so diverse and so different. Nilmatapurana boosts to say that ‘the holy region of Kasmira is possessed of all the sacred places. There are sacred lakes of the Nagas and the holy mountains; there are holy rivers and also the holy lakes;' and that ‘the region of kasmira, of course, occupies an important place in the world.’¹ Kalhana called it ‘…the best place in Himalaya’. Further he says that ‘the king of the serpents with his two thousand tongues can not describe the glories of the country [of Kashmir]’.² François Bernier a French physician who visited Kashmir in 1665 AD with Emperor Aurangzeb was wonder struck and amazed when he saw this land. He wrote that ‘nature has exhausted all his skills in the creation of this country.’³ Thus while some professional geographers called it ‘cynical trough’⁴ others mesmerized by the beauty of this Valley described it as a ‘white foot’.⁵

Fredric Drew writes;

“The country of Kashmir has justly a reputation for something distinctive, if not unique, in its character. Its position and form together are such that

there is no parallel to it in the whole of the Himalayas. It is a plain embedded among the mountains, a wide vale enclosed by mountain ranges, lying at such a height above the sea as on the one hand to be of a climate entirely different from that of India, being saved from the heat that parches its plains, and on the other hand to be free from the severity of cold that visits the more lofty plateaus or wide valleys that are found more towards the centre of the mass of mountains”.6

What gives Kashmir a unique and distinctive geographical personality? What makes the areas within as ‘kashir’ and areas without as ‘outer world’? The answer is clear and quite open in the form of mountains which mark the physical contours of the country that is called Kashmir. It is these ‘marble wall of mountains’7 or ‘…..the holy mountains…….’8 surrounding all around that house the perennial ‘snow fields [that] feed all the rivers and are the ultimate source of life in Kashmir valley.’9. Thus it is in the fitness of thing to start the description of the geography of Kashmir with its heaven high great snow mountains which first catches the eye once one turns to view it and imprint a map of valley on the mind.

The mountain circle of Kashmir includes Pir Panjal range, the Greater Himalaya and the North Kashmir ranges. While the Pir Panjal forms quite a formidable barrier on the south and south-west separating Kashmir from the plains of India, the greater Himalaya and the north Kashmir ranges shut it off from the frost bitten plateau deserts of Ladakh and Baltistan lying within the towering ranges of the black and bare mountains to the north-east and north-west.10 The area of the ‘plain embedded among the mountains’, is called Valley

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10. Ibid., p. 29
proper and it is situated at an elevation of 6000ft. Its latitude and longitude being between 33.22° and 37.06° north and 72.30° and 77.30° east respectively. It is about 15,948 sq. km in area. The length of irregular oval which the line of mountain summits form is 185 km and that the width of it varies from 64 to 120 km.

**THE GREAT SNOW MOUNTAINS**

Perhaps it were these ‘high inaccessible mountains’ that led the 11th century genius from Central Asia Alberuni to write that ‘they [Kashmiris] are particularly anxious about the natural strength of their country. . .’. Where these mountains have deterred the ambitious conquerors to extend their sway over Kashmir they have at the same time nursed the people living within. Thus as prominent these mountains look apparently, far more is their importance in the history of Kashmir. None of the natural features of Kashmir geography have had a more direct bearing on the history of the country than the great mountain-barriers that surround it.

The mountains which surround Kashmir are never monotonous. Infinitely varied in form and colour, they are such as an artist might picture in his dreams. Also known as ‘marble walls’ these mountains surrounding Kashmir valley exert an over ridding influence on the local weather making process. They protect the valley from the blasting cold of the north as well as the scorching heat of the south and contribute significantly to its temperate climate.

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13. Ibid., p. 02.
17. Moonis Raza, op. cit., p. 61.
Apart from their beauty and variety of temperature the mountains of Kashmir are of great importance to the country. They supply water for irrigation, timber, fuel and the grazing upon which so much of the agricultural prosperity of the valley depends.\textsuperscript{18} For a good rice harvest heavy snows in the winter on the mountains to fill the streams in the summer is necessary.\textsuperscript{19} It is this crucial economic importance of the mountains that their ranges, their hills, their peaks and summits and the lakes found on them possess very sacred place in the collect psyche of the people. That is why they have been named after mythological figures by the inhabitants of the country. Some mountains are called Mahadev or Mahaguns and some peaks are known as Harmukh. In the like manner some lakes are named as Kounsernag, while others are known as Nilnag, Shishnag or Gangbal. The sources of water known as \textit{agair} in local nomenclature are situated on different mountains. They have been playing a pivotal role in shaping the nursing capacities of the valley of Kashmir since times immemorial. Thus there is no exaggeration if these sources of survival (\textit{agair}) have been called as ‘lords’(\textit{baadshah}) sitting on peaks and the \textit{kuls} that get their birth out of the ‘icy water’ that ooze from them have been described as mothers by the local poets who sung songs in their praise.\textsuperscript{20}

\begin{center}
\textit{Be at ease and listen attentively}
\end{center}

\begin{center}
\textit{I will tell you the name of seven kings.}
\end{center}

\begin{center}
\textit{First, king Harmukh, second Phalgham}
\end{center}

\begin{center}
\textit{Third, king Kouser who is atop.}
\end{center}

\begin{center}
\textit{Fourth, king Reimbi river, majestic in look}
\end{center}

\begin{center}
\textit{Fifth, king Sukh nag with marvelous face}
\end{center}

\begin{center}
\textit{Sixth, is king Feroz with crown and scepter}
\end{center}

\begin{flushleft}
\textsuperscript{18.} Lawrence, op. cit., p. 16.
\textsuperscript{19.} Ibid., p. 335.
\textsuperscript{20.} Ghulam .Mohammed Lone, \textit{Agarnama}, p. 17.
\end{flushleft}
Seventh, king Kamraj a prestigious one.
They only live in world that is born of mothers
Let me tell you what the names of seven mothers are.
Nengal ded-maver, Hameil, Sind maij
Lidder ded, Vishav, Romshi, and Bani krai.

KAREWAS OR UDDERS

A conspicuous feature of the landscape of Kashmir valley is the ‘karewas or uders’. They are composed of clay, sand and silt of locustrine origin. Constituting nearly half of the total area of the valley and enormously adding to its scenic beauty, the karewas play an important role in the ecology of the region. Being essentially cliffs of clay and consisting for the most part of brown sand, these karewas are separated from one another by deep and narrow valleys (nar). Extending over a length of about 80 km from Shopian to Sopore, the karewa and their ravines have a width varying from 12 km to 25.6 km along the south-west side of the valley. Again the north-western end and north-east side of the valley are dotted with karewa grounds.

There are mainly two types of karewas-(1), flat-topped karewas, and (2) the slopping karewas. Flat topped karewas witness least erosion and retain a good amount of moisture. Thus they were brought under the cultivation of certain dry crop not dependent on water like rice. Wheat, barley, spices like zuir [diuretic] and the most celebrated crop of Kashmir- saffron was cultivated on these karewas.

So for as slopping karewas are concerned they hardly served any noticeable agricultural purpose during the pre-green revolution era. They are in shape of a long strip of land mass with a bow shaped top. At some places they

were like cluster of mounds close to each other immediately bordered by some wet land. Such karewas enjoyed strategic importance in ancient times where state capitals were located.\textsuperscript{22} They were exposed to soil erosion, were bone dry and devoid of any scope for irrigation. A major social functionary that flourished in the vicinities of these karewas was the potter’s class. The soil of these lands was considered best for the manufacture of earthen baked pottery.

\textbf{THE VITASTA [JEHLUM]}

No descriptive account of Kashmir would be considered complete without the delineation of river Jehlum frequently referred as Vitasta in our ancient sources and popularly called \textit{Veith} by contemporary common populace in Kashmir. \textit{Nilmatapurana} mentions that ‘in the centre [of valley] flows the… Vitasta- the highest goddess visibly born of the Himalaya.’\textsuperscript{23} ‘United with the valley in every fibre of its being’\textsuperscript{24} it is the dendretic irrigation system of the mountains of Kashmir that causes the birth of this marvelous river which stands an eyewitness to the whole saga of Kashmir history.

So far as its origin and course is concerned ‘the Jehlum itself rises from the Pir Panjal range near Verinag. Initially, the river flows in a north-westerly direction, but at its exit from the Wular Lake, it takes a southwesterly direction which it pursues as far as Baramulla where it finally leaves the valley of Kashmir, escaping through a gorge in the Pir Panjal. This upper basin of the Jehlum lies in the trough between the Greater Himalaya and the Pir Panjal ranges, popularly known as the vale of Kashmir’.\textsuperscript{25} During ancient times a festival known as \textit{Vethtravah} was celebrated on the occasion of the birth of river

\begin{footnotesize}
\begin{itemize}
  \item[22.] Parihaspora, the capital city of Lalitaditya of 8\textsuperscript{th} century is a typical example. This city was just like a \textit{jaldurgaha} [water fort] safe and secure from all sides.
  \item[23.] \textit{Nilamata Purana}, Vol. II, no, 267.
  \item[24.] Kalhana, book i, no 47.
  \item[25.] Moonis Raza, op. cit., p. 11.
\end{itemize}
\end{footnotesize}
Jehlum. River Jehlum is about a hundred and ten km long. From Khanabal to Srinagar not less than seventeen streams (aarā) and thousands of springs pour into it. Sandran, Braing, Arapat kul, Lidder, Arapal, Harwan, Sind, Erin, Madhumati, Pohru, and Vji-diakil join Jehlum on the right side and the nallas that join it on its left bank include Vishav, Rembiara-Sasara, Romushi, Dudhganga, Shaliganga and Ningal. Given the nature of their flow and the location of their source their behaviour varies and thus they have been classified by local people into masculine and feminine groups. For example Romesh is considered feminine and Rembara is considered masculine. These very streams that join Jehlum at different points serve the irrigation facilities of the vast patches of lands bordering their banks. This is made possible by the favourable terrain of the land which suites the requirements of the prerequisites of gravitational flow.

In the low lying area river Jehlum is bordered by a chain of swamps known as numbals which often act as natural basins during floods. These numbals include Kinhama, Nawgam, Brari numbal, Panzinara, Highgam, Shalbug nambal and a number of others. Besides there are some world famous lakes also which are connected with Jehlum. These lakes include Dal lake, Khushalsir, Giel sir, Hokersir, Mansbal and Walur. Dal lake, Khushalsir and Hokersir fall in district Srinagar. Dal Lake is located in the eastern side of the city and the famous Zabarvan hills are situated in its eastern side. Khushalsir is in the northern side of the city. Hokersir falls in the western side of Srinagar city. It is a well known migratory bird’s sanctuary in the valley of Kashmir. These birds arrive soon after autumn and leave for procreation to other places in early spring.

27. Local informant.
30. Ibid., p. 214-221.
During the period of our study these water bodies generated considerable amount of wealth. In the absence of any documentary evidence of data pertaining to the wealth generated by these water bodies *(aab gah)* we can not afford to submit any specific figure. However the economic value of these water bodies can be very well ascertained by a popular statement regarding the economic potential of river Jehlum alone. In past times it was believed by the people subsisting on the bounties of Jehlum that this river produced per day one *mun* [80 kg] of gold. These numbals were supplying not only nutritious grass for the cattle but simultaneously people gathered vegetables for cooking and reed for building roofs. Besides a major craft industry of mat weaving flourished in the localities close to these numbals. A particular community known as hanjis lived in boats in these water bodies. They procured *hiak* [fuel] and sold it to city people for winter season. Some of them caught fish and a section of them possessed large boats (*bahatz*) for the transportation of goods from khanbal port to Srinagar, Bandipora and Baramulla. It is pertinent to mention here that during pre-modern times the road transport was non existent in Kashmir and river Jehlum was the only highway used for the transport of goods from one place to another.

**SOILS**

The soil tests conducted on modern scientific methods reveal that, ‘the soils of the valley basin and the low altitude terraces abound in nitrogen content, organic matter and other plant nutrients which raise their fertility status. They are estimated to have a high content of *P₂O₅* and *K₂O* and are fairly rich in calcium and magnesium. Texturally they vary from clayey loams to loams with a variable

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31. Information gathered from an interview with Ghulam Nabi Dar r/o village Malur Srinagar. The said respondent owes a boat and he uses it for ferrying people across river Jehlum and is paid in kind at harvesting time. This is his ancestral occupation.
32. Fuel recovered from river beds as well as obtained from Pohru nullah during summer. It was transported to Srinagar in early winter where people used it in fire pots and cooking purposes. Due to the use of cooking gas and electricity it is no more used now.
nitrogen content ranging between 0.4 and 0.08 percent. It has been observed that there is an accumulation of Fe and Al in B horizon, particularly in low-lying areas. The pH value varies from 6.5 to 7.2.  

Kashmir is quite rich so for its soil profile is concerned. Every region has its own soil types which altogether differ from other areas. The karewas, the foothills and the marshes possess their own soil cover. The colour and texture of soils vary from area to area. The divergence of the soils is reflected by the fact that the same crop cultivated in different places with different soils also differ in taste when cooked or taken in raw form. Farmers ascribe this change in taste to the impact of soil on crops. At certain places sharp colour differences can be noticed in two different soils existing parallel to each other. 

The Kashmiri peasant has always been aware of the importance of soils and soil fertility. The long experience taught him to distinguish between a fertile and unfertile soil and thus he called the fertile land mas and the unfertile land as fount. The soils in fact had an impact on his choice of implements. Thus he used different ploughs on different soils. He was no less conscious regarding the nature of the texture of soil. For the growth of roots which ultimately determined the growth of crops, soils with suitable texture played an important role. A texture characterized by softness (mosud) and non glutinous was considered ideal for the crops. For developing these desired qualities in soil ash, dust and manures were applied recurrently. 

The soil wealth found in different areas of Kashmir has been traditionally classified by peasants into a number of types. Each type named after its texture, colour, location, and crop capability. These soil types include- gurtu [silt], Bahil

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33. Moonis Raza, op. cit., p. 115.
34. One such instance is found in Lettapora Pulwama. It is situated on the right side of National Highway. A karewa end cut for earth filling reveals two soils very close with clear cut difference.
[loam], Sekil [sandy soil], dazanlad [black], numbal and karewa.\textsuperscript{35} Literally gurtu means silt. It is a fertile soil with high percentage of clay and silt.\textsuperscript{36} It holds water and even in scanty rains yields a good crop of rice. \textsuperscript{37} Bahil or viahuil is a promised and prized soil with a very high fertility status.\textsuperscript{38} This soils lies above the level of the flood plains. It has a darkish colour and tends to be black when dry.\textsuperscript{39} The excessive application of manure often causes rai [blight] on the crops growing in this soil.\textsuperscript{40} When sand content increase the bahil soil change into sekil.\textsuperscript{41} Sandy soil is chiefly found in Sind valley and is largely under forest cover.\textsuperscript{42} It is also rich and under assured water supply can yield a good crop.\textsuperscript{43} Dazanlad soil is black in colour and usually available in low lying lands, near swamps and some higher villages.\textsuperscript{44} This soil is hot and feverish and if precautionary measures are taken a good crop of paddy can be expected.\textsuperscript{45} Peaty soil is a peculiarity of swampy land and usually found near the banks of Jehlum and in the vicinity of Walur Lake. It is fertile and requires least manures.\textsuperscript{46} Karewa soil has various types manifest by different colours and can be divided into three categories viz. surzamin, gurtu and yellow.\textsuperscript{47} In fertility surzamin is rated first\textsuperscript{48} followed by red gurtu,\textsuperscript{49} while the yellow hued soil is regarded as the worst.\textsuperscript{50}

\textsuperscript{35} Moonis Raza, op. cit., p. 118.  
\textsuperscript{36} Ibid., p. 118.  
\textsuperscript{37} Lawrence, op. cit., p. 319.  
\textsuperscript{38} Moonis Raza, op. cit., p. 118.  
\textsuperscript{39} Ibid., p. 118.  
\textsuperscript{40} Lawrence, op. cit., p. 319.  
\textsuperscript{41} Moonis Raza, op. cit., p. 118.  
\textsuperscript{42} Ibid., p. 118.  
\textsuperscript{43} Ibid., p. 118.  
\textsuperscript{44} Lawrence, op. cit., p. 320.  
\textsuperscript{45} Ibid., p. 320.  
\textsuperscript{46} Ibid., p. 320.  
\textsuperscript{47} Ibid., p. 321.  
\textsuperscript{48} Ibid., p. 320.  
\textsuperscript{49} Ibid., p. 321.  
\textsuperscript{50} Ibid., p. 321.
In addition to the above mentioned six major soil types, a number of other soils with different qualities exist in Kashmir valley. These include *lemb*, *radh*, *tand* -land reclaimed from the forest, *zabal zamin* -land injured by percolation from irrigated fields, *khar zamin* -soil located in the midst of fertile soil, *ront zamin* -which always cakes, *shath* -sand and stony soil. *Tats* -too warm by presence of large stones and finally *tresh* -soil lacking the quality of water retention.51

**CONGENIAL CLIMATE**

Kashmir has no parallel so far its climate is concerned. It is as diverse as is the geography of this country. That is why people from other parts of the world found that in Kashmir ‘every hundred feet of elevation brings some new phase of climate and of vegetation, and in a short ride of thirty miles one can pass from overpowering heat to a climate delightfully cool, or can escape from wearisome wet weather to a dry and sunny atmosphere.52 To quote the same source again ‘a day’s journey from the capital [Srinagar] will bring one into a wholly different climate, and I [Lawrence] have known constant rains in the southern end of valley while Srinagar and the northern part of Kashmir were parched with draught’.53

Kashmir has a modified sub-tropical climate.54 The temperature ranges from an average daily maximum of 31c and minimum of 15c during summer to an average daily maximum of 4c and minimum of -4c during winter. It receives an annual precipitation of about 1,050 mm, mostly in the form of snow during the winter months. On the basis of general characteristics of weather a year can

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51. Ibid., p. 321.
52. Ibid., pp. 13-14. While traveling from Srinagar to Baramulla which is a distance of fifty six km I have also observed rains in Baramulla, clouds *en route* and clear sky in Srinagar.
53. Ibid., p. 24.
be divided into four season’s viz. winter, spring, summer and autumn. Winter is from November to February. It is a cloudy season with occasional snowfall. Temperature slides down to -5c.\(^{55}\) Spring is from March to mid-May. In this season the weather shows visible signs of improvement.\(^{56}\) Summer is from Mid-May to mid-September. It is the hottest and humid season with maximum temperature 37c. Autumn is from mid September to mid October. It is the pleasant season in Kashmir. It is known for moderate temperature, low rains and cool nights.

However in Kashmir a year is broadly divided into two parts so far as climate is concerned. One part is known as \textit{retkool} [summer] and the other one is called \textit{wandi} [winter]. Each of these two parts is further divided into three parts. Each one consists of three seasons. Each season consists of one and half \textit{pachas} [one \textit{pach} is equal to 40 days]. This peculiar climatic division of a year in Kashmir is mainly because of the agricultural importance of each season. Following six seasons each of a duration of two months shaped the climatic calendar of an agricultural year in Kashmir:

**Sonth [Spring]**

Mid-March to mid-May; it is \textit{waf} [sowing] season. \textit{Gongul} is done in this season. A peasant pun goes \textit{yus kari gongul suie kari krav} means he who sows will reap. The seeds of almost all \textit{khari} crops are sown in this season. This season possess great importance for a peasant. He has to be very vigilant in terms of sowing seeds, preparing beds and ensuring proper crop growth. Thus it is a common saying that \textit{sont gou ctsul} means spring is brief passing quickly.

**Grashim [Summer].**

Mid May to mid July is the summer season in Kashmir. This is the

55. Ibid., p. 15.
hottest season of the year. The cultivation of kharif crops like rice is done in this period. It is completed by or before twenty first of June. Its weeding (nend) is completed in the same period. The heat of this season is regarded essential for good rice crop. Besides, the maize, millet and other emergency crops raised during draught were sown in the same season. Grasham is also the harvesting time of the rabi crops such as wheat and barley.

**WAHRAT [RAINS]**

Mid July to mid September is known as wahrat. It is the season of rains so crucial for the growth of rice crop. Agriculture work is not so brick. Major work is done. The peasants just visit their fields and watch the growth of grains. Besides they go to the pastures to see their cattle. At home they gathered hay, dried that thoroughly, turned it into long ropes (lava) and stored it on trees.

**HARUD [AUTUMN]**

Autumn consists of mid September to mid November. Hurad is more than a mere season for a cultivator in Kashmir. It is the formal conclusion of activities pertaining to agriculture. It means harvesting, gathering grains and leaving land unattended for next six months. It may be noted here that traditionally field agriculture continued for only six months in Kashmir.

It is said that hurd goo baill meaning that gathering is due if one has worked in spring. In Kashmir cultivators believe that spring is area specific but autumn is same for all (sont chu buin buin harud chu konui). This is really true. In spring the date of sowing rice witness almost thirty days gape. Certain areas start sowing in the beginning of April where as in some areas it is done at the close of the month. However when it is autumn harvesting starts within a weeks time through out Valley. Harud is gathering period. Agriculture operations need to be completed as quickly as possible. Thus cultivators are always busy in this season. They hardly care for anything other than crops. Harvesting, threshing and
storage are their main concerns. They apply all manpower and go for helping each other. It is said that even a running dog in fields is a matter of encouragement for the peasants in autumn.

It was only that crops were harvested and grains stored in autumn that people involved in agriculture attended other social functions. Marriages were conducted and construction works pertaining to house building was initiated; Rice was dried, husked by pestle and mortar, sieved and stored for winter season; Pottery wares were purchased from potters moving from village to village.

**WANNDI [WINTER]**

Mid-November to mid-January; in this season it is very difficult to walk in the agriculture land. The frost (*soour*) on soil melts late, never dry fully and virtually turn soil into mud. Thus no agriculture work was conducted during the chilly winters and people mostly stayed inside their cottages. Womenfolk took to the spinning wheels (*yinders*) and men handled the spindle whorls, twisted ropes and weaved mats. Winters provided some leisure time to the cultivators who otherwise remained tied to the soil. It was in this season that they thought about searching suitable matches for their sons and daughters. In traditional agricultural life joint family system was a popular norm in Kashmir and people needed to live together to cope up with the labour requirements of farming their. However it was generally during winters that joint families split and brothers started separate households.

**SHESHUR [SEVERE COLD]**

Mid-January to mid-march is the season of *sheshur*. Sheshur means freeze. This is in fact a part of winter. The only major difference is that acute cold prevails during this season.  

57. Ibid., p. 63.
The weather elements exercise a cumulative effect on man and determine the level of comfort of places under different climatic regimes is a fact fully corroborated by the living conditions of the people in Kashmir. As the climatic regimes changes so changes the choice of living of people in Kashmir. Thus from the mountain foot hills to middle of the valley, hardly a distance of thirty to eighty kms, isobars differ, land forms differ, soils vary and accordingly the crops, cultivation pattern and the settlement pattern of the people differ.

The lush green over castes, the frequent clouds, the colourful terrain, majestic sun shine, divergent flora and fauna has had a tremendous impact on the inhabitants of the valley, more so on the rural people who live very close to nature by virtue of their job. Thus there is little surprise if peasants in Kashmir posses a wonder full knowledge pertaining to the climate of their country. Interesting clues pertaining to the relationship of climatic cycles and agriculture operations are revealed by peasants. This one comes to know once one visits the valley or once one initiates a talk on this topic with them. It is not with out reason. Climate has been very crucial for their calling. Promising crops are always subject to the timely rains, sufficient sunny days and snow capes. Long involvement with agriculture has taught a peasant that ‘for a good rice harvest the following conditions are necessary: heavy snows in the winter on the mountains to fill the streams in the summer, good rains in March and the beginning of April, with an occasional shower and fine weather in September. In September the nights should be very cold. All Kashmiris assert that sirdana, or full grains, depend on cold dew penetrating the outer husk and swelling and hardening the forming grain’.  

Given the importance of weather conditions in the life of the people dependent on agriculture for their survival one need not to wonder on a quite

58. Ibid., p. 63.
59. Ibid., p. 71.
popular folk saying that *greestis guz zi khodie aasin, aks manghay taaf ti bikis rooed* [a cultivator should have two gods; one to ask for sunshine and the other to ask for rains]. This speaks volumes regarding the relevance of climate to the life of a cultivator. No wonder that he shared an intimate and a sensitive relationship with climate available to the geography of his land. He divided valley into two regions—east and west (*dochuin ti khoveir*). Eastern areas are warmer than western areas. They receive comparatively more sun shine. For instance a casual look on houses leads to the fact that they are generally constructed in right-left direction. This practice was more common in Kashmir during pre-modern times when roads didn’t exist and *kuls* and springs determined the settlement pattern. Whenever a house was constructed besides other local pre-requisites it was ensured that the front side is on the right side (*dochhun*). On this side sunshine lasted till sunset. The mountains of this side provide good pastures with energy rich grass. Bakarwals the nomadic people throng to this region in the early summers.\(^6^0\)

Every component of land be it a hillock or a stream, a mountain or a spring serves the massages pertaining to climate. Interestingly the cultivators have been conscious to this fact. Thus when they find clouds on *kreoush* [mountain lids] rains were sure. They even set dates when air, land and water witnessed *jamber* [warming] after chilly winter. They knew it well that tree planted in moonlight (*zonpacch*) suffer from partial dry. *Adrin* [initial showers after 21st of June] was considered testing time for the ultimate success of plant growth. They knew by experience that by twenty first of June rice cultivation should come to an end. By this date sun entered into *solceter*.\(^6^1\) Cultivation of maize is now safe. The *darz* [pest] can not damage now. In fact they felt the very  

\(^6^0\) Lawrence, op. cit., p. 335.  
\(^6^1\) Based on field study.
pulse of the climate available to him. A haze cover on mountains in September meant the arrival of harvesting. So concerned were cultivators regarding weather that they looked towards sky off and on not less than twenty times a day, watched it first in morning, examined it at dusk, mentioned climate several times a day particularly at launch, dinner or at routine gathering. The mood of the winds, the heat of the sun and the colour of the clouds had a direct bearing on his person. The favourable the weather, the nice their disposition. They always prayed for the safety from the wrath of bad weather. Bad weathers (aasmani balia) have often caused havoc to the people.

Thus if a native is declared ‘weather wise’ by foreign observers who were impressed by his intellect, there is no exaggeration in it. It was fully known to him that the winds in summer in the after noon cause decrease in temperature which lowered the pace of glacier melting and consequently the level of water decreased in the kuhls and rivers. This process he named davok. The continues rains of small droplets was considered dangerous. It was called flood rains. He was aware about the nature of rains in Kashmir. He knew that showers seldom fell valley wide. They fell sparsely and at times had sharp distributions. So sharp that some times one horn of bullock witnessed rain and the other remained dry. He often said that the more the sky roars with thunders the less it rains. For him the first roar of thunders in spring meant the birth of mushrooms which they collected for cooking. Rainbow (sonzal, ramram budrien boien) after rains was considered a sign that overcast will be clear.62

Given the fact that the peasants used to sleep generally in the open in summers they were more familiar with the dark sky. It is no wonder that they named certain star constellations also. For example kritz kuri [vegetable girls], triaker [balance] etc. They believed that the bigger the corona of moon the nearer

62. Ibid.
the clouds and the lesser its size the farther the clouds. At dusk in harvest they observed the sky anxiously and if they noticed the *sadr tii * [west-east green patches of light] rains were sure in 48 hours. Besides these indications if the stars twinkle more than normal it was considered an indication of cloudy overcast in the next day or two. Birds such as hoopoe and swift were considered birds of precursor who conveyed the arrival of spring. Frog crying meant time has come to arrange the rice nurseries.⁶³

Thus the land including its lofty mountains, vibrant water bodies, prominent karewas, temperate climate all together frame the contours of existence in Kashmir within which the inhabitants have successfully survived. Land has been a determining factor in Kashmir history. To conclude let us quote a few lines from Lucien Febvres monumental work-*A Geographical Introduction to History*;

‘yes gentlemen, give me the map of a country, its configuration, its climate its waters, its winds and all its physical geography; give me its natural production, its flora, its zoology, and I pledge myself to tell you, a priori, what the man of that country will be, and what part that country will play in history, not by accident, but of necessity; not at one epoch, but in all epochs; and more over, the idea which it is destined to represent!’⁶⁴

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⁶³. Information gathered from a cultivator namely Noor Mohammad Mir resident of Panzinara Sonawari Sumbal.

BEGINNING OF AGRICULTURE IN KASHMIR

Food came first then faith.

[Kashmiri saying]

Agriculture involves clearing the natural ecosystem in order to create an artificial habitat where humans can grow the plants and stock the animals they want.\(^1\) The earliest accepted evidence of agriculture dates to the eight millennium BP.\(^2\) Before we initiate a discussion on the beginning of agriculture in Kashmir let us present a brief introduction of the different theories and models propounded by botanists, historians and archaeologists regarding the origin of agriculture. These models broadly include the stress model, the co-evolution model and the oasis theory.

The 19\(^{th}\) century botanist Alphonse de Candolle was the first person who attempted to locate the origin of the cultivated plants. In 1883 he published a book entitled The Origin of Cultivated Plants, in which he considered the regions of origin of domesticated plants, their early cultivation, and the process of diffusion by which they were introduced to other areas. He deduced:

‘Agriculture came originally, at least so far as the principal species are concerned, from three great regions, in which certain plants grew, regions which had no communication with each other. These are-China, the southwest Asia [with Egypt] and inter-tropical America. I do not mean to say that in Europe, in Africa, and elsewhere savage tribes may not have cultivated a few species locally, at an early epoch, as an addition to the

\(_______________________________\\)
\(^2\) Charles A. Reed, *Origin of Agriculture*, pp. 879-946.
resources of hunting and fishing, but great civilization based upon agriculture began in the three regions I have indicated.\textsuperscript{3}

In 1926 AD a reputed Russian botanist N.I. Vavilov in his seminal work ‘Origin, Variation, Immunity and Breeding of Cultivated Plants’ postulated seven fundamental independent centres of origin of cultivated plants, each centre being associated with the cultivation of different plants, and with different methods of cultivation and types of agricultural implements. These seven centres are as follows:

‘First South-west Asia, comprising Asia Minor, Persia, Afghanistan, Turkistan and north-west India; among the principal cultivated plants the origin of which is attributed to this centre are: soft wheats, rye, flax, fruit trees [apple, pear, sweet cherry], grape wine and many vegetables [e.g., beans, peas and carrots]. Forests of wild apples, pears and sweet cherries, covered with wild grape-vine are still found in Transcaucasia and northern Persia. Second India, comprising the valley of Ganges, the Indostan peninsula and the adjoining parts of Indochina and Siam; the cultivated plants that arose here are: rice, certain forms of naked oats and naked barley, millet, soya, sugar cane, Asiatic cottons and tropical fruit-trees. Rice still grows wild in this area. Third the great river valleys of eastern and central China; this is the centre for the radish, citrus plants, peach, tea, mulberry, and other less-known plants. Fourth the Mediterranean basin, including the Iberian, Italian and Balkan peninsulas, the coasts of Asia Minor, Syria, Palestine, Egypt, Tunisia, Algeria and Morocco. Fifth the mountainous part of east Africa, chiefly Abyssinia; as centre, Vavilov believes, has seen the first cultivation of wheat, barley, sorghum, and coffee. Sixth Southern Mexico, where maize, upland cotton and cacao were first cultivated; as well as some other plants. Seventh Peru and Bolivia—the centre for the original cultivation of the potato.\textsuperscript{4}

\textsuperscript{3} Needham, \textit{Science and Civilization in China}, Vol. VI, part-II, p. 35.
In 1952 Sauer postulated three hearths of plant cultivation, one in mainland Southeast Asia and two in America, from which the idea of plant cultivation gradually diffused. Harlan has proposed three mutually independent systems of domestication, each with a centre and a non-centre i) a Near East centre and an African non-centre; ii) a North Chinese and a Southeast Asian and South Pacific non-centre; and iii) a Mesoamerican centre and a South American non-centre.

There are different factors that are held responsible for the birth of agriculture. Some scholars are of the opinion that ‘agriculture did not originate simply from the “discovery” that seeds dropped into the ground would grow into food plants’. In fact the people were “forced” into producing food because of increasing scarcity of wild resources. Thus we have two models that explain what propelled humankind into farming.

The Stress Model: The stress model of cultural and technological change is based on the idea that changes occur only under some form of stress [Binford and Binford, 1968]. This approach emphasizes the dynamic role- hunger or fear of hunger- might have played in propelling humankind into farming. At the beginning of Neolithic period, under the pressure of food shortage caused by climatic change, man [or woman] learned to farm and domesticate animals.

The Co-evolution Model: The other view of the beginning of agriculture focuses on food production as the result of a co-evolutionary process (Rindos, 1984). Rindos suggests that previous theoretical propositions tend to separate humankind from the natural order. “we view civilization as...based on control

5. Carl O. Sauer, Agricultural Origins And Dispersals, p. 27.
8. Ibid., p. 39.
both of nature and of human beings, and having properly identified agriculture as the foundation of civilization, we proceed to read this ‘paradigm of consciousness’ back in time to account for the very origin of agriculture, and thus of civilization itself’ (1984:4). The co-evolution model, then, suggests that humans, animals, and plants underwent a mutual process of domestication. In this model the increased utilization of wild plants by an increasingly large human population led *naturally* to an increased yield of food plants.⁹

Gordon V Childe [1952] a world famous archeologist suggested the ‘oasis theory’, that as climate dried and the sources of water diminished, animals and plants would be forced to live in close contiguity with humans, and domestication would then occur.¹⁰ Further he believed that women not man discovered the art of cultivating plants and thus initiated the beginning of first great transition.¹¹

Having presented the various popular theories regarded responsible for the beginning of agriculture in human history let us also record what is the popular belief of the rural people about the beginning of farming in Kashmir. Need less to say when we discuss agriculture with common masses in Kashmir it is generally held that farming was the first profession of man. Food which was synonymous to agriculture during our period of study enjoyed paramount importance. And people firmly believed that it originated prior to religion. What people think at collective level about the origin of this epochal development is beautifully summed up in one of our important sources documented in Persian language- *Gulzar-i-Kashmir*. It says:

‘Since animals depend on food for their living. The food provides energy to

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⁹. Ibid., pp. 40-41.
¹⁰. Ibid., p. 51.
the body and turn into blood. Food that is generally brought into use are procured from two sources-plants and animals. Food from plants is stored on large scale. The Creator of earth and heaven has created infinite number of plants. The limited knowledge of man fails to grasp them completely. Thus out of this vast plant kingdom what suits to the animals and what suits to the likes of human sensory faculties of taste and smell, and do not create any problem for man, first people selected them, preserved their seeds carefully, and according to their experience and knowledge cultivated them in every area and city, according to the seasons of the year, on the irrigated and rain fed lands. So that cultivation of these crops relieves man from the food problem."12

THE BEGINNING OF AGRICULTURE IN KASHMIR

When did hunting and gathering ceased as main sources of food and at what point of time people shifted to the systematic production of food by selecting seeds and cultivating plants in Kashmir, it is a moot question. The ‘auxiliary sciences’ of our subject are also not forthcoming in this regard. However, there is little doubt that pre-agriculture period termed as ‘barbarian’ by archeologist like Gordon Childe stretched over a considerable part of Kashmir’s past and it had some inherent limitations.13 In the first instance it was deficient and non-reliable in character. There was always chaos of supplies. Prey, the basic source of food, was wild and free of ones control. Major portions of land were submerged and there was hardly any scope for cultivation. No wonder that seasonal occupation and sparse settlement are the main features of this period in Kashmir.

Ensured supplies in a challenging climatic situation of Kashmir and riddance from ‘come and go’ compelled the early people to search for a lasting

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solution of food problem within the contours of the geography of the land.\textsuperscript{14} Around 3000-2500 BC for the first time efforts were made to introduce agriculture in Kashmir. To begin with wheat, barely and lentil crops were experimented. This situation continued for almost second millennium BC. However somewhere around two thousand BC a landmark development came in the crop culture of Kashmir. In order to find a permanent solution to the food problem and construct a sustainable life supporting system within the contours of the physical environment of Kashmir a new crop was introduced. This crop was rice locally known as \textit{danei}. What circumstances led to this landmark development in the food history or crop culture of Kashmir this would be discussed elsewhere in the following chapters. It is suffice here to say that it was rice culture that laid solid beginning of agriculture in Kashmir and dominated the rural landscape till present times.\textsuperscript{15}

\textbf{AGRICULTURAL REGIONS}

The climatic variations, the different land types and the crop culture have largely framed the different agriculture regions of Kashmir. Needless to say the valley of Kashmir is not so large a state as far its area is concerned. However within it is so diverse that within fifty km journey one comes across not less than three weather conditions. Besides the topography is never same. Karewas,

\begin{itemize}
\item[14.] Nilamata Purana, Vol. II, p. 61.
\item[15.] Archeological evidences of various crops: At Burzohom between 3000-2500 BC cereals, pulses and horticulture products together constituted 86% of plants economy while there were also 14% of weeds. Of the food plants cereals alone constituted 73.68%; of which wheat \textit{[triticum aestivum and triticum sphaerococcum]} was the major crop with a share of 87.5% and the rest of 21.5% was barely \textit{[hordeum vulgare]}. The share of pulses in the total agriculture was 1.7% made up by lentil \textit{[lens culinaris]} and that of the fruit 10.5%. This cropping pattern almost continued during the next cultural phase (2500-1700 BC). Almost a similar situation is found at Gojkral too where around 3000-2500 BC wheat, barely and lentil crops were grown. Besides, around 2500-2000 BC common pea was introduced while around 2000 BC rice and millet were also cultivated. During the last stage between 1700-1000 BC all the earlier types of the crops were grown but the rice was cultivated in abundance. Aijaz Bandy, \textit{Prehistoric Kashmir}, p. 180.
\end{itemize}
swamps, marshes, mountains and lakes are characteristic features of geography. Added to this the plants also differ in their adaptation and cultivation. In order to capitalize the available land resources and secure food security the cultivators have tested different crops on different landforms and cultivated them accordingly. Broadly speaking the valley proper was divided into following agriculture regions till pre-green revolution era.

I. Rice Producing Area. Rice producing area consisted on those areas (tarfaat) which are situated in between the low-lying country and upper areas situated close to the mountains. This has been traditionally the rice granary of Kashmir. This area in fact sufficed the required qualities must for the propagation of rice culture. Temperature was suitable. The soil soft with out stones which abound in quantity the closer we go to the mountains. The slope was favourable for the construction of kuhls working on gravitational flow. Besides in this area there was hardly any locality with out natural springs. The easy availability of water by these springs considerably compensated the irrigation requirement for rice cultivation. It is therefore not with out reason to find these springs being considered as assets. No less important factor was that this belt was always safe from devastating floods or soil erosion which frequently visited the lower areas.  

II. Saffron Cultivation Region. Saffron was cultivated in Pampore the capital of pargana Vihi. Pampore pargana falls in the Maraz division of Kashmir. It is an udar situated in the foot of Wasturvon hill. River Vitasta flows in the western side from the south-western direction. Almost nineteen villages including Pampore, Sadav, Somber, Latipor, Chandhor, Khunmoh, Khrewshar, Zewan, Balhom, Voyan, etc. were involved in the cultivation of this corp. It is the only

16. During 19th century alone the frequency of floods was one in 4.3 years. The Valley of Kashmir, A Geographical Interpretation, Vol. 1, The Land, Moonis Raza, p. 95.
area which is popular for the cultivation of saffron. 10510 bighas of land were under its cultivation. Saffron land was classified into three categories such as wantu, darmu and keru.\(^\text{17}\)

During Mughal rule saffron was cultivated at Inderkot and Shibu-din-por situated in the vicinity of Walur Lake.\(^\text{18}\) However it didn’t continue there. Perhaps it was because of the limited land availability in the area, which was sufficient for settlement as the lands surrounding were low and always flooded.

**III. Grape cultivation at Repor.** Growing fruits has a long history in Kashmir.\(^\text{19}\) Kalhana had long back written that ‘grapes’ that are rare even in heaven are common in Kashmir.\(^\text{20}\) This is absolutely true. While traveling through countryside in Kashmir one frequently comes across grapevines and pomegranate shrubs in the courtyards of people. These plants formed an important family possession and greatly added colour to the otherwise monotonous foods of people. However besides this common practice of fruit production at domestic level certain areas were particularly meant for the cultivation of certain fruits. Grape plantings were obtained from one such particular area-Repor. This was the only known place of viticulture during the period of our study.

Repor falls in the Lar pargana. It is situated on the right bank of Sind nala which flows in its south from north-eastern to south-western direction. On its northern side stands a mountain gange. The land form is inclined and the soil is stony.

\(^{18}\) Ibid., p. 104.
\(^{19}\) Harwan tiles depict bunches of grapes.
IV. Valley Floor Of Wheat, Barley Cultivation. One of the paradoxes of Kashmir history has been that the valley floor or what has been described by a famous land settlement officer Lawrence as ‘Low lying country’ bordering Vitasta and comprising a considerable portion of land has a late history of rice cultivation. This area has always been vulnerable to floods.\(^{21}\) Besides, a large portion of land was under wet lands. Water was so plentiful in the low lying parts of the valley that land remained literally deluged.\(^{22}\) By the time kuhls reached this area they were exhausted or there was no scope for gradient irrigation. Hence rice cultivation in this area was negligible. Given this scarcity of irrigation \textit{rabi} crops like barley, wheat and maize was commonly cultivated in this area. The large availability of marshy land supplied fodder grass on large quantity. This whole area was known for large scale stock raising and there were also \textit{rakhs} meant for the horse breeding.\(^{23}\)

The scarcity of cereals caused serious food shortage in this area which sometimes culminated into fatal famines. There are no karewa in this area. A few that exist such Hanjik, Diwar Yakmanpor, Tergam, Shilvat or Inderkot are negligible in terms of land under them. It is by the construction of \textit{gunds} and embankmenting of river Vitasta that the land has been reclaimed for cultivation and habitation in this part.

V. Maize Cultivation In Kandi. Unlike other regions which are located in a particular area of Kashmir, the mountain neighbourhoods known as kandi in local parlance is spread on a vast area falling immediate to the mountains.

\(^{21}\) Even a casual look at Kashmir history shows that the frequency of floods has been very high ever since the valley assumed its present form. In the 20\(^{th}\) century alone, of which we have continues record, there has been fifteen floods up to 1965, the mean expectancy being 1 in 4.3 years. Among the major floods, those of 1959 and 1965 have no parallel in living history. Moonis Raza, p. 95.

\(^{22}\) Moonis Raza, op. cit., p. 82.

\(^{23}\) Ghulam Mohammad Lone, \textit{Agar Nama}, p. 112.
Since these areas are close to the mountains temperature remains low, winters are long, summers short and time for cultivation hardly lasts for three months. Given the unfavourable weather conditions people resorted to the cultivation of pulses and maize which thrive on this land. In case of timely rains a good crop was expected. Rice crop did not thrive there and if cultivated just ears developed without any rice inside.

Most of the kandi land falls near the mountain ranges situated in the western and south-western side of Kashmir. So far as eastern and north-eastern area is concerned there is no kandi land. In this area sun shine period is long as this area falls in the right side. However, there are very few karewas and soil is full of pebbles and stones. In this area we come across rice cultivation very close to hills. Besides the cultivation of pulses and maize millets were commonly cultivated. So far as the areas mentioned latter is concerned they fall in the left side of the Kashmir valley. These include Khag, Uri and Yoosmarg.

In kandi there are villages who transhumance during summer. Their lands lie in mountains where they engage in the cultivation of maize, pulses and potato. Villages like Sarbal, Sonamarg, Gagangir in Ganderbal district and Kamrazipora, Aglar, Abhama, Sangarwani, Khygam and Kaller in Pulwama, in Uri Reshivadi, Lachipora and Maya villages shifted to pastures in summer for stock care and cultivation.24

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24. Local informant.
LAND RECLAMATION

*Land assumes meaning by reclamation.*

[Peasants say]

Land in its natural form hardly serves any systematic, secured and permanent food requirement of the society. It becomes promising only once it is shaped into required use. Its slopes are terraced, its streams are canalized, its swamps are checked, its rivers are regulated by embankments etc. etc. In the following pages we shall see how this all was made possible in Kashmir and what are the major methods of reclamation of land.

As a matter of fact the history of land reclamation in Kashmir is long and interesting. The history of Kashmir itself began with reclamation. It was reclaimed out of a vast lake called *Satisar*. To quote Rajatarangini:

‘Formerly since the beginning of the Kalpa, the land in the womb of Himalaya was filled with water during the period of the [first] six Manus [and formed] the lake of Sati (*Satisara*). Afterwards when the present period of the [seventh] Manu Vaivasvata had arrived, the Prajapati Kasyapa caused the goddess led by Druhina, Upendra and Rudra to descend , caused [the demon] Jalodbhava, who dwelt in that [lake] , to be killed, and created the land known by the name of Kasmir in the space [previously occupied by] the lake.’

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Long before Rajatarangini was written in 12th century [1149] Nilamata Purana had written that since ‘Prajapati is called Ka, and Kasyapa is also Prajapati. Built by him this country will be called Kasmira’. Or to quote it again,

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‘Because water called Ka was taken out by Balarama [the plough-wielder] from this country, so this will be called Kasmira in this world.’\(^3\)

What is documented in mythological works like Nilamata Purana or chronicles such as Rajatarangini it is testified by scientific evidences also. In this regard Fredric Drew the author of The Jummo and Kashmir Territories-A geographical account writes that ‘the observation of nearly every traveler to Kashmir have tended to show that the vale was in the late geological times completely occupied by a lake’.\(^4\) However in spite of this first great reclamation that brought the country into existence and provided a space for man to settle here, it was long after, mostly during historic times, that the process of moulding the physical geography of the country for the sustainable source of living was started. As a matter of fact agriculture was never possible in Kashmir unless nalas or natural streams with perennial sources in mountain ranges were not canalized, the sloppy terrain not turned into terraces, the river Vitasta known as sleeping dragon (shuingiet shahmar) not controlled and the marshy lands that occupied a lot of area not dyked. This conquest of land forms furnished basis for agriculture. But this did not happen overnight. It was a protracted engagement that continued all along the history of Kashmir. Thus it was long after that the land of Kyshapa became ‘beneficial for living beings, endowed with the qualities [of producing] all grains’.\(^5\)

Need less to say that the land formation of Kashmir varies from sloppy to swamps and from udars to semi-plains therefore, the method of land reclamation also varies from one type of land to another. Broadly speaking two different methods -embankmenting (suth) and terracing (bethdar) -were used for the recla-

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3. Ibid.
mation of land in Kashmir. While embankments were used to reclaim swampy and flood infested areas, terraces were used to reclaim the sloppy and semi-sloppy terrain.

RECLAMATION OF LAND IN LOW LYING AREAS

i. Embankmenting (*suth*). It has rightly been said that ‘Kashmir is, indeed, the gift of the Jehlum. It is born of it, made up of the detritus brought down by its numerous tributaries; and is united with it through every fibre of its being’. However the ‘flood calamity’ of same river caused havoc to the Valley floor till recent past. Thus the reclamation of land in the central strip for human settlement and cultivation necessitated the regulated flow of river Jehlum which ‘crept over the fields like a devouring serpent’ and turned the whole valley into a vast lake. Further a control-less river flowing with out necessary curbs meant an unceasing re-approchment of the river and the vast marshy lands leaving no scope for cultivation. The fact remains that the more we travel toward past the less we found this part worth for mans attention to shift to it. The reasons were simple; it was problematic to settle there. To quote kalhana, ‘this country [of Kashmir] always [before] gave small production, as it was [liable to be] flooded by the waters of the Mahapadma lake, and was intersected by [many] streams’. It was only after centuries of flooding by river Jehlum, each time depositing a good amount of silt that this area assumed economic significance. Added to this it was the highway value of Jehlum that promoted settlement in this strip. Thus the

7. Throughout this part of Kashmir habitation sites selected for residential purposes formed a dune type land mass called *taeng* in local parlance. It was higher than surrounding lands which saved it from frequent floods. It was late in 7th, 8th and 9th century onwards that rulers started founding localities in this area.
9. Ibid., p. 195
embankmenting of river Jehlum may be considered as a major attempt to reclaim land in the valley floor of Kashmir.

When did this process begin? No concrete evidence is available in this regard. Unfortunate as it, in spite of showering all praises on this river, specifying even the occasion of its birth, the authors for unknown reasons, failed to keep the account of the development of its banks. As such the history of river embankmenting has no recorded beginning. Given this unclear situation the researcher has no way to resolve this question but to take recourse to the circumstantial evidence like settlement pattern of Kashmir, study it and set a probable date. It can be inferred by the settlement pattern of Kashmir that the process of developing raised banks on Jehlum started very late in Kashmir history when population pressures generated the need to shift to the lower areas.\(^{10}\) Lower areas it may be mentioned here witnessed late settlement. The first recorded evidences of constructing an embankment on river Jehlum comes during the reign of Parvarasana II [6\(^{th}\) century A.D].\(^{11}\) However the purpose was not agriculture but to protect his newly founded capital city Parvarpora near Srinagar. Till mid 8\(^{th}\) century A.D. river embankmenting seems to be more or less a forgotten department hardly attended by any ruler. It was Lalitaditya Muktapida [724-761A.D] who attended this serious problem which was a stumbling block to economic development. To quote kalhana, ‘When then the waters had been drained off somewhat, through the great exertions of king Lalitaditya, it became productive to a small extent.’\(^{12}\) This statement of Kalhana makes it clear that till the times of Lalitaditya the major issue before the

\(^{10}\) Out of the forty three Neolithic sites excavated in Kashmir so far not a single site has been recovered from this area. All sites were located on karewas that were safe from floods. See Bandy, *Prehistoric Kashmir*, p. 105.

\(^{11}\) Kalhanas Rajatarangini, book. iii, no, 345-46.

\(^{12}\) Ibid.
establishment was dredging the passage of Vitasta not framing its dams. Framing
dams was fruitful only when what ever rained from heaven flowed out of valley
smoothly. But this was not the case at that time. The passage had blocked,
discharge was minimum with the result the land was flooded by Vitasta,
mountain streams and Mahapadma Lake. Thus he attended drainage sector on
priority basis and dredged the river below Baramulla to facilitate quick flow of
water and as such gave a flip to the agriculture production. However what
Lalitaditya did in this direction his successors failed to maintain it. They didn’t
preserve what Muktapida had constructed. Thus ‘under the feeble kings’ whose
reigns were marred by court controversies’, who were ‘sensuous’ and
‘destroyer of subjects’ ‘the country was, just [as before], overtaken by
disastrous floods’ and ‘in the famine- stricken land one khari of rice (dhanya)
was bought for ten hundred and fifty dinaras’. Flood calamity became a
dominant discourse and subject of every conversation.

Then through the merit of Avantivarman, says Kalhana, there descended
to the earth the Lord of Food (annapati) himself, [in the person of] the illustrious
Suyya, to give fresh life to the people. Praising Suyya Kalhana writes;

‘neither Kashayapa nor Samkarsana had conferred benefits such as were
conferred with ease on this realm by Suyya of meritorious acts. The
reclamation of the land from water, the bestowal of it to pious Brahmans,
the building of barrages with stones in water and the suppression of kaliya,
which were achieved by Vishnu in four incarnations of righteous acts, were

15. Ibid., book iv, no, 396.
16. Ibid., book iv, no, 399.
17. Ibid., book v, no, 70.
18. Ibid., no, 71.
19. Ibid., no,72.
achieved by Suyya, who had a mass of religious merits, in single birth only.\footnote{Ibid., book v, no. 73-83, pp. 196-97.}

Suyya launched a multifaceted strategy. He addressed this chronic problem with farsightedness. His strategy had four main aspects. First ensuring the smooth passage of water out of Kashmir valley; Second construction of embankment on the shores of Mahapadma Lake and third dams on both side of Vitasta and finally shifting the confluence of Sindu and Vitasta.

The chaos that followed after the demise of Lalitaditya had far reaching consequences. Agriculture was worst hit. Water bodies suffered negligence. This happened with the kuhls supplying water to rice fields\footnote{Ibid., no, 85, p. 197.} and this happened even with river Jehlum also. Below Baramulla the narrow gorge was blocked by the stones that rolled down from the mountains lining both river banks, compressed the Vitasta and made its water turn backward [in whirls].\footnote{Ibid., no, 88-89, p. 198.} Suyya followed a wonderful technique. He on reaching in Kramarajya the locality called Yaksadara, threw with both hands money (\textit{dinnara}) into the water. The famine stricken people then searched for the money, dragged out the rocks from the river, and thus cleared the bed of Vitasta. After he had in this manner artfully drained off that water for two or three days, he had the Vitasta dammed up in one place by workmen. The whole river was blocked up by Suyya for seven days by the construction of a stone dam. After having the river bed cleared at the bottom, and stone walls constructed to protect it against rocks which might fell down, he removed the dam. In this way Suyya solved a major problem. He brought an order to the drainage system of Kashmir. Water flowed out reclaiming in the first instance a vast area submerged under water thenceforth. At the same time it facilitated the other reclamation work also.
It was perhaps for the first time in the annals of Kashmir history that serious steps were taken to tackle the problems created by frequent floods in river Jehlum. A long dam of seven yojanas\textsuperscript{23} was constructed along the Vitasta [Jehlum]. Wherever he knew inundation-breaches to occur during disastrous floods, there he constructed new beds for the Vitasta.\textsuperscript{24} Trained by him the Vitasta starts rapidly on her way from the basin of the Mahapadma Lake, like an arrow from the bow.

A marvelous engineering feat of Suyya was shifting the confluence of Sind and Jehlum. To quote Kalhana, the two great rivers, the Sindhu and Vitasta, flowing to the left and right of Trigrimi their confluence were shifted to Shadipora. To this day, writes Kalhana, even there are seen, growing on the banks of the former river beds old trees which bear the marks of the ropes fastened to them by the boatmen.\textsuperscript{25}

Sir M A Stein a well-known authority on Kashmir history who worked meticulously on ancient history and conducted field study regarding this grand land reclaiming project of Suyya writes;

‘by forcing the river to pass to the north of Trigam instead of south of it, it became possible to reclaim a great portion of the land between the Vitasta and the Sukhnag river on the south. But the results of this change must have Made themselves felt yet over a far larger area. The wide low-lying tracts khun, gaier khun and gogji khun. That means the river has breached at three places. This is which stretch to the south of the Volur Lake have remained to the

\textsuperscript{23} Yojana is a measure of distance differently regarded as equal four, five, nine or eighteen English miles

\textsuperscript{24} Almost around all villages located on Jehlum the river has breached quite often at several points. Each breaching point has a name with the suffix of khun. Khun is called breach in Kashmiri language. For instance in a particular village one comes across names like baieng evident by the ditches caused by breaches that still exist despite the fact that floods occurred not less than fifty years ago].

\textsuperscript{25} Ibid., book iii, no, 103
present day the scene of the cultivator’s constant struggle against floods from lakes and rivers. It is clear that the task of protecting and reclaiming these lands must have been considerably facilitated when the Vitasta was prevented from entering their very centre from the side of Parispor. 26

What is however significant to note is that Suyya did not stop his reclamation activities here. He planned to reclaim as much land as possible. This was key to the economic progress of the state. Thus for this purpose he did not spare the Walur lake. Kalhana says that Suyya dammed in the water of Mahapadma Lake [Walur]. 27 It may be noted here that this lake acts as a huge flood reservoir for the greatest part of the drainage of Kashmir. In normal years the length of the lake may be reckoned at about twelve km and its width at six miles, with an area of about seventy eight sq miles. In years of flood the lake extends to about thirteen miles in length and eight miles in width. 28 Walur is located in the north of Kashmir. It is here that Jehlum starts the next part of its journey, resumes river shape near Sopore and travels smoothly up to Baramulla a distance of about twelve km.

On the north and north-eastern side this lake is bordered by a chain of mountains from Safapora to Watlab. Thus almost half of this lake is naturally embanked. It is on the south and south-western side that this lake occupied vast areas during floods. 29 Thus by constructing embankments and at the same time shifting the confluence of Vitasta and Sindhu Suyya reclaimed this whole area. The land reclaimed as such was yet exposed to floods in Sukhnag tributary which flooded on the western side of the reclaimed area. Suyya therefore, rounded the

27. Ibid., book v, no, 103.
28. Lawrence, op. cit., p. 20.
29. While gathering information pertaining to my problem during field study the villagers of Dumbkhaun Sumbal, that presently is not less than eight or nine km far from the third embankment of the Walur, pointed a patch of land (kha) which they still call by the name of Mahapadam. This
recovered land by circular dykes known as *kundalas*.\(^{30}\)

It may be added here that this lake has three embankments. The second is known as Sheikh bund and the third and the last one is called Bakshi bund constructed during the reign of Bakshi Ghulam Mohammad [1953-1963]. For routine rains the first bund is sufficient. It checks the level of water. The land beyond the first bund is thus used for the cattle rearing. In case of excessive rains water crosses over the first bund and occupy the first patch of reclaimed land. The second patch of reclaimed land witness floods seldom when it rains continuously; once in a decade. Thus this patch is used for the cultivation of maize, pulses and sesame. Besides, a great wealth of cattle is reared here. However, it is the last bund that clearly marks and demarcates the boundaries of Walur Lake. Beyond this bund the land reclaimed is used for rice cultivation, orchards and other purposes.

**ii. Gunds.** The embankmenting of river Jehlum was not only beneficial in the sense that it did not let the surplus waters to submerge the land but it also parted from the river the adjacent fens (*numbals*) mostly caused by the tributaries of river Jehlum. These marshy lands provided enormous space for agriculture if provided with embankments. For this purpose their bordering land was dyked. This was done by another important technique of constructing *gunds*. *Gund* was a piece of land that was surrounded all around by bunds.\(^{31}\) These swamps frequently flooded their superb therefore, from a convenient point an

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land is located in the foot of small Inderkot karewa on its northern side. This name is a living testimony that in the remote past Mahapadma Lake stretched up to this place. There is no doubt about it. The land formation of the area is such that even at present the waters of the lake can reach to this place by a normal rainfall of three-four days. It is but for the embankments that this area is safe and suitable for agriculture.

\(^{30}\) Ibid., book. v, no.106. *Kundal* means a bowl. Since the villages thus founded presented the look of a bowl therefore, they came to be known as kundals. Markundal, Vutz kundal and Aamchi kundal in the superb of Wular Lake owe their existence to this plan. Stein op. cit., Vol. I, P 199.
embankment was started that run parallel to the river bank with a vast land in between. As such a large area was recovered. However, this vast patch of land reclaimed as such was further subdivided into different gunds by embankments which were connected with the river embankment on the one side and with the embankment of swampy land on the other. Each gund was connected by a wooden pipe (nour) with the swamps beyond bund for irrigation of rice crop. Certain portions required for the crops other than rice were reclaimed by digging ditches. The soil recovered from these ditches served two purposes. It increased the level of the land and made it fit for vegetable cultivation. At the same time the ditch channels served the purpose of irrigation to the dry land whenever a need for it was felt.\textsuperscript{32}

This division of the reclaimed land into gunds rather than keeping the whole area as a single unit was not without reason. The main embankment that marked the reclaimed portion from the fen never meant an assured security against inundation. In a continues rainfall especially during summer when glacier fed nalas kept their catchment areas already brimmed, excessive waters often crossed over the banks. Or as generally happened breached the bunds at vulnerable points. So in such cases only that gund, where breaches occurred, was flooded and other gunds remained safe. However, this arrangement was not free from certain defects. Different gunds belonged to different villages and their safety was the primary concern of the villagers. When water level swelled in the swampy lands, defensive efforts got divided as each village wanted to protect only its own gund. Thus, the deficient manpower plus the dearth of material for repair also caused floods.

\footnotesize
\textsuperscript{32} Personal observation.
The embankments laid out on river Jehlum for the reclamation of land usually ran parallel to the water course. But they were not erected right on the bank or near deeper points. For, that was neither possible nor a surety against breaches. Sufficient distance was left between the main bund and the channel. The gap was set as per the estimated level of water during floods. Where distance was not possible the bunds were raised higher. However, no technique like protection which is a modern development was operative to stop friability of banks which was a recurrent process near the meanders due to the constant pressure of water. Such meanders occurred within a mile or so in the course of river Jehlum and were often the breaching points (khun).

The material used for the construction of embankments was generally earth which was piled layer after layer and pressed by feet to made it water proof. Where earth could not suffice the protective measures another abundantly available material in Kashmir i.e. stone was used. The use of stone for pitching of embankments in Kashmir is an ancient practice.  

iii. Floating Fields (Radh). Floating fields known as radh in local parlance were introduced by Zain-ul-abidin (1420-1470 A.D). Such fields not only existed in Kashmir but were long before known in China [C. 1300 A.D] as chia-thein [frame-field] or feng-thein [zizania fields]. Aztecs [1200 A.D-1521] who ruled over Mexico before the Spanish conquest also innovated floating fields known as chinampas. Floating fields were also found in Kasumigaura in northeast Japan and in Lake Inle in Burma.

33. Kalhanas Rajatarangini, book v, no. 103.
37. Needham, op. cit., p. 121.
It is most probable that the technology of floating fields in Kashmir diffused from China via Tibet. The time of their arrival in Kashmir is marked by Kashmir’s developed relations with the north eastern neighbours.\(^{38}\) Besides it is not with interest to know that Dal [lake], where floating fields are found, is said to be a Tibetan word meaning still.\(^{39}\)

The basic principle on which these floating fields functioned was the buoyancy of liquids. What was however necessary a base had to be created that would dominate more water than its weight and generate buoyancy? The base checked the sinking of the soil into water and made fields adaptive to swelling and shrinking of water. These fields were not movable and were sometimes stolen.\(^{40}\) The radh or floating fields were made of long strips of the lake reed, with a breadth of about six feet. These strips were towed from place to place and were moored at the four corners by poles driven into lake bed. When the radh was sufficiently strong to bear the weight of a man, heaps of weed and mud were extracted from the lake by poles, and these heaps were formed into cones and placed at intervals on the radh. These cones were known as pokhar.\(^{41}\) Another method of reclaiming land from the lakes was the dem. These were not floating gardens but small fields with a solid basement constructed near the lake shores. Mud, peat and other lake residue was piled up one or two feet above the expected level of water.\(^{42}\)

b. RECLAMATION OF LAND ON SLOPING LANDS
i. Terracing (paiedar zameen). Terracing is an ancient art and a world wide phe-

\(^{39}\) Lawrence, op. cit., p. 461.
\(^{40}\) Ain-i-Akbari, p. 361.
\(^{41}\) Ibid., p. 344. See also Guldast Kashmir, Pandit Hargopal Khasta, p. 66
\(^{42}\) Ibid., p. 34.
nomenon found throughout Latin America, in the Middle East, the Himalaya kingdom, hilly areas of south and south East Asia, Japan and in many parts of Africa.\textsuperscript{43} No one knows exactly when the reclamation of sloppy terrain situated in the vicinity of karewas and hills started in Kashmir. But there is no denying the fact that these terraces figure among the earliest attempts to agriculturize the land and perhaps co-date with the diffusion of rice culture in Kashmir. The process of canalization provides clear clues regarding the different phases of this process. Reasonably an area would have not been terraced prior to an assured supply of irrigation. Thus we have provided an account of irrigation history soon after the discussion of terrace formation and kuhls so that the chronology of this major land reclamation process is broadly established.

Unfortunately the technical aspect of the terrace formation in Kashmir is not clear. Further, the oral tradition too does not help us satisfactorily because the terracing of the terrain of the valley has been accomplished generations before. Hardly any cultivator who has actively participated in these activities survives to this day. The only alternative for us is to study the formation of these terraces in the light of other civilizations. In this regard it is worth to quote a 12\textsuperscript{th} century Chinese writer who has presented a fuller description of terracing. He writes:

\begin{quote}
Terracing means cutting steps in the mountain to make fields. In mountainous areas where there are a few level places, apart from stretches of rock, precipices or similarly barren areas, all the rest, make ridges where ever there is soil from the valley bottom right up to the dizzying areas, can be split to where crops can be grown. If stones and soil are in equal proportions then you must pile up the stones in rows, encircling the soil to form a field.\textsuperscript{44}
\end{quote}

\begin{footnotes}
\begin{itemize}
\item \textsuperscript{43} Joseph Needam, op. cit., p. 123
\item \textsuperscript{44} Ibid., p. 126.
\end{itemize}
\end{footnotes}
In the first instance the purpose of these terraces in Kashmir was to create an artificial eco-system for rice culture. This would have not been possible had there not been a vast scope for the contour canals which were fed by natural *nalas* and crawled by gravitational flow. The terracing of an area was always done in accordance with the source of irrigation. The construction of ridges or steps of this ladder like fields for the maintenance of water level and ploughing was determined by two important factors—slope and height. On a steep slope narrow and channel like fields were carved out whereas on moderate slope fields were comparatively bigger. The fields formed in the lower side were broader than the fields formed on the upper parts. So far as Kashmir is concerned, the terrain was not sloppy like a hill side therefore, there was valley floor terracing.\(^\text{45}\)

The terrace framing started from the lower part of field. A wall of clods was erected at the lower end and the field was leveled by turning soil of the upper side to the wall end. The walls were usually of semi-circular in style. A square field was hardly possible in terracing. After the completion of first rung, the lower end of the next field was simultaneously marked but its wall was raised to accommodate the soil fetched from the upper side which was necessary for leveling. The height of the wall commensurated almost with the height of the soil lifted from the other side. The process of field construction continued as such till the completion of the terracing.

The fields were never hewn bigger than what the technical consideration permitted. Bigger fields needed high walls which could not stand for long time. They chasm in the middle and collapsed. To provide more strength to the walls they were buttressed by clods. However, where the soil was a little sandy boulders where employed. Grass (*dard-i-gass*) was sowed on these walls which engaged the soil and checked its friability caused by the field

\(^{45}\) Personal observation
These walls, it may be noted, were not straight in height but with bowing tendency towards fields. Walls (bouth) were must in the terracing but a good proportion of land was covered under field boundaries (bairi) which resulted by fragmentation when families disintegrated. The different fields of the terraced land were known by different names. The largest field was called as khohul. It was about six to seven kanals in area. The fields of three kanals, two kanals and half kanal were known as maar, dai, and dour respectively.47

PERIODS OF TERRACE FORMATION

Terracing was beyond doubt the major method of reclaiming land for rice cultivation in Kashmir. In order to know the various stages of this process it is must that we go through the history of irrigation in Kashmir. This will help us to ascertain the path and period of diffusion of rice culture in the different parts of Kashmir. For it may be remembered that canalization, terrace formation and spread of rice cultivation always went hand in hand.

Let us first understand the type of irrigation prevailing in Kashmir prior to the mechanized methods of lift irrigation that was introduced in Kashmir in the 1960s. Before that canalization of natural streams generally known as kuhls [water channel] was the chief source of the irrigation system in Kashmir. These kuhls were typical example of terrace irrigation and they worked on gravitational flow passing quickly from one place to another place. Testifying to merit and intellect of Kashmiris in devising this system of irrigation Sir Thomas Holditch writes that ‘there are no practical irrigation engineers who can rival the Afghans and the Kashmiris in their knowledge of how to make water flow where water never flowed before’.48

46. Local informant.
47. Ibid.
Terraced irrigation was long before practiced in the hilly countries of Palestine, Armenia and Peru.\textsuperscript{49} This system of irrigation is so widely spread and so natural to all primitive people that we need not suppose any diffusion of such system from any center where it was invented.\textsuperscript{50}

An elaborate network of kuhls existed in Kashmir which presented a network of a labyrinth. The total number of these kuhls was 2827 which irrigated nearly 61.15\% of the total irrigated area of Kashmir.\textsuperscript{51} Every village nay every field was connected with these kuhls.

In order to understand the construction of these kuhls one must bear in mind the geographical setting of Kashmir which has induced its inhabitant to construct streams bringing the supply of water from a far. Kashmir has a sloppy terrain with a tendency towards center where river Jehlum divides the main land into two parts. The glaciers fed streams that abound in Kashmir traverse their way and join river Jehlum at different places leaving vast stretches of land in between arid and dry. As a matter of fact the land lying in between these natural streams would have not been cultivated unless some adequate arrangement for irrigation was not made. What beset the attention of the State as well as the peasant from the earliest times was to harness the water of these \textit{nallahs} [stream] and canalize it according to the requirements. The harnessing of water would have been difficult or some times impossible had these \textit{nallahs} been too deep but they crawl only few meters below the surrounding land.

What was usually done a particular place was selected on these streams keeping in view the area to be irrigated. The canal often flew on the upper side

\textsuperscript{50} Ibid., p. 3
\textsuperscript{51} Majid Hussain, \textit{Geography of Jammu and Kashmir}, p. 64.
providing water to larger area. The water was diverted from these streams to the kuhls by weirs or projection snags which consisted of wooden stakes and stones with grasses and willow branches twisted in between them. However, when a ravine had to be crossed, a flat bottomed boat (nav) was erected on high trestles and the water was flown over in a quaint looking aqueduct. In case of a karewa the channel was cut along the face of the clip. It is not with out amazement to find these kuhls sometimes flowing like a spent crawling on a wall.

Unlike the canals of the plains that irrigate both sides these kuhls supplied water to only one side falling on the inclined end. They were always known by the name of their founder or the area they irrigated or the nallah from which derived.

They were under a proper social control and a legal framework regulated their use. The supervision of a water channel was assigned to a water baileif known as mirab. He was appointed on heredity basis or annually. In remuneration he got a share of the crop. It is interesting to know that same institution with same name and functions existed in Persia and Central Asian countries.

The distribution of water was decided by customs and tradition. The regulation of water was maintained by water guards (raviks). They kept balance in supply of water between the upper areas (sar-i-aub) and the lower areas (pai-i-aub) and checked the over flow into the small ducts (joay). Nobody could

52. Lawrence, op. cit. p. 323.
53. Ibid., p. 23.
54. Ibid., p. 323.
55. See map of kuhls.
56. Ibid., p. 323
57. Hanes, E. Wulff, Traditional Crafts of Persia, p. 256.
58. Based on the discussion with a villager Wali MohammadWani Chewdara Beeru Budgam.
encroach upon the common property or harness more than his due share of water. When the kuhl was breached or the snag was swept away by flood the beneficiaries voluntarily assisted in the repair.

The *sar-i-aub* villages always received uninterrupted irrigation. They were close to the source. However when the *pai-i-aub* villages suffered irrigation shortage especially during scarcity or dire requirement in transplantation or *pupsug* the concerned villagers moved to the source, closed the small *kuhls* of the main *kuhl* and shifted all waters to their fields for a day or till their requirement was met. Every village had its own turn. This neutralized the possibility of conflicting situation. This practice called as *louer* in local parlance was most common in the Budgam area.\(^5^9\)

`Kuhls were not less than arteries that sustained the people. Peasants were quite aware of it. Not surprising then that they were so dear to them. They considered them crucial for his survival because they glorified the hidden capacity of land. The water that flowed in kuhls was compared with rice. According to peasants it was not water but *batta* [cooked rice] flowing in those kuhls. Sometimes they were called *dood ganga* and sometimes they were called *soinman*—gold producer. They were at times glorified as mothers. He who was living close to them was considered fortunate. For example in Kulgam there flows Mav kuhl. It is said about it *yeeas chii mav tus kya zarrorat gav or yapari mav tapari kya zarorut gav*, meaning he who has Mav [canal] needs no cow.\(^6^0\) Sometimes they were described as dumb, deaf and blind in view of the nature of their flow.

The foundation of these canals was often attributed to some saint.

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59. Based on field study

These kuhls were symbols of prosperity and there was a common practice in countryside that people first shared their dreams to the near by stream when they woke up in morning. The amulets that were obtained from the family peers had to be deposited to the stream. It was a pre condition for its efficacy.\textsuperscript{61} In certain areas the newly wed bridles went to the streams at the third day of marriage picked some water in pot and distributed it to the ladies accompanying her [this practice is followed in Dawar Guraz].\textsuperscript{62}

A BRIEF NARRATIVE OF IRRIGATION HISTORY

As already pointed out irrigation is a rice related phenomenon in Kashmir. The evidence of rice and as such irrigation goes back to three and a half millennium years.\textsuperscript{63} Till the state of Kashmir had not come into existence as a political entity the irrigation work would have been done by individual tribes for irrigating their respective areas of land. But with the emergence of state irrigation became one of its main priorities as agriculture was the basis of its economy. It is therefore, not surprising that we come across some references of construction of canals in otherwise a bare political narrative - Rajatarangini.\textsuperscript{64}

The first ever recorded attempt to regulate the water as per the need and necessity of the people comes during the reign of king Suvarna who ruled over Kashmir before Ashoka, the great. He constructed a canal called Suvarnami to bring water to Kerala area. To quote kalhana, ‘after him [Godhara] his son Suvarna was a giver of gold (\textit{suvarna}) to the needy, he who brought to Karala the canal (\textit{kulya}) called Suvarnami’.\textsuperscript{65} The identity of this canal has been ascertained by historians. Suvarnami kulya is the present Soinman kuhl which irrigates the

\textsuperscript{61.} Field study.
\textsuperscript{62.} Ibid.
\textsuperscript{63.} Indian archaeology [A review], 1981-82, p. 21-23.
\textsuperscript{64.} \textit{Kalhanas Rajatarangini}, Vol. I, p. 17, 49, 151, 318.
\textsuperscript{65.} Ibid., Vol. I, p. 17.
Advin paragana. It is twenty km long and receives its water from Vishu nala.\textsuperscript{66} Raja Suvarna was followed by latter rulers. Mention may particularly be made of the Damodar II. Damodar-II constructed a long dam called Guddsuth in order to bring water into the town which he had himself built on Damodra karewa.\textsuperscript{67} He also built long stone lined dykes to guard against inundation.\textsuperscript{68} Mihirkula [6\textsuperscript{th} century A.D] diverted the river called Chanderakulya.\textsuperscript{69} And Raja Baka founded the Bakavati canal.\textsuperscript{70}

It was Lalitaditya (724-761 A.D) who for the first time infused a new spirit in the irrigational activities of Kashmir. He initiated several schemes for the development of agriculture. He not only minimized the scourge of floods but also widened the network of irrigation. Although as such our sources do not present in detail the names of canals constructed during the reign of Muktapida but the fact remains that the economic prosperity and the expansion in the political geography of Kashmir was not possible by an exhausted state treasury. It directly points toward a blooming agriculture sector which in itself was impossible without capitalizing the waters of the natural streams. It was for the first time in the irrigation history of Kashmir that rulers searched for alternative methods of irrigation where it was not possible to construct kuls due to topographical constraints. Thus we find that new technological devices were put into use. Special arrangement was made for the irrigation of Cakradara karewa by lifting water from river Jehlum. To quote Kalhana, “at Cakradhar [modern Tushkadar below Vijibror] he made an arrangement for lifting the water of Vitasta [Jehlum] and distributing it to various villages by construction of a series of water wheels.

\textsuperscript{66} Mir Abdul Rahman, \textit{Kashmir Mein Abpashi}, p. 114.
\textsuperscript{67} Kalhanas \textit{Rajatarangini}, Vol. I, p. 29.
\textsuperscript{68} Ibid., p. 29.
\textsuperscript{69} Ibid., p. 48.
\textsuperscript{70} Ibid., p. 49.
By this progressive step a vast area comprising of thousands of hectares of land were for the first time brought under cultivation.

After Lalitaditya Karkota dynasty hardly produced any ruler who demonstrated concern, devised policies and drafted plans for the welfare of general public. The prestige of this family suffered a setback after the third generation. Family feuds and central fugal tendencies aspiring for independent vaisais marred the prosperity of the kingdom. “Under the feeble kings”, says kalhana, “the country was again just [as before] overtaken by disastrous floods”. In the resultant flood caused famines, the price of rice touched the heaven. One khari [80 kg] of rice was sold for ten hundred and fifty dinars.

In a state of utter chaos and confusion this was quite natural. Kalhana further says that ‘while the courtiers, lusting for presents (dana), moved to and fro between the two [princes], their treasure fared badly, like the temple-juice from the two temple-holes of an elephant in rut, when the bees, lusting for the fragrant secretion (dana), move to and fro between them’. Added to this there are instances of rulers who wasted their time with women and wine. Discussing the reign of Vajraditya (Bappiyaka) Kalhana writes, ‘this sensuous ruler had a large number of women in his seraglio, with whom he diverted himself in turn, like a stallion with the mares’. In fact Kalhana declare the rules like Prthivyapida, who ruled for a brief period of four and a half years as ‘destroyer

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71. Ibid., pp. 140-141
74. Ibid.
75. Ibid., book. iv, no. 375., p. 156.
76. Ibid., book. iv, no. 396., p. 158.
of his subjects’. 77

It was one hundred years after the death of Lalitaditya that Kashmir witnessed the great revival of canal building and land reclamation under the Utpala dynasty. Avantivarman [855-883 A.D] the founder of this dynasty is undoubtedly an unrivaled figure in the irrigational history of the early medieval Kashmir. He inherited a state with utterly ruined agriculture and a hungry populace. There was no other solution of the problem than to reconstruct the hydraulic infrastructure of the state. In this zeal Avantivarman did not even refrain to put his treasury at the disposal of a layman if he could improve the things. This layman with uncommon intellect was Suyya, who latter on became the engineer of Avantivarman. 78 He was the master architect of all irrigation schemes. Owing to this wonderful work he has rightly been referred by Kalhana as the “lord of food” (anapati). 79

Besides flood protection measures and the reclamation of land that we have discussed earlier in this dissertation, Avantivarman contributed a lot in the irrigation sector. Prior to his reign only a few canals had been constructed but he made the optimum use of the available water resources and founded a number of canals. Kalhana has beautifully depicts this process. “He made”, writes kalhana, “different streams with their waves which are [like] the quivering tongues [of snakes]) move about according to his will, just as conjurer [does with] the snakes”. 80

Apart from building canals Avantivarman regulated the supply of water on scientific principles. In this regard it is wroth revealing to quote Kalhana.

77. Ibid., book iv, no. 399, p. 158
78. Ibid., Vol II, p. 428.
79. Ibid., Vol I, p. 196.
80. Ibid.
“After watering all villages [land], he took from [each] village [some] soil, and ascertained, by [observing] the time it took to dry up, the period within which irrigation would be required [for each soil respectively]. He then arranged accordingly on a permanent basis for the size and distribution of the water course for each village”. 81 This classification of soil is a unique example in the agricultural history of Kashmir.

The impact of all these welfare schemes was wonderful. Agriculture witnessed a remarkable progress. Land under cultivation registered phenomenal increase which in turn gave a quantum flip to the production of rice crop. All this surplus production ultimately led to the end of ‘food calamity’. Kalhana says, “there were previously from the beginning of things the purchase price of a khari of rice was two hundred dinnars in time of great abundance. In that every land of Kashmir henceforth O wonders! The khari of rice came to be bought for thirty six dinnars.” 82

The death of Avantivarman was a great setback to the state. For almost six centuries after the death of Avantivarman, state suffered the worst ever negligence. Hydraulic chaos touched the nadir because of the bestiality and savagery of the rulers. Incessant feuds, civil wars, rebellions, upheavals and foreign invasions marked this period. The weak central authority led to the insufficient upkeep of the canals, area under cultivation dwindled and irrigation system was thoroughly destroyed. Consequently, rice again became a precious commodity. To quote Rajatarangini;

‘in the terrible year [of the Laukika era three thousand nine hundred] ninety-three [A. D. 917/18] the people were destroyed by a famine, as it was

82. Ibid., Vol. I, p. 201.
difficult to obtain food while the Khari sold for a thousand [Dinnaras]. One could scarcely see the water in the Vitasta, entirely covered [as the river] was with corpses soaked and swollen by the water in which they had long been lying. The land became densely covered with bones in all directions, until it was like one [great] burial ground, causing terror to all beings.\(^83\)

With the restoration of stability at the political horizon of Kashmir soon after the establishment of Sultanate in the first half of fourteenth century conditions markedly improved. Although the early sultans did not contribute much to irrigation sector because of their pre-occupation in the consolidation of power and the suppression of rival elements, but there was phenomenal development in canal building under Zain-ul-Abidin [1420-1470 A.D]. Land reclamation was resumed on war footing. For that purpose streams were canalized, massive areas were terraced and thus rice culture was promoted even in those areas which were hitherto considered as goblin grounds.

Bud Shah, as the king was popularly known among his people because of his welfare schemes, very well knew the fundamental importance of agriculture in the countries economy and had no doubt about the fact that the growth of agricultural sector will bring the graph of economic development of the country to a strong position. He believed that everything could wait but not agriculture. However the development of this primary sector was subject to a strong network of kuhls that would cover as much land as possible. Zain-ul-Abidin therefore, launched a massive programme of canal construction. This is documented by his court chronicler in the true spirit of the zeal of this people’s king. To quote Shrivara, ‘there was not a piece of land, not a lawn, not a region, and not a forest where the king did not excavate a canal’.\(^84\) Following is the list of important

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\(^83\) Ibid., Vol. I, p. 221.  
\(^84\) Shrivara, \textit{Zainatarangni}, English Trans., by, J. C. Dutt, p. 45
canals which were constructed by Zain-ul-Abidin.

**Martand Canal:** Martand kuhl is the first canalization of Lidar nalla after its departure from the greater Himalayan range. It was constructed by Zain-ul-Abidin to divert the water of Lidar to a vast area from Ganeshpura Ashmuqam to Nowgam lying on the left side of Lidar in the foot of the Martand karewa.\(^{85}\) A thirty three km long channel was started from Ganeshpura and ran on the clip of karewa in a zigzag manner. It provided irrigation to a number of villages namely, Gopalpora, Ranbirsinghpura, Rampora, Hurdتور, Kavarigam of Anantnag district.\(^{86}\)

Martand canal has a crucial importance. It followed in a direction where the terrain below its origin was hostile to further canalization and it is therefore, not surprising to find only two canals constructed on the left side whereas, the right side of the Lidar is frequently dotted by canals. From the engineering point of view, Martand canal demonstrated a high expertise attained by Kashmiri in the kuhl technology. To a person walking on the Phalgham road it seems as if the canal was constructed to irrigate the mountains.

**Shah Kuhl:** An other important canal constructed by Zain-ul-abidin on the left side of the Sind was Shah kuhl.\(^{87}\) It left the Sind near Vayal and ran in north to south direction covering almost seventeen km distance under foot-hills.\(^{88}\) The canal was flown very skillfully on a high strip of land lying on the eastern side of vast marshy land (Anchar). Since this strip lasted up to Srinagar, the canal also ran accordingly providing irrigation to the interiors of the city.\(^{89}\)

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86. Ibid., pp. 115-116.
87. Ibid., p. 124.
88. Ibid., p. 124.
89. Ibid., p. 124.
**Lar Kuhl.** As evident by its name Lar kuhl was constructed to irrigate Lar pargana and some villages around Manasbal which were beyond the reach of any other canal. With its source in Sind nala near Haripora Lar kul flows up to Asham (Safapora) covering a distance of seventeen km.90

**Zaingir Kuhl.** An important canal built by Zain-ul-Abidin was Zainagir kuhl named after the Zainagir town in the vicinity of Sopore. The intention was to irrigate the land lying on the north-east side of Walur Lake. For that purpose Maduati nala that entered the lake from the eastern side was canalized near Saonerwani (Bandipora) and Zainagir canal was constructed and ran in the east to north direction. Thirty three km long Zainagir canal irrigated several villages of Bandipora and Sopore tehsil.91

**Lal Kuhl:** Lal kuhl was built by Zain-ul Aabidin on pohru nala. It covered a distance of 33 km in semi-circle manner and irrigated about 2456 ht. of land. Sagipura, Latishat, Norropra-jagir and other villages of tehsil Sopore were irrigated by Lal kuhl.92

**Lachman Kuhl or Zaina Ganga.** The Lachlan kuhl or Zain Ganga canal drew water from the Sind nala and irrigated land around Naushahra, a new town founded by the Sultan. This canal was extended to the Jamia Masjid and emptied itself into the Mar canal.93

**Mar Canal:** Before the construction of this canal, the surplus water of the Dal Lake flew out into the Jehlum near at Habba Kadal. The sultan diverted its water into the mar canal. This was extended up to Shadipora, where it joined with the

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90. Ibid., p. 125
91. Ibid., p.117.
92. Ibid., p. 115
93. N. K. Zutshi, *Sultan Zain-ul-Abidin of Kashmir*, p. 130
confluence of the Jehlum and Sind nala. This canal linked Srinagar city with
the Dal Lake and thus formed an important inland highway for communication.
Mar canal no more exists now.

Other canals constructed by Bud Shah include Karla canal Avantipora
canal. Karla canal irrigated the territory lying between Shopian and Ramu. Sultan
also built a town Zainapor after his name on the bank of this canal. Avantipora
canal irrigated the land around the town of Avantipora.

The positive effects of this extensive canalization was manifest in the
increase of productively. Jonaraja the court chronicler of Zain-ul-Abidin says,
‘The granaries are indeed like the breast of the earth from which the people
derive their nourishment’. According to Moorcroft the annual produce of rice in
Zain-ul-Abidin time was seventy seven lakhs of kharwar.

Zain-ul-abidin’s death in 1470 A.D was followed by a long period of
political instability, lawlessness and chaos which ultimately culminated into
Mughal rule in 1586 A.D. Mughals did not contribute much to the irrigation
sector of Kashmir. Of course they built some canals but they were primarily for
the beautification of the gardens that they constructed and not for the
development of agriculture. During the reign of Akbar, subadar Yusuf Khan
Rizivi built a canal connecting a stream known as nala Sind with Baghi-Illahi.
Jahangir’s reign witnessed the construction of a canal for Shalimar garden.

Similarly Asaif Khan built another canal for Nishat garden

94. Ibid., p. 131.
95. Ibid., p. 130.
96. Ibid., p. 130.
99. Lahori, Badshah Nama, p. 28.
100. A. M. Mattoo, Kashmir under Mughals, p. 39.
was expanded to provide water to Naseem Bagh.\textsuperscript{101} Badshahi canal was channelized to provide water to Mula Akhoon Garden [Malshahi bagh] and Noor Bagh.\textsuperscript{102} Saif Khan dug a canal on the Sind nala to facilitate water to the Lashkar Khans Garden.\textsuperscript{103} Instead of increase there was fall in the output of rice as compared to past. G.T.Vigny says that the output of rice was near about sixty lakh kharwars.\textsuperscript{104}

The condition of masses was further worsened by frequent floods and famines that haunted the Mughal period. Instead of improving the infrastructure of canals and solving the problem within the parameters of the hydraulic resources of Kashmir which needless to say had great potential, the Mughals introduced a bad precedence of the import of food grains from other parts of empire.\textsuperscript{105}

The Afghan [1757-1819 A.D] and Sikh [1819-1846 A.D] rule was over all a period of negligence of developmental activities and irrigation was no exception. Kashmir during this period was occupied rather than governed. The sole aim of the rulers was to extract wealth and fleece the working classes. To quote the author of The Sikh Rule in Kashmir:

\begin{quote}
\textit{\lq;instead of improving the agricultural productivity of Kashmir, the Sikh government siphoned off nearly three fourth of the agricultural produce as land revenue from peasantry without spending a single penny to enlarge the area of production. The peasants got hardly one fourth of their produce in return of their sweat of brow. They lived mostly on vegetables, water chestnuts and wild fruits for the greater part of the year. The peasantry was}\n\end{quote}

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\textsuperscript{101} Mir Abdul Rahman, op. cit, pp. 33-34.
\textsuperscript{102} Ibid., p. 33-34.
\textsuperscript{103} Ibid., p. 33-34.
\textsuperscript{104} G.T. Vigny, Travels in Kashmir Ladakh, Iskardo, p. 308.
\end{flushright}
doomed below the level of subsistence. The peasants were forced by the government to till their farmlands as they had neither the means nor the will to carry it out which resulted in recurrent famines and epidemic diseases. Consequently the population of the valley of Kashmir diminished from eight lacs to one lac and twenty thousand. Land went out of cultivation and agricultural prosperity of Kashmir became a thing of the past. The agricultural produce fell down from sixty lac kharwars in 1420-1470 A.D to two million kharwars in 1822-23 A.D with a downward trend to the end of the Sikh rule.\(^{106}\)

The Sikh rule culminated into the foundation of J&K state in 1846 A.D under Gulab Singh. Initially, Dogras also did not contribute much in irrigation but when Maharaja Pratap Singh assumed the gadhi several irrigation schemes were initiated. He repaired the Martand canal and Lal kuhl. It was during his tenure that separate department for irrigation was setup in 1923.\(^{107}\) Great spell channel for diverting the flood water of Jehlum was constructed between Ram Munshi Bagh and Panderathan. Dredging operations were conducted below the town of Baramulla for removing silt. Maharaja Hari Singh remodeled Zainagir canal, Dadi canal and Nandi canal.\(^{108}\)

Till 1949-50 the total area under irrigation in Kashmir reached to 236 lakh ht.\(^{109}\) After 1950 irrigation schemes were taken on priority basis and a number of new canals were built. These newly constructed canals were Avantipora canal, Parimpora canal, Malhara canal, Rekh Litter, Mahind canal. Reshipora canal, Babal canal, Aunera canal, and Aaghe canal. As a result of these efforts land


\(^{107}\) Mir Abdul Rahman, op. cit., p. 36.

\(^{108}\) Ibid., p. 36.

\(^{109}\) Ibid., p. 53
under cultivation enormously increased. In 1976-77, 3.80 lakh ht were irrigated.\textsuperscript{110}

**MEANS AND METHODS OF IRRIGATION**

Besides kuhls, wells, shadufs and *arhatas* were some important means and methods of irrigation in Kashmiri till recent times. They helped in the promotion of agriculture on the lands where kuhls were non-existent.

**Wells.** Like other countries there existed a good precedence of building wells in Kashmir by rulers for the public utility.\textsuperscript{111} However, nothing with confidence can be said regarding their technological aspect. When this technology started in Kashmir and where from it came? These questions can be answered only by speculations. It looks close to reality that the well technology based on knelt burnt bricks reached to Kashmir most probably during the Muryans or Kushana times. These periods witnessed a tremendous development in the construction of wells \textsuperscript{112} and Kashmir needless to say, had been a part of these empires for a pretty long time. Well construction received a boost with the islamization of Kashmir as most of the mosques were generally provided with wells for the ablution purposes.

Wells catered a limited service of irrigation in Kashmir. Keeping in view the availability of kuhls and springs in the upper areas the need of wells hardly emerged. It was in the plains where there was no access of kuhls and water bodies were distant that wells were constructed for cultivation and domestic consumption. The main concentration of wells was found in Srinagar. They were mostly used by *malyars* [vegetable gardeners] to irrigate the vegetables raised for

\textsuperscript{110} Ibid., p. 53.


commercial purposes.\(^{113}\)

Both kucha [unlined] and puka [lined] wells were in use in Kashmir. The kucha wells were dug by cultivators in their field. Usually, they were not much deep, hardly ten to twelve feet and gushed water till autumn. Kucha wells were prone to sliding which blocked the pours of water. To restore the water supply these wells were silted \((paz)\) every year. It was the knelt burnt brick wells that demanded a high level of technical skill. These wells were often deep depending on the height of place chosen for drilling. The depth of wells was largely determined by the availability of water body lying around. What was usually done if a well was constructed at some distance from a river the depth of the well was equalized to that of the river. This helped the perennial supply of water to well.\(^{114}\)

A particular spot the promised success was selected and digging commenced. The whole task was done by the people well conversant in the profession. Initially a large area was spaded which narrowed down as the work proceeded till water gushed and hindered the further digging. A wooden frame \((tsuk)\) was fixed at the bottom of the well. Lining of the sides by bricks and earth filling proceeded simultaneously. Adequate arrangement was made to enter the well if needed.\(^{115}\) The digging of wells was not an easy job. Sometimes the soil discharged poisonous gases which caused causalities.\(^{116}\)

Mainly two mechanisms were used to lift water from the well. Those were shaduf locally knows as \textit{toul} and water wheel known as \textit{arhata}.

\(^{113}\) Local informant.

\(^{114}\) Information supplied by an experienced well digger Abdul. Rahman Mir village Panzinara Sonawari.

\(^{115}\) Local informant.

\(^{116}\) Ibid.
Shadoof (toul). Shadoof is the oldest mechanism for lifting water for irrigation.\textsuperscript{117} The earliest evidence of shadoof comes from a cylinder seal of the Akkadian period [Babylonia] in the third millennium in connection with the irrigation of a tree or garden.\textsuperscript{118} It was familiar from remote past in Egypt, Assyria, Persia,\textsuperscript{119} China,\textsuperscript{120} and India.\textsuperscript{121}

Shadoof was a common devise used for irrigation of vegetable gardens. It was commonly found in the low lying parts of Kashmir. Above low lying areas their presence almost seized. This was mainly because of availability of springs and kuhls in that part of the country which were in full bloom during the most crucial season of water requirement in summer. Besides it was not easy to dig wells there. The soil is hard, full of rubble and water level is very deep. On the other hand water level in low lying area was high, soil soft and kuhls and springs non existent.

Toul consisted of a stand of two poles erected at the edge of a well. Generally instead of poles whose underground portions decayed after some time, cultivators planted willow trees for the purpose of shadoof stand. Willows lasted till their life and simultaneously they provided shadow to the people engaged in lifting water in hot summer months of June, July and August. The polls or the willows were connected by two beams horizontally. The upper beam provided a fulcrum for the rotatable beam (kaniej) dividing it approximately in 2:1 ratio. The pole was equipped with a rope (raz) and bucket (toul vour) on the upper side and a counter weight (bar) made of clay or stone on the lower side. The rope was made of rice grass or reeds (wopai). The deep the well the long the
rope and rotatable beam. The poll hung on the beam with the help of a semi-circle piece of wood known as bror. Bror was provided a passage for the beam which simultaneously shouldered the poll. The second beam (mutz) beneath the upper one was adjusted for precautionary measures so that in case of the breakage of fulcrum the pole hit the beam and the water drawer was not injured.

Shadoof worked on a counterpoise principle. The pole adjusted on the fulcrum formed a club of balance with weight of stones and the bucket as two pairs of scale. The counter weight should have been a little less in weight than the weight formed by a water filled bucket. The heaviness in the weight of stones caused difficulty in hauling the rope and the lightness hindered the recovery of bucket. It was hanged or attached to the rope of the beam of shadoof. The moment bucket touched the water, the rope was jerked by the right hand and the bucket dipped into the water. It was often made of iron and had a round base which facilitated its sinking or pouring out water. A shadoof with good balance was easy to handle and a person raised about 600 gallons of water to a height of six ft a day. 122

The low running cost incurred on shadoof made its application quite popular. Besides the average one shadoof, there were cases where vegetable growers maintained two or three shadoofs at a time. Shadoof however, also suffered a number of limitations. It was labour consuming required at least two persons, one handing the shadoof and the other diverting water to different beds. Secondly, it worked only in shallow water and served only small fields not far from well.

Shadoof used in Kashmir varied in some respects from the shadoofs used in other parts of the world. Unlike Egyptians or Chinese shadoof where a

122. Derry and Williams, *Short History of Technology*, p. 52
pole or a piece of bamboo was fitted with the bucket to carry it, we find only the rope being employed for this purpose in Kashmir. Another noticeable variation was the adjustment of supplementary horizontal beams as a precautionary measure. Such a device was lacking in the shadoof of other cultures.

**Persian wheel (arhata).** The earliest recorded evidence of the use of arhata in Kashmir comes from the eight century during the reign of Lalitaditya [724-761 A.D]. To quote Kalhana, ‘at Cakaradhara he [Lalitaditya] made an arrangement for conducting the water of the Vitasta [Jhelum] and distributing it to various villages by the construction of series of water wheels (arhata).’

123 Before discussing in detail the structure and use of this machine, it is worth while to mention that Persian wheel or saqiya was known as arhata in Kashmir. Although arhata has almost disappeared in Kashmir but the word is still used as figurative for a large quantity of water.

Arhata or Persian wheel was known in Roman times, from about the start of the Christian era. It was in use in Egypt, Syria, and Persia and probably along the North African coast. It consisted of two gears meshing at right angles, a large vertical cogwheel and a large lantern pinion. The lantern pinion had spacer bars in between two disks and the vertical wheel had teeth. The disk carrying pot-garland and the vertical cogwheel was held by same axle (mohoul). As the animal with a draw bar on his neck walked in a circular path the lantern pinion revolved. The circular motion was transmitted to the pot-garland by intermingling of spacer bars and teeth. Since the pot-garland used to be adjusted

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124. During my field study whenever I asked the elders regarding *arhata* the machine that they draw a sketch of in their words was always a *sajiya* or persian wheel.
127. Ibid., p. 40.
or hanged on wheel when the wheel revolved the pots dipped into the well came up filled and discharged the water into a head tank.\textsuperscript{128}

Evidence suggested that \textit{arhata} was operative in Kashmir till recent times. But its use was not as rampant as shadoofs understandably because of high charges incurred on it. Arhata needed a well, a bullock to handle, the ox and a machine. Moreover, the land to be irrigated should have been in a consolidated form. All these conditions were beyond the reach of a common cultivator. The fact remains that \textit{arhata} was a luxury article used for supplying water to the orchards of the well to do people of Kashmir like \textit{chakdars} [landlords] and \textit{zaildars}.

\textsuperscript{128} Information collected from Mohammad Sideeq Bhat resident of village Malur, Srinagar Kashmir.
LAND AND TILLER

Every care should be taken that there should not be left with the villagers more food supply than required for one year's consumption, or more oxen than wanted for (the tillage of) their fields.

[Kalhana]

What had been the nature of relationship between land and cultivator? Was it occupancy in nature? Did a tiller served simply as tenant at will. Did land included in his property which he could change or mortgage at his sweet will if not at least dispose it off? What about the attitude of the state. How it looked upon soil. A plank of sovereignty, ‘beneficial for living beings’\(^1\) ‘to protect, forsooth’ the inhabitants\(^2\) or ultimate source of the “breasts of the earth”\(^3\) i.e. the granaries from which people derived their nourishment or just an easily and abundantly available source of wealth to ‘bestow it to pious Brahmans’\(^4\) or chakdars, jagirdars, mafadars etc. to frame a strong supporting structure to prolong its grip and occupation on the country. What was more important for the state – soil or subjects? How did it frame the relationship of people with land? How was land graded? And what relation peasants shared with their cultivated land. These are some interesting question pertaining to the theme of our topic. In the following pages we shall try to find out the answer to them in light of the sources available to us at present.

In ancient times land was the sole property of the State. King was considered as ‘lord’ or ‘protector of earth’\(^5\). Kalhana in his seminal work Raja-

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3. Jonaraja
5. Ibid., p. 17.
tarangini time and again glorifies the paramount and unchallenged position of the
king. He writes that ‘Kasmir-land is Parvati; know that its king is a portion of
Siva. Though he be wicked, a wise man who desires [his own] prosperity, will
not despise him.’6 Sometimes a king is described as ‘an ornament of the earth’7
and some times he was ‘comparable to a father (janaka) of his subjects’.8 He
‘was like an earthly Indra’9 whose ‘orders were never broken’10 ‘Desiring
continues welfare’, kalhana writes, ‘you should regard the king of Kasmira as
born of a portion of Hara and never disobey him.’11

Even it was believed that the kings didn’t die but assume eternity. This is
made evident by the available sources. According to them, ‘after enjoying
supreme power, the king at the end of his life ….obtained communion with the
husband of Parvati [Siva]’12 or ‘he ascended bodily to the worlds of Siva together
with his near attendants’.13 And when a ruling king turned against his own
subjects the latter was considered responsible for it. ‘Though this king [Kinnaz]
followed the right customs, still when the fortune of his subjects turned, he
brought about a series of great calamities under the baneful influence of
sensuality’.14 ‘O wonder, [even] the earth follows the desires of the kings of great
might and shows them favour’.15 Besides kings it was the religious class that
enjoyed a dominant place in the society. The destruction of universe even [may

7. Ibid., p.15.
8. Ibid., p. 18.
9. Ibid., p.18.
10. Ibid., p. 18.
11. Ibid., p. 63.
12. Ibid., p. 28.
13. Ibid., p. 42.
14. Ibid., p. 34.
15. Ibid., p. 147.
be caused] by the wrath of even a single virtuous women, deity or Brahman.\textsuperscript{16}

Peasants the largest chunk of population were \textit{praJA} who eked their living by working on fields. They had no property rights. They just worked on the land which was the \textit{agahara} of some Brahman or \textit{vaisha} of some \textit{samanta}.\textsuperscript{17} The dynastic rulers of the time in fact tried their best to safeguard their power. For that matter divine theory of kingship was indoctrinated among masses and other possible steps were taken to nip the rebellious tendencies. In this regard it is quite revealing to quote a policy statement of Lalitaditya Muktapida which says that ‘every care should be taken that there should not be left with the villagers more food supply than required for one years consumption, or more oxen than wanted for [the tillage of] their fields’, ‘because if they should keep more wealth, they would become in a single year very formidable Damaras and strong enough to neglect the commands of the king.’\textsuperscript{18}

So far as post-Mughal era of Kashmir history till the beginning of 19\textsuperscript{th} century is concerned the author of ‘The Agrarian System of Kashmir’ has beautifully summed up the land-tiller relationship. To quote him:

‘We have in hand sufficient evidence pointing summarily to the peasant’s right of possession, use and disposal during the medieval period in Kashmir. But for want of his total power of enjoyment, he could not claim to hold the title of the \textit{malik} [owner] in letter and spirit. In essence, it was the state which happened to be the real owner for it enjoyed the optimum benefit of the peasants labour. This is why the state did not fix any bar on the right of

\begin{itemize}
\item \textsuperscript{16} Ibid., p. 41.
\item \textsuperscript{17} The rulers frequently granted \textit{agrahara} to Brahmans. Agrahara is the regular term used by Kalhana for designating a \textit{‘jagir’} village or piece of land, the revenue of which was assigned to an individual, corporation or religious institution. See Rajatarangini i. 87, 88, 90, 96, 98, 100, 121, 174, 307, 311, 314, 340, 341, 343; ii.55; iii. 376, 481; iv. 23, 24, 170, 397, 403, 442; vi. 89, 336; vii. 182, 184, 185, 608, 698, 699, 908; iii. 2408, 2419, 2420, 3355.
\item \textsuperscript{18} \textit{Rajatarangini}, Vol. I, p.134.
\end{itemize}
the peasants to possession, use and own the land for it had its own economic consideration for that. If the state restored such rights to the peasantry, it was partly to keep them contented and partly tied to the land. It is in this backdrop that Irfan Habib rightly argues, ‘if in one sense, the land belonged to the peasant, in another, the peasant belonged to the land’. However, such an implicit serfdom never meant that the Kashmir peasantry, like their European counterpart, could be sold, pawned, gifted or gambled away. Thus, one may argue that the apparent legal and fiscal limitations together with some practical difficulties reduced a peasant to the position of a “limited” rather than “absolute” owner of land in Kashmir.  

The travelogues of the European travelers who started arriving in Kashmir after Mughal conquest throw valuable light on the nature of peasant’s relation with the land. It is pertinent to quote here what they say. Francois Bernier who came to Kashmir in the second half of the 17th century remarked that “…the rents are paid to the king, who is the absolute Lord [of all the lands of his empire]….20 Another traveler George Forster who visited Kashmir in 1782-84 has equated the relations of the king and his subjects with that of the master and the servant.21 William Moorcroft and George Trebeck wrote that “…..the whole of the land in Kashmir is considered to have been out of mind, the property of the ruler…”.22 Baron Charles Hugel and G.T Vigne also opined that land was the property of the state headed by a king.23 Immediately after the Dogras took over as the rulers of Kashmir in 1846 AD by virtue of the Treaty of Amritsar concluded on sixteenth of March 1846 AD they declared whole land of Kashmir

as the state property.\textsuperscript{24}

It was in this background that when Walter Lawrence took over as land settlement officer in April, 1889 he found villagers occupying ‘shadowy rights in land’.\textsuperscript{25} He further writes that ‘When I commenced work I found that the people distrusted everything and every body, and that they placed no value on the occupancy of land.’\textsuperscript{26}

Enforced regime grabbed whatever rights tillers enjoyed. It evolved a favourable structure and distributed the land to \textit{jagirdars, chakdars and maufidars} who were its special subjects. Almost an area of 2,91,689 acres was under the various categories of landlords\textsuperscript{27} who had no liking for manual jobs. These land gifts alienated the mass majority who had no incentives to work hard on others fields. Consequently the production shrunk to the minimum level. The precarious position of the cultivating community having no property rights over land and often living under the pall of eviction is tersely communicated by these peasant sayings that \textit{sier vav koth gou dari vav, grees voen maei gatz asan zi khoda, akis vanha poz ti bakis vanha apoz},\textsuperscript{28} meaning that eviction is worst than food calamity and a peasant has desired two gods, reveal facts before one and hide the truth before the other. And \textit{darr abad ti mulk burbad, darr burbad ti mulk abad}, landlords destroy the country, their destruction makes country developed.\textsuperscript{29}

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\begin{itemize}
\item 24. JKA, file no. 191/h-751 of 1918. Article I of the Treaty writes- the British government transfers and makes over for ever in independent possession to maharaja Gulab Singh and the heirs male of his body all the hilly or mountainous country with its dependencies situated to the eastward of the river Indus and the westward of the River Ravi including Chamba and excluding Lahul, being part of the territories ceded to the British government by the Lahore state according to the provisions of Article IV of the Treaty of Lahore, dated 9\textsuperscript{th} March, 1846 ).
\item 25. Lawrence, op. cit., p. 414.
\item 26. Ibid., p. 425.
\item 27. 27. M.Y. Ganai, \textit{Kashmir’s Struggle for Independence}, p. 39.
\item 29. Local informant.
\end{itemize}
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Immediately after the end of Dogra rule, fifty five lakh kanals were transferred to the tillers by passing the famous Abolition of Big Landed Estates Act 1950.\textsuperscript{30} It may be noted that by virtue of this act only that land was transferred from the landlords which exceeded one hundred and eighty kanals and the orchard and maufi lands were exempted from the act. By virtue of this landmark step three hundred and ninety six big jagirs were revoked and two lakh and fifty thousand tillers became the proprietors of land.\textsuperscript{31}

**PEASANT AND HIS PLOT OF LAND**

Once peasants assumed property rights of the plot of land he worked on by virtue of Big Landed Estates Act 1950 a remarkable change was noticed in the relationship of land vis-à-vis tiller. A close relationship surcharged with emotions existed between a peasant and his plot of land. Land was in fact more than a heap of soil or a pond of submerged water for him. It was a part of his body, a trust of progeny or a heritage bestowed by ancestors. Life long attachment turned the soil his indispensable companion. Land was granary for him, a security against hunger. He repeatedly uttered that *maitzi manzi chi laiel vapdan* means soil is the source of prosperity. He collected the provisions in wild as well as systematically grew them under his care and control. He could never dream of disposing it off. He considered himself merely a custodian. For him land was a stream he had only the right to drink as much as he could and had no right to sell the land. For, for him it belonged to posterity. Thus during pre-modern times it was production that determined the value of land rather than its proximity to some city, town or busy thoroughfare.

Only extreme pressure forced him to sell or shift the land. Land was gifted rather than sold. Selling was resorted to in extreme situation like hunger or

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famine. No wonder it was very hard almost impossible to motivate a cultivator for transfer of land even if sometimes he was provided double in return. The decision would always be taken after consulting not only close relations but also the family priests.  

Sale of land was deemed as catastrophe. Peasant always resisted selling his field. For him land was not for sale. It was meant for cultivation. It was meant for the procurement of food (reezik). Leaving land without cultivation was a sin before him. Society also disapproved it. Those who didn’t attend their fields seriously they sell their fields ultimately. And once out of some unavoidable circumstances or urgency a plot was sold he hesitated and avoided to pass from the side of the sold plot through out life. Sometimes it so impacted him that he burst into tears whenever he passed through the plot. It also happened that before sale he took a round of the plot, sought apologize for sale. Or he sometimes took a fistful of soil from it and sprinkled it on the new field purchased in lieu of the previous plot. Despite this all he never lost love for his previous land.

Sale of land also involved social repugnance and chastisement. It was believed that land belonged to progeny. It had to be cared and smoothly transferred to the next generation. It was a general notion among country people that land selling was always pregnant with drastic consequences. No one had prospered out of the sale of heritage. *Hienvool chuu hamash zanan ti anuinwool chuu hamash haraan-* Sellers always loose and buyers always win was a standard statement regarding the sale of land in Kashmir. Sharing so sensitive a relation with the land, it is not surprising to find a cultivator at one or the other field even if apparently he had no work there. He could not afford to delay his daily visits to

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32. I have personally seen during fieldwork people asking priests (*pirs*) whether they should change a particular piece of land with a particular person or not. The decision was often taken according to priests suggestions.
various fields. The fact remains that visiting fields was itself an important task for him. His field should have been always in the range of his eyes. He sometimes he urged his nears and dears to bury him on his favourite fields. His relation seized with his land only after his death.  

**LAND DISTRIBUTION**

In Kashmir there were different levels of distribution of land. District, tehsil [by old custom tehsil is restricted to certain mountains and villages]. Villages at average were located at two to three km distance. At village level land was distributed among cultivators. The peculiarity of land distribution among cultivating community at village level was that it was hardly granted in a consolidated form. A peasants land was distributed all through the village different areas (*kha*) were granted to different families. This fragment distribution of land had certain important reasons behind. In the first place the land differed in terms of form, crop capability, location and use.

We find in villages different types of land rendering difficult the distribution as no body afforded to be satisfied with one particular area (*kha*). Thus in a village where there were, *banjar, abi, khushik, tshath, wudur, sarie ab, pia ab*, etc. it was distributed proportionately among all families. Besides, the waste land was the collectively shared by whole village.

Land situated near some watercourse or *sar* was most valuable. Land close to roads did not attract cultivators much. Its crops were vulnerable to damage. Stray animals and more so the conveys of pastoral people of Gujar and Bakrwal whose arrival and departure timing commensurated with brisk agricultural activities like sowing and harvesting were supposed to cause damage to crops. Besides people believed that its production was prone to theft.

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33. Local informant.
and bad eye (nazr). A totem, amulet or vessel was fixed in the crop so that on lookers attention gets diverted.\footnote{Ibid.}

**NAMING THE FIELDS**

For the reasons of identification the cultivated land of a deh [village] was known after different names. Naming had its own pattern. Some fields (kha) were named after the crop it produced, some after the nature of the soil, some after some saint or sufi, some after the use it was put to, some after the landlord it belonged to, some after the land grantee it was granted to, some after the reclamation pattern and some after some public figure etc.\footnote{For example in a village the kha names were Baghdad, Buiparan, Bangkhan, Chakalpash [clod roof], Dumbyarbal, Dadribal, Frasut, Gurtang [horse mound], Garrkhan, Gogikhan, Groond, Haktang [knoll kohl land], Khali [threshing ground], Kashkashvar [poppy land], Kraz [moat], Khajbagh, Khanndaj, Lail, Mahrajvath, Majdaj [radish land], Mahchakul [pulse land], Meurasabun, Nambal- (Gola, Dangersund, Gunzsund),Porintang, Pernain, Resala, Siikh [sand], Shalamar, Soramtar, Tikya vathanirkhy.,}

**LAND TYPES**

It is pertinent to submit here an account of the various types of land in terms of the use it was put to. It was not crops only that people required land. It was required for other purposes also. All uses of land were clearly mentioned.

The first category of land was called *abi awal*. Abi awal means irrigated rice producing soil. Rice was generally raised each year on it. It was the category of land which had immediate access to water and least apprehensions of water scarcity. *Abi awal nambal* was irrigated land subject to floods. Being near
the margin of swamps the soil retained moisture, and if not damaged by floods, produced good crop. *Abi doem* means soil producing rice only in years of good snowfall and rain, and in other years maize and pulses. It was not inferior to *abi awal* but the water supply being limited and uncertain. *Abi soom*, land which had no permanent source of irrigation but was dependent on leftover water of *abi awal*. Only dry crop was cultivated and cultivation of rice crop was prohibited. It also included all *abi sagzars*, the produce of which was generally consumed at home, the produce being generally ordinary knoll kohl, turnips, and radishes. Vegetable yielding land which had some permanent source of irrigation and which gave more than two crops was known as *abi wari*. Wari means un-irrigated land situated in or near the village site. It was usually manured. And the rainfall water of the village site cleared itself into it. It generally produced two crops in a year, i.e., turnips and makki. *Bagh-i-abi*, land having source of irrigation and rich fruit trees. *Bagh-i-khushki*, land having fruit bearing trees. It didn’t have any of irrigation due to which it was called Bagh-i-khushki. Land though cultivated but which remained without any crop for four consecutive years was called as *banjr-i-jadeed*. *Banjr-i-qadeem kha-krisham*, *kha-i krisham* was self cultivated land. *Banjr-i-qadeem safeedzar & beedzar*, land on which trees for timber or firewood like willow and poplar were planted. *Banjr-i-qadeem*, land though fit for cultivation but was left uncultivated for more than eight years and was covered into a very high quality of soil. Another category of land was called *gair mumkin* land. It included all the land not used for cultivation. *Gair mumkin aasthan* was the land in which any Muslim saint was buried. *Gair mumkin abadi*, land on which were the village houses. *Gair mumkin asar qadeema*, land which was preserved for archeological sites. *Gair mumkin asthapan*, land which was under the use of any *asthapan* of Hindu religion. *Gair mumkin awa or batha*, land on which bricks for construction were prepared. *Gair mumkin banna*, land which was used as ‘adh’, ‘banna’ [milestone]. *Gair mumkin cheshma*, land from which any spring oozed out and the water was used
either for drinking purposes or for irrigation. *Gair mumkin daraah*, land on which water for irrigation or other purpose ran. *Gair mumkin darya*, land on which there was a river. *Gair mumkin jhandhra ghrat*, land which was used as a *jhandhra ghrat*. [jhandra was used for pounding rice.] *Gair mumkin jungle*, land on which were standing royal trees like pine, kail etc. *Gair mumkin kuhl*, land on which drinking water or water for irrigation ran. Land on which was standing any house was called *gair mumkin makan*. Likewise *gair mumkin masjid* was land on which was standing any mosque. *Gair mumkin qabristan* was land which was used by the Muslims as burial place. *Gair mumkin rah* was land on which there was a way. *Gair mumkin rasta* was land which was used as village thoroughfare. *Gair mumkin sarak* was land which was used as permanent road. *Gair mumkin shamshanboomi* was a piece land on which the Hindus performed last rites of their dead and cremated them.

Un-irrigated land of the worst kind of soil was called *labru*. The fields were situated on the steep slopes of hillsides, where ploughing was not an easy task. Maize and millets were generally raised on it. The young crop on it was subject to damage by heavy rainfall, and in case of failure of rain the crops dried up. *Labro abi*, sloping land on which though irrigation facility was available but which was used for dry crops. *Labro chha*, sloping land, dry crops were grown with the help of sufficient manure. *Maidani awal*, a good quality maidani land, which does not have any source of irrigation but being fertile, gave good dry crop. *Maidani doem*, land which did not have any source of irrigation but which produced *khushki* crops with the use of manure.

Land used for vegetables was called *maliari*. It was a rich land and yielded three crops a year. Miliari was land cultivated, as a rule, by maliars and was usually situated in or near the city, or in the immediate vicinity of the village site. This kind of land was by far the richest of all soils. Vegetables of all kinds were raised on it. *Nambal sailabia* was a kind of soil which came under floods
due to heavy rains. Dry land having no irrigation facility but generally prone to floods. *Nambal*, land which did not have any source of irrigation and produced dry crops. *Wari*, land growing vegetables with the help of artificial irrigation. *Zaffrani land*, *zaffrani* land was land meant for the production of saffron. *Zair-i-saya*, land which was not fit for cultivation, being under the shade of chinar or walnut. *Radh*, these were fields floating over water in Dal lake of Srinagar city. It gave very good quality vegetables. *Demb*, This term was applied to the fixed land made on the lake. A *demb* was a diminutive island made by throwing up the lake silt when the water level was low, and by sinking old and useless floating garden *radhs* in shallow water. The construction took time. Foundation was first formed by planting willows along the four sides of the site selected, and when the soil thrown up during one winter settled more was added, and so on till the *demb* surface was above flood level. *Khush-i-abras*, the area classed *abras* was very small. Abras was dry land receiving moisture from its vicinity to a *kuhl*. *Khushk-i-labru* and *khushk-i-nar* was inferior to *khushk-i-maidani* as rain washed the surface soil away and a heavy snow fall harmed spring crops as well.36

DIVISION OF LAND AT THE TIME OF FAMILY SPLIT

Joint family system was a popular norm in Kashmir during the period of our study. One of the major factors was that pre-mechanized agriculture operations demanded corporate efforts and large manpower. That served as an integrating force which kept family united for longer periods. We find during the period of our study large families with three or four generations under the same roof. Sometimes the people followed *khanadamadi* system and brought grooms for their girls. Or even permanent family helpers were hired for additional help in the field. They lived with the family and were paid in kind about six *kharbars* per year.

Families usually disintegrating when the members increased, sister-in-laws multiplied and finally when the family head passed away. With this disintegration followed the division of land. Land distribution was done according to religious injections and local practices. However, if a family split before or after harvesting time *asbogh* was followed. Standing crops or stored grains were distributed according to family members. Land plots were allotted by *anwach* so that there was impartial distribution of land. Under this practice fields were divided into as many parts as required. The villagers’ elders on their own with the consensus brought some stones or whatever possible nearby and gave it the symbolic value of land. Then they were thrown open and some third person or the beneficiaries themselves were told to choose.\(^{37}\) As for measurement of land is concerned *jarib* or *guz* was generally used for this purpose. Sometimes villagers measured land with the help of steps (*qadam*). Each village used to have a person or two who were knowing the land measurement. *Saer, manut, panzu, trak* and *khar* were different units designated for measured land. These above scales were basically units of weight. They were used for land because it was seed covering that determined the limits of land area in agriculture. Thus a piece of land covered under five kg of seed was called a *trak* of land. And were sixteen *trak* or eighty kg. were required it was called a *khar*.\(^{38}\)

**OUTFIT OR DRESS OF A PEASANT**

The nature of work demanded a separate dress for cultivation which suited his job requirements. Thus, while on his field a cultivator always wore a separate outfit. Given the large scale prevalence of rice culture whose almost all operations were conducted in water or mud, the cultivator used a *kaith* [half sleeves trouser] and half sleeve *kurta*.

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\(^{37}\) Local informan

\(^{38}\) Ibid.
Agricultural activities involved great physical exertion. This fact is tersely attested by a local saying that *greis kar gou jin kar* [the work of agriculturist is the work of dijin].\(^{39}\) In rice culture this exertion was all the more back breaking in cultivation and harvesting season. Sowing, dibbling or weeding was often carried out at a stretch that too in a posture wherein the body remained in bended form. This caused tremendous pressure on back. Therefore cultivators used to tie a *haelgundun* [a sort of belt of a cloth strip] at the waist. It gave them stamina and eased the pressure of work. There was another way to mitigate the continues exertion on the legs while threshing rice for long hours or while traveling to the *margs* [pastures] on foot to look after sheep put in the care of shepherds. A strip of cloth called *potahur* was covered on legs below knees. Perhaps the white caps (*kulposh*) routinely used by cultivators had also some rational. They reflected back sunlight and at the same time absorbed the sweat excreted while working. In order to relieve the legs from the pain of exhaustion peasants washed and hand pressed their legs in hot water at night. In the harvesting season during autumn the feet and particularly the heels of the peasants cracked. Burning pine pitch (*kilm*) and animal fats was used for their cure. Oil was used to keep the hands soft which hardened due to continues work. Sometimes mud deposited under nails causing burning. It was removed with the help of a needle or knife or the village barber cured it. After removing mud hot oil was poured at the affected place so that it didn’t turn septic.\(^{40}\)

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40. Based on field work.
FERTILIZERS

Cultivate till manure allows.  
[Peasants say]

What preoccupied the mind of agriculture community in pre-package technology was food security to the possible extent. For that matter land was available. But land alone did not suffice. Cultivation exhausted it and the routine process of rejuvenation by nature was not sufficient to make the soil yield crops as per the requirement or in commensurate with the labour invested. For a cultivator it was merely a waste of energy to cultivate without enriching land by various methods. It was generally believed that manures make soil promising (khev gou devv) and when land itself is nourished only then it will give good yield. It was a common notion among cultivators that where manures end cultivation also end (yicha pah touta kha).

The crop culture of Kashmir further intensified the need of fertilizers. Major use of land was rice and rice lands were not used for double cropping. Cultivators could not effort to use soil potency for crops other than rice which was the chief food crop. They were of the opinion that dani gatzi banuin khoshkus karo keh means rice matters other crops can be managed. Traditional rice varieties had average yield and in case of uptada [weak] land yields were minimal. Thus we find general masses scared of hunger in spite of the fact that there was no scarcity of land. In the given circumstances the yields never lasted till next crops were harvested. This vicious situation is better represented by an oft quoted peasant pun- daten bata ti gounin fakea means food in spring and hunger at harvesting time. Apykal [period prior to harvesting] happened to be crucial and testing time for people. And if stars favoured and provisions of the
previous year lasted beyond the harvesting time of new crops this situation called
neiws manz proon poshun [old stocks after new harvest] was a sign of
prosperity.¹

It is therefore not without reason that hunger apprehensions and fruitful
return of the hard labour were dominant concerns of the peasantry that forced
them to search and devise means to procure all possible types of fertilizers so that
yields serve as shield against starvation. As a permanent solution nutrient loss of
soil was compensated by mixed farming and even rearing lahin cattle [cattle
which neither produced milk nor were used for ploughing] mainly for the dung
they produced. Some times it also happened that cultivators flocked herds on the
rice fields so that soil received a good dose of urine and tail which were
considered very potent manures.² Komuels did not even effort the wastage of
human feces. Besides cowshed a cultivator’s residential hut had a dust pit
(chuitdoub) where whatever waste was produced like dust, ash, litter etc. that
was added to might soil recovered periodically from family latrine.

Production of litter was an important aspect of peasantry. An ideal
peasant family was considered one which produced a big basket of dust for the
fields.³ Perhaps it was this very practice that a noted nineteenth century
European observer of Kashmiri society, Walter Lawrence remarked that,
‘Kashmiri thoroughly appreciates the great importance of manure in cultivation
[and] waste nothing which is useful in agriculture.’⁴ It was because of the crucial
economic importance of pah that the size of its heap in front of a rural house was
an indication of the level of prosperity of its owner. This in fact served as status

¹. Based on discussion with the cultivators of different parts of Kashmir.
². Lawrence, The Valley of Kashmir, p. 321.
³. During field study peasants told me that litter was considered an important sign of a rural family.
⁴. Walter R. Lawrence, op. cit, p. 321.
symbol. The bigger the heap the clearer was the indication of prosperous condition of a family. It is no wonder that if some one would convey some one’s prosperous conditions he would say that tim chii bounvail they have a big heap of manure in front of their house.\(^5\)

For details and adequate treatment we have discussed the manures used during the period of our study under different heading on the following pages. However, prior to going into details it is worth to note here that the cultivators in Kashmir did not resort to what Gordon V. Childe says “dodge it [soil] and run away”\(^6\), nor they followed slash and burn or shifting cultivation. The geographical setting in which a Kashmiri peasant lived did not permit these techniques. Therefore, he evolved a sustainable mechanism, welded stock raising with farming and simultaneously searched for other possible alternatives. For that matter every dam thing was tested to ascertain its fertility value and apply it to the soil for larger yields.

**KINDS OF MANURE**

**Farmyard Manure.** Farmyard manure refers to the decomposed mixture of dung and urine of animals along with litter [bedding material] and left over material from roughages or fodder fed to the cattle.\(^7\) Right from the Neolithic times there has been always a mixed farming i.e. simultaneous cattle rising and cultivation.\(^8\) Cattle not only eased human hands from the drudgery of tillage but also helped in maintaining the fertility of soil. In an Akkadian poem [3850 B.C] we find a farmer welcoming the pasturing of herdsmen’s animal on his land probably for manuring purposes.\(^9\)

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5. This information I collected from the Sopore area of District Baramulla Kashmir.
The use of dung or farmyard as a fertilizer was a worldwide phenomenon prevailing in every culture acquainted with farming. It was used in China in the composted form long age. They kept the sheep and cattle in stables and their litter was carefully collected. Every day some litter or straw was spread three inches in the cattle byre and early each morning this was collected and composted. Then more was spread as before and after a night had passed it was added to the compost heap. In India the first clear reference of the actual application of cow dung to the field is available in the Harsacarita of Bana. Bana [7th century A.D] describes a cultivator driving bullock carts filled with dung and other refuse to the fields to restore its fertility. Persian also soiled their fields with dung. In Europe farmyard manure was main source of fertilizer in the pre-modern times. In Kashmir too the farmyard manure known as goahu was the most commonly applied fertilizer and it was one of the main reasons that cattle were reared in Kashmir. For the sake of convenience we may divide the farmyard manure into two categories viz. (i) goahu [dung of bovine] and (ii) munan [tail of ovis].

Dung (goahu). Dung (goahu) was the major fertilizer keeping into account the magnitude of its availability, extent of its use, its usage in the staple crop and the continuity of its use notwithstanding the introduction of chemical fertilizers. Since the cattle in Kashmir remained indoors during winter season, goahu accumulated during this period in stable was taken out and distributed in the fields in the month of April. Normally it was kept in small heaps and was distributed after it got decomposed. It is important to mention that fresh goahu was not used in Kashmir.

The farmers had learnt by experience that the use of fresh dung ( *zindi goahu*) was not as useful as decomposed one. Decomposed dung was largely enriched by earthworms that eat dung and excreted much potent manure. It was also a fact that fresh dung propagated weeds because the cattle fed upon them and excreted undigested seeds with their dung. Thus it was avoided for dry cultivation. Besides immunification rotten the litter present in the dung.

The traditional peasant was no doubt aware of the fertility value of the farmyard manure, but he didn’t know the different soil nutrients it contained. The modern scientific research show the different fertilizing elements of farmyard manure.  

<table>
<thead>
<tr>
<th>Excreta</th>
<th>Percentage of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td><strong>Cows &amp; bullocks</strong></td>
<td></td>
</tr>
<tr>
<td>Dung</td>
<td>0.40</td>
</tr>
<tr>
<td>Urine</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Sheep &amp; Goat</strong></td>
<td></td>
</tr>
<tr>
<td>Dung</td>
<td>0.75</td>
</tr>
<tr>
<td>Urine</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Horses</strong></td>
<td></td>
</tr>
<tr>
<td>Dung</td>
<td>0.55</td>
</tr>
<tr>
<td>Urine</td>
<td>1.35</td>
</tr>
</tbody>
</table>

The non-availability of sufficient dung had been a problem in Kashmir. Given the climatic conditions of Kashmir, cattle could not be reared in sufficient numbers by common peasant as they had to be fed by ones own fodder which was not adequately available to the ordinary peasant considering his small holding and the rack renting of the state. In this way the rearing of large number

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of cattle became the sole monopoly of the well-to-do farmers. The result was that the rich became richer and the poor poorer. The poor had only a small holding but he had no sufficient pah to manure his plot adequately to yield good harvest. No wonder then that the land of the poor used to be phont [unfertile] and thus yielded a far low harvest than the rich peasant.

Since cattle has been a valuable asset of a peasant and particularly the yielder of pah, it is not surprising that cattle was generally accommodated in the same house in which the peasant resided. Generally the ground floor used to be reserved for the accommodation of the cattle, while their owner resided in the first floor. In certain areas cattle was put in separate buildings also. These buildings were known as haij. It was also for this reason that each village had a cowherd (goor) who was one of the main village servants and was paid in terms of fixed share (mangai) by the peasants.

Dung or goahu was available more than the other manures and it was applied at large scale and that too on the commonly cultivated staple crop-paddy. Generally it was applied in March-April before the commencement of ploughing. The rate of application depended upon the magnitude of availability but normally five to six hundred baskets per hectare was considered to be enough. The effect of goahu lasted for one crop only so it was applied every year.

It is wroth to mention that traditionally Kashmiri cultivators used only that part of dung as fertilizer which the cattle dropped during winter season when they were confined to their cotes. Not because the dung of other seasons was not considered fit as manure but because the Kashmiri peasant was hard pressed

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15. Lawrence, op. cit., p. 359.
17. Local informant.
for using the cow dung as a fuel as well as to use its charcoal for his fire pot (kangri) to warm himself against the chilly winter.

The fuel cakes (lobaur) were also sold in the urban areas like Srinagar. This trade was carried by a particular section of society known as lobur hanz. The lobur hanz owed big boats. They purchased fuel cakes in the rural areas, carried them to the city by boats and sold there. Hence, they came to be known by their profession as lobur hanz, i.e. boatman dealing in fuel cakes. Besides the dung cakes were used as fuel for the kilns of the potters.

**Tail (munan).** The second important category of farmyard manure and comparatively rich in fertility value than cattle dung used in Kashmir was munan. Munan means the decomposed tail, litter and urine of sheep and goat. Sheep was reared in Kashmir from times immemorial. The finds recovered from the famous Neolithic site of Kashmir -Gofkral- testify to the domestication of sheep and goat in Kashmir around second millennium B.C.\(^\text{18}\)

The temperate climate of Kashmir and the abundance of meadows (nai) and green pastures (nuer) facilitated the rearing of sheep in Kashmir. However, it was not simply because of these climatic factors that one finds in pre-modern Kashmir large flocks of sheep being reared in the valley. In fact it was a multitude of benefits related to sheep that welded farming community with the herds. Sheep played an important role in the rejuvenation of soil exhausted by continuous cropping. Hence, it is no wonder to know that Kashmiri called a sheep as a pot of gold (tuer gou soum suer) and took utmost care for its proper maintenance.

As already noted manure was a permanent need of a peasant for the proper output of his labour which he invested in the soil. Therefore, we find him keen in

\(^\text{18. Indian Archaeology. [A. Review], 1981-82, p. 19.}\)
the domestication of sheep in spite of a number of hurdles. The high fertility value of tail known to the cultivator further developed this interest. Hence, we find a Kashmiri cultivator adopting every possible technique to procure more and more munan from his flock. For that purpose he confined his herd in separate cotes and added large quantity of litter like leaves and grass for the convenience of sheep to lie upon and at the same time to increase the volume of manure. However, he did not recover the refuse of sheep daily but only once or twice a year. Usually it was recovered in spring when the sheep were driven out to graze in different pastures. The long stay of tail in cotes rendered it decomposed which was considered more effective for crops and soil than fresh one.

As a matter of fact sheep produced highly potent but low quantity of excreta and much of it was dropped during the course of grazing which got wasted in pasture lands. The cultivator made best use of winter when his sheep remained confined to the pens. The sheep dropped maximum portion of tail in the cotes and a lot of litter was added to it. However, opposite was the case with summer. Sheep were either at that time grazing in the open fields or in the pastures. Consequently, a small proportion was obtained in summer.

It is interesting to know that the cultivators tried to make even the use of the tail that the sheep dropped outside the cotes. We find cultivators folding flocks on the field. For that purpose even he paid to the shepherd in case he had not his own herd. Unfortunately the long winters of Kashmir hampered the growth and development of sheep industry. The sheep had to be confined to the cotes for a long time [November to March] and fed upon ones own expenses. The problem of fodder rendered the poor people with out sheep. The difference was manifest by the fact that the prosperous people in the rural areas domesticated large flocks (ramb,khal) of sheep whereas the down trodden people (safaed poosh) hardly managed to rear a few. The problem was further aggravated by the taxation policy of the state as the sheep were heavily taxed. To
quote Lawrence, ‘a tax of two annes per sheep is taken by state……. A tax of thirteen chikli rupees is levied per hundred sheep. The tax (zar-i-chaupan) is collected as the flocks (rambas) pass up to the mountain pasture’.\textsuperscript{19} In addition to this the ‘state exercised the privilege of selecting one in every thousands sheep as the flock. The first was known as hazari or khilkat, the second as bara’.\textsuperscript{20} Besides paying tax to the state the cultivators had also to feed the chaupan whose share varied from two to three manwats (about 2 ¾ lbs).\textsuperscript{21} Since, the weaker section could not afford to pay the tax thus sheep rearing became a monopoly of the rich people. With the result it badly told upon the productivity of the soil. Although maldar [having lot of cattle] yielded much output due to the excessive application of munan but maximum land remained under production because of the deficiency of adequate supply of manure.

**Night soil (tuoch poash).** Night soil is a potent fertilizer and was used as manure throughout the world during pre-modern times.\textsuperscript{22} In China during Sung-period [A.D.960-1279] human manure was used on large scale. Chinese applied it in two different ways. Either they diluted it with water or mixed with other organic material.\textsuperscript{23} The method adopted by Persians was also more or less the same. They mixed ash with human feces.\textsuperscript{24} Aztecs also knew the value of human excreta as fertilizer.\textsuperscript{25} In Europe night soil was used by market gardeners till recent times.\textsuperscript{26}

In Kashmir cultivators thoroughly understood the value of night soil

\textsuperscript{19.} Lawrence, op. cit. pp. 362-6.  
\textsuperscript{20.} Ibid, p. 363.  
\textsuperscript{21.} Ibid, p. 362.  
\textsuperscript{22.} Modern chemical analysis of mixed human excreta made by Wolf in Europe and by Kellner in Japan shows that as an average these carry in every 2000 pounds 12.7 pounds of nitrogen, 4 pounds of potassium and 1.7 pounds of phosphorus 12. Joseph Needham, op. cit. p. 290.  
\textsuperscript{23.} Ibid, p. 291.  
\textsuperscript{24.} Hans E, Wulff, op. cit, p. 270.  
\textsuperscript{26.} Joseph Needham, op. cit. p. 290.
which was an easy way for him to mitigate the deficiency of soil nutrients.\textsuperscript{27} It was used in Kashmir for raising crops since ancient times. The earliest known evidence comes from the times of Samgramaraja [A.D 1003].\textsuperscript{28} It seems that night soil had attained commercial importance due to extensive application by vegetables growers. We find some people were engaged in its trade. Kalhana says that king Harsa even appointed a prefect of night soil to raise revenue.\textsuperscript{29}

While in rural areas night soil was used on a limited scale for kitchen gardening (\textit{vaer}) only, in urban centers its application was thorough. The reason for this contrasting situation is not far to seek. There was abundance of human manure available in urban centers because of use of latrines. Secondly the great demand for vegetables in urban areas required the maximum application of this potent available fertilizer to meet the market demand and earn large profit. Thus, we find vegetable growers (\textit{arms, malyars}) taking without prejudice or repugnance full advantage of the human manure. Night soil was a vital necessity for a market gardener (\textit{aarm}) therefore, every family of vegetable growers had a member known as \textit{yetchvol} [creel carrier] assigned with the job of manure collection. These people woke up as early as possible and vied with each other in search of night soil.\textsuperscript{30} Night soil was collected in a creel that was carried on the back by a person. The collection of night soil was not a seasonal exercise but a daily routine that continued through out year.

It is not without interest to know that night soil fetched a good amount as revenue to the state exchequer till recent times. Urban development departments like Srinagar Municipal Committee issued permits to the people involved in

\textsuperscript{27} Lawrence, op. cit., p. 322.  
\textsuperscript{29} Ibid, p. 354.  
\textsuperscript{30} Based of interview with a \textit{miliar} [vegetable grower], Abdul Rahman Dar, Bangar Mohalla Danamazar, Srinagar.
night soil collection. The income recovered from taxation on night soil amounted to Rs. 35000 in 1960-61; Rs. 50000 in 1966-67.\textsuperscript{31} Human manure collected from city latrines was dumped near the field. Sweepings, grass and dust of the city alleys was mixed with it and it was left for pulverization under the sun light.\textsuperscript{32} It was used as fertilizer only after it completely decomposed. Moreover, it was always used in a moderate quantity because if applied in excess it caused damage to the crops and burnt them.

**Marl (malkum).** Marl is a loamy soil often used as fertilizer. From the very beginning rivers had been depositing a lot of silt in the adjoining areas which maintained the fertility of the soil and made land cultivatable for generation after generation without loosing its productivity power. This process of silting was a recurrent phenomenon in every river valley civilization. In fact, it was one of the important factors that inspired the early inhabitant to settle near the river banks.\textsuperscript{33} With the passage of time population expanded and settlements started in the areas far from river valleys and the cultivators ceased to have access to this labour less natural fertilizer. They devised other means for the procurement of silt. Some times as in China mud recovered from ditches were used as fertilizer.\textsuperscript{34} Marling was also practiced in Rome and Norfolk countries.\textsuperscript{35} In the coastal areas where mud was not available sand was applied for soil fertility.\textsuperscript{36}

As in other parts of the world Kashmiri cultivator too was not ignorant of the value of marl. Thus, he devised a unique technique locally known as *malkum* to acquire the silt carried by *nallahs* and *kuhls*. For this purpose ditches were dug

\begin{itemize}
\item \textsuperscript{31} Information furnished by Compost Officers Srinagar Municipal Committee.
\item \textsuperscript{32} Lawrence, op. cit. p. 322.
\item \textsuperscript{33} James R. Jacob and others, *Western Civilization*, p. 7.
\item \textsuperscript{34} Maurice Daumus [ed], op. cit. p. 283.
\item \textsuperscript{35} Derry and Williams, *A Short History of Technology From the Earliest Times to AD 1900*, p. 679.
\item \textsuperscript{36} Maurice Daumus, op. cit. p. 464.
\end{itemize}
near the cultivated fields. The course of the nearby passing stream was diverted into it. The water halted for sometime in the ditch and deposited all the suspended bodies that it carried throughout its journey. The continuous supply of water to these ditches made it possible for the cultivator to recover large quantity of marl which varied from four hundred to six hundred baskets per ditch per annum.³⁷ These ditches were cleared of the marl in spring and the manure was used for rice cultivation.

These ditches (malsar) were owned commonly by cultivators and the marl was divided as per the share of a cultivator. Some cultivators also possessed their own ditches.³⁸ It is not without interest to know that the supply of silt by streams increased the value of the land lying close to the kuhls. The nearer the field to the kuhl the more was the possibility of manure. With the result the fields around kuhls were coveted and the cultivators vied with each other in having land close to the stream.

It may be mentioned here that malkum was not practiced in all parts of Kashmir. It was done only in those areas and fields where rice cultivation depended on kuhl irrigation. We find malkum being widely practiced in certain areas of south Kashmir (Maraz) like Tral, Shopian, Shangus, Kuthar, Brang and Kulgam. In these areas the streams coming from the mountains were full of water all the year and thus had a lot of scope for malkum. They carried lot of silt and other suspended particles and deposited it into the mulkum ditches. It is pertinent to mention here that malkum practice is no more as popular in Kashmir as it happened to be in the past. Very few people collect manure by this technique at present. The application of chemical fertilizers and a general trend toward horticulture are main factors responsible for this change. Chemical fertilizers

³⁷. Based on personal interview with Nazir Ahmed Kotay, resident of village Ussus Shangas, Anantnag Kashmir.
³⁸. Local informant.
compensated the requirement of manure and horticulturization has almost made the *kuhls* defunct. Further these ditches have been reclaimed and converted into rice fields.

In some areas the method of collecting silt adopted by cultivators for turning land fertile was somewhat different. The cultivators diverted the *kuhls* towards their rice fields soon after harvesting paddy. The *kuhls* watered the fields day and night and deposited all their silt in the fields. Silting by continues supply of water to the fields was common in some villages of Budgam district.

**Yanued.** In Bangil pargana peasants recovered marl for crops in different manner. It was called *yanued*. *Yan* or *wun* is a point where water is diverted to the field. The slowly incoming water deposited its silt at this point. This soil was considered rich in potency and it was sprinkled to the fields.\(^{39}\)

**Poultry Droppings (*rekhi*).** Poultry played an important role in traditional economy of Kashmir and formed an important source of income to the villagers.\(^{40}\) In the absence of currency, egg was a common medium of exchange and poultry was a good source of income considering its demand in the urban areas. Moreover, poultry made the peasant self sufficient with regard to meat requirements which they occasionally needed. It is therefore, not for nothing that a peasant family considered itself incomplete without poultry. And it is also no wonder that like cattle, poultry was also accommodated in the same house in which peasant lived. However, it was not only because of meat and egg that people raised poultry. It had yet another very crucial advantage for the rural peasantry. Poultry was a source of fertilizer. Kashmiri farmer had well understood the fertility value of poultry droppings and considered them more

\(^{39}\) Information collected from a cultivator of village Nehalpora Pattan Baramulla.

\(^{40}\) Lawrence, op. cit., p. 366.
potent than other types of manures.\textsuperscript{41}

The scientific analysis of chemical composition of poultry dropping has proved right the perception of Kashmiri cultivator regarding the potency of poultry droppings. The different plant nutrients present in poultry droppings showed by modern research is given as under.\textsuperscript{42}

<table>
<thead>
<tr>
<th>Type</th>
<th>Moisture %</th>
<th>Nitrogen(N)%</th>
<th>Phosphorus(P\textsubscript{2}O\textsubscript{5})</th>
<th>Potash (K\textsubscript{2}O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh</td>
<td>75</td>
<td>1.47</td>
<td>1.15</td>
<td>0.28</td>
</tr>
<tr>
<td>Floor</td>
<td>24</td>
<td>3.03</td>
<td>2.63</td>
<td>1.40</td>
</tr>
</tbody>
</table>

Needless to say poultry drops a low quantity of excreta and maximum portion of droppings were dropped during the daytime when poultry used to remain outdoors, therefore cultivators received only a few baskets of manure from the hencoop per year. The limited supply of droppings had a direct bearing on the application of poultry manure. Poultry droppings were mostly used for kitchen gardens, which as mentioned above were of crucial importance for the survival of the peasant.

Besides poultry droppings, pigeon fesses (koter rekh) were also used as fertilizers. The main source of pigeon droppings were mosques and tombs (zariats). The roofs and recess of the mosque and tombs were cleaned every year and tones of dropping were sold to the cultivators.

\textsuperscript{41} Ibid., p. 321.
\textsuperscript{42} K.S Yawalkar, op. cit, p. 4.
Ash (soour). The history of the use of ash as plant nutrient goes back to remote past. It was perhaps the first substances used by the early man to enrich the soil for large productivity. In the earlier times man cleared by fire a patch of wooded land and from the soil thus enriched raised his crops. When the soil was exhausted he simply moved on and repeated the operation elsewhere.\footnote{Jacquetta Hawkes and Sir Leonard Woolley, op. cit., Vol. I, p. 514.} This practice continues among some tribes up to the present day.

Ash was used as a fertilizer throughout the world. Indians in North American used the wood ash as a fertilizer.\footnote{Encyclopedia Britannica, Vol. IX, p. 212.} Chinese mixed ash with chaff and fallen leaf.\footnote{Joseph Needham, op. cit., p. 291.} In Persia ash was added to dung and human fesses.\footnote{Hanes. E. Wulff, op. cit., p. 318.} The use of ash as fertilizer was also prevailing in India,\footnote{Maurice Daumas, op. cit., p. 318.} Latium\footnote{Luigi Pareti, *History of Mankind Cultural and Scientific Development*, Vol. II, p. 120.} and Muslim countries.\footnote{Ahmad. Y. al-Hassan and Donald R. Hill, *Islamic Technology*, p. 206.} Like all these countries ash was commonly used as fertilizer in Kashmir. The major portion of ash was furnished by kangri [fire pot]. It is interesting to mention here that for the protection of body from the chilly winter Kashmiris made use of kangri. Kangri was just like a fire pot with a baked bowl surrounded with willow twigs.\footnote{Lawrence, op. cit., p. 250.} The bowl was filled with charcoal which kept a person warm. Since kangri was used by every individual for almost five months from November to March, it produced a large quantity of ash. All the ash thus recovered was collected in a particular place known as surbuin meaning ash mound.

Ash was mainly used for kitchen gardening and paddy nurseries. Along with different crop nutrients, list of which is given below, ash contained a specific property which kept the texture of soil soft (mosud) and helped in the

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47. Maurice Daumas, op. cit., p. 318.
50. Lawrence, op. cit., p. 250.
growth of crops. Besides ash softened the texture of the soil of nurseries and at the time transplantation plants pulled had least mud and easy to collect.

Fertility value of houses holds ash.\(^{51}\)

<table>
<thead>
<tr>
<th>Percentage content</th>
<th>NITROGEN (N)</th>
<th>PHOSPHOURES (P(_2)O(_5))</th>
<th>POTASH (K(_2)O)</th>
</tr>
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<tr>
<td></td>
<td>0.5- 1.9</td>
<td>1.6- 4.2</td>
<td>2.3- 12.0</td>
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**Silkworm Droppings (kim mal).** Sericulture has been a side business of the rural peasantry in Kashmir. It not only generated vast employment and fetched a good income to the cultivators but also formed a considerable source of revenue to the state. Although no statistical data is available regarding the earlier period but towards the close of first half of 20\(^{th}\) century out of 3553 inhabited villages and towns in Kashmir province, 2100 villages were engaged in sericulture operations.\(^{52}\) These 2100 villages included 40,000 agricultural families. During this period [1940-41] the state recovered revenue of 637583 rupees from this sector.\(^{53}\)

Besides, being a source of income sericulture had another advantage for the cultivators. The silkworms while feeding on mulberry leaves dotted their nurseries with a lot of excreta. Like Chinese farmers\(^{54}\), the cultivators of Kashmir did not waste this refuse but gathered it carefully and applied it as a fertilizer to the fields.

**Citzen.** The crops like rice, wheat or maize that the cultivators cultivated on

\(^{51}\) Yawalkar, op. cit., p. 161


\(^{53}\) Ibid., p. 273.

\(^{54}\) Joseph Needham, op. cit., p292.
massive scale produced sufficient quantity of litter. Thatched roofs were another major source of litter. Before the introduction of tin sheets in the seventies and eighties of the twentieth century the roofs of houses in Kashmir were mainly covered by paddy grass and reeds shingle and tulip roofs. Jahangir writes in his memories that ‘the buildings of Kashmir are of wood; they make them two, three, and four storied, and covering the roofs with earth, they plant the bulbs of the chaughashi tulip, which blooms year after year in the spring season, and is exceedingly beautiful.’\textsuperscript{55} After every four, five or six years roof material was changed and the exhausted one was used for the enrichment of soil.

In certain areas litter served as a cheap fuel. Besides, litter was covered on pathways during rains and winter months for avoiding slip and mud. This litter was latter on recovered, piled for immunification and used as manure. In addition to this the cultivators deposited all the roof and unusable grass which was not consumable to the cattle wealth into a water pond (\textit{dooub}). Water decayed it, turned it into \textit{pah} and latter on it was recovered and used for cultivated lands. This type of manure was locally known as \textit{ctzen}.\textsuperscript{56}

\textbf{Ctzk [clods].} It was well known to the cultivators that the top layer of earth happens to be always rich in fertility. There was no dearth of such soil in Kashmir. Major portions of land named as \textit{banjar, shamlat, charie}, or \textit{boueet [uncultivated]} etc. were not under cultivation. Clods were recovered from such lands for enhancing the crop productivity of the rice fields. These clods were spread on the fields which largely mitigated the manure shortage of the cultivators. This method was known as \textit{ctzk seeir} or \textit{czekam}.\textsuperscript{57}

\textit{Yarchang or sopueit} meaning oak residue was also applied as

\footnotesize{\textsuperscript{55} Tuzk-i- Jhangiri, Rogers, Alexander (tr.), Beveridge, Henry [ed.], pp.52, 53.  
\textsuperscript{56} Local informant,  
\textsuperscript{57} Lawrence, op. cit., p. 32.}
manure. The cultivators of the forest areas used as manure the silt, humus and other decomposed material brought by *nallahs* during the time of flood. This type of manure was known as *mudh*. Some cultivators even used a widely grown grass known as *soi* [nettles] as manure.

Besides these efforts on the part of cultivators to enrich soil by all possible manures, there was a natural process of soil enrichment working simultaneously though it did not suffice the requirement. The routine rains washed away the top soil of the karewas and deposited it in the fields of lower villages. It also added to the fertility of the soil.

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58. Based on interview with Mohammad Saber Bhat of village Lolab Kupwara Kashmir.
59. Local informant.
60. This information was provided to me by a farmer Khazer Mohammad Bhat of village Malur Srinagar.
Tools matter.
[Peasants say]

The tool kit (alati kishaverzi) of cultivating community in Kashmir sufficed all the requirements of work at the field. It included more than half a dozen tools. The tools were made in accordance to the landform, crops cultivated and the material available. The woods were put in water then made bone dry so that after turning it into some required tool the wood didn’t shrink. Usually it was a general practice to use the wood procured previously a year or two ago. Fresh material was avoided. Different parts of the same implement were made out of different plant types. For example the sole of the plough was made of tul [mulberry], the handle of kiker [acacia], the yoke of brimji [celtis australis], the pole of poshu [yew] or cheeru [apricot], and the pegs of kiker wood. The strength of the stuff and the exertion at the time of use were main reasons for employing different woods.

What is interesting to know that all tools were manufactured locally by carpenters (najar, chhan) and iron smiths (ahangar). They were an indispensable component of village social structure. Thus they were present in all localities and in lieu of their services they were paid in kind [rice] at the harvesting season? Even the tools of the smiths were also manufactured locally. Traditionally there was an established system of tool manufacturing and sale. The shrines and the yearly vourus held on their resting places served markets where tradesmen stalled their products and the rural folk bought them besides being honoured by the relic glimpse. Thus it was a certificate of durability of a plough or a hoe, yoke or a handle (dun) to have been brought from such places. While the implements
were not in use during off season every care was taken for their safety. It was always avoided to keep them in the open. Continues sunshine and rains destroyed the material of these tools and shorten their life span.¹

The use of wood on massive scale was the main peculiarity of the tools manufactured. The woods used included mulberry (*tul*) apricot (*cheru*), yew (*posh*), cellis australis (*brimij*) and birch (*burza*). Baring a few, all these plants were grown in the agriculture lands available. It was only *poosh* and *linu* that were brought from the forests. These woods were light, soft, strong and durable. The metal used in these tools was iron. It was produced locally in the neighbourhood of Sof village. Sof iron was regarded superior to the iron imported from India for the purpose of agricultural implements, and the blacksmiths always spoke of it most favourably.¹ Besides using a black substance like fossil peat blacksmiths used coals to mould the raw iron into various tools. These coals were available in abundance.²

TILLAGE IMPLEMENTS

**Plough (albain).** Plough is believed to have originated somewhere in the lands between Egypt and Persia and spread gradually thence over much of Europe, North Africa and the east. The earliest evidence we have of plough comes from Mesopotamian cylinder seal at Ur and Egyptian paintings going back to rather before 3000 BC.³

It is interesting to know that in many of the older civilizations the origin of the plough is attributed to a god of some legendary character. According to a Chinese myth Shen Nung the heavenly husbandman was a sage emperor who

1. Local informant.
2. Lawrence, op. cit., p. 63.
lived in the 3rd millennium BC and taught his people the use of plough and the
cultivation of cereals. In India plough is ascribed to Balarama who is also called
haldhar. In one of the verses of Nilamata Purana Baladeva is said to have broke
forth Himalayas with plough.

Scholars who have worked on technology provide different opinions
regarding the origin of plough. Some have maintained that all ploughs are
derived from the hoe, some claim it to be the elaboration of the digging stick,
while others believe that it derived from the spade. On the other hand Francesca
Bray, Haudricout and Delamree considered plough as an independent invention
rather than a development of a simpler tillage tool.

It is generally believed that plough was developed as a result of the
adaptation of a digging-stick or of a hoe, so that it could be dragged continuously
through the ground. This viewpoint is also subscribed by authors like Clive
Ponting who writes ‘The earliest ploughs were simply an enlarged digging stick
dragged by a single animal or a pair of oxen’. There is all probability that it
would have passed through the various stages of evolution. Leaving plough aside
which is comparatively a most complex tool so far as traditional tool kit of
agriculture is concerned, other tools like hoe and sickle so simple than plough
also did not emerge independently and evolved from a simple curved tree branch

8. Thomas Hugh, An Unfinished History of the World, p. 76
10. Ibid., p. 136
[hoe] and flint.\textsuperscript{13} Besides an interesting point is that it is said that plough ‘must rather have been made by men-probably by the priests, for it was anciently said that the plough was the gift of the gods-as a means of increasing the production of grain for the purposes of taxation and export.\textsuperscript{14} The origin of the plough is far from clear. Its complexities indicate that it probably had a single centre of origin & diffused gradually through the rest of Neolithic Old World along with the idea of animal traction. It seems to have spread rapidly throughout West Asia, South Asia and Europe in the Neolithic and early Chalcolithic period.\textsuperscript{15} The appearance of the plough was an important land-mark in the history of agricultural. It was one of the leading implement associated with agriculture. It heralded an agricultural revolution.\textsuperscript{16} More and more land came under cultivation, production multiplied and population increased. Plough was the first application of non human power in agriculture \textsuperscript{17} and humanity’s first step towards the use of machine.\textsuperscript{18}

**KASHMIRI PLOUGH-TYPES, SOURCES AND IMPORTANCE**

*We remember your many many favours*

*Oh! Our beautiful plough*

*We see you and feel hopeful and happy*

*Oh! You my beautiful plough.*

*You the bow of chandandar*

*You the fairy and pearl of heaven*

*All your enemies succumb and perish*

\textsuperscript{13} Henrey Hodges, *Technology in Ancient World*, p. 28.

\textsuperscript{14} Cecil Curwen, op. cit., pp. 57-59.

\textsuperscript{15} Needam, op. cit. p. 137.


\textsuperscript{17} Lynn White, *Technology and Social Change in Medieval Times*, p. 41.

\textsuperscript{18} Maurice Daumas, Vol. I, p. 145
Oh! You my beautiful plough.
Oh! You the smiling flower of flower garden
Oh! You the bride of Land
It is you that all afford to talk
Oh! You my beautiful plough.
Peasant’s heart throb in your love
Fondly he looks after you
He places you on his head
Oh! You my beautiful plough.
The house in which you stay
There can never be ‘food calamity’
Is it possible to live without you?
Oh! You my beautiful plough.
The way on which you walk
That way produces pearls
As if land produces the diamonds of Badakshan
Oh! You my beautiful plough. 19

There is hardly any doubt that plough was a leading tool in the agricultural operations in Kashmir since remote past. To discuss the possible origin of Kashmiri plough it is pertinent to present a description of ploughs that were common in different parts of Kashmir and compare them with the ploughs of the bordering civilizations.

During our period of study there were four types of plough used for land tillage in Kashmir. All had difference in structure and were used on different soils in different parts of Kashmir. Two were known as albien, third was called batij and the fourth was called heej. Albain was common almost throughout

19. Kulyati Mahjoor [Kashmiri], Cultural Academy, pp. 32-38
Kashmir, maraizi plough and bati in certain parts of south Kashmir, and heej in the *kuniel* land.

**Albain [plough].** *Gulzar-i-Kashmir* a late nineteenth century source pertaining to our theme has presented a graphic description of plough both *albain* and *heej*. It is perhaps the only source which has been so keen regarding the details of this tool known as *peasants arm*. The said document exists in the Persian script. Here we present its English version. It writes:

“Plough (*albain*) consists of all these parts. A sole (*kurheit*), of the shape of bow. At its front tip iron ploughshare (*phaal*) is adjusted. It is adjusted by a two pronged nile (*wangin*). So that agriculture land is ploughed. A socket is made on the back of sole. Two wooden logs are pinioned in it. One log is called handle (*laratha*). It is a straight log of wood. At the top of it has a branch towards peasant [used for grip]. During ploughing land the pressure of the hand of the peasant falls on it. The other log is called pole (*lanz*). It is curved log, long up to the head of the oxen while in traction. On the shoulder of the oxen a yoke (*yepiet*) is put. Yoke is a board of wood. In the middle of the yoke a peg of wood is fixed. It is called *akhij*. Then *lanz* [pole], yoke and *akhij* [peg] are tied with a *mitlier* [a leather loop]. Four wooden pegs, two on each side of the yoke, are put in the yoke [holes] so that the shoulders of the oxen are adjusted. These are called *hamchoor*. Then two ropes tied to the pegs are adjusted around the neck of the oxen so that plough is adjusted to the oxen. This tool [plough] is used for furrowing the land.”

**Maraizi plough.** The plough which we have named maraizi *albain* for the purpose of identification varied in its shape and structure with the first one mentioned above. It had a thin sole of 2.75 ft length and 9.4 ft long traction pole. The most characteristic feature that differentiated it with the other three ploughs was *voun* [peg] and *kien* [stone] adjusted in between beam and stilt. Beam and

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20. Diwan Kripa Ram, *Gulzar-i-Kashmir*, p. 485,
stilt were inserted in two separate holes. Voun was fitted in the sole cavity in which traction pole was inserted. Kein a small boulder stone was fixed between peg and handle. The function of the voun and kien was to provide additional strength to beam and pole and avoid their wavering which caused due to the pressure exerted by soil while in work. This plough was used in certain villages of the districts Anantnag and Pulwama.21

Batij. Batij was altogether different in look, size, weight, and structure from other ploughs used in Kashmir. The sole and stilt of this plough were carved out from single piece of wood. The grip of stilt tilted forward than backside as was generally the case with other ploughs. It was so because unlike other ploughs whose stilts stood in right angle the stilt of batij was obtuse. On obtuse posture grip ploughman put constant pressure on sole. The sole was small in size which cut small furrows. Draught pole was always straight and pinioned into single piece of sole and stilt wood not much different from other ploughs in shape and size. However what made it different was its area of use. It was used in certain parts of maraz [south Kashmir].22

Heej. This plough was used for plowing the land under water. Its sole had no iron ploughshare. Rest it was same as albain in shape and structure.23 However in size it was smaller than other ploughs. Besides, its sole too was comparatively smaller than dry land plough. It was because a large sole exerted more pressure on bullock and required large amount of energy to haul the plough. Since ploughing continued for almost one month that too in water more exertion exhausted the animals. Thus it was thought more prudent to have a plough that didn’t tire the bullocks. Further the peasants believed that vari vari van sori, yakbar zo sori means slowly and in piece meals one can shift the mountains and

21. Field study and information gathered from peasants.
22. Local Informant.
haste makes bad impact on health.

In all ploughs of Kashmir the traction pole (lanz) had one to three holes for the adjustment of the yoke. The selection of the hole at the time of ploughing depended on the size of the bullocks and the depth of furrows. Besides in the areas where ploughing was done in water, strings were tied to the tails of the oxen and the other side of the string was tied with yoke. This saved the ploughman from the irritation caused by the tail of the traction animal. It also happened that a yoke had more than two cavities at the centre. This mechanism was adopted to cope up with the difficulty caused in ploughing the land by the animals that differed in size or strength. The taller or the stronger the animal, the more pressure shifted to the weaker or the dwarf one. With the result he surrendered and sat amid ploughing. To avoid this awkward and awesome situation the peasants tried to maintain a balance. This was attained by keeping more space of the yoke toward the weaker and less toward taller or stronger. It was for this purpose that cavities in the middle of the yoke were used for. Inches mattered. By tilting the yoke a little the animal tracking on the side where the span of the yoke remained comparatively less, the animal faced more pressure. It was on this side that the stronger, healthier or the taller animal was adjusted.\textsuperscript{24} It is important to mention here that for safety of bullocks ploughman had always a knife in his pocket. Some times bullocks fought with each other or by some other reason the noose around their neck tightened creating possibilities of their killing, on such emergencies knife proved quite useful.

So far as ploughshare is concerned two types were used in Kashmir. One was called turka phal and the other basti phal. The former was triangular with a two-three inch tail. The tail was turned red hot into fire and then inserted at the concerned point. This technique saved the front portion from cracking and added

\textsuperscript{24} Local Informant.
more strength to adjustment. Further a pronged nail was used for the durability of the ploughshare. It may be added here that this ploughshare was stamped on the tip of the sole. The basta phal or sleeve share covered the tip of the sole from all side. It was the turka phal that was more common than basta phal. Perhaps it was lighter than the other, easy to forge and consequently not costly also.25

A ploughman could plough three kanals of abi land at the time of voobi [first plough] and six kanals at the time of second ull [ploughing] and two kanals khushik land at voobi and four at ull. Khushk [dry land] involved more exertion and more perspiration because of hot temperature.26 The peasants didn’t stop with a single plough. A couple of ploughs was a safety so that in case of any damage to one the other would be readily available. Besides, the nature of cultivation too demanded that. For khushki lands and abi lands different ploughs were used.

PLoughs of the Bordering Civilizations

Let us have a brief look on the ploughs operating in neighbouring world and ascertain the possible links of local ploughs. As for Chinese plough li is concerned it has no resemblance with any Kashmiri plough. Plough parts like sole, handle, beam and yoke had no similarity with Kashmiri plough, neither outwardly nor in adjustment pattern. The frame of Chinese plough was square; the handle was leaning towards backside and had no grip. The beam had a bend and was adjusted with stilt and strut. A skate or shoe was attached to the beam at the front. Besides the Chinese plough had a mould board.27 Ploughs used in Kashmir had no such features. Neither was there any skate nor struts nor mould board. The frame was angular or bow. The handle was perpendicular or obtuse in case of batij. Handle possessed a grip and the beam and sole formed an acute

25. Ibid.
angle. Contrary to the Chinese plough where team size was usually single buffalo or sometimes three or even four oxen in Northern China, in Kashmir only two oxen were used for traction. In view of these major differences we find no influence of Chinese plough on Kashmiri plough.

For reasons of regional variations a number of ploughs—desi, kushna, muna, hal, dubehri, nayra, lotan, adha hal, pakka etc.—were used in India.\textsuperscript{28} The Kashmiri ploughs—batij and albain [discussed first] closely resembled with muna and hal used in Assam, Himachal Pradesh and Maharashtra. Muna used in Assam and batij used in Anantnag district of Kashmir resembled with each other in shape and size. The Kushana plough presently used in Himachal Pradesh and Maharashtra looked like albian of Kashmir.\textsuperscript{29} In both these ploughs a gape

Another dominant source of Kashmiri plough was Persia and Central Asia. A number of ploughs were found in this region but except gajemeh which is also known as Caspian plough, all other ploughs were quite different from Kashmiri plough. The Caspian plough was widely used for rice cultivation in Caspian provinces and outside Persia in India and south-east Asia. It was a suitably trimmed tree fork. One branch formed the plow beam and the top of the branch hook protected by a socket type plough share. A stilt with a handle was mortised into the rear of the plow.\textsuperscript{30} It is not without interest to know that same structure was adopted in the Kashmiri plough. Moreover the handle, sole, and beam of the latter resembled with gajemeh. In addition to this there was a close terminological resemblance between Persian and Kashmiri plough. The terms used for sole [Pr.-koreh, Kr.-koreh heit], forged nails [Pr.-mekh, Kr.-mekh] and yoke [Pr.-yo, Kr.-yopeit] were same in Persia and Kashmir. Beside the loop was made from animal skin and the material employed for construction of plough

\textsuperscript{28} Kumar, Agriculture in India, Vol. I, fig. 86.


\textsuperscript{30} Hans E. Wulff, Traditional Crafts of Persia, p. 262.
was identical. Like Persia and Central Asia mulberry wood was favoured for the sole for it was durable and light. However despite these similarities Kashmiri plough differed in certain respects from Caspian plough. The adjustment pattern of yoke and beam in both ploughs was not same. In Caspian plough yoke and beam was connected by a loop that run over a peg or through a hole. A space was left between yoke and beam. On the other hand the yoke of Kashmiri plough was placed on the beam and a folded circular loop ran round the beam and yoke. A peg was penetrated through a hole in the beam that tackled the pull of the bullocks and simultaneously prevented the yoke from sliding down.

The Kashmiri ploughs thus resembled with the ploughs operating in Persia and central Asia. The *albian* and *gajemeh* were same, only adjustment of yoke differed. At the same time *batij* and *muna*, *albian* and *hal* also resembled with each other. A few additions that we find in local ploughs had been developed indigenously to adjust it with certain local requirements.

It is important to note here that there was a practice among rural people in Kashmir that whenever any person suffered from eczema disease [skin infection locally called *dideir*] he used to visit priests who suggested him to bring some soil fixed on the sole of the plough and advised the patient to massage it on the infected place.31

**HAND TILLAGE**

**Hoe [tangur].** Hoe seems to be a truly universal tool found wherever there is agriculture. It was essential to the earliest farmers, as is clear from the numbers found in early Neolithic sites all over the world and is still essential to most farmers today. While in certain places it is the chief implement used for the cultivation in most areas it is used principally for weeding, earthing up, tillage, or

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31. Information gathered from peasants.
cultivating small awkward patches of ground. It occurs in enormous variety of size and forms, rounded, pointed and square, but nowadays the square types is the most common. It seems impossible to postulate any single date or point of origin of hoe, which must have been as universal as the knife and chopper ever since Neolithic times.\textsuperscript{32}

Not unlike other inventions, hoe too has passed through a number of evolutionary stages before reaching its present state of condition. The earliest hoe recovered from Egypt dates back to more than four thousands B.C.\textsuperscript{33} It was a single piece of wood with a curved front which acted as a blade. It had no joint and seems to have been framed from a tree ranch. Probably some earliest hoes were not hafted but simply held in the hand through the smaller or narrower ones could well have been bound to an angled wooden haft.

Hoe was the most common percussion implement used for agricultural activities in Kashmir. Evidences of this tool comes from the Neolithic site of Burzohom dated back to second millennium B.C.\textsuperscript{34} Two groups of hoes were recovered. They were- (a) large oval 25cm long and 7.5cm broad. The underside was roughly packed, but the out side as well as ends were ground. The butt was hammered and the edge was convex. Group second was similar to group first but small in size. They were not hafted and seem to have been directly used by hand.

Keeping in view the evidence of ample agricultural productivity and cultivation of varied crops in Kashmir it can be inferred that hoe had a primary place in the farming activities from the times immemorial.

A good variety of hoes were used in Kashmir which differed in size and structure because of technical considerations. Generally Kashmiri hoes of tradi-

\begin{itemize}
\item \textsuperscript{32} Needham, op. cit., p. 135.
\item \textsuperscript{33} Singer, op. cit., 539d into following categories.
\item \textsuperscript{34} Aijaz Bandy, \textit{Prehistoric Kashmir}, p. 161, plate xxii.
\end{itemize}
tional agricultural could be divided into following categories:

**Small hoe (khani).** It was almost one and a half feet long with a blade three inches wide and five inches long. The blade had a tail that was inserted into the head of the handle. Some times instead of a tale, a hoe had a head with a round socket for a straight wooden handle. This hoe was mainly used for weeding and heaping the soil up round the root of the crops like garlic, chilly and other thickly grown vegetables.

**Large hoe (patir tongur).** Much like the small hoe in shape, this hoe was a little bigger and differed in operational purpose. With a four inch wide and six inch long blade, it was generally used for tilling and smoothing ground after ploughing. Clods were also crashed and crops such as maize and pulses were weeded by this hoe.

**Large irrigation hoe (kahi).** This hoe was used for digging canals, mending the edges of grassy boundaries and cutting turfs or clouds left after ploughing if the land was too weedy. It had a wider blade than other hoes. Instead of a tail it had a socketed head and the handle was inserted into it.

**Nail hoe (kili tongur, skuil).** Iron pronged nail hoe was another percussion tool. It had two sharp and slightly hooked teeth with a tail grafted into the handle. This implement was employed for digging mounds of manure especially cattle refuse like dung etc. Due to compactness and excess of grassy elements in manure a spade or a blade hoe could not function smoothly. But a nail hoe with its sharp teeth went deep into the manure. Another nail hoe was a small one. It had a narrow blade of about two inches wide and was used for weeding thickly grown vegetables. A special method was adopted in a hoe while fitting a blade to the handle. In case the blade being more angular or less than sixty degree it created difficulty for a user and could not penetrate deep unless a peasant bowed or sat down completely. On the other hand if the blade was fitted to the handle perpe-
ndicularly it didn’t dig or turn colds well. To overcome these technical problems the blade was so adjusted as to form a 60 degree angle. But all this was furnished without any geometrical instrument. The distance between the edge of the blade and the handle should have been equal to the length of the blade. Therefore, the handle, blade and distance between blade edge and handle made a triangle where in all sides were equal.\footnote{35. Personal observation}

**Weeding knife (khrupa, ramb).** Weeds short enough to be pulled out by hand or mowed by sickle were cleared by a weeding knife known as *khrupa*. It was operated in push and pull manner at the ground near the roots of the weeds. The handle was curved which helped it to run parallel to the ground.\footnote{36. Personal observation}

**Spades (beil).** Although ploughs were traditionally the chief agriculture implement, digging by spades have always been indispensable for opening new land, tilling awaked corners, preparing vegetable garden, digging ditches, building bunds, planting trees and innumerable other tasks. The long history, wide distribution and enormous typological variation of the spade in both the Old and the New World indicate that it would be difficult to trace any signal center of origin, but as an agricultural implement spade was traditionally less important than hoe or plough.\footnote{37. Needham Joseph, op. cit, Vol. VI, part. II, p. 136}

Spade is supposed to have evolved from the digging stick.\footnote{38. Ibid., p. 137.} Some scholars believe that it is the earliest form of plough.\footnote{39. Ibid., p. 133.} However, spade seems to be an independent invention rather than the basis of some latter development. Its structure was less complicated than hoe or plough and operationally it had a minimum use and different pattern of function. Neither it made continuous
furrows like a plough nor was it percussioned like a hoe. Rather it was thrust into
ground by the right foot and the hands swung or pressed the handle back. The
hands and feet played equal part in this activity. A distinct feature concerned
with spade was that while digging earth a person walked in a reverse direction
and thus the tilled land was not trampled.

There were different kinds of spades used in Kashmir.\textsuperscript{40} They were framed
in a number of designs in view of the nature of work. Broadly the spades of
Kashmir can be divided into three categories: (a) square blade with turned over
edges and a round cutting edge spade. No considerable difference existed in these
two designs. Both possessed turned over edges. For the comfort of foot, some
times a wooden footrest (lutwuth) was pushed over the handle. For the
adjustment of handle two semi-circle pieces of iron, one in front and the other at
back side, were stamped at the center of the upper part of the blade, both these
pieces were encircled by an iron ring which sustained pressure when handle was
pressed in. However, the square edged spade turned over less ground than round
bladed and at the same time left behind little powered ground while digging a
ditch or carrying earth from one place to another.

**Wooden spade (livaen).** It was a wooden spade shod with a thin iron blade.\textsuperscript{41}
The wood used for it included mulberry and cellis australis. Unlike above
mentioned spade, which consisted of two parts-handle and blade, handle
pinioned into the socket of the blade tail, livaen had neither a plane nor a crescent
but a pronged blade and the whole implement was carved out from a single piece
of wood. Sometimes the handle and blade (potur) were nailed together. It was
mainly used for rice cultivation, clearing water channels, shaping field
boundaries or digging wet land. First because the wood is comparatively lighter

\textsuperscript{40} Diwan Kripa Ram, op. cit, p. 486.
\textsuperscript{41} Lawrence, op. cit, p. 325.
than iron; secondly the wet soils get stuck with the iron and create hurdles to shift the soil. However this is not the case with wood.

**Reimb.** This tool used in rice cultivation looked like spade but its size was small. It had a blade about five to four inch with a socket type tail in which a handle (*daum*) was pressed in. It was used to avoid the seepage in the terraced rice fields.42

### SMOOTHING AND LEVELING IMPLEMENTS

**Harrow (**ma**j).** Harrow was an animal drawn implement used after ploughing to break up clods and level the furrows in the wet rice field.43 It consisted of a square beam about five feet log to which a row of sharp wooden tines were attached. A handle fixed at the middle of the beam guided the harrow which was drawn by a pole attached to the yoke. Harrows with no handles were also used. To tackle the buoyancy of water the beam was often weighted down by a number of heavy clods or sometimes the driver itself stood on the board.

**Mallet (**yetf**ur, **yubchut**).** Mallet is a very ancient agricultural implement and can be seen in operation for land preparation in the Egyptian tomb paintings dated 1420 B.C.44 In China the oldest surviving example is a western Han maul from Niya Sinkiang and the implement is still in common use in north China today.45 Mallet was also used in Persia,46 India47 and in Western countries like Rome.48

42. It was in village Lolab District Kupwara where cultivators demonstrated this implement in front of me during my field study.
43. Gulzar-i-Kashmir, op. cit, p. 286
44. Singer Charles, op. cit. Vol. I, p. 540. See also *Short History of Technology* by Derry and Williams, p. 51.
46. Hans E. Wulff, op. cit. p. 266.
48. Derry and Williams, op. cit, p. 57.
Mallet had a similar shape and mode of operation everywhere. It was used for cold crashing soon after ploughing the rather coarse soil. The work was often done in gangs.\textsuperscript{49} Mallet had a simple structure. A long handle of four or five feet was inserted into a piece of wood perpendicularly. It was all made of wood especially light one for minimizing the workload on arms due to the continuous striking.

**Ox drawn clod crasher (\textit{patdah or mond}).** In addition to mallet there was yet another device for crashing clods and leveling ground. This implement was locally known as \textit{patdah}. It was a log of wood attached to a draught pole and drawn over the furrows by bullocks. For complete crashing of the clods the driver stood on the log with the handle in his hand. \textit{Patdah} was like a harrow in shape but it had no tines.\textsuperscript{50}

**HARVESTING IMPLEMENTS**

\textbf{Sickle (\textit{droit}).} Sickle was a leading harvesting implement prior to the introduction of modern methods. The earliest known sickles were used to harvest wild grasses in the Nile valley 12,000 to 10,000 but are not found elsewhere earlier than the Neolithic Natufian sites of Jordon [8000 to 7000 B.C]. These early sickles consisted of a bone or wooden haft inset with small stones of flint blades. Their form has led to the suggestion that they were modeled on an animals jawbone. Such sickles are characteristic of Natufian sites and have been found in several though not all Near Eastern sites. They also occur in European sites as late as -2000 but were quite soon replaced in Western Asia and the Mediterranean area by sickles of baked clay, bronze and eventually iron.\textsuperscript{51} In Neolithic Kashmir we come across artifacts that are believed to have been used for harvesting. These harvesters are rectangular or semi-lunar in shape.

\textsuperscript{49} Lawrence, op. cit., p. 324.  
\textsuperscript{50} Diwan Kripa Ram, op. cit., p. 286.  
\textsuperscript{51} Joseph Needham, op. cit, Vol. VI, part ii. p. 321
There are two or four perfectly bored small holes along the long blunt side, made of both stone and bone, the surfaces of the tool are ground.\textsuperscript{52} The earliest evidence of iron sickles comes from the archeological site of Avantipora, the capital city of Avantivarman.\textsuperscript{53}

The form of sickles had been almost similar in all civilizations. It had a blade that was bent back at the handle and then curved forward in a long sweep. This enabled stems to be cut with less strain on the wrist. The stems being cut mostly near the base. The reaping was done from a squatting position. It was customary to have serrated sickles and the teeth were kept sharp with a double edged file (\textit{dund-vav}). Most cereals were reaped with a sickle after the crop was fully matured.

Kashmiri sickles can be divided into four categories on the basis of size and purpose of operation; [a] Pointed, hooked grain cutting sickle with a straight or sometimes handle. The curved handle protected the hand from being rubbed with the ground; [b]. Flattened balanced grass cutting sickles; [c] Reed cutting sickles; [d] a long hooked peat cutting sickles. It was commonly used in the swampy areas.\textsuperscript{54}

Sickles used in Kashmir had a considerable resemblance with the sickles of other civilization like India, Persia, China and European. The grain cutting sickles not heavily curved took after one of the kinds of Indian and Chinese sickles. The grass cutting balanced sickles found in hilly areas resembled with Persian sickles.

The long peat cutting sickle was confined to Kashmir only and in Kashmir

\textsuperscript{52} Aijaz Bandy, op. cit., p. 163.
\textsuperscript{53} Other tools recovered from there include plow share and spade. They are presently lying in S.P.S Museum Srinagar.
\textsuperscript{54} Local informant
also in those areas having marshy land (numbel). This sickle was used neither in mowing nor in slashing manner. Rather it was inserted into the peaty land and then handled up and down. As such big clods of peat were let out. It is worth mentioning here that unlike Persian or China no harm-protector or bamboo finozer stilts were used in Kashmir while handing sickle during harvesting crops

**Threshing stick (chall).** Wheat and some varieties of rice were very hard at threshing. Even after striking several times against a threshing board, there remained several grains on the sheaves. To thresh all the grains the sheaves were struck and scraped by a small piece of wood measuring about one and half feet long and three inches wide. This implement was known as *chall*.\(^{55}\) It was a very effective but time consuming device.

**Threshing pin (chulin).** Threshing maize needed a quite different method. Neither it could be struck against a threshing board by sticks nor trampled under the foot of oxen. It had to be peeled and peeling simply by hands was a hectic job. To facilitate the task a sharp pointed stick was framed. The pointed side was inserted into the cob at the top and forced upwards. With the result cover of cob got divided into two parts. Both the sides were then held by hands and pulled apart consequently the cob came out of its cover.\(^{56}\)

**Threshing spade (fuh).** Fuh had a close resemblance with spade. It was used to arrange the grains heaped in front of threshing board while beating the sheaves. It had a broad blade and long handle.\(^{57}\) It was made of wood.

**Veitrain.** It was a sack of grass in which rice seeds were kept.\(^{58}\) Smaller size sacks made of grass were called *thichnur*.

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\(^{55}\) Diwan Kripa Ram, op. cit., p. 487.
\(^{56}\) Based on information collected from an interview with Mohammad Shaban Bhat of village Malur Srinagar.
\(^{57}\) Diwan Kripa Ram, op. cit., p. 487.
\(^{58}\) Ibid.
Threshing board (*vaan mund*). It was made of pear and willow wood and used for threshing rice.\(^{59}\) The length of it was subject to the available man power. However ten feet was considered ideal. It accommodated about seven people to thresh the rice. Each sheave was beaten against board three times to five times. The breadth of the board was about two to three feet.

Broom (*mazan*). It was used for sweeping chaff on rice while threshing it.\(^{60}\) It was made from the branches of *mazan* [a plant] and plum tree.

Pruning-hook (*aeind*). Hooking axe was used for cutting the branches of willow. Its main advantage was that in the first place there was no need to climb the trees for getting leafs for goat or sheep. This could have been done while standing on ground. Secondly this curved blade was of great helpful for pruning the higher branches of willow trees. Those higher branches were very fragile and did not tolerate the weight of the worker. Thus he selected some suitable place at the tree, held the hook in hand and started pruning the branches normally beyond his reach.\(^{61}\)

Fork [*trashool*]. It was used for heaping rice. It had not less than tree branches at the end.\(^{62}\)

**IMPLEMENTS AND EQUIPMENTS FOR CARRIAGE**

The tremendous muscular strength of the rural people of Kashmir had long been testified by the people who visited this part of world from time to time. In this regard one of the travelogues mentions that ‘the ordinary kashmiri villagers…physique of both men and women is excellent. They are of medium height, but compared with the people of India of exceptional muscular strength.

\(^{59}\) Ibid
\(^{60}\) Ibid.
\(^{61}\) Local informant
\(^{62}\) Diwan Kripa Ram, op. cit., p. 487.
The men carry enormous loads. As for women were concerned they too carried heavy loads. Certain jobs like carrying water buckets, and firewood were mainly meant for fair sex. They carried loads on head. However, heavy loads were carried by men. They carried the loads on shoulders and back. Various methods were devised to ease the hazards of burden. These included: creel, (yat or kajawa), carrying club (shiru), kunzier and bullock carts trolley (hagur).

**Creel (yat, kajawa).** This basket like equipment made of osiers was used for carrying manure. It differed from other baskets in shape and size. It was narrow at the bottom and broad at the top and had two grips. Instead of carrying on head or shoulder it was carried on back and held by shoulders with the help of two grips made of grass. It was long enough to allow a person to land it and take rest and stand up with out much difficulty. The vegetable gardeners of Srinagar used to employ this basket. Early in the morning they roamed from street to street to collect manure.

**Sheru [carriage club].** It was used for the carriage of un-threshed rice and grass. In shape it was like a club with a height of about five feet. At the head end it had an eye in which a rope, double on front side and single on the back side, was adjusted. Rice used to be fixed in such a manner that the pole stood in the middle of the crossly put rice sheaves. The ropes were knotted. The two front ropes served as belts (randaks). One of the main advantages of this method was that instead of shoulder the burden hung on back. At the same time it was quite easy to have rest and then start again without some body’s help.

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63. Francis Younghusband, *Kashmir*, p. 130
64. Diwan Kripa Ram, op. cit., p. 487.
65. Interview with Abdul Rahman Dar resident of Bangar Mohalla Dana Mazar Safa Kadal Srinagar.
66. Local informant.
**Kunzier.** It was used for the carriage of dung. It had four stilts adjusted on a round base. Besides there were two ropes used for its lift.\(^{67}\)

**Shoulder clothes (nakhpatij).** It was a piece of cloth used for covering shoulders during carrying loads. It saved skin from the exertion of ropes.\(^{68}\)

**Bullock carts (hagar).** Bullock carts were used in plain areas. It was mainly used for the transportation of agricultural products

**OTHER IMPLEMENTS- AXE, HOOP (CHAEIL), STICK;** In addition to the above mentioned implements there were some tools that were used by general populace. These included axe and stick.

**Axe (tbar).** Axe was used for pruning trees. It had mainly two types. The smaller one was used for light tasks whereas the bigger one known as *makitz* was employed for cutting trees and cracking logs.

**Hoop (chaeil).** Once the sheep were brought back from the pastures they were washed. Washing took place in the river or lakes. They were then roughly rubbed down with a hoop of iron. This made the wool clean and clear and then shearing was commenced.\(^{69}\)

**Stick (lour).** Stick was so familiar, common and so readily available that the cultivators never bother to include it in the tool kit. However the fact remains that it qualified all the requirements of a tool. It had a number of advantages. It was used by ploughman to handle the bullocks. Shepherds kept it always in hand to control the cattle; milkmen selling milk in countryside had it always in hand to keep the dogs at bay. It enhanced strength and confidence to the people traveling

\(^{67}\) Information obtained from a villager of Ussus Anantnag Kashmir

\(^{68}\) Diwan Kripa Ram, op. cit., p. 487

\(^{69}\) Lawrence, op. cit., p. 363.
alone in the thinly populated valley when foot and horse were the only means of travel. It was a great support for the aged people. For best and durable sticks branches of yew trees were used. The advantages of stick have been beautifully summed up in a local riddle (*pretz*) *maars maars taraas taari, haaras khaveyi tzoont ti taange, aath maali chi dapaan trayim zanng* means stick kills snake, it ferries you across river, in summer it brings you apples and pears, these are the advantages of third leg.\(^70\)

\(^70\) Ghulam Nabi Nazir, *Kashir Looki Baaith* [Kashmiri], Cultural Academy Srinagar, pp. 72-73.
CROPS

Fate augments the happiness of men by increasing the crops.

[Zainatarangini]

Crops have a core importance in agriculture. They provide food and food and agriculture were intimately related in the society of the period of our study. Before we discuss the crops of Kashmir it would be in the fitness of things to know what has been the importance of food in the history of Kashmir. In Kashmir food is called rizk. It enjoyed crucial significance. Food procurement was the first priority (god yi ed pati theid) of the people. Food was considered as the basic problem (baita dood goo buud doo ad). It was consumed with utmost care. People swore by food (rizk chii dre). It is frequently said that food was followed by prosperity (biata sait chi vatie). These statements reflect in true spirit the collective concern of the people regarding the value of food in a region like Kashmir where the shortfall of supplies, man made or natural, always culminated into fatal famines.\(^1\) it was generally said that ‘anna [food] came first, faith came after’.\(^2\) Failure of crops was mourned much restlessly than the death of a family member. It is often said that murds chii vadan behuit ti batis chii vadan vodni meaning dead are mourned with ease and food is mourned with pain. There was a popular tradition of taking religious processions (alams) to pray at some shrines (zairat) for the halt of excessive downpour. In case of draught water pots were taken to sacred sites for rains. It was done so that famines didn’t occur. Famines were very fatal. Taihr added with chicken was

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2. Elders quite often quote this sentence in their conversation-goudi avv unn ti pati avv daram.
served at rice nurseries so that the ensuing crop remained safe from devastating calamities such as hail storm, blast (rai) etc.\(^3\)

‘Food’ was considered a sign of power in the ancient historical sources of Kashmir.\(^4\) The consumption of meals prepared of new rice crop of the year (nov karun) was an occasion of rejoice and great festivity which people celebrated collectively. Given the sacred value of food there were set social norms prescribing how to take food. It was strictly prohibited to take food by left hand. Left hand was used for ablution after the call of nature was attended. Besides it was also used for clearing nose or touching unclean things. The oven used for cooking food was also considered sacred place and the soil recovered from the reframing of the old one was deposited at some clean spot.\(^5\)

Till recent past and even at present also in ideal rural settings of Kashmir when daughters returned after delivery or routine stay at their parental families they brought bread trays-chcuch daij-with them. In the sources pertaining to Kashmir history ‘draught, destruction of crops by ants, locusts and birds’ figure prominent among ‘the six calamities’ that visited Kashmir.\(^6\) The birth of a son was celebrated as nendmohnev or dandvool [de-weeding person or ploughman]

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3. For example in certain rural areas such as Zaingeer villagers held a katim sharief at sowing and harvesting time. After the digur nimaz [afternoon prayer] people gathered in the local masjid offered nimaz and sung in the praise of prophet, besides special mangabats [devotional gatherings] were repeated. This function continued till evening prayer. By that time each cultivator brought a plate (trami) of cooked rice (batta) as per his capacity. These tramis were distributed among the non agriculture families of the village such pirs, babas, ironsmiths, carpenters etc, etc. They didn’t cook rice at their residence on these occasions.


5. All this pieced together information I gathered from the aged people who have seen famines and draughts and suffered starvation.

an addition in manpower to procure food.\(^7\) Black gram was a sign of scarcity and hungry mans look inauspicious.\(^8\) Rice was showered on bridle grooms at marriages.\(^9\) We find in sources that ‘for want of food distressed hungry man left aside gold and other riches and stole rice from a pot.\(^{10}\) To ensure a constant food supply in a region like Kashmir which remained cut off from rest of the world for not less than six months, dumping of food provisions has been a norm of living. That is why surplus cereals were sold only after the smooth storage of the next crop. We find peasantry very reluctant to sell the additional quota if any at the time of harvest. There was no question of selling it even if one had some dire urgency. Consumption of previous rice in presence of the fresh one available was a sign of prosperity which peasants often quoted with envy.\(^{11}\)

Traditionally *batta* was the common food of the people in Kashmir.\(^{12}\) Batta was prepared from rice. It was taken two times a day- at launch and dinner. Both times were cooked separately. However if there was surplus *batta* it was not wasted. It was put at the top of the fresh cooked rice so that it gets worm and was taken with out any excuse. Besides potherbs such as knoll kohl, potato, onion, pumpkins were cooked in a separate pot. Thus while at dinning it was a plate of rice, a bowl of vegetables, and a glass of water in front of a person. Each person consumed one cup of rice one time. Curd was prepared by each family or procured from the milkman. It was turned into lassi and drink while taking *batta*. Rice no doubt was a common food of the people but at times when it was not available due to draught or floods, people ‘lived on edible leaves, roots, and

\(^7\) Lawrence says that in spite of being extraordinarily prolificacy of women bearing on an average ten to fourteen children population was not sufficient for the soil. To Lawrence It is safe to say that for proper cultivation population is still far too small. Lawrence, op. cit., p. 218.

\(^8\) Som Nath Pandit, *Kashrin Batan hind Rasm ti Rewaj* [Kashmiri], p. 224.

\(^9\) Personal observation. During my field study I attend a marriage ceremony of Sikh community in Tral [Pulwama] in 2008 and saw womenfolk showering rice on bridle groom.


\(^11\) Information collected from field study.

\(^12\) Fredric Drew, p. 172.
fruits’. Ghulam Nabi Nazir, Besides \textit{batta} people also eat \textit{Vaat}. It was prepared of maize. Wheat, barley, wild grasses like \textit{magmach, throww}, millets, boiled dried pears, boiled water nuts, mulberry, were other foods taken during the times of food scarcity. In certain areas people roasted maize cobs and stored them. In winter these cobs were boiled and taken as food.\footnote{Based on field study.} Other than solid foods we find a tradition of taking tea also. It was taken twice- early in the morning and at afternoon (\textit{digur}). With tea it was either bread or \textit{satu} that was taken.\footnote{Breads included \textit{aabctz, yaji, and drambi}.} Besides whenever some guest arrived \textit{kahva} and \textit{damtuth} was prepared.

Arrival of crops in Kashmir is interesting as well as intriguing. The crop culture has a long history and its origin is diverse ranging from China to South America. Right from the day agriculture started in the valley of Kashmir the inhabitants left no effort to domesticate as many crops as possible and experimented all available landforms for this purpose. For this reason seeds were brought from the regions bearing climatic resemblance with Kashmir.\footnote{Cultivators were always keen to procure best seeds. Thus whenever they had a chance to visit some new place they enquired about crops and tried to get the seeds. In certain cases, as told to this research student by the respondents, they procured seeds from a far off pilgrimage centre like Maadena Munavara in Sudia Arabia.} The ultimate purpose was to ensure food security. Crops were in fact introduced to pile enormous masses of food to save life. This fact is correctly corroborated by Lawrence when he said that much can be done to save life by introducing the cultivation of potato, turnip and carrot.\footnote{Lawrence, op. cit., 218.}

Besides there were other factors that promoted the crop wealth of Kashmir. Whenever Kashmir came into contact with outer world at different levels it had a direct bearing on it’s over all life. And agriculture didn’t remain
unaffected. The expansion of political sway of various empires that emerged at different points of time and annexed this land, the emergence of religious movements that broke the isolation of this land locked territory and above all a strong civilizational neighbourhood all these factors together added to the crop wealth of Kashmir. It is perhaps because of these multiple factors that Walter Lawrence writes, ‘the countless orchards of apples, pears, and apricot give the valley the appearance of a well-wooded park. There is a curious mixture of the east and west. The crops are eastern, but the rounded forms of the trees, the rivers and the streams with their banks of green turf, and willows recall the west’. The botanical research also subscribes to this fact. It testifies that:

‘The alien flora of Kashmir Himalaya is comprised of 571 plant species belonging to 352 genera and 104 families. Dicotyledons contribute maximum number [425] of alien plant species distributed in 261 genera and 74 families; where as monocotyledons share 133 plant species grouped under 81 genera and 23 families. Gymnosperms are represented by 11 plant species belonging to 8 genera and 5 families…..European flora contributes maximum percentage (38%) followed by Asia [excluding south Asia], Africa, North America, South America and Australia which contribute 27,15,10,8 and 2% to the total alien flora, respectively. Annual and perennial herbs predominate the alien flora and are represented by 181[32%] and 155 [27%] species, respectively. About 332 [58%] species have been introduced intentionally for various purposes. Among these, 119 [36%] plant species have been introduced as ornamental; 72 [22%] as food plants, 50 [15%] as fodder plants, 32 (10%) for the plantation, 22 [6%] for landscape, 20 [6%] for their medicinal value and 17 [5%] for horticultural purposes. In addition, 239 [42%] plant species have unintentionally arrived in the region.’

The cultivators used all possible means to ensure the protection of most

dearly cultivated crops. They took no chance to loose even a single grain. Negligence it was believed causes scarcity (bae qudries chi shabi qadier ti bayzar). Thus it was not without reason if a cultivator was always present at his field looking after his crop, maintaining water level, hoeing it, removing weeds and providing manures to increase production. At times he spent nights to divert water or made wigwams (pahuer) to sleep near the crop for constant vigil of the crop. Where his intellect failed to submit some solution to the problems which his crops faced he resorted to practiced which were called superstitions. Thus for a good production writes an observer ‗he will also buy an amulet from some holy men and tie it to a post set up in the rice, or he will scatter holy dust over the field. Among other devices for arresting rai may be mentioned the setting up of poplar wands in the rice fields, and if a widow will walk through the rai-stricken plots with her head uncovered it is generally believed that rai will be averted‘.20

Some times crop such as amaranth was cultivated to guard the maize crop from those sides vulnerable to animal damage. Amaranth it may be mentioned had large stalks and the crops cultivated behind it was hardly visible. By itself it didn‘t get the attention of the cattle and thus largely relieved a cultivator from the care of crops. In order to protect wheat crop from the disease of sorem which was fatal and destroyed the crop completely cultivators prepared solution of nilthut [a medicine] and sprayed it to the seed.

All the more pain was taken for the protection of rice at the time of its harvest. It was a sumptuous food for the commonly found bird sparrow. In case the crop lodged or ripened earlier as some varieties did, it was a daunting job to avoid the sparrows till the crop was harvested. However cultivators had devised the required techniques to tackle this situation. Fencing (pai, rouit) was a popular way to guard the crops. Some times scarecrows (khok) were erected to ward off

20. Lawrence, op. cit., p. 334.
sparrows. Some quncha was employed. It was a grass rope about seven feet long held tightly and moved quickly. All of a sudden it was hit to the ground and a cracking sound caused which frightened the birds around. In upper villages where wild animals like bears damaged the maize crop platforms were erected to stay safe and hunt out the animal. Fire was also used to keep the animals at bay. Besides in certain areas where maize crop was cultivated on large scale because of non availability of irrigation, wolves damaged the crops on large scale. To tackle this problem loops were fixed on the possible routes of these animals. At times they got entangled and were killed.

Rodents were far more destructive than flying birds or wild animals. They were found everywhere and damaged more than what they actually consumed. Lawrence writes Kashmir is overrun with rats and mice. They caused great damage to wheat and barley. They had different types. Big rats were known as khacha gagar. Mice were known as krints. In case rats were found in the crops two methods were employed to kill them. Either water was pumped into their bills or fuel cakes were put in a pot. At the bottom a hole was made for the ignition. It was kept on the bill from lid side and aired behind. By these methods rats were forced out of their holes. Some times traps were fixed near the holes attached with the foods favourite to the rats. As soon as they touched the grains they were caught and killed. The whole Valley is rich in superstitions comments Lawrence. Cultivators believed in bad omen. They believed that a promising crop if caught in bad eye will suffer any damage. Thus to avert this misfortune they get amulets or fix damaged pots or torn out cloths in the middle

21. It is not with out interest to know why it was called a khok. Khokas were tribal people living on the hilly side of Kashmir. They looted and plundered the valley whenever there was political instability.
22. Information gathered from field study.
23. Lawrence, op. cit., pp. 112-113.
24. Ibid., p. 113.
25. Ibid., p. 294.
of the crop so that any passer by fix his attention on these things and the crop is saved.

_Darz_ a darkish grub and one of the worst vegetable pests injured the roots of maize and cotton. Vegetables such as tomato, eggplant, and potato were sumptuous food for insects. They attacked their stem and cut it into two. A number of plants were partially damaged. They were spared and were not planted. Such plants broke down at the time of fruiting if transplanted unnoticeably. For the control of such a deadly pest which was difficult to detect because of camouflage the nurseries were watered and the pest was forced to move for safety. Thus it was detected and killed or birds that immediately arrived at this time picked them up.26

The cultivators firmly believed that as the seed so the crop. Thus for a promising crop ‘great care was used in the selection of seed, and the seed grain was jealously put away after harvest in grass sacks (vetran). Noting but the direst necessity induced a kashmiri to break in upon his seed store for food….’ 27 Not only this in order to get the best possible seeds ‘every cultivator sowed one or two field broadcast, and kept the produce for the seed of the next years nursery, experience showed that broadcast rice gave the best seed’.28 In case of vegetable seeds early fruits were preserved. It was thought they get long time on the plants and thus they are thoroughly ripe and matured. The cultivators believed that good seeds brought good harvests. Thus good quality seeders were preserved like long eggplant, long chilies and long bottle guards. Cultivators meticulously recognized different seeds of same colour, size and look. A peculiar thing about seeds was that cultivators preserved seeds which apparently had no immediate use. However they knew the rhythm of the climate of this country. Any time

26. Local informant.
27. Lawrence, op. cit., p. 327.
28. Ibid., p. 33.
rains may delay, dryness may prevail, crops may fail, and thus they took no chance. It was on these occasions that they used those seeds. In certain cases seeds were collected in \textit{gata pach}, the two dark weeks, and kept in a dry place till the day of \textit{shevratri} [March].\footnote{Ibid., p. 354.}

Of all the crops it was rice that occupied larger acreage of land and vast attention of the cultivators. It was the major food plant.

**FOOD CROPS**

\textbf{Rice, the great staple of agriculture:} The world wide diffusion of rice has made it difficult for natural historians to locate its centre of origin. However the opinion tilts towards Southern Asia, east India and China.\footnote{T.T Chang, The Origin, Evolution and Breeding of Cultivated Plants p. 29; ‘where and when and by whom rice was domesticated, in this vast area from India to China, remains to be determined’, J R Harlan, article ‘The Origin of the Cereal Agriculture in the Old World’, Origin of Agriculture, ed. by Charles A Reed, p.371.} The earliest archeological evidence of rice comes from Non Nok Tha in Thailand, where it dates back to 3500 BC.\footnote{Randhawa, Vol. I. p. 271.} It was known to Chinese around -3000.\footnote{Joseph Needham, op. cit., p. 481.} In India the history of rice begins with the Harrapane civilization. Impression of spike-lets on potsherds has been reported from Lothal in Gujarat.\footnote{Sir Mortimer Wheeler, Civilization of the Indus Valley and Beyond, p. 90.}

In Kashmir the cultivation of rice began around 1500 BC. Charred grains of rice have been recovered from Neolithic site of Semthan.\footnote{Indian Archeology [a review], 1981-82. pp. 21-23,} Rice appears at Gofkral towards the end of the second phase datable to -1000 BC.\footnote{Ibid., pp, 21-23.} and in the megalithic period at Burzohom -1000 BC.\footnote{F.A Lone Maqsooda Khan and G.M Bhat, Palaeoethnobotony, p. 112}
So far as the source of rice in Kashmir is concerned the consensus seems to favour China as the most possible contributor. It is believed that the Neolithic farmer of Kashmir seems to have been largely inspired to grow rice under the Chinese influence. In this regard the author of Prehistoric Kashmir writes:

‘As is detectable from the archaeological record of Gofkral (period IC and II) as well as from Burzohom (period III), the crop was raised between 2000-1700BC. The fact that the people seem to have not built any contact with the Indian rice cultivation sites suggests an outside origin for the Kashmir variety. The source of its introduction was south-east Chinese sites of the Lung Shan period, for two obvious reasons; one that the two specific wild verities of cultivated rice were largely distributed in east Asia including China, and secondly at this period of time the people of Kashmir seems to have had built cultural contacts with the Lung Shan people of China.’\(^37\) The Chinese contacts seem dominant elsewhere also. The tools like harvester which has been found at many Neolithic sites of the Yang Shao and the Lung Shan in China bear close resemblance with the harvester that appeared in Kashmir for the first time around 2000 BC at Gofkral.\(^38\)

Besides it is interesting to know that rice is called tao in Chinese and in Kashmir rice cultivated on terraced land is toa type. It remains to be seen if these two words share any relationship.

The propagation of rice in proper Valley is quite revealing for it has a well set chronological order. Broadly speaking Kashmir witnessed different stages in the propagation of rice culture. In the first stage marshy borders self irrigating in nature, were probably brought under this crop. Rice culture evolved on same lines in other cultivation regions also.\(^39\) However this was a preliminary phase.

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38. Ibid.
39. The dog burials, pit dwellings and bone tools recovered from Burzohom also suggest the influence of Neolithic of northern China. For cultivation practices, see Needham, pages 504-505.
Systematic rice cultivation started only after the waters of the streams were canalized and terracing the slopes for retention of water—a pre-requisite for the proper growth of the crop began in Kashmir. Mañivaraja [south Kashmir] was selected first and as per recorded evidence this process began centuries before Christian era because king Suvarna who initiated the canalization on the scientific principles of gravitational flow is mentioned in Rajatarangini among the earliest known rulers of Kashmir.40

It is an important question to know that what circumstances led the early cultivators of Kashmir, who were raising wheat and barely on rudimentary lines with less human labour and meager investment, to shift to a crop like rice which was not a simple business. It not only involved sowing and harvesting but something more. It needed the reclamation of land, regular supervision, management of water resources and after all a very challenging situation i.e. change of food habit. Definitely there would have been some important factors responsible for this landmark development in the agricultural history of Kashmir. Why and when this change occurred in the crop culture of Kashmir or how much time was spent in this transition actual answer of these queries is almost impossible. Our sources are silent in this regard. In fact this shift pertains to a period when written word itself was not known here. One thing is however clear that once the cultivators opted for rice an everlasting blend was forged which still exists.

Till the game, gathering and the cultivation of cereals like wheat and barely sufficed the food requirement of earlier inhabitants, they had not to worry about the search for alternative crops. But once the population increased excessive pressure for food arose and the existing crop pattern and other food sources most probably succumbed before the new situation. It may be added here

that the scope of these earlier crops was also limited in Kashmir. The vast karewa were hardly plain. They were characterized by slope and steep. It was very hard and laborious to till the steep soil with the technology at hand. No small hurdle was the nature of soil. The karewa soil has proverbial hardness. It is very hard to work at. It cake quickly. Retains less moisture and in times of draught or non availability of water there is every possibility of crop failure. Besides, the lower areas had perpetual threat of floods and the upper areas were less fertile as no artificial source of manuring seems to have been operative.\textsuperscript{41} Needless to emphasize that wheat is already less productive than rice.\textsuperscript{42} Simultaneously the urge to avoid ‘come and go’ was also there as man inhabited the country partially in the remote past.\textsuperscript{43} Man spent only that period which suited his requirement.

It may be mentioned here that no society can effort to take risks with its survival. For survival it always tries to be on the safe side. Ensured food sources are basic to survival and agriculture is the best ensured source of food. However the promotion of a crop that a cultivator grows is subject to the favourable climatic conditions. In Kashmir other than rice all other crops were rain dependent and rains were seldom timely. They never occurred as per need and the people always lived in perpetual threat of scarcity. The curiosity to make optimum use of available land resources and create a sustainable surviving mechanism ultimately prepared society to search for some reliable crop and that crop was rice. Rice suited to the ‘carrying capacity of land.’ It had tremendous scope. Rice required water and water was available in abundance. Just \textit{kuhls} needed to be carved out on the already favourable sloping terrain. In cultivating rice man was more in commanding position to procure food from soil. It was given to all these circumstances that rice was naturalized in Kashmir. The idea

\textsuperscript{41} Till recent times this crop received no manure. Lawrence, op. cit., p. 341.
\textsuperscript{43} \textit{Nilamata Parana}, Vol. II, p. 61
was not far to seek since the crop was already domesticated in the bordering areas.

Where was the new crop cultivated initially? It looks that the fringes of marshy land was experimented first. It is not surprising to find the evolution of rice cultivation preceding on parallel lines in others cultures also.\textsuperscript{44} The spread of rice cultivation to upper areas has a late beginning. It was subject to the harnessing of natural streams which only an organized community could do. These areas were brought under rice culture gradually at different periods of history.

Rice enjoyed central importance in the crop culture of Kashmir since its very inception. All others cereals such as wheat, barely or maize were supplementary crops raised only when or where rice was not possible. Of the data available about the year 1889-90 it is quite clear that rice alone inhabited as much land as maize, barley and wheat together. Of the total 492,117 acres under crop, rice was grown on 189,352 acres, maize on 130,644 acres, barely on 30,103 acres and wheat on 29,840 acres respectively.\textsuperscript{45}

What really astonishes one regarding the popularity of rice cultivation is the availability of numerous varieties of this crop in Kashmir. It is no less surprising to find how easily the Kashmiri identified the countless varieties of rice.\textsuperscript{46} In a single district Lawrence counted fifty three varieties.\textsuperscript{47} In some sources varieties of rice cultivated in Kashmir numbered ninety six.\textsuperscript{48} However when we counted these local traces from different sources they cross over a hundred. These varieties included red rice, white rice, fragrant rice, long

\textsuperscript{44} Joseph Needham, op. cit., p. 486.
\textsuperscript{45} Lawrence, op. cit, p. 240.
\textsuperscript{46} Ibid., p. 333.
\textsuperscript{47} Ibid., p. 332.
\textsuperscript{48} Pandit Hargopal Khasta, Guldast Kashmir, p. 30.
eared, medium sized awn as well as awn less.\textsuperscript{49}

In the subsequent centuries there was tremendous increase in rice varieties to make the rice culture broad based so that it suits expected climatic challenges and diverse land forms of Kashmir. We have a potent list of rice varieties which cross over a hundred. Varieties like \textit{sukhdas}, \textit{kuver}, and \textit{basmati} were also cultivated in the far off areas such as Oudh, Burhanpur and Vijayanagar.\textsuperscript{50} The time, source and direction of the transfer of these similar varieties is yet to be established.

Certain villages were famous for their peculiar rice varieties. Telbal on the Dal lake was noted for its soft white \textit{chughal}, qasba Lal for its \textit{anzan}, Salora for its \textit{gudh krihun}.\textsuperscript{51} The cultivators made a wise selection of the rice and choose the only one suitable for his area. It is not out of place to mention here that hardly any rice variety was adopted throughout Kashmir because geographical constraint did not allow it. We find a sort of regionalization of rice varieties in terms of climatic zones and landforms. For instance \textit{niver} & \textit{kanvol} was adaptive

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\textsuperscript{49} Following is the list of rice varieties: \textit{Anzan, Auzal-crad, Anar-dani, Basmati, Braz, Baber, Ban-I-kala, Bud-i-Anzan, Budji, Bud-zug, Bud-zagur, Bari, Pout-bra, but-boul, pout-kumad, joub, taich-itaichal, tumil hal, chogal, chitter-hal, chahnani-nour, chata zug, chander hal, chit gur, chuk-i-anuri, chondur, china, dood-i-krad, dood-i-braz, dood-i-kroor, dood-i-hal, raen, rashum, ram-i-hal, ropa-hal, rah bahn, zuk-i-tatur, zuk mavar, zagr, zuk, chunder-i-hal, sukkdas, sokal, sheerma, shah gur, shal-i-kuin, shoon, shala-i-anzan, shala-i-zug, kuo, kuin, khran-i-shoon, khaice nur, kata chan, krah-ihal, krahni-i-braz, kanhama, kaval-i-krad, kal-i-neur, khrani krad, kahi, khalal, khar, kho zuir, kabro, kumund, krail-anzan, knur, kava anzan, kachur neur, kavgur, munk-i-hal, krahni neur, krahini zuk, gari tan, gurah, gurah kunir, gurah mushk, gud krihun, gud vozul, lashoor, lacha hal, lar boul, loveel anzan, lahn-i-zug, mukht-i-hal, musch budij, mukhta-i-braz, maver, matri hal, mah dun, mah anzan, manka hal, Mughal boul, marvad, mukht-i-anzan, moin daini, niwer, nehal, nik-i-anzan, nik-i-zak, vatal hal, har-i-kant, yemberzal, he boul, gulzag, Sources—Gulzar-i-Kashmir, Kashmir Dictionary, Local informant.

\textsuperscript{50} A. Rahman [ed.], \textit{History of Indian Science Technology and Culture}, AD 1000-1800, p. 321.

\textsuperscript{51} Lawrence, pp. 332-333.
to the cold climate. They thrived in areas close to the mountains.\textsuperscript{52} \textit{Yatal} was suitable for the swampy lands where harvesting commenced late due to the presence of water in the fields and it had the qualities to remain erect for long period.\textsuperscript{53} \textit{Yatal} neither broke in the middle by the weight of ears nor lodged on mud by winds. Variety like \textit{gud vozul} was an emergency one. It ripened in short span of time and was cultivated mainly when irrigation was delayed. Where the cold water from the mountains first entered the rice fields the red rice was grown, as the white rice did not stand the chill of the irrigation. As one ascended the slopes of the valley the chief variety of rice grown was the \textit{niwar}, a plant of short stout growth, which yielded a hard red rice, very sweet and nourishing.\textsuperscript{54}

\textbf{PATTERN OF RICE CULTIVATION}

It was the rice that mattered most for the cultivators. It was in every way their favourite crop for which they devoted all energy. ‘For rice’ writes Lawrence, ‘he will terrace his fields, expend great labour in digging out irrigation channels, spend his nights out in the fields watching the flow of water, and will pass laborious days moving about like an amphibious animal in the wet deep mud’.\textsuperscript{55} Further he remarks that ‘I do not think that the Kashmiri has much to learn in rice cultivation, or that he can be fairly blamed for growing inferior varieties of rice.’\textsuperscript{56}

Rice related agricultural activities are so intermingled and contemporaneous that one feels handicapped to draw a clear cut line. As a matter of fact preparation for the cultivation of rice commenced with the harvest of paddy. The cultivators first of all made the selection of \textit{biol} [seed] for the next year. For

\begin{itemize}
\item \textsuperscript{52} Local informant.
\item \textsuperscript{53} Ibid.
\item \textsuperscript{54} Lawrence, op. cit., p. 331.
\item \textsuperscript{55} Ibid., p. 330.
\item \textsuperscript{56} Ibid., p. 335.
\end{itemize}
that matter he selected only that field where he was sure about the quality of grain. Rice varieties, it may be mentioned here, differed in their growth pattern. Some varieties ripened early and some took time. Till the long duration varieties were harvested the short duration one broke in the middle. Harvesting therefore proved problematic if a diluted seed was used. After threshing paddy the boul was stored separately in earthen silos.

It was the wet system of rice cultivation that prevailed in Kashmir all along its history. Both transplant and broadcasting system techniques of rice cultivation were in practice. However it was the broadcasting system that was much popular and transplantation, though known earlier also, was adopted on large scale after 1950s. Before we discuss these two methods of rice cultivation let us see first how the land was prepared.

There were two different methods of preparing land in Kashmir. They were tao and kunil. The former was common in the terraced land and the latter in the lower area. In the tao land was ploughed in dry condition. The first ploughing (vobi, vakdi) was followed by crashing clods by mallets. The process was repeated after the second ploughing if clods again remained. In certain areas an ox-drawn clod crasher (mund) was rolled on the soil. When the soil was bone dry water was directed to the fields and land turned into soft mud. In case there were clods those were broken by feet (lutvoun). Finally the field was smoothed by a harrow. Ploughing tao was believed to yield more crops because in soft mud root development was quick and therefore plants gathered more nutrients. Keinul ploughing was confined to the swampy areas of low lying region. In this system

57. Far reaching changes occurred in Kashmir in the beginning of the second half of the twenty century. Peasants obtained property rights, the nature of state changed from dynastic to democratic, aristocratic to welfare; Kashmir was well connected with other parts of the country, population also increased. All these factors created a new social milieu wherein peasants shifted to a different technique of production without having anything at risk.
the land was prepared in wet condition.

Abi land was ploughed three to four times but multiple ploughing was generally favoured. The cultivators believed that aalun chhu plaul meaning ploughing increases production. Ploughing ran in a sequence. Unless the first ploughing did not end second was not commenced. The land submerged in water had some peculiar techniques of ploughing. Since it was very hard for a ploughman to regulate evenly the furrows in water he therefore, fixed sticks (tsip koiun) in the direction of furrow so that land was evenly ploughed. At every turn he moved those sticks and thus managed the proper tillage of the field. Further the place of traction animal was daily changed from one side to another. For this purpose a mud mark was put on the thighs of bullocks daily. Ploughing continued till three o’clock. Before bullocks were left free to home they were washed. Side by side ploughing the boundaries of the fields were mended re-prepared if required or pasted with mud to turn them water proof. Rodents did damage to these boundaries. The boundaries were almost six to twelve inches wide. Preparation of land ended with the harrowing of field.

Rice cultivation was marked by the eruption of khaz. Khaz was a microbe that flourished in stagnant and warm water. Red pustules appeared on organs like legs and right arm. They caused acute irritation. The peasant protected themselves from khaz by pine pitch. It was rubbed on legs and arms. It stuck with skin and lasted for full day. A new coat was applied every day.58

58. Pine pitch (kilm). In low lying area a bacteria developed in the stagnant water in summers. However at dawn and dusk it turned inactive. As temperature increased it became deadly and stung bitterly both men and oxen on the organs exposed to water. It caused pimples with severe itching pain which lasted for hours together. In case of severe attack the infected organs developed swelling. In certain areas the fields were known for its prevalence. These fields were called mohnev khov human killer.
**Broadcasting method of cultivation (wattur):** Broadcasting known as *wattur* was the most popular method of rice cultivation in Kashmir. It is still practiced in India\(^{59}\) and was also in practice in China.\(^{60}\) The cause of its prevalence was not merely the legacy of past or the ignorance of peasants about transplantation but there were other reasons that made it common.

In view of the geographical conditions of Kashmir where snow is possible up to May and temperature normally remains low, the cultivator did not take cudgels of crop failure by sowing the seeds earlier. They delayed the sowing to the improved weather condition and that was possible by broadcasting only. Needles to say broadcasting and transplantation had not less than twenty days difference. No less important factor was the shortage of man power. Lawrence had rightly complained that deficiency of population was an important cause of agriculture backwardness.\(^{61}\) The choice of cultivation techniques is largely determined by population pressure and the available labour supply. Since the labour supply was deficient the cultivators opted for broadcasting. No doubt broadcasting was a back breaking method but the initial stage such as preparing of land and sowing were completed by the minimum workforce. The labour consuming stages of weeding and harvesting were compensated by the involve-

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In order to neutralize the attack pine pitch was used. It was recovered from pine. Before stepping into water for rice plantation, it’s weeding or for collecting grass for cattle it was rubbed on legs and arms. Every day a fresh coat of pine pitch was applied to the exposed parts. *Kilm* was prepared locally. Pieces of pine wood were stored in a pottery ware. The pot was put in the fire upside down. Below the mouth of the pot another pot (*choud*) was fixed. As the heat increased the wood in the pot waxed out pitch and deposited it into the pot below. After the pieces were fully exhausted the operation ended. However given the heaviness of the pitch which didn’t rub easily, eatable oil was added to it. It was rubbed off by kerosene oil. During rice dibbling or weeding a particular insect called *woner* sting on breast causing a pimple and temporary but painful itch.

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59. Ghose, Ghatge and Subrahmanyan, op. cit., p. 46.
60. Needam, op. cit., p. 496.
ment of oxen and long harvests which were characteristic features of this system. Broadcasting method had another attraction for the peasant. He believed that broadcasted rice produced best seed. Even after the shift to transplantation the seeds were mostly procured from broadcasted rice for quite some time.\textsuperscript{62}

The preparation of land and seed in \textit{wattru} was same as in transplantation but the time and method of sowing and the weeding markedly varied. All paddy land was first ploughed and kept ready for seeds. By the ending of May broadcasting of seeds started with the ratio of eighty kg per \textit{khar}. The seeds settled on mud. However for the fear of birds puddling was done so that seeds were mixed with mud.\textsuperscript{63}

Contrary to the nursery method the fields were not drained in the initial stage. Since the seeds were sprinkled by hand they hardly covered the soil with equal space. Some portions received large and some less. As soon as plants assumed some height spacing (\textit{gudrou}) started. Rice clumps were dibbed in those portions having received minimum seeds. Where the whole field was densely seeded the plants were spaced by a sort of ploughing (\textit{sel}). In this ploughing, continues furrows were not made but a gap was left in between.\textsuperscript{64}

The weeding of \textit{wattru} was known as \textit{khushaba}. It was a sort of puddling of mud resumed not only for the removal of weeds (\textit{katch}) but it loosed the soil around the plants and helped in the spacing of plants also. Khushaba was done by hand as well as by foot. Human as well as animal power was used for it. A gang of persons standing in a row with sticks in hand kneaded the soil with their foot or scratched it by hand. In case of larger plots animals were ran on the crop.

\begin{itemize}
\item[\textsuperscript{62}] Ibid., p. 331.
\item[\textsuperscript{63}] Local informant.
\item[\textsuperscript{64}] Ibid.
\end{itemize}
It may be mentioned here that broadcasting method required extensive weeding (nend).  

**Transplantation method of cultivation (tropia, thal dranthien):**
Transplantation is relatively a latter method of rice cultivation. The technique of transplantation was undoubtedly a Chinese invention. At present it is the only popular method of rice cultivation in Kashmir. This method is marked by selection of seedlings rather than sowing directly. During the month of April the cultivators used to make preparations for rice cultivation. The first thing to do was to get the seeds from the silos for pre-germination which was followed by the arrangement for the nurseries (thujnaer).

The seed was dried, winnowed and filled in big bowls which were kept full of water. This stage lasted for four days or till the grains were fully moistured. The surplus water was poured out and the seeds started germinating. If it happened to be cold the bowls were shifted to some temperate place like stables for quick germination. Meanwhile preparation of the nursery remained in progress. Nursery was a sensitive matter and therefore its location, soil and the manures to be used were taken into consideration.

Nursery was generally arranged in close proximity to the fields. Soft and sandy soil was considered ideal for nursery. Nursery needed to be fertile and it was adequately manured by very potent fertilizers. Ash, barnyard and sheep tails formed the main manures which were applied prior to ploughing and mixed with the soil subsequently. Nursery was thoroughly ploughed for two to three times and finally leveled by a rake. Prior to sprinkling seeds nursery was thoroughly cleaned.

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65. Ibid.
Rice was usually transplanted from nursery after forty days. The propagation of rice plants proceeded on random wise and no lining was maintained. The size of the clumps was conditional to the level of water. Since plants planted in shallow water produced more tempers (hayi) the clumps were usually small. However in the fields with high water level clumps were larger because in high water plants produce few tempers. Usually twenty first of June was the final date and transplantation was to come to an end before this date. After almost fifteen days weeding started; Weeding was considered must for good production. It was said that nendan chu danie meaning weeding increases rice output. Thus a cultivator was never satisfied with a single weeding. The number of weeding varied from three to four. The weeds extracted were buried in mud or piled (madun) if large in quantity.  

Wheat (kanak) and barley (wishak): Wheat and barely are the earliest domesticated crops. With their original centre in Near East they had been cultivated around 8000 B.C. The earliest finds are known from pre-pottery Neolithic sites in Jericho and Ali Khosh in southern Iran. Egyptians raised them on the Nile deposited silt as early as 7000 BC. Grains of wheat and barely have been recovered from the tombs of Pharaoh belonging to the first dynasty. In India the cultivation of both these cereals is confirmed from the sites of Indus Valley Civilization. These crops are not indigenous to India but exotic introduced from West Asia during pre-recorded times. Chinese were not

67. Local informant.
69. Ibid., p. 459.
70. Ibid., p. 461.
71. N. I. Vavilov, Origin and Geography of Cultivated Plants, p. 17.
aware of these cereals till 1300 B.C. when they were introduced from the West.

In Kashmir the history of wheat and barely cultivation is as old as agriculture itself. The earliest evidence is available from Burzohom datable 2324 B.C. Carbonized grains of these cereals have also been noticed from the Neolithic sites of Semthan and Gofkral. The available palaeobotanical evidence suggests that wheat was the principal and popular crop then. Its popularity can be gauged from the extent of its share of the overall cereal production which was 78.5% around 3000-2500 BC, 73.68% around 2500-1700 BC and 63.7% around 1700-1000.

It is important here to throw some light on the problem of the origin of wheat and barely in Kashmir. Since, the cultivation of these crops in Kashmir predate nearly one thousand years to China and is contemporaneous to Harappan civilization, therefore regardless of geographical proximity and vibrant relations, these two regions fell far from being the source of these cereals in Kashmir. Negated from these two directions of north and west there remains least doubt that wheat and barely followed the north-west route into Kashmir. It was from Persia via Afghanistan or Central Asia that these crops came to Kashmir. Their cultivation dates back to fifth millennium B.C. in this region. Interestingly cultivation pattern also resemble with Kashmir. Like Persia wheat and barely were raised on higher lands in Kashmir, instead on the river deposited silt as obtained in Egypt.

75. Needham, op. cit., p. 463.
76. Farooq Ahmad Lone, Maqsooda Khan and G.M Bhat, palaeoethnobotany, p. 8.
77. ASI, 1986-82, p.21.
80. Ibid., p. 242.
In Kashmir archaeological findings attest the presence of wheat and barely besides game till the middle of the second millennium B.C. However, the appearance of rice on the agriculture landscape of Kashmir around 1500 B.C altered the situation. Rice assumed the first rung in the crop hierarchy and pushed wheat and barely to secondary importance. This balance continued for more than 3000 years. With the coming of New World crop of maize in 17th or 18th century A.D. the importance of wheat and barely was further reduced. Wheat and barely were subsidiary crops rather than make shift or complementary one. They were usually raised on the land where rice cultivation was not possible.

In 1890,s the period about which we have statistical information regarding acreage under crops, wheat and barely were raised on 8.20% of the total cropped land. Compared to wheat, barely occupied more acreage. There were many reasons for that. Productivity figured as the first. Barely was more productive than wheat which is evident by their yield which hanged around eight and a half to seven mounds per acre respectively. Second and no less important factor was that barely ripened earlier than wheat and therefore relieved the peasantry from the food scarcity. Thirdly barely was immune from the disease such as rai and sus which often attacked wheat. Besides barely had a great medicinal value. Nilmatapurana describes it as ‘king of all medicinal herbs’. Like China and Greece barely water (washka shir) was drunk by invalids in Kashmir. Some times barely flour were fed to the ill person. There were three varieties of wheat namely kashur kanak, [Kashmiri wheat] khuch kanak and

83. Lawrence, op. cit., p. 240.
84. Ibid, p. 240; Wheat was raised on 29,840 acres and barely on 30, 103 acres.
85. Ibid., pp. 341-42.
86. Based on my field study.
siestan kanak [wheat from Siestan Persia] and two of barely-kashir wishka [Kashmiri barely] and buta wishka [Tibetan barely]. It were khuch kanak for large yield and kashir wishka for better taste that were cultivated larger than other varieties.\(^89\)

Wheat and barely were rabi crops in Kashmir often raised on different plots after harvesting maize, pulses, sesame or cotton. The area to be cropped by wheat and barely was determined by a number of considerations like the magnitude of their consumption, the availability of land and the ratio of other crops cultivated in early spring. Only a limited portion of cultivator’s total land witnessed the cultivation of wheat and barely in spite of the fact that at the time of their season of cultivation maximum land used to be bare of crops.\(^90\) Why these crops didn’t become much popular in Kashmir Lawrence writes in this regard:

\[\text{‘There are two facts which may prevent either of these crops [wheat and barley] being largely produced in the valley. The rainfall is scanty and very uncertain, and I imagine that if irrigation were attempted the water in spring-time would prove too cold for plant growth. I have seen five spring harvests in Kashmir. The first was destroyed by heavy rains in the early spring, immediately followed by intense heat and dryness; the second was ruined by want of winter rains; the third was lost by the snows lying long into the spring, when they melted under a burst of hot weather which caked the soil and nipped the young wheat and barley plants; the fourth failed by the absence of either winter or spring rains; and the last was spoiled by the snow lying too late, and by excessive spring rains. The Kashmiris do not care for barley or wheat as a food.’}\]\(^91\)

Maize (makaie): Maize is of American origin and was not known in the Old

\(^89\). Local informant.

\(^90\). Ibid.

\(^91\). Lawrence, op. cit., p. 329.
World in pre-Columbian times [1492].

This highly productive cereal was cultivated about 5000 B.C. An actual pre-historic cob has been recovered from La Perra cave in Mexico. It was mainly through discoveries and explorations launched during 15th and 16th centuries AD that maize reached to the different corners of world. Portuguese introduced it to West Africa and Magellan [1521] a famous explorer is believed to have spread its use to the Philippines and the East Indies. Maize reached to China around 16th century. In India it is believed that maize was under cultivation in early 17th century but some scholars ascribe the beginning of its naturalization in 19th century.

So far as Kashmir is concerned accurate information about the beginning of maize cultivation is not available. However, the nature of its cultivation in the early 19th century Kashmir, when it had become an established crop and formed a part of food, baring the fact that it takes time for new crops to carve their place in the traditional crop pattern, is suggestive that its cultivation started in Kashmir during 17th to 18th century and would have therefore been introduced by Mughals because Kashmir was a part of Mughal empire at that time. This substantiates the opinion that maize was under cultivation in India in early seventeenth century AD.

94. Maurice Daumas, A History of Technology and Invention, p. 79.
95. Derry and Williams, Short History of Technology, p. 66.
97. W.H. Moreland, India at the Death of Akbar, p. 103.
100. The domestication of maize in India is a matter of controversy. Historians have specified two different dates i.e. 17th and 19th century. However the condition of this crop in Kashmir in the 19th century presupposes that it would have been cultivated in India, wherefrom it traveled to Kashmir, much earlier most probably during 17th century.
Once maize was introduced in Kashmir it met with a positive response and became second most popular crop after rice. Till 1889 A.D. out of the total cropped land of 429,117 acres maize was raised on 130,644 acres.\textsuperscript{101} Several causes helped in the popularity of maize. There was a vast scope for its cultivations in Kashmir. It was not only raised as a supplementary crop on paddy land at the time of water shortage but certain areas such as \textit{kandi} and plains around Jehlum and Walur lake where irrigation facility was not available came to be known for its cultivation. Maize was a rain fed crop and its growth was conditional to the timely showers. Besides, there was no application of manures in the plains perhaps because it was cultivated on reclaimed land which was already rich in fertility. However its cultivation was marked by heavy manuring in the \textit{kandi} areas.\textsuperscript{102}

As per the information gathered there were three varieties of maize raised in Kashmir. Those were \textit{kashir makaie}, [Kashmiri maize], \textit{bud makaie} [big maize] and \textit{niwer makaie} [short duration maize].\textsuperscript{103} \textit{Kashir makaie} was the old variety cultivated in Kashmir that is why after the introduction of other varieties it came to be known as \textit{kashir makaie} where as maize is not at all indigenous to Kashmir. Among all these varieties \textit{kashir makaie} was grown on large scale. It was white in colour with small grains and yielded more production, about one quintal per kanal.\textsuperscript{104} Maize was commonly used for bread, \textit{sut} and \textit{vat}.\textsuperscript{105} Its bread continues as a staple food of Gujars in Kashmir even at present.

\textbf{Amaranth (gunhar):} Amaranth also figure among those crops that were dif-

\textsuperscript{101} Walter R. Lawrence, op. cit., p. 240.
\textsuperscript{102} Ibid., p. 336.
\textsuperscript{103} Based on interview with Ghulam Rasool Genie Paray Mohalla Hajin Sonawari Kashmir age 70 years.
\textsuperscript{104} Ibid.
\textsuperscript{105} Local informant.
fused from the New World to Old World by the explorers. It was first introduced by the Portuguese into India from the Brazil in 17th century. Understandably it was from India that this colourful crop entered into Kashmir. The accurate date is not known but the fact remains that before 17th century this crop was not cultivated in Kashmir. The earliest evidence of amaranth cultivation in Kashmir is recorded in 19th century source- *Gulzar-i-Kashmir*. The cultivation of amaranth was carried on a small scale in Kashmir that too in an inter-plantation form with maize or cotton rather than separately. It is therefore, difficult to say how much land a cultivator spared for this crop.

The chief uses of amaranth were bread, sut and detergent. Its stalks were burnt and the ash thus recovered was preserved in bowls for washing clothes. However, these derivatives were not the only factors that lure a cultivator for its cultivation. Amaranth had in fact a protective value and largely relieved a cultivator from the care of constant supervision of crop. It was cultivated to guard the maize crop from those slides exposed to animals. It was a large stalked plant. Once it was fully grown on the field borders the main crop inside was hardly seen. The cultivation of amaranth begged least labour of the cultivator which is manifest by the rudimentary nature of its cultivation. It was neither manured and irrigated nor hoed.

There were two varieties of amaranth – white and reddish. The seeds were sown in May with a ratio of ½ to ¾ kg per kanal. The preparation of land for

108. Walter R. Lawrence, op. cit., p. 338.
109. During my field study the cultivators confirmed the cultivation of amaranth but could not provide any answer about the acreage being cultivated.
110. Lawrence, op. cit., p. 338.
111. Ibid., p. 338.
112. Based on information provided by Mohammad Sideeq Bhat village Malur Srinagar.
amaranth was not different from those crops with whom it was cultivated. Harvesting generally started in September. After being harvested by sickles it was beaten by logs to depart the grains from the ears. The yield of amaranth was about one kharwar (80kg) per kanal.\textsuperscript{113}

**Buckwheat (trumba):** Buckwheat is a native crop of China\textsuperscript{114} and Central Asia.\textsuperscript{115} It was from these centers that it spread to different parts of the world at different periods of history. It was through Mongols that European came to know about buckwheat around 15\textsuperscript{th} century.\textsuperscript{116} This annual plant is extensively grown in the Himalayan region.\textsuperscript{117} It possibly came to Kashmir from China or Central Asia.

Buckwheat is a rainy season crop suitable for unproductive hilly soils and the quick maturity makes buckwheat well adapted to a late sown crop. It was because of these peculiarities that buckwheat found it place in the crop culture of Kashmir. It was generally raised as a makeshift crop in view of the uncertain irrigation\textsuperscript{118} but in upper areas its cultivation continued on permanent basis.\textsuperscript{119} Contrary to other summer crops such as maize, foxtail millet or broom corn, buckwheat had a limited consumption and was accordingly cultivated. It was milled into flour for bread and fed to poultry and horses as well.\textsuperscript{120}

There were two different varieties of buckwheat in Kashmir i.e. sweet buckwheat (shirin trumba) and sour buckwheat (taluq trumba).\textsuperscript{121} The techniques

\begin{itemize}
  \item \textsuperscript{113} Ibid.
  \item \textsuperscript{114} Joseph Needham, Vol. VI, part II, p. 182.
  \item \textsuperscript{115} Encyclopedia Britannica, Vol. II, p. 322.
  \item \textsuperscript{116} Charles Singer, op. cit, Vol. III, p. 125.
  \item \textsuperscript{118} Lawrence, op. cit, p.338.
  \item \textsuperscript{119} Ibid., p. 338.
  \item \textsuperscript{120} Ibid.
  \item \textsuperscript{121} Diwan Kripa Ram, op. cit., p. 282.
\end{itemize}
of cultivation of both these varieties were same but they had different areas of application. The former was raised in lower areas and the latter in the upper one.\textsuperscript{122}

Cultivation of buckwheat started in June when all possibilities of rice cultivation vanished from the eyes of cultivators.\textsuperscript{123} The land was seeded with the ratio of $\frac{1}{2}$ kg per kanal. The seeds were stamped in between tillage’s which numbered from two to three. The method of sowing was broadcast. Since the seeds of buckwheat were densely sown there was no hoeing, weeding or pilling earth around the plants. In fact it was cultivated simply with out any marginal labour involvement. The role of cultivator seized with sowing and there after it was the condition of soil and timely rains that framed the productivity of buckwheat.\textsuperscript{124}

**MILLETS**

**Foxtail Millet (shoul) and Broom Millet (pingi):** The centre of origin of foxtail millet and broom-corn is China\textsuperscript{125} where they had been cultivated since Neolithic times.\textsuperscript{126} Both these millets are exotic to India and were introduced in the remote past from China.\textsuperscript{127}

Archaeological evidence of these millets is available in Kashmir around 2000 BC.\textsuperscript{128} But we don’t have any recorded evidence recording the date and direction of their passage in Kashmir. A casual reference of broomcorn exists in

\begin{flushright}
\textsuperscript{122} Lawrence, op. cit., p. 338.
\textsuperscript{123} Ibid., p. 338.
\textsuperscript{124} Based on the discussion with my informants.
\textsuperscript{125} Joseph Needham, Vol. VI, part II, p. 132.
\textsuperscript{126} Ibid., p. 434.
\end{flushright}
plus sixth century religious work- Nilmatapurana.\textsuperscript{129} It seems that probably Kashmir received these crops from China via Central Asia through Central Asian emigrants as Kashmir had intimate relations with this region since prehistoric times.

The cultivation of foxtail millet or broom corn was largely a draught period phenomenon in Kashmir. They were in fact emergency crops raised as a dernier resort when neither rice nor wheat and barely was possible.\textsuperscript{130} Given the compulsive nature of their cultivation at the cost of rice foxtail millet and broomcorn cultivation was not welcome gesture for a peasant. It has become proverbial in Kashmir to metaphorize a state of ruination by saying \textit{piing voven} or \textit{shol voven} meaning sowing of foxtail or broom corn.\textsuperscript{131}

Except some negligible cultivation in the hilly areas the assured supply of water has made foxtail millet and broom corn almost non existence in Kashmir at present.\textsuperscript{132} Both these millets had two varieties-reddish and white- and presented almost similar pattern of cultivation.\textsuperscript{133} However, there was a little gap in the time of sowing. Foxtail millet was sown in April-May\textsuperscript{134} and broom corn in early June.\textsuperscript{135} The seeds were put into ground by two different ways either strewed on un-ploughed land and mingled with soil by subsequent tillage or the land was first ploughed, the seeds were sown and mixed with soil by one or two more ploughing. With regard to the seed-land ratio it varied from 1 to 1 ½ kg per \textit{kanal} in case of \textit{ping} and ½ to ¾ per \textit{kanal} in case of \textit{shol}.\textsuperscript{136} The grains of \textit{shol} were

\begin{itemize}
\item Lawrence, op. cit., p. 337.
\item At present the cultivation is reported from Gudr Bandipora and Gund, Sonamarg.
\item Local informant.
\item Lawrence, op. cit., p. 337.
\item Ibid., p. 338.
\item Information provided by cultivators.
\end{itemize}
minute and therefore a minor quantity had a large covering.

**FIBRE CROPS**

**Cotton (kaps):** Cotton is an endemic fiber plant of India.\(^{137}\) It was first cultivated by Indus Valley people about 3000 B.C.\(^{138}\) Fragments of cotton cloth have been recovered from Harapan site of Mohenjodaro.\(^{139}\) From India the cultivation of cotton spread to other parts of the world. It was introduced in middle east around 700 B.C.\(^{140}\) In Central Asia the archaeological evidence of cotton are not earlier than 706 A.D.\(^{141}\) It is a matter of surprise that China lying very close to the centre of origin of cotton adopted its cultivation very late during Sung period (960-1279 A.D).\(^{142}\)

The history of cotton cultivation in Kashmir is very obscure. There is no mention of it in Nilmatapurana nor has any archeological finding of cotton cloth or seed so far been detected in Kashmir. The earliest textual evidence of cotton comes from the last *Tarang* [book] of Rajatarangini which covers the history of Kashmir from 1100 A.D.\(^{143}\) onwards. It is late in 15\(^{th}\) century A.D. that the cultivation of cotton for textile obtained by the involvement of gins is versified by a famous Kashmir *shavite* saint Laleshwari.\(^{144}\)

*Lalla, set forth like a cotton flower hoping to bloom*

*The gin (kaid) and cardet (dhum) gave me blow hard*

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139. Randhawa, op. cit., p. 179.
140. Wulff, op. cit., p. 178.
143. *Kalhana's Rajatarangini*, book viii, no. 245. The causal reference of cotton by Kalhana should not be taken to mean that the crop was really cultivated in Kashmir. It might have been imported in a finished form from the neighboring world.
144. Lal Ded [Kashmiri], Cultural Academy Srinagar, p. 158
Then I was stretched on a new handle (zaij) light
To me got suspended (weavers) foot in weavers loom

By that time cotton seems to have been an established crop in Kashmir. It is clear that cotton was relatively a new comer to Kashmir but whom goes the credit of its introduction can not be set up beyond probability. Cotton was either introduced by Kushans around the beginning of Christian era because they simultaneously ruled over Kashmir as well as Sind the home of cotton. Or cotton was introduced after Kashmir developed close contacts with Muslim world. Needless to say spread of Islam largely contributed in the transfer of crop technology to different corners of the world. 145 Until the introduction of machine made textiles in Kashmir, cloths were exclusively made from wool and cotton which were used in winter and summer respectively. For the procurement of cotton textiles (khadir) cultivators normally reserved a piece of land for its cultivation. And it is no wonder to find this crop having been cultivated through out Kashmir on a large scale. During 19th century there were 16, 489 acres under its cultivation. 146 However, except the names which the fields received after the cultivation of cotton, the crop has now disappeared in Kashmir.

Cotton was a short plant of about two feet high. It received comparatively a better treatment than other rain fed crops. It was a complementary crop raised on regular basis as a kharif one on the dry land. There were two varieties of cotton red and white, white being more popular. 147

OLEIFRIOUS CROPS (TEL-I-PHAL)

Kashmiris extracted oil for cooking as well as lighting from a number of

146. Lawrence, op. cit., p. 240.
147. Based on the discussion with cultivators.
plants which included sesame, flax, brassicas, cotton seed, nuts and apricots. A noticeable variation existed in the magnitude of the cultivation of these oil seeds. Flax for instance occupied larger acreage than others [21, 485 acres] not because of linseed that it produced but it supplied a nutrition fodder for cattle. Sesame was raised on 3727 acres. It was however rape the chief of the oilseeds which was consumed for cooking purposes larger than other oilseeds. Its cultivation extended to about 6387 acres. Over all nearly 6.50% of the area under crops in 19th century Kashmir was under the cultivation of oiliferous crops which not only sufficed the local requirements but also fetched considerable revenue amounting to Rs. 23020 in 1886-97 and Rs. 235640 in 1890-91 from the export sector.

**Flax (alish):** Flax, a fibre as well as oil producing crop originated from West Asia. It was cultivated by Egyptians from the ancient times. Flax has been recovered from Alisher in central Anatolia at a level dating back to about 3000 BC. Chinese imported this crop from Turkistan around the beginning of christen era. And in India it is believed to have been brought by Aryans and probably same people introduced it in Kashmir. Flax was cultivated in Kashmir mainly for extracting oil and oil cakes (*kheij*). In ancient times it formed an important source of fibre also.

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148. Lawrence, op. cit., p. 240.
149. Ibid., p. 240.
150. Ibid.
151. Ibid., p. 388.
154. Ibid., p. 279
155. Maurice Daumas, op. cit., p. 283
157. Lawrence, op. cit., pp. 339-40
158. *Kalhanas Rajatarangini*, book vii, no. 1193
**Rape (tilgogal):** Rape occurs wild as a weed from Western Europe to eastern China.\(^{159}\) No one knows when it was cultivated for the production of oil but the evidences of its cultivation dates back to earlier times. Rape was cultivated in Europe from Neolithic times for its oil.\(^{160}\) In India and China the brassica cultivation is attested by the archaeological findings from the Indus valley site of Chanodaro [Sind]\(^{161}\) and Neolithic site of Pan-Pho in Shensi.\(^{162}\) Evidence are so thick that nothing can be said with certainty regarding the cultivation of rape in Kashmir except that it perhaps entered into Kashmir from the bordering areas. There are no two opinions regarding the fact that it was cultivated in Kashmir from ancient times. Nilmata Purana mentions its use as an ointment.\(^{163}\)

Rape had three different varieties – *tilgogal* [brassica campesteris], *sarshif* [,, ,, sub sp] and *sindij* [, ,, sub sp].\(^{164}\) Of all the three varieties *sarshif* was sown in early spring. *Tilgugal* and *sindij* were sown in autumn. It may be mentioned that *sershaf* and *sindij* witnessed a meager cultivation than *tilgogul*.

**Sesame (tael):** Sesame is a native crop of Africa.\(^{165}\) It was cultivated by Indus Valley people who probably received it directly from Africa or via Mesopotamia.\(^{166}\) Sesame was a principal source of edible oil of Sumerians and is recorded by the name of *si-gis-mî* in Assyrian tablets.\(^{167}\) It became known in Persia during Achaemenian times [6th century B.C]\(^{168}\) and in China in second

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161. Randhawa, op. cit., p. 179.  
164. Lawrence, op. cit., p. 339.  
166. Ibid., p. 168.  
167. Ibid., p. 168  
168. Wulff, op. cit., p. 245.
century B.C\textsuperscript{169} where it came to be known as the king of oil seeds.\textsuperscript{170}

No less importance was enjoyed by sesame in Kashmir from the immemorial times. What is interesting to known is that it has been repeatedly mentioned in our earliest religious literature which speaks a great antiquity about its cultivation in Kashmir.\textsuperscript{171} In the absence of sources it is difficult to say where from sesame cultivation reached to Kashmir.

**VEGETABLES (SUBZI)**

Lawrence writes;

‘vegetables are of great importance in Kashmir and every villager has a small garden plot, where he raises wealth of food with very small effort………..; thistles, nettles, the wild chicory, the dandelion-in fact, every plant which is not poisonous goes into the cooking-pot.’\textsuperscript{172}

Traditionally two main sources of vegetables were prevalent in Kashmir-wild (\textit{khud rou}) and cultivated (\textit{kashti}). Vegetables gathered wild included \textit{wopal hak} [\textit{pipsacus inermis}],\textsuperscript{173} \textit{gula}, \textit{kriz}, [\textit{piouscorea deltoidea}], \textit{nuner}, \textit{lisa}, \textit{abuj} [\textit{rumex}], \textit{sutsal} [\textit{mulva rotundifolia}], \textit{hund} [\textit{cichorium intybus}], pompahkan [\textit{rheum}], \textit{hadder} [\textit{agaricus}] and morel (\textit{kanaghchie}).\textsuperscript{174} These wild potherbs grew extensively on uncultivated land, pastures and orchards in the spring and greatly relieved the common populace from the general relish scarcity in the early spring. They were not only cooked during the time of their season when they were available in the field but they were also dried and preserved in \textit{tsarahs} [rope of vegetables] for winter. Most of these potherbs were attributed with medicinal

\begin{flushleft}
\textsuperscript{169} Ibid., p. 245
\textsuperscript{170} Needam, Vol. VI, part II, p. 525
\textsuperscript{171} Nilamata Purana, Vol. II, no. 499-500,507,516.
\textsuperscript{172} Lawrence, op. cit., p. 346.
\textsuperscript{173} \textit{Kalhanas Rajatarangini}, op. cit., p. 193.
\textsuperscript{174} Lawrence, op. cit., pp. 72-73.
\end{flushleft}
values.\textsuperscript{175} A good number of vegetables like \textit{bumb} [nymphaea stellata] and \textit{nadru} [nelumbium sp.] were procured from the water bodies like lakes and \textit{numbles} [swamps].\textsuperscript{176}

No less was the magnitude of domesticated vegetables. These vegetables of Kashmir included both root and leaf vegetables, bulbs and tubers. Since vegetables were a matter of daily necessity their cultivation was an unavoidable phenomenon. The winter months characterized by the scarcity of pot-herbs further added to their importance. It is not for nothing that a customary practice of preserving vegetables for cold season, by various methods keeping in view the nature of vegetables, prevailed in Kashmir. Generally perishable varieties like tomatoes, knoll kohl and bottle guards were cut into slices and dried on willow plates (\textit{tsker}). Turnip, carrots and reddish were stored in ditches (\textit{kho}) dug in the courtyards.\textsuperscript{177} Drying of vegetables in summer was an important activity of women folk in Kashmir.

Baring a small section of people called \textit{arm}, \textit{milyar} [vegetable grower] who lived within or on the fringes of urban centers and professed vegetable cultivation as a consequent of close market with enormous demand, the cultivation of these essential commodities in Kashmir was by and large confined to a pre-eminent piece of land, known as \textit{vaar}. Every cultivator possessed a \textit{vaar}. It was a small field with a single entry and closed on all sides by mud walls (\textit{duos}) as a safeguard against theft and cattle. It catered all the flavor requirements of cultivator. Given its crucial importance it was comparatively better manured and always situated in the vicinity of residence. Womenfolk in particular had a close attachment with it.\textsuperscript{178}

\begin{flushright}
175. Ibid., pp. 75-76.
176. Ibid., p. 72.
177. Personal observation.
178. Local informant
\end{flushright}
Except a few potherbs such as potato, tomato and chili that are New World crops and entered in Kashmir in 18th and 19th century, the history of all other vegetables in Kashmir is an unresolved problem. Our earliest recorded sources give a general term of ‘vegetables’ but do not identify any one. Kalhana no doubt mentions the name of a vegetable (upala shakha or volpal hak) but it grows wild in Kashmir. The silence of sources about vegetables in no way justifies the argument that vegetables were not known in Kashmir in ancient times. Definitely they were. But it is a fact that like other crops there was a gradual increase in the number of vegetables cultivated in Kashmir, which continued up to the modern times. It is not with out interest to know that cabbage, cauliflower and bindi were not known in Kashmir at least before the beginning of 20th century. Although it is next to impossible to give a clear date and locate the actual direction of entry of each vegetable cultivated in Kashmir but it can hardly be denied that most of them have their centre of origin in West Asia, India and America. It was from these regions that onion, garlic, carrot, reddish, turnip, gourds, egg-plant, potato, tomato and chili arrived Kashmir via Persia, central Asia or India.

The novice introduction of floating gardens (radh) by sultan Zain-ul-abidin in the 15th century was a land mark development in the history of potherbs of Kashmir. Needless to say the technology of the floating gardens has been discussed elsewhere in this dissertation however one aspect needs to be highlighted here, that is the vegetables cultivated on them. Unfortunately sources do not assist us here but one can logically presume that if not all but most of the

179. There is no mention of potato and tomato in Gulzar-i-Kashmir where as chili has been mentioned. It therefore, seems that chili arrived in Kashmir earlier than the other two potherbs.
182. No mention of these vegetables is available from The Valley of Kashmir.
vegetables cultivated on them share an inter-woven and common history with *radhs*.

The list of vegetables cultivated in Kashmir is long and exhaustive. In fact their number is in no way less than other crops. They differed markedly in their mode and season of cultivation, parts that were consumed and durability. The most commonly consumed and popular vegetable in Kashmir as today was knoll-kohl. It has been described as national vegetable of kashmir. The chief varieties cultivated in Kashmir were *karm sag, kremi hak, vusta hak* [red in colour], karnndar khanyar and hanz hak. Potatoes included two varieties- red and white. Red was most popular. It was sweet and durable. Tomatoes were also cultivated. They were very popular. They were cut into slices and dried for winter season. A good number of vegetable marrow was cultivated in Kashmir. They were grown on raised cones of earth known as *pokhar*. These *pokhars* were indicative of seeded points on a flat piece of land. Each *pokhar* was enclosed with three to four seeds. Chilies were chiefly grown by the regular gardening cultivators, and very large crops were raised in the neighbourhood of the city and the towns. Eggplant was also cultivated. Root vegetables were autumn crops. Among these vegetables turnip were cultivated on large scale. Because it’s dried slices were reserved for winter months. It was also fed to the cattle. Radish and carrot were used in *anchar*. Garlic cultivation was popular. Onion and leek were also cultivated. They were considered very important for cooking potherbs. Besides vegetables, pulses were cultivated on large scale. Pulses included white bean (*razma*), gram, *mung* [phaseolus mungo], *mah* [phaseolus radiatus], *mothi* [phaseolus aconitifolius] and peas were cultivated as

184. Lawrence, op. cit, p. 347
185. Ibid.
186. Ibid.
187. Ibid.
188. Ibid.
per need and requirement.\textsuperscript{189}

NARCOTIC CROPS

Hemp (\textit{bhang}): The categorization of hemp in intoxicant crops rather than fibre plants in the present work has been a deliberate attempt. In Kashmir the basic purpose of its cultivation was hashish rather than fibre. Hemp was an important fibre crop used in the Old World since ancient times.\textsuperscript{190} Given the evidence of large scale cultivation of this crop in Mesopotamia, Palestine and China scholars have proposed a diffuse origin of hemp, in the huge area from the Caspian and the Himalayas to China and Siberia.\textsuperscript{191}

Surely nothing with confidence can be said regarding the origin of hemp in Kashmir. However one thing is clear that unlike cereals or millets it grew wild in Kashmir. Evidences of its cultivation dates back to ancient times.\textsuperscript{192} Besides making ropes from its bark, the crop had been used to produce a narcotic substance known as \textit{charus} [hashish]. It was interesting to know that the cultivation of hemp for narcotic purpose was encouraged by Lahore Darbar (1819-1846). It fetched them considerable revenue. In 1846 the state recovered Rs. 11500 as excise duty from this crop.\textsuperscript{193}

Hemp grew wild in Kashmir without any formal involvement of cultivator. However for large propagation the seeds were some times sown in the fields devoid of this crop. The main concentration of its cultivation was along the banks of river Jehlum and Vishou.\textsuperscript{194}

\textbf{Tobacco (\textit{tamouk})}: The history of this narcotic crop in the sub-continent of India

\begin{flushleft}
\textsuperscript{189} Ibid., p. 399
\textsuperscript{190} Needam, op. cit., p. 532.
\textsuperscript{191} Ibid., p. 532.
\textsuperscript{192} Kalhanas Rajatarangini, book vi, no. 298.
\textsuperscript{193} Ganesh Lal, \textit{Siyahat-i-kashmir}, p. 37
\textsuperscript{194} Lawrence, op. cit., p. 67
\end{flushleft}
goes back to early 17\textsuperscript{th} century when it was first introduced by Europeans in Bijapur and Goa around 1605AD.\textsuperscript{195} The crop came to be wildly cultivated in the subsequent period and smoking became common.\textsuperscript{196} In Kashmir tobacco cultivation seems a late development probably introduced in the second half of the 19\textsuperscript{th} century. \textit{Gulzar-i-Kashmir}, a major documented record of agricultural products of Kashmir nowhere mentions it.\textsuperscript{197} Nor does Moorcroft an early 19\textsuperscript{th} century European traveler referred to it albeit he gives details of crops raised in Kashmir.\textsuperscript{198} The earliest mention of tobacco cultivation in Kashmir is made by the late 19\textsuperscript{th} century land settlement officers of Kashmir Walter Lawrence.\textsuperscript{199} Besides tobacco another narcotic crop cultivated in Kashmir was poppy.\textsuperscript{200} It produced opium,\textsuperscript{201} medicine\textsuperscript{202} and bakers used it for pasting the breads.\textsuperscript{203}

**HORTICULTURE**

Testifying to the skills of Kashmiri cultivator in growing fruits Walter Lawrence writes, ‘he is a good gardener and has a considerable knowledge of horticulture’.\textsuperscript{204} As we shall see in the following pages, fruit growing was a Neolithic phenomenon in Kashmir. The specimen of fruits recovered from the archaeological excavations testify to the fact that early inhabitants of Kashmir were well conversant with the food value of fruits and either raised them under their supervision or gathered them in the wild state. Nilmata Purana also writes

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\begin{enumerate}
\item Irfan Habib, \textit{The Agrarian System of Mughal India}, p. 50.
\item Diwan Kripa Ram, op. cit., p. 282.
\item Moorcroft and Trebeck, Travels, Vol. II, pp. 132-163.
\item Lawrence, op. cit., p. 345.
\item Diwan Kripa Ram, op. cit., p. 284.
\item Ibid., p. 234.
\item Ibid., p. 234.
\item Lawrence, op. cit., p. 396.
\item This practice still continues.
\item Lawrence, p. 277.
\end{enumerate}
with praise about the cultivation of ‘good fruits’ in Kashmir in remote past.\textsuperscript{205}

Fortunately a wealth of fruits with innumerable varieties flourished in Kashmir. ‘The epicure will find dainty fruits and vegetables cheaper here than perhaps in any part of the world’ comments a foreign observer. Given their abundant availability Kashmir has rightly been described as a ‘country of fruits’.\textsuperscript{206} ‘which are sufficient to break one’s resolution’.\textsuperscript{207} Broadly speaking four different kinds of fruits were cultivated in Kashmir. These included flesh fruits, drupe fruits, dry fruits and pulpy fruits.

It may be mentioned here that traditionally horticulture was not an organized and well developed industry in Kashmir. Rather it was carried more or less on primitive lines. Manuring and pruning of fruit trees did not exist at all. Gardens so to say worked simultaneously as grazing grounds.\textsuperscript{208} It is not surprising then to find some Europeans, visiting Kashmir in medieval times, resenting the comparative ignorance of the gardeners.\textsuperscript{209} Needless to say this rudimentary state of horticulture was more a flaw of communication than the agricultural backwardness of the cultivators. Geography rendered communication very difficult and consequently fruit growing became non-remunerative. In remote regions like Kashmir fruits baring a few dried one could not be exported outside Kashmir for the fear of damage caused in prolonged travel. Thus the lack of economic incentives reasonably left the cultivators unconcerned about the development of horticulture. It is no wonder that in spite of tremendous scope for horticulture in Kashmir the acreage under orchards hardly crossed over 5% of the total area under crops in the late 19th century.\textsuperscript{210}

\textsuperscript{205} Nilamata Purana, Vol. I, no. 14-16.
\textsuperscript{206} Lawrence, op. cit., p. 348.
\textsuperscript{207} Mirza Haider Dughlat, Tarikh-i-Rashidi, p. 425.
\textsuperscript{208} Lawrence, op. cit., p. 354.
\textsuperscript{209} Francois Bernier Travels in Moghal Empire, p. 397.
\textsuperscript{210} Lawrence op. cit., p. 240.
An important development that took place in horticultural sector during late medieval times was grafting locally known as *pyvnd*. This technique had far reaching repercussion on fruit production. It made the availability of best kind of fruits easy. Two different types of grafting were common in Kashmir *aurpyvand* [grafting] and *chishmipyvnd* [budding]. The former was done after transplantation and the later prior to transplantation in the nurseries. In *aurpyvnd* the stem of the plant was cut off horizontally at a convenient height, and was partially slit or opened. A scion of the desired quality was inserted into the silts without any binding but clay mortar worked up with rice husks was put around it and kept from being washed away by a cover of board slips of birch bark. The mud was moisture in a dry season. In budding the peel of the fruit tree which was to be grafted was slipped off. The young green shoot bearing a leaf and bud was put in a saucer containing milk. The saucer was taken into the orchard of the wild stock and a shoot of a wild tree was stripped of its green bark and the new was slipped on to the wild stock. It was not tied by strings and was left to take its chance.

**FLESH FRUITS (MAZDAR MEV)**

**Apple** (*ctuznt*): Apple is a best known fruit tree of temperate climate. It grows wild throughout Europe except in Northern part, in Anatolia, the south of the Caucasus and in the Persian province of Gilan. Apple was considered a celebrated and excellent of all the fruits in Kashmir. It out numbered all other fruits in terms of varieties, acreage under cultivation as well as productivity.

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212. Lawrence, op. cit., p. 349.
214. Lawrence, op. cit., p. 349.
Apple tree grows wild in Kashmir and therefore it is said that it is a native plant of Kashmir. It was perhaps domesticated very late and gathered in early stages in its wild form. Concrete evidences about its cultivation in ancient past are lacking. However during medieval times it had become a part of agriculture.

Apple stands next to rice so far its varieties are concerned. There were as many as twenty seven varieties of apple. These varieties markedly differed in colour, size, perishability, fragrance and taste. These apples were named after the taste and place where cultivated or from where introduced. Several apples bore non Kashmiri names which suggest that they were brought from the neighbouring area.

The most popular apple of Kashmir was *ambru*. It was large in size, red and white in colour and lasted for long time. Another variety *mohi ambur* was like *ambur* but it was more acidic and reddish, *kadusari* was long and juicy, *doud ambur* was the sweetest and finest of all the *ambur* family. Wild apple like *tett sheker* and *malmu* were very refreshing. No less was the number of small apples known as *trel*. These included *khas trel, badshah trel, nabid trel, janbaz trel, sil trel, maz trel, khatoon trel, mendkam trel and kakzi trel*. The other varieties of apple were *samarkandi, balpori, zafarkhani, bulbul tsunt, saeeb ashmi, vanka aosari, hardu, saeeb indergami, shivander, vobakhotani, and chouek tsunt*.

**Grapes (daach):** The history of viticulture is as old as that of man. Details of

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216. Lawrence, op. cit., p. 349.
218. Lawrence, op. cit., p. 349.
219. Ibid., p. 349.
221. Ibid.
grape and wine production figured in the mosaics of the 4th (2400 B.C) 17th and 18th dynasty of Egypt. Botanists agree that grape wine is at home in the regions south of the Caucasus, in Armenia and North Persia.

Archaeology confirms the cultivation of grapes in Kashmir as early as 1500 B.C. The relief depiction of grape bunches on the Harwan tiles bespeak of paramount importance of this celebrated fruit of Kashmir around the beginning of Christian era. Hieun Tsung who visited Kashmir in the 7th century A.D mentions po-tan [grape] as one of the principal fruit of Kashmir. Nilmatapurana referred grapes as draksa, a relishable food and a gift for the gods and the Brahmans. A festival in honour of syama- personified vine creeper is also mentioned. Kalhana while discussing the rarities of Kashmir says that ‘grapes’ grown in Kashmir are difficult to find even in heaven.

The grapes of Kashmir are believed to have been introduced from Middle East through Central Asia. Our earliest sources present a general term of grapes without having taken into cognizance the different varieties of the fruit. It is therefore, quite impossible to detect the different varieties. However, it is clear that there was continues increase in the varieties of the grapes of the Kashmir. In the post Sultanate era new varieties of vine were introduced from the neighboring world. Out of twenty varieties of grapes namely husani, kath-a-husani, shibi, mesqa, kishmish, bab-i-kul, aupiman, kavir, ponfaki, haridey, kaachagar, shakeri, match kaver, doonduj, budhkara, ameri, anguri, safad, kunhapini, ________________

225. R. C. Kak, Ancient Monuments of Kashmir, plate no. 34.
227. Nilmatapurana, Vol. I, p. 120.
229. Paleoetholobotany, op. cit., p. 146.
krinkani and sund cultivated in Kashmir till recent times,\textsuperscript{230} husani, masqa, kishmish, and sahibi were introduced from Persia where these varieties were extensively under cultivation.\textsuperscript{231}

After 1586 A.D when Kashmir became a part of a large political entity of Mughals and contacts with outer world enormously increased grapes began to be exported from Kashmir to serve the royal kitchen at Agra. Abul Fazal the court historian of Emperor Akbar writes, ‘the markets are stocked with Kashmiri grape. Kashmiris bring them on their backs in conical baskets which look very curious.’\textsuperscript{232} Even at present one can find grape cultivation being carried by one or two persons in every village. However, the area known for viticulture in Kashmir during the period of our study was Repor, a village situated in the north-east of Srinagar. It was not a plane area but sloppy one with stony soil.\textsuperscript{233}

**Pear (tung):** Pear is a native fruit of China.\textsuperscript{234} It has been under cultivation from the pre-historic times. Pear is said to have been derived from the wild pyres communis.\textsuperscript{235} Pyres communis grow wild in Kashmir.\textsuperscript{236} The earliest evidence of its cultivation in Kashmir comes from the accounts of Hieun Tsung.\textsuperscript{237} Pear was perhaps domesticated locally by the early inhabitants of Kashmir. Several of its varieties were introduced from the neighbouring world at different periods of time.

There were twenty seven varieties of pear in Kashmir.\textsuperscript{238} Among these
varieties *nak* was a larger pear, gathered late in spring. It was exported.\(^{239}\) The *goshbug* was very sweet but did not keep for long.\(^{240}\) *Haran* was an early pear. It ripened almost with the mulberries.\(^{241}\) *Walnut* was a large pear. It was much used in the manufacture of brandy and exported in a dry condition to Punjab.\(^{242}\) Other varieties were *-koternul, sirkantag, mamatang, jajiritang, khudrun, shaladar, shurbat tang, talimlar, gulabi, nashpati, happtang aukher koteh, budana, badshah tung, krupdar, hapt tanchi, shalun tung, sabrah, tanji tulk, vah tanji, amrood turish, khahamuk tang, laryoot, tuttung and kundami.*\(^{243}\)

**Quince (*bum tsount*):** Quince is a shrub. It is a native of Persia and Anatolia.\(^{244}\) In Kashmir it seems to have come from Persia because its local name *bum tsunt* is an amalgamation of two words, *bum* and *tsunt*. *Bum* is a corrupt form of *bahi* [Persian name of quince] and *tsunt* simply means an apple. It is like apple so people called it *bum tsunt*.

Quince was cultivated on large scale in Kashmir especially around Dal Lake and Lar Parang.\(^{245}\) It was cut into slices and used as a relish in a fresh as well as dried form.\(^{246}\) An important reason of its cultivation in Kashmir was to obtain seeds which pertained herbal properties and according to our source they were exported to Punjab and other parts of India.\(^{247}\)

Quince had three varieties- *shirin, turish* and *badana turish.*\(^{248}\) It was

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239. Lawrence, op. cit., p. 350.
240. Ibid.
241. Ibid.
242. Ibid.
245. Lawrence, op. cit., p. 351.
246. Local informant.
stage in nursery condition for three to four years and then transplanted in spring propagated through stem cutting. These cuttings (kalm) were raised in the initial to the concerned place. Fruiting started two years after transplantation. A well grown plant yielded about 100 to 125 kg of fruits per season.²⁴⁹

**Raspberries, black berries, bramble (chanch):** A generic term of chanch is used for all these fruits in Kashmir. Chanch was a thorny shrub and grew widely on riverbanks, around wells, road sides and field acclivities. Its propagation was done by birds that fed upon it and excreted undigested seeds which often germinated. It is therefore, not with out reason that despite the apathy of cultivators there was [and is] a rampant growth of chanch in Kashmir.

**Mulberry:** Mulberry was a native of China and was cultivated in Asia from the earliest times.²⁵⁰ It was cultivated in Kashmir since Vedic times. At the performance of vajnopavita ceremony, a sacred fire was burnt into which besides many other incenses, a large number of twigs or cuttings of some sacred trees were put. In India such twigs were obtained from trees like peepule, khadria, shami, banyan etc, but from mulberry in Kashmir.²⁵¹ Since vajnopavita took its origin from Vedas which were written more than a thousand year before the Christ, we are on a firm ground to believe that the mulberry tree existed in Kashmir since Vedic times. As in China, in Kashmir too these trees were worshipped by the people with great reverence.²⁵²

Besides sustaining the sericulture industry, mulberry served a number of other purposes. It supplied a cherished fruit which greatly relieved the common populace from food scarcity. Several of my respondents whom I talked to during

²⁴⁹. Local informant.
the field study said that during food scarcity and famines they relied on mulberry fruit. Besides other reasons food was an important consideration before the planters of these trees. That is why this tree was commonly available on wasteland and road sides. Some of the trees were enormous in size with at least two to three hundred years of age. The berries were reserved in dried condition and ground into *satu*.\(^{253}\) No less was the use of mulberry wood for manufacturing agricultural implements.

Cultivation of mulberry was a state monopoly in Kashmir. Baring a few wildly grown, the plants were distributed by government agencies among the rural peasantry. Owing to the state control the cutting of mulberry was strictly prohibited. There were eight varieties of mulberry in Kashmir. They were *siya* [black], *safait* [white], *bedana*, *cherry tut*, *shah tut*, *tut kabuli*, *choka tut*, and *tut du shak*.\(^{254}\)

**DRUPE FRUITS (*ANCH-I-DAR MEV*)**

Drupe fruits include apricot, peach, plum and cherry [sweet as well as sour]. They are also known as stone fruits because their mesocarpic portion encloses the pits. There is no archaeological evidence of plum and cherry being cultivated in prehistoric Kashmir but the antiquity of peach and apricot can hardly be doubted. The evidence of their cultivation in Kashmiri dates back to early Neolithic phase of Burzohom (2375-1700 B.C.).\(^{255}\)

Apricot and peach were native fruit of China.\(^{256}\) It was from this celestial kingdom that these drupe fruits diffused in Central Asia, Persia, Armenia, Greece

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253. Based on interview with Mohammad Sideeq Bhat, village Malur, Srinagar.
254. Local informant.
256. Hans E. Wulff, op. cit., p. 244.
and Rome. \(^{257}\) It is not without interest to know that apricot and peach known as *hsing* and *thao* in Chinese\(^{258}\) are popular to this day by the name of *tser* and *tsunan* in Kashmir. These names demonstrate a considerable phonetic resemblance pointing to their possible route of diffusion in Kashmir.

Peach had three varieties –*shirin dana*, *taluk dana* and *shaftalo-beaustikhum*\(^{259}\) and apricot had seven varieties - *shirin dana*, *khobani*, *potachur*, *halvaye*, *turish qucher* and *aunbcher*.\(^{260}\) Besides being taken in a ripened as well as dried condition, apricot pits also produced oil.\(^{261}\)

There is a controversy regarding the introduction of cherry in Kashmir. Jahangir credits their introduction into Kashmir to Mughal *jagir* holder Mohammad Quli Aisher who brought them from Kabul.\(^{262}\) However this statement is not corroborated by historical evidence. Even much before Jahangir, Haider Duglat recorded their cultivation in Kashmir during 15th century.\(^{263}\) On the other hand Lawrence claims the introduction of cherry from Europe via Arabia, Persia and Afghanistan.\(^{264}\) Bitter cherry (*aulach*) grows wild in Kashmir and seems to have been domesticated indigenously. It has been referred as *kapitha* in Rajatarangini.\(^{265}\)

Plum (*aur*) too was a native fruit of China.\(^{266}\) It was also cultivated in Russia, Central Asia, Persia, Caucasus and the Balkan.\(^{267}\) Probably like other

\(^{258}\) Ibid.  
\(^{259}\) Diwan Kripa Ram, op. cit., p. 294.  
\(^{260}\) Ibid, p. 294.  
\(^{261}\) Lawrence, op. cit., p. 348.  
\(^{262}\) *Tuzuk-i-Jahangiri*, trans., by Rogers, p. 145.  
\(^{263}\) Mirza Haider Duglat, op. cit. p. 425.  
\(^{264}\) Lawrence, op. cit., p. 348.  
\(^{266}\) Needham, op. cit., p. 548.  
fruits plum came from Persia or central Asia. Plum had three main varieties *kasana*, *alvi zard* and *alubukhara.*

**DRY FRUITS (KHUSHIK MEWW)**

**Walnut (dooen):** Walnut grew wild in Greece, Asia Minor, Persia, in Himalayas and China. The palio-pleistocence and post glacial deposits of Kashmir have yielded carbonized woods, leaf impression and pollen grains of *juglans* spp. variety. Evidences of *juglan* ragia variety of walnuts have also been recorded from the archeological sites of Burzohom and Semthan. The remote antiquity of walnuts in this Himalayans region presupposes that the fruit might have been domesticated locally.

Walnut formed an important agricultural product of Kashmir. It was cultivated throughout Kashmir. However, in central parts around river Jehlum density of cultivation was comparatively thicker. The reasons were purely environmental. Walnut was not adaptive to damp soil and in the low lying areas soil often happened to be damp. It was, therefore, mainly cultivated on the dry waste lands and *karewa* slopes. These tracts were abundant in the upper areas of Kashmir.

Contrary to the present times when walnut happens to be an important cash crop in Kashmir, in past it was used for extracting oil for cooking and lightening. During famines it also supplemented the food requirement. Its

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268. Diwan Kripa Ram, op. cit., p. 294
269. Singer, op. cit., p. 358
272. Lawrence, op. cit., p. 352.
274. Ibid., p. 30.
oil was paid as revenue to the state.\textsuperscript{275} The stem of this tree served as raw material to the world famous wood carving industry of Kashmir.

**Almond (badam):** Almond is a native crop of Persia\textsuperscript{276} where from it spread to Europe on the one hand and to China and India on the other.\textsuperscript{277} There is least doubt that almond was an exotic crop in Kashmir introduced from the broad belt of north–western regions of Kashmir. Its cultivation in Kashmir is proved by archaeological evidence from Burzohom.\textsuperscript{278} The lack of recorded evidences of almond cultivation of Kashmir points to the fact that this dry fruit was cultivated very thinly in pre modern times. Three different varieties of almonds- *khar badam*, *shirin badam*, and *talik badam*- were found in Kashmir.\textsuperscript{279} It was the *shirin badam* that was most favoured and cultivated on large scale.

**PULPY FRUITS (KEKER-I-DAR MAV)**

**Melons (khurbuz) and watermelon (hindwand):** These annual fruits of cucurbitaceas family are native crops of tropical Africa.\textsuperscript{280} They have been depicted on the Egyptian paintings dating from the time of pyramids.\textsuperscript{281} They are cultivated in China, India, southern Russia, southern France, Africa and Central Asia.\textsuperscript{282}

These pulpy fruits seem to have been introduced in Kashmir from Central Asia. Watermelons were cultivated in the vicinity of Srinagar and melons in Narambagh near Shadipora. The water melons of Kashmir were of high

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\textsuperscript{275} Lawrence, op. cit., p. 353. \\
\textsuperscript{276} Wulff, op. cit., p. 245. \\
\textsuperscript{277} Ibid, p. 245. \\
\textsuperscript{278} Sankalia, op. cit., pp. 300-303. \\
\textsuperscript{279} Kripa Ram, op. cit., p. 294. \\
\textsuperscript{280} Encyclopedia Britannica, Vol. 23, p. 288. \\
\textsuperscript{281} Ibid., Vol. 23, p. 288. \\
\textsuperscript{282} Ibid., p. 288.
\end{flushright}

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standard. They were even supplied to the Mughal court.\textsuperscript{283} Jahangir speaks highly about the sweetness and delicacy of watermelons and melons of Kashmir.\textsuperscript{284} Likewise Moorcroft wrote in early 19\textsuperscript{th} century that ‘sweet and well flavoured melons’ were found in Kashmir.\textsuperscript{285}

**Pomegranate (\textit{daaen}):** Pomegranate grows wild in stony ground in Persia, Kurdistan, Afghanistan and Baluchistan.\textsuperscript{286} Throughout orient this fruit has since earliest times occupied a position of prominence. Its hard shell provided vessels like cups and small boxes to middle Bronze Age Palestinians [C. 1650 B.C].\textsuperscript{287} In Kashmir pomegranate has been under cultivation from remote past. It is mentioned as \textit{daedima} in \textit{Nilamata Purana}, an offering for the god Vishnu.\textsuperscript{288}

It was probably from its centre of origin [Persia] via Afghanistan that this fruit reached to Kashmir. This is evident by the resemblance in soil properties in the two regions. As in Persia a stony soil with pottery pieces was considered suitable for this plant in Kashmir.

Pomegranates were cultivated in Kashmir on large scale. There was hardly any locality where this fruit was not found. However the notable areas known for its massive cultivation were Baghwanpora Lalbazar Srinagar where the ruined gardens of pomegranate still survive. Pomegranate was a favourite fruit and its rind was used as dye.\textsuperscript{289} Six different varieties of pomegranate namely \textit{shirin}, \textit{tulaq}, \textit{jagir}, \textit{katha}, \textit{jalalabadi} and \textit{hedaan} were cultivated in Kashmir.\textsuperscript{290}

\begin{itemize}
\item \textsuperscript{283} \textit{Ain-i-Akbari}, Trans. Bloachman, p. 68.
\item \textsuperscript{284} \textit{Tuzuk-i-Jahangiri}, Trans. Rogers, p. 145.
\item \textsuperscript{285} Moorcroft and Trebeck, Travels. Vol. II, p. 144
\item \textsuperscript{287} Singer, op. cit., Vol. I, p. 372.
\item \textsuperscript{288} \textit{Nilmatapurana}, Vol. I, p. 120.
\item \textsuperscript{289} Lawrence, op. cit., p. 68.
\item \textsuperscript{290} Diwan Kripa Ram, op. cit., p. 294.
\end{itemize}
SAFFRON (KONG)

This most celebrated crop known as kong in Kashmir, saffron in Arabic and kasharo in Sanskrit has a unique importance among all the crops cultivated in Kashmir. It has not only been repeatedly mentioned by local and foreign authors but it is the only crop of Kashmir whose origin is shrouded in a mythical legend. According to legend a physician Wagabatta by name received a bulb of saffron as a reward from Naga Takshaka after being cured from a long ailment.\(^\text{291}\) Another legend says that saffron is the gift from a local saint.\(^\text{292}\) Be it as it may be. One thing is however clear that saffron was a praised commodity. Kalhana counted it among the five rarest thing of Kashmir. The other being icy water, learning, lofty houses, and grapes.\(^\text{293}\)

Saffron is a member of iris family. It was a native of Greece & Asia Minor.\(^\text{294}\) The chief seat of its cultivations in early times was the town of Corycus [Korghoz] in Cilicia.\(^\text{295}\) It was known in the Middle East, Egypt, Crete and Phoenicia, since ancient times.\(^\text{296}\) It was extensively cultivated in Persia right through the Islamic period.\(^\text{297}\) Saffron reached to Spain with the spread of Islam.\(^\text{298}\) It were the Mongol invaders who introduced saffron in China in 13\(^{th}\) and 14\(^{th}\) century A.D.\(^\text{299}\)

Saffron cultivation was known in Kashmir from ancient times. The earliest textual evidence comes from 6\(^{th}\) century A.D.\(^\text{300}\) Saffron is believed to be

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\(^\text{292}\) Local informant.  
\(^\text{296}\) Ibid.  
\(^\text{297}\) Ibid.  
\(^\text{298}\) Ibid.  
\(^\text{299}\) Ibid.  
\(^\text{300}\) *Nilamata Parana*, Vol. II, p. 3
on exotic crop in Kashmir. It was brought from Persia. This is clear from the fact that the other bordering regions of Kashmir either had not this crop altogether or received it at a latter stage when it had already become an established crop in Kashmir.

The garlic like this fragrant plant served a number of purposes. It was used as a perfume, bouquet, as an ink for sacred scriptures, added to coffee (*kahva*) and condiment, a special present and as a pigment for the forehead mark of the followers of Sanatandaram. Saffron was the only cash crop in the pre-modern times and formed an important item of export in Kashmir’s foreign trade. It was exported to different parts of world such as India, Tibet and Central Asia.

It is a matter of surprise that regardless of the enormous scope of saffron cultivation in Kashmir on the vast stretches of *karewas* dotted on the landscape of Kashmir, the crop did not practically spread beyond the table land of Pampore. The novice experiment of Sultans to cultivate it on Dever *udar* failed after some time. Consequently the acreage under saffron has always been limited- 10,000 to 12,000 *bighas* during Akbar’s reign,\(^{301}\) three miles or 4527 acres during 19\(^{th}\) century.\(^{302}\)

Understandably there were certain inherent causes that prevented the common peasantry to resort to saffron cultivation. Saffron cultivation was in fact a state monopoly in Kashmir.\(^{303}\) It fetched a good amount as revenue to the state.\(^{304}\) Since the peasantry had no incentive the cultivation was carried on more or less by forced labour. To quote Mughal historian Abul Fazal, ‘in former times saffron was collected by compulsory labour, they (rulers) pressed men daily,  


\[^{302}\] Lawrence, op. cit., p. 343; Kripa Ram, op. cit., p. 492.


\[^{304}\] Lawrence, op. cit., p. 236.
and made them separate the saffron from the petals and the stamens.\textsuperscript{305} It was given this great impediment in the development of saffron cultivation that Walter Lawrence wrote in 1890,\textit{s} that ‘I am afraid that the system of collection by farmers will prevent the industry from becoming popular, as during harvesting time the cultivators are as carefully watched and supervised as diamond diggers at Kimberley.’\textsuperscript{306}

Another important cause which restricted the cultivation of saffron to Pampore \textit{udar} only was its immunity from rates which dwell in beds and fed upon the sweet and juicy bulbs. This does not mean that the soil of Pampore karewa was something special and altogether different from other \textit{karewas}. Rodents didn’t flourish because the whole patch of land was under saffron crop only.\textsuperscript{307} There was no house, no tree, no other crops and no other acclivities (\textit{buth}) and therefore, it provided no shelter for rats. The crop failed to flourish in other parts of valley where it was experimented due to one or the other cause highlighted above. Interestingly the myth that the peculiarity of saffron cultivation on Pampore karewa was due to the communing of some saint became a common notion among people.\textsuperscript{308}

\begin{itemize}
\item \textsuperscript{305} \textit{Ain-i-Akbari}, op. cit., p. 90.
\item \textsuperscript{306} Lawrence, op. cit., pp. 343-44.
\item \textsuperscript{307} Based on an interview with a saffron grower Mohammad Maqbool resident of village Ladav, Pampore Pulwama.
\item \textsuperscript{308} Ibid.
\end{itemize}
LIVE STOCK

And cattle He has created for you (men): from them ye derive warmth, and numerous benefits, and of their (meat) ye eat. And ye have a sense of pride and beauty in them as you derive them home in the evening, and as ye lead them forth to pasture in the morning.

[al Quran. S. 16, A. 5-6]

What role animals played in agriculture and which animals were found in the stable of a peasant in Kashmir we shall take these questions a little latter. Let us start with the theories of domestication first. There are a number of theories regarding the domestication of animals. One theory is that the step was taken directly from hunting practices and in particular by the capture of animals for use as decoys. Next holds that the women folk having already made enough progress with agriculture used some extra food to be available to tempt hungry animals. Another theory maintains that in the condition of post-glacial desiccation the wild flocks and herds become more and more open to human influences and control.¹ The theories of Edward Hahn was that animals were domesticated for religious reasons, as symbols of a divinity or as themselves sacred, as necessary to the observance of cult, perhaps for sacrifice.² Scholars have put forward a theoretical time sequence for the domestication of the different groups. According to their analysis it were first the scavengers, such as dogs, second nomadic animals such as the reindeer, goat and sheep; third beasts for which a settled life is essential- cattle and pig; finally animals that can be used for transport including the horse, the ass and the llama.³

². R. H. Buchanan et al, Man and His Habitat, p. 59.
Our earliest written sources present a flourishing state of animal husbandry in Kashmir. For instance Nilmatapurana writes that, ‘unconquerable by the enemy kingdom, ignorant of the fears born of them, rich in cows, horses …etc. it [Kashmir] is devoid of the fear of famines.’\(^4\) There is hardly any exaggeration in these statements. Long before this mahatmya was written in the 6th century of the Christian era the craftsmen had skillfully framed the relief pictures of cows, horses, rams and a few birds like cocks and geese in different postures on fire baked floor tiles of the famous Buddhist site at Harwan.\(^5\) Besides archeologists have recovered the remains of certain animals from the Neolithic site of Burzohom excavated in 1930 and 1960 which also testifies the long history of domestication of cattle in Kashmir.\(^6\)

Given the peculiar geographical conditions the livestock of the Kashmir valley mainly included cows, oxen, sheep, poultry and horse.\(^7\) They flourished in the local climatic conditions and sufficed the requirements of the people. Cow gave milk that was called nori khoda, oxen yoked the plough, sheep supplied wool and tail and chickens sufficed the requirement of meat and eggs. Horse helped to cover the distance and defend the State. Given these huge benefits it was rightly believed by the people that mall gou muhmuk yar- animals help in testing times. It is thus not with out reason that during the period of our study people wanted to be maldar and reared as much cattle as they could.\(^8\) We find a peasant’s wretched hut and its surroundings included one cowshed, a hencoop, a

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5. S. L Shali, plate no,
7. Lawrence, op. cit., pp. 58-69
8. A general agriculture family with one hundred and fifty kanals of kharif land possessed two hundred sheep [with the ratio of five male twenty five female], four or five bullocks, at least four cows, ten to fifteen ducks and swans and not less than half a dozen poultry and almost twenty horses. Information gathered from a cultivator Mr. Ali Mohammad Khan Markundal Sonawari Kashmir.
pen (*voor*) in the courtyard and a *neigai* in the far of side of the house where cattle were tied.

The importance of live stock is attested by yet another important practice prevalent in Kashmir. That is sir names and place names. Sir names such as *dand*, *kath*, *kukar*, *khar* and *batku* are borne by a sizeable number of people in Kashmiri society [ox, ram, cock, donkey, and duck]. Certain areas and localities of Kashmir such as Dandward in Kulgam, Kukar bazaar in Srinagar, Gurvatan, etc. are known after the names of live stock.

Economic importance apart, that no doubt has always been paramount consideration, the animals find their place in the life of the people because of some religious and social factors also. In case of some furious behaviour of the climate such as protracted rains or long spells of draught people resorted to the animal sacrifice for normal weather conditions. They scarified a bull, reserved some meat for distribution and deposited some to the stream in flood. Nothing different was done in case of some sudden illness or accident of a person. Cattle served an immediate remedy. A ram or a calf was at once killed with the intention of *zovas zou* - life for life. No less strong tradition of saint sacrifices prevailed in Kashmir. For the wellbeing of the newly born babies people vowed to kill an animal at the *mazar* of some saint. At the collective level there was a particular festival of sacrifice. Almost every family bought or domesticated an animal for this purpose. Poultry had a ritualistic importance. It served as a timer and awoke the faithful in the morning. Besides it was the cock not the geese or duck that was a favourite offering for the shrine. No less important factor was the entertainment. In the pre-modern times and even at present cock fighting was a means of recreation to the rural gentry. Cattle served as dowry (*boog*) to the newly wed ladies.9

9. It is said that during his Valley tour once Nund Reshi visited a family in a rural area. After some time he inquired from the head of the family about his live stock. How many cows he had; how much milk
Live stock formed the other family of a peasant. Since that family was *naizaban* [speechless] one had to be more careful about them. That is perhaps one of the factors that ground floor was often reserved for livestock whereas family members resided on the first story. Even people slept in stables during winters.\(^\text{10}\) What is more important cattle served as a status symbol and it is not without reason that rural folk cared more for cattle than for their infants, sometimes even swore by them, at times wept and mourned the death of bullock, and quite often buried the cows instead of exposing them to scavengers.

Special crops such as willows, iris, maize and *muth* favourite fodder for sheep and oxen formed an important part of crop culture of Kashmir. Besides, the rural people were so concerned about the wellbeing of livestock that except bullocks all of them were sent to graze in alpine pastures during summer where shepherd took care of them. Besides hay was carefully cut, dried and twisted into ropes. These ropes were suspended from trees and remained dry and uninjured by the winter snows and rains.\(^\text{11}\)

The fact that cattle being so crucial for agriculture, the state always reserved big tracts of land in every village as ‘charagah’ which used to be the collective property of the whole village. This was done so that no one would encroach upon the grazing land and jeopardized the cattle rearing. The traditional Shepherds looked after the village cattle on this land in day time. A good number of boys and girls always accompanied a herd (*khuiel*) to collect the dung for fuel and manure purpose. At afternoons the herd was rested at a specific point known

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they gave. Had he any sheep? What about poultry etc. On receiving the answer that he had no live stock in his house, the great saint silently spoke to himself (*vothu pana yiitha lagukh balai*) oh! Let us leave this place; it is not safe to stay here.

10. Lawrence, op. cit., p. 363.
11. Ibid., p. 358.
as bahinvar. Whatever dung it was procured at that place it was the discretion of the herdsmen to give it to which he liked.

A gur or ganie family whose main job was to take care of cattle figured prominent among thirty six taifadars or nangars who provided different services to rural people. In return they not only received per head a portion of paddy at the harvesting time but even he gathered his daily meals from the villagers for which he visited door to door of his customers with a pot in hand and collected food early in the morning. Besides he rendered his services to the people on other important occasions also. For example at social gatherings such as festive occasions of marriages he served water to the guests. The close intimacy with the people often turned him a middleman who arranged marriages in the villages.\textsuperscript{12}

It is said that the Kashmiri cattle were conservative in their habits. A bullock bred in the low lands around the Wular Lake will fall short in condition if taken to higher villages and the kandi bullock bred in the hilly tracts will be of no use in the plains.\textsuperscript{13} Despite all difficulties people cared for their cattle with utmost concern. They tried to fed them to the best of their possibility and satisfaction, kept them in the same house in which they lived, fixed amulets in the stable to ward off bad omen for cattle, brought them back to home after dusk, didn’t like any unknown person to visit the stables, and transfer of cows after sale usually took place after dusk.\textsuperscript{14}

\begin{flushleft}
\textsuperscript{12} Local informant. It was a herdsman who conveyed to the cattle owner the date of conceiving of his cow.
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\textsuperscript{13} Lawrence, op. cit., p.358; Jonaraja in his Zainatarangini narrates an interesting episode regarding a cow of a Brahmana which was stolen from Jayapidapora. The Brahma once found the cow in Madavarajya [south Kashmir]. In order to prove the authenticity of his claim the king threw some water nuts in front of the said cow which it fondly eat which proved that the cow was from Walur area because the animals there were habitual of eating water nuts. See Zainatarangini, p. 82.
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\textsuperscript{14} Local informant.
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As a matter of fact cattle formed a part of peasant’s family. They were known as nazabein [tongue less]. They just low or bleat to register their complaint, or neigh, lowered head or followed behind to demonstrate love for their master. For the better upkeep of cattle wealth various methods were used to protect them from illness and other complexities. From the protection of ticks, mites and other parasites which swarmed during summer when cattle grazed in open a special resin was prepared. Cedar pieces were boiled in water and a risen was prepared. The pieces were removed and the mixture was again boiled for the minimum content of water. This preparation known as chova in local parlance, was sprayed or massaged on the vulnerable animals. It produced an offending smell and kept parasites at bay.  

Mosquitoes (maih) caused a serious trouble to the cattle in summers. Fumes of dung fire were used to avoid them. Incase a cattle suffered a muscle pull or dislocation of joint red ochre was applied. Cauterization was commonly used for the cure of horses. The cattle were provided salt periodically, at least once in a year. Salt was broken, moisturied and mixed with chilly and put in the mouth of the cattle. Sometimes a piece of rock salt was put in front of the cattle and they licked it.

Live stock suffered some fatal diseases also. Hulhaj was most dangerous. Diarrhea (choour), and cough were other ailments which proved fatal once they visited. However the cultivators had devised certain remedies for their cure and mainly employed the herbs available to him. Fresh bulbs of allium (gand) were mixed with paddy chaff (poi) to stimulate the estrus cycle of the cows and ewes during breeding season. Dried leaves and flowers of malva (sotzal) were boiled

15. This information was provided to me by Mr. Zaffar Hussain Khan, Asstt. Professor Department of Botany, Government College Baramulla Kashmir.
16. Local informant.
and mixed with wheat chaff and was served to goats suffering from respiratory disorder. The dried ariel parts including the leaves and flowering scrapes of taraxacum (*haend*) were boiled, the extract so obtained was served daily to cows, goat etc. after delivering for at least a fortnight to relieve from stretch of their bones, ligaments and the general weakness. The close relationship with cattle involved the people in zonotic diseases. Animals and their caretakers shared a number of diseases such as brusilecas etc. Peasants were conscious that these diseases cause damage. Thus the food infected by cat was considered responsible for the loss of memory and pots spoiled by dogs were purified by fire.

It was generally said that *chavayus gatze charvayi laguin* means feed a cattle stomach full, for a hungry cattle complaints before Creator. Cattle were fed according to a proper time schedule. Before peasants eat for themselves they fed their cattle first. The head of the family always enquired whether the cattle have been fed or not. During summers except for milking animals and traction bullocks, no animal was provided feed at station. They fed on green grass and dried rice stacks. For the rest of the day *chopans* looked after them in the grazing ground. They gathered them at a particular place known *gour vaan* situated in the vicinity of the village early in the morning and brought them back before sunset.

On return dried paddy grass, two sheaves each were provided to the cattle. However it was the winter season when special arrangement of fodder was made. Milk animals were provided both times where as non milking animals (*lahin*) were provided only one time after sunset. Besides, grass was provided three times morning, afternoons and at evening. Oil cakes were mixed with rice husk and jiggery was also fed to the cattle. Salting also took place once or twice a

18. Ibid.
19. Ibid.
20. Local informant.
year. Water for drinking was given at afternoon only. Cow was considered very valuable. Thus it was not left for grazing. All day it spent in stable or in the yard. It should have been readily available for milk. Besides it was believed that bad eye may cause damage to the cow. Whenever a cow was sold or bought transfers took place after dusk. Generally a blanket was covered on the back so that udders remain covered.

For sheep *muth* was boiled and fed in a tub (*tathul*). Iris was the most favourite fodder of the sheep. So far as poultry is considered they were released at sunrise. A fistful or two of un-husked rice was sprayed for their food. Same process was repeated at dusk when they were locked in coops. It may be mentioned here that winters were a tough time for cattle. Insufficiency of food and permanent confinement to the stables turned them weak and vulnerable to diseases.21

The unlettered rural folk had sufficient knowledge to understand the bleating or lowing of his cattle and effectively made them to understand his language also. They had devised a workable vocabulary and certain simple voices to deal with animals. Low was called *taang*, bleating *faing*, barking *voruen*, neighing of a horse *hein*, hen’s voice was called *kur kur*, swan’s *krand*, *li li* used for calf. *Hool* was a word of protest usually uttered with all power when an eagle hovered over chickens or landed to pounce and pick whosoever was caught. In order to call hen *tu tu* was said, for duck-*biet biet*, for horse *kh kha* [a voice produced by open lips, closed teeth right side of the tongue pasted with upper mouth and relaxed which produced this] and for bullock *valu volu*. For the defense against dog *dirie* was said and to invite the attention of the dogs for food the word *koosh* was used. To direct the dogs for the haunt *uskhies* was uttered. *Hary* was a common word used for the animals. It meant walk quickly.

21. Local informant.
In case the animal was guided to drink water a particular whistling was used. *Haa* was a word of caution, uttered the time cattle did some unwanted action. *Hulsa valou* meaning turn and ploughman uttered these words at every end of the furrow. The animals were intelligent (*ahbaz*). They quickly acted the way demanded whenever a particular word or voice reached their ears.\(^{22}\)

There was an institutional system for the protection of crops against the stray animals. It was a normal practice to loop a cattle or horse and tie together two *logul* [difficult to handle] animals so that they do not cause damage to the crops, don’t run hither and thither and were easily controlled or hauled back to home. However this was not possible with swan and duck. They had no such arrangement. Besides it also happened that the practice did suffer certain lapses at times. Some stray animal or a herd of birds damaged the crops. Since the animals were considered *nizaban* [speechless] it was the owner who was held responsible for the damage caused by the animals. Such animals were locked in kanji house (*phatak*), and released after fine. In case of the animals whose owners didn’t turn up even after *ishtihar* [public notice] they were auctioned.

Muzzle was used to prevent animals from damaging crops while ploughing the land or threshing the grain. It was made of iron wire or willow. There were strings on the two sides of muzzle which were tied over the head and below the horns of an animal. The mouth remained inside the muzzle and ploughing or threshing was done without any disturbance.\(^{23}\)

**Cattle- cow and bullocks:** The cattle of Kashmir were small but hardy, and for their size they did a fair tale of work.\(^{24}\) The cattle included cow and oxen .Cow was a family asset. It was called a treasure.\(^{25}\) It gave milk. Milk was not simply a

\(^{22}\) Local informant.

\(^{23}\) Local informant.

\(^{24}\) Lawrence, op. cit., p. 358.

\(^{25}\) Ibid., p. 359.
food item taken in various forms, with tea, curd, or cheese. It in fact served as a major nutrient to the mal-fed people. A month or two before the delivery, when milking an expecting cow was considered bad for the health of the fetus, were crucial. Once the cow calved prosperity returned. Female calves were favoured, males only that much who sufficed the requirement of traction. Towards the end of nineteenth century an ordinary cow of the villagers gave four seers of milk a day and could have been obtained for fifteen rupees.\(^{26}\) It may be mentioned here that milk determined the cost of a cow. The transaction generally occurred after milking the cow for there was a rule that *gav chawit, dand wayit ti gur khasit*- before purchasing milk the cow, yoke the bullock and ride a horse.

Calving started after the age of two years. For quick procreation onion were fed to cow. It was believed to prepare the cow for mating. Cows procured up to ten calves (*peein*). Rumtin [thin skinned] cow was considered prolific in milk production. It was believed that a cow which lows loudly or has large udders rarely gives milk.\(^{27}\)

Care of a cow was always the responsibility of womenfolk. they remembered the date of matting. They milked and fed cow and enjoyed a good say in the purchase also. Cows were milked twice a day; early in the morning and evening. Milk was preserved under a willow basket known as *poel*. It was a broad basket put upside down on floor with a weight on it, so that cats do not spoil the milk. For milking calf was must. It was he left prior to pressing the udders; he sucked for some time and prepared cow for free flow of milk. Whenever a milking woman, sitting on the right side, felt it hard to get milk, calf was released, it sucked the udders for a while then pulled back and milking was resumed. At the end calf was again left. It sucked for sometime and was tied to

\(^{26}\) Ibid.

\(^{27}\) Ibid.
its post far from the cow. Sometimes the calf died in infancy and the cow refused milk. In such circumstances *khaluiers* were brought. It was a grass filled skin of a dead calf. Cows licked it while the women milked her. Those cows that were habitual of self sucking a bottomless basket was put in their neck which stopped them from bending the neck to the required angle for sucking its own udders.28

Bullocks had a crucial importance for a peasant. For more food supply oxen were must. A peasant could not afford without them. They were must in every family though the numbers varied. A peasant could afford to take milk less tea but it was unthinkable to left land un-ploughed. At times when he could not get bullocks due to some reason he without caring for consequences employed a cow for ploughing land for rice cultivation.29 the importance of an ox in rural economy can be imagined from the fact that till recent past if a village boy wished another boy ill, he would say ‘may your ox die.’30 Were the precarious position of a peasant prevented him to have a couple of a bullock (*hoor*) which he envied to have, he at least kept one and formed a team with a same person of his neighbourhood. This was called *alsood* in south Kashmir and *baij* in north Kashmir. People with a big *asami* kept two teams or three oxen. In case of three, one got the rest alternatively and thus it helped in ploughing large tracts of land. Besides, bullocks helped in the transportation of agriculture goods and worked on oil press. In case a family possessed two teams it was a sigh of prosperity.

A *panjkalan* [long] bull was an ideal animal. He was quick at ploughing. He didn’t sit during work. Once trained in the work at the age of three years it served the owner for ten *haks*. Dubwukur was famous for strong and hard

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28. Local informant.
29. It was prohibited to use cow for ploughing land during Dogra Rule. See *Kashmir’s Struggle for Independence*, M Y Ganai, p. 16.
bullocks. Untrained ox was called aachur and the trained one was called mava and vastur. 31

Those bullocks that were dangerous and unpredictable they were tied by nose. Generally cattle were roped at their own point at night. Ropes were of two types-razkur and nukti. In spring season animal traders from Ponch and Rajori appeared in countryside along with the plough oxen for the sale to the peasants. Buffaloes were also domesticated. However their domestication was mainly carried by the Gujars. There was no custom for domestication in the valley proper. 32

**Sheep and goat:** Sheep and goat come from the high lands of western Asia between Anatolia and the Hindukush where three wild forms occur, all which seem to form part of the ancestry of domestic sheep and goat. 33 At the Belt cave in northern Iran domesticated sheep and goat were found in the earliest, pre-potter Neolithic occupation dated by carbon-14 to the first half of the sixth millennium. 34 In Kashmir concrete evidences both archeological and written are available regarding the domestication of sheep & goat in antiquity. From Burzohom bones of both these animals have been recovered. 35 Sheep has also been depicted on the floor tiles of famous Buddhist site of Harwan.

In Kashmir the sheep were great wealth to the villagers. It is said touir gou soni suier- sheep is gold. There were special reasons to raise sheep & goat in Kashmir. Wool was an absolute necessity to the cultivator for his winter clothing. 36 In spite of the number of sheep in Kashmir it was often difficult to

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31. Local informant.
32. Lawrence, op. cit., p. 360.
35. Aijaz Bandy, op. cit., p. 78
36. Lawrence, op. cit., p. 362.
obtain mutton in the villages, for the people wanted wool and warmth in the
winter, and the man who had plenty of sheep on his ground floor could keep his
family warm in the most bitter winter.\textsuperscript{37} It may be added here that sheep and goat
were not equally raised. Goat definitely lagged far behind in number. Truly goat
was known poor mans cow but in actual practice it was hard to raise it. In the city
goats were kept for the sustenance of infants.\textsuperscript{38} Goat is much suited to areas with
warm temperature and the cold climate of the valley doesn’t favour this animal.

Sheep was suitable in many respects. Its number increased rapidly as the
sheep lambed twice a year. Ewes dropped their lambs in spring and in late
autumn, but the spring lambs were the strongest, for they got the best food. Ewes
commenced lambing at two years, and breed till they were six years old. They
then loose their teeth.\textsuperscript{39} There were two shearings in the year, one six months
after the nauroz, and the second, from which only a small quantity of wool was
obtained, three months latter.\textsuperscript{40} The wool fleeced from sheep formed the raw
material for the fabrics and blankets and even skins were used as mattresses.
Weaving industry was solely dependent on wool. Every Kashmiri had been
called as a weaver, spinning wheels (yinder) were found in each family and every
neighbourhood had a weaver (vovur). Besides this all there was another most
crucial factor that promoted the sheep rearing in Kashmir. It was the manure
required for the rejuvenation of soil. Suffice to say rice has been a staple crop of
Kashmir. Only its bumper production ensured a hunger free life in a
geographically cut off from the world. However that was never possible out of a
\textit{phont} [weal] soil. The cultivator strictly believed that the extent of cultivation is
subject to the availability of manure. In order to have more and more land for the

\begin{flushright}
37. Ibid., p. 363.
38. Ibid., p. 364.
39. Ibid., p. 361.
40. Ibid., p. 362.
\end{flushright}
cultivation of rice and get optimum produce from soil, more manure was required which was possible only by strong herd and a packed stable. It may not be out of place to mention that manure mounds served as status symbols in countryside. Perhaps it was one of the main reasons that ‘it was only in time of dire necessity or on occasion of rejoicing that’ peasants ‘parted with his ewes.’

Peasants strictly followed the dictum that kuin tiour ti niour—even if one wheter sent him to pasture. For almost whole summer the sheep were sent to the mountain pasture (nuer). When the days became warm, and the sheep sought the shelter of the trees which abounded in every village, says Lawrence, ‘the professional shepherd made his appearance, and led the village flocks away to the higher slopes of the valley.’ Three times in the grazing season the villager took salt to the ilak, or grazing mountains. The Kashmiri believed that salt improved and increased the growth of wool, and has a proverb to that effect nuin chu muin salt means wool.

In case a sheep was missing the shepherd had to produce the head or skin of a missing sheep, or he was called upon to take an oath that the sheep was killed by a panther or some other wild animal. Failing this the chaupan paid eight annas for a missing sheep. Or he had to give the danda—another sheep in place of missing one. In certain cases the chaupan had to clear himself by ordeal. The chaupan was a distinct class, marrying among themselves, and they often protected a dishonest brother from punishment or loss of clients, so that the villager was practically at their mercy. The villager was helpless in the matter of choosing a chaupan. The institution was practically hereditary.

41. Ibid., p. 360.
42. Ibid., p. 365.
43. Ibid., pp. 362-364.
44. Ibid., p. 362.
45. Ibid., p. 361.
was obliged by custom to entrust his sheep to an appointed chaupan, or shepherd, and for each sheep the chaupan received a fee, which varied from two to three manwatas (about 2 ¾ lbs) of shali or maize. The fee varied according to the reputation of the chaupan. The chaupan received grain and one pice per sheep. He also was entitled to the wool of one out of every fifty (douf cheri). If the chaupan happened to be honest, and brought back the full number of sheep, he was given one sheep out of every fifty. Among other perquisites of the chaupan was the butter which he made from the sheep's milk. Sheep contributed to the state exchequer also. A tax of two annas per sheep known as teir dani was taken by the state.

**Poultry (koker, batk, anz):** Chicken first appear in the archeological record in the cities of the Indus civilization about 3000BC. It is quite likely that they may have been domesticated in that region, as the wild species still flourish in the foot-hills of north-west India. In most of the south East Asia, chickens are kept primarily as sacrifices and for use in divination. In many cases they are never eaten. Chickens are certainly native to south eastern Asia where their domestication no doubt first occurred. Both ducks & geese seem to have been domesticated at least twice, in Egypt and in China. The Egyptian goose seems to have disappeared from modern cultures; for all modern domesticated geese are derived from Chinese sources. China at a very early period had domesticated the hen, which slowly moved eastwards, was acclimatized in Elam and was introduced Egypt in the 18th dynasty, when the pharaoh boasts of having received [from Elam] ‘birds that give birth every day’. There is a drawing of a cock on an

46. Ibid.
47. Ibid., p. 362.
48. Ibid.
49. Cecil Curwen, op. cit., p. 36.
50. Harry Hoijer et al., op. cit., p. 356.
51. Ibid, p. 357
ostrakon of that period.\textsuperscript{52}

The depiction of poultry on the Harwan tiles testifies to the presence of a thriving culture of domesticating cocks and geese in the remote past of Kashmir. Poultry was abundant in Kashmir, and excellent fowls were to be found in every village.\textsuperscript{53} Kashmiri peasant had a special interest in poultry for it served as a source of income.\textsuperscript{54} Egg served as currency. We find the hencoops existing in the very corridor of the house. For the courtyards were never fenced and there were always chances of stealing and the danger of cats.\textsuperscript{55} A hencoop was called \textit{garus manz gari-} house within house.

One finds the distribution of poultry largely determined by the geographic factor. Cock and hen were found from pastures to plains in every village of Kashmir but ducks and geese had a different spatial distribution. They were found of water and the areas with large tracts of wet lands, ponds and lakes had a large concentration of these birds. That is why in the neighbourhood of Walur lake geese were plentiful. There was a large export of ducks to the Punjab. The best breed of fowls was found in Lolab valley.\textsuperscript{56} Within Kashmir also the tradesmen sold poultry in portable cages called \textit{dooel}. The gypsy people who visited valley annually during summer months brought novel species of fowls. They sell them to the people.

No less interesting is to know that there was a common practice of hatching the duck eggs by hen in Kashmir. In order to avoid the missing or mistaking the others poultry as ones own the ducks or geese were properly

\textsuperscript{52} Jacquetta Hawkes \textit{et al.}, \textit{History of Mankind}, p. 522.
\textsuperscript{53} Lawrence, op. cit., 365.
\textsuperscript{54} Ibid., p. 366.
\textsuperscript{55} \textit{Tarikh-i-Hassan}, Vol. I. p. 1041.
\textsuperscript{56} Lawrence, op. cit., p. 365.
marked. Some times it so happened that there were no eggs for the hen to hatch. After laying eggs hen developed incubation (*praiy*). in order to end incubation hen was socked in water. It was considered a method for its remedy.\(^57\)

During the period of our study we find the practice of *auduuk* quite common in rural area. A hen, geese or a duck was let to another person who took care of it. The said bird laid eggs and hatched them into cheese. They were divided between the real owner and the other person who had borrowed them. Division was fifty fifty but the bird let off was returned to the owner.\(^58\) Poultry suffered from smallpox during autumn which took a heavy numbers. No less damage was caused by cats. It attacked the coops in darkness and killed them.\(^59\)

**Horse** (*gour*). The history of horse is some what less clear. It is a latter domestication, perhaps copied from that of the donkey. However there is no evidence of wild horses south of the Asiatic highlands, and the grass lands of central Asia seems the most likely home of this animal.\(^60\) The horse first appears in the Middle East early in the second millennium. It was brought into regular use in Mesopotamia by the Kassi in the 7\(^{th}\) century BC and reached Egypt in about the time of Hyksos possibly through their agency; it was brought into India by the Aryan invaders perhaps two centuries later. For a long time its use, both in Egypt and Mesopotamia, was continued to the drawing of military chariots.\(^61\)

Regardless of the fact that horse was domesticated at a late stage but this animal still assumed the prime importance. Many factors accounted for it. Its passion for race suited the pre-modern society to cover the distances everywhere. In Kashmir it was the passion and the strategic location of the valley in various

\(^{57}\) Local informant.  
\(^{58}\) Local informant.  
\(^{60}\) Harry Hoijer *et al*, op. cit., p. 356.  
political geographies at different stages of its history that contributed to the promotion of horse rearing. The hilly and karewa terrain required a beast that is quick, courageous and suitable to local geographical conditions. Horse met with all these prerequisites.

Before the introduction of modern transport system the major land transport happened to be tanga which took people to different destinations. Tanga was driven by horse. ‘In the absence of cart roads, pony carriage was of great importance in Kashmir.62 Besides in rural areas it was the horse which carried manure, grains or grass and all other things from home to the field and vice versa.

Strategic setting of the Valley had a great hand in promoting horse rearing on large scale. Kashmir has always been a border territory, both as a sovereign political entity as well as part of some ‘conquest state’. Thus defense considerations had been of paramount importance in front of the rulers and they never compromised with it. Consequently horse rearing received a great flip as this animal suited the requirement of the rulers. The importance of horse in defense is well demonstrated by the Harwan tiles, where we find a full galloping cavalry men armed with a bow. Even as late as the end of the 19th century one who possessed a pony was sent off at a notice to Gilgit.63 And state maintained large grass Rekhs for pony breeding. The most prolific breeding grounds were situated towards the shores of the Wular.64

In order to ensure the safety of horse from being stolen by the traditional galwans, owners adopted two methods; they branded their horse in a secret manner. It was called khall. Only the owner knew were the animal was marked so that at the time of identification to prove his ownership he gave the right

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62. Lawrence, op. cit., p. 364.
63. Ibid., p. 365
64. Ibid., p. 364
response. Secondly they paid in kind to the *galwans* so that the safety of horse is ensured. Galwans served as guards to the horse. They knew the potential thieves and the animals and their owners were known to them. Every area had a separate galwan and in this way there was a network of galwans in the Valley. Some villages were known after their name. Ponies were made over the charge of the galwans, who looked after long strings of them on the mountain pastures.⁶⁵

The ponies of the swampy country were not so good as the indigenous breeds of the Lidar valley and the stony country of Deosar. The swamp ponies had soft feet. They were useless when they left the easy valley tracks and reached the mountain paths.⁶⁶

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⁶⁵. Ibid., p. 365
⁶⁶. Ibid.
HARVESTING AND STORAGE

He harvests who sows.

[Sheik-ul- Alam]

There were two seasons of harvesting. One for rabi crops and other for kharif crops. Rabi crops included wheat and barely oliferious crops and seeds. Kharif crops included the great staple rice, maize, pulses, and iris. No less important was the harvesting of fodder trees planted for the consumption of animals during winter.

Crops differ in terms of production, use, nature of grains and other many things therefore there was no similarity in harvesting techniques also. Harvesting was always a busy time and there was no question of delay. This happened to be an intensive working period. All other engagements were left and families—male as well as female—together engaged in harvesting. No other agriculture operation involved the different stages that were involved in harvesting. We find peasants leavening early in the morning, working for long hours without any rest, running from field to field to conduct different operations. Cut (lonun) somewhere, sheave (gundon) at other place and pile (watun) the rice in ricks at other place. Harvesting which is synonymous to autumn has thus been called a dirtiest season. In this season we find villagers almost outdoors to attend their crops. Hurd vatun or harvesting was the major preoccupation of the cultivators. It is therefore not without reason that cultivators enquired from each other hurd vorva did you gather the crops.

HARVESTING

Soon after the paddy fields turned golden in look due to the senescence process the sickles were taken to ironsmith for sharpening their teeth. Once the sickles were ready and the cultivator clear about the maturity of grains which he tested by pressing the awns with fingers and tasting them harvesting started. Selection of the day was subject to clear weather and day’s auspiciousness. Paddy harvesting had a number of stages. On the day one cutting continued all the day. Cutting generally started from right to left in rows called vouishh. In certain areas cutting from left to right also prevailed [this I have seen in Hajin Sumbal]. With sickle in right hand and the left hand busy in grabbing the rice the cultivators walked slowly in sitting posture, cut the rice in front of him and put that in rows behind. On the next day cutting was stopped at afternoon and if it seemed that rice cut a day before has satisfactorily dried it was tied into sheaves. After third day cutting (lonouin), sheaving (gundouin) and pilling (vatouin) continued simultaneously. It may be mentioned here that sheaving was generally done at late hours under moonlight. It was done so because dew turned the grass soft and it caused no scratches to hands or arms. It also checked the wastage of grains. After the rice was knotted into sheaves, then sheaves were arranged into chaak [four sheaves put together]. Then a person fixed the place for rick (gouin) and others brought the chaak and he framed ricks.

In case of rains mowing was suspended and the paddy in sheaves was piled. If the padd had not dried fully and it looked that once it is piled it may produce heat and damage the crop, then another safe method was followed. Paddy was piled in panzwards. Panzwar also was a rick. It comprised three or four partitions. The space within the partitions received sun light

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2. Friday was generally avoided for it was believed that it had gober i.e. there were chances of injury and damage.
directly and air had an easy passage. Rice dried well and did not suffer any damage.

The next stage was to shift the rice crop to the threshing ground (khal). It was resumed few days after harvesting. Peasants took some rest. Harvesting it may be added here was a hectic activity. Secondly peasants considered the warming of grain in ricks a must as it according to them matured the grains.

The land reserved for threshing crops was situated on different sides of villages. Threshing ground was always common land and every peasant had his allotted place. Crops were shifted to the ground on shoulders, or bullock cart were employed. The hectic job of collection was generally conducted on corporate basis. Neighbours and blood related families furnished the job one by one. During the operation of shift a good amount of grains got wasted. Once a person shouldered a load of rice his main concern happen to be to reach the threshing ground as soon as possible. He could not rest in between. Thus he always walked quickly with the result the awns waved up and down, struck each other and shed some grains. It was perhaps the reason that at times cultivators sowed spiked rice varieties which hardly shed the grains. It was comparatively difficult to thresh these varieties.

Huge ricks were stocked and the ricks were prepared as carefully as the bridles were prepared. Ricks round (goin) or square (banni) were meticulously framed. Square ricks were usually framed by big asamis as it accommodated large quantity of rice. The availability of limited place in threshing grounds was also a factor. Simultaneously big asamis had also big manpower available. So they prepared the big threshing boards worked on by about eight people. Threshing was not simply beating sheaves against board. It had to be carried in a balanced manner, with a proper
distribution of manpower in different engagements. Beating was always masculine job. Female supplied ration, swept the chaff on grains, knotted the sheaves together and carried head loads of rice to granaries. Granaries were at the most at a distance of three or four minutes walk from threshing grounds.

**Threshing (chambuin).** Threshing routinely commenced in the month of November. In certain cases it was done after winter. However that was done in exceptional cases. It was not a norm. Threshing point was called *vaan*. It consisted of three parts: back side for rice sheaves called *vaan var*; a plank or a log of wood in front of *vaan var* called *mund*; and the place in front of the *mund* where threshed rice assembled. It was called *asami*. The threshing point was so arranged that the people threshing rice did not face sun directly.

Work started at eight a.m. and continued till afternoon. In the mean time brief intervals were taken for the dressing of *asamis* and sweeping the chaff to one side. After beating operation, grass was piled up in ricks, the grains were cleaned by *vav puait*. Tillers in the chaff were beaten to recover grains and grains were stored in granaries. With sunset the work was completed.

Threshing in a way was a recovery season for the tiller. But it was no less so for other related people also. All *tiafadars* had to take the share of their service. The ironsmith, locality shepherd, mosque attend (*hamami*), mosque imam, community priests (*bayati peeir*), boat ferries (*karnais*) *shiqdars*, millers, barber, *merabs* were paid in kind.³

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³ The iron smith was paid 50 kg per oxen team. Locality shepherd was paid 10 kg per cattle. Mosque’s attendant (*hamami*) was paid one *trak* per adult attending masque. Mosque imam [priest] was paid two *trak* per adult attending masque. Community priest (*bayati peeir*) was paid as per choice. A boat ferry (*karnais*) was paid 10 kg per family. However it was paid in those areas where such services were needed. Barber was paid two *trak* per male head. Even one had to pay for those new born also who were born few days before harvesting. It may be mentioned here that certain functionaries like barber, boat ferries and sometimes shepherds also collected *kheir mangay* [rice in sheaves not yet threshed]
Treading (*gahais travuien*). For the other major crops like oil seeds and pulses animal labour was used for harvesting. Oil seeds (*tilgogul, sinzer*) recovered before rice cultivation was stored early in the morning. It was done so because sunshine turned the ears brittle which spelt during shift. Under dewdrops there were less chances of wastage of grains. Ricking had two important advantages. It caused spontaneous heat and turned pods weak to shad grains. Simultaneously it spared the services of cultivator to attend the most crucial crop of rice. After the cultivator was relieved of the stress of rice cultivation which always happen to be his first priority he attended the harvesting of oilseeds. The ricks were uncovered and spread on the threshing ground. Then followed the actual process of gathering the grains. A team of cattle consisting of four to eight including the *agul* [trained] and inexperienced (*acher*) were turned over grains by a person. They thoroughly trampled the pods. In order to ensure the complete recovery the crop was turned upside down. Exhausted pods were set aside and the grains were collected. For removing chaff if any winnowing was resumed.⁴

Beating (*moruien*). Maize and pulses were beaten. Maize was first stored in sheaves (*kakar*) and after the other engagements were completed the threshing of maize started. That is why the maize recovered in the month of September was generally threshed in winter when manpower was available. First the cobs were departed by hand then corn was recovered from cobs. Before this process, the covers of the cobs were removed by a special tool called *chulin* [threshing pin]. Naked cobs were then exposed to sun light for drying. Drying minimized the moisture if any that could otherwise damage the crop when stored. Besides drying facilitated the threshing work. The cobs were either put in a sack and beaten or some times it also happened that they were beaten to the grains in open without sacks.⁵

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4. Local informant
5. Local informant
**Threshing Sticks (laang).** Fruit trees like walnut and almond mostly cultivated on karewas and common lands were an important source of income. Besides it involved least labour or other investment. They fetched a sort of easy income. No wonder that every family possessed these trees. Sometimes where a tree happened to be very old and produced large quantity of nuts it was commonly owned.

Harvesting of fruit trees was quite different than other crops. In September the impact of autumn set in and the cultivators considered that *pai* [supply of soil nutrients] has stopped and therefore it is time to start collecting fruits. Harvesting the nuts was the work of only those persons knowing the techniques of tree climbing. He would select a certain point at tree, hold a long wand in hands and hit it against fruit bearing branches making them shed off already matured nuts. Most of the nuts shed their green covers (*golur*) in the process of strikes. Next to this process followed the cleaning process. The green covers of nuts were manually removed. After the completion of this process the nuts were washed in water, dried and stored.

The harvesting of nut trees happened to be a risky job. It caused several causalities. No season passed without causalities. There would hardly be any locality in Kashmir having not suffered such causalities a number of times. People avoided the climbing on Friday.

**GRAIN CLEARING METHODS**

**Winnowing fans (vav paut):** Crops like rice, wheat and barely produced a lot of chaff. Although there was a periodic sweeping of the *asami* at the time of threshing cereals but still certain ears mostly detached by the rodent bits ______________________

6. I have seen many trees after the picking season with a quantity of nuts on them, and on inquiry have found that some villager had lost his life by falling from the tree in the previous year, and all were afraid to climb the fatal walnut. Lawrence, op. cit., p. 354.
remained unbeaten and did not seize their grains. Besides this on the back side of the beating board the grains usually were full of soil, dust and chaff. At the end of day work this grain was sprinkled on asami and two person on two sides swept the dust and chaff. In spite of all cleaning methods, there was always some portion of grains that needed winnowing in order to shift the chaff, soil, and dust from the grains. Sometimes help was sought from natural winds if available and the grains were dropped on ground from shoulders height. A cultivator was not always fortunate to have winds at his hand. There was a set method adopted for the clearance of grains. Winds were generated artificially by a blanket. Two seasoned persons well versed in the art of winnowing held a folded blanket by two sides. The corners of the blanket were held in two hands. The upper corners were tightly held by left hand and below right hands jerked the blanket. In front a person dropped grains from a try slowly. The wind generated by this process tossed the grains apart from ingredients. It may be mentioned here that while selecting the posture of winnowing the direction of winds was fully taken into consideration.

Where there was a small quantity of grains winnowing trays were used. These were however operated by womenfolk. They took up some quantity in it, processed it for sometime so that chaff, soil and other elements were separated and stored the rest. We also find baskets being used for removing chaff from grains. Grains were put in a willow basket. The basket was shaked and grains were disturbed to different sides, by this method the grains found way out through the cavities of the basket and the chaff remained in the basket.\(^7\)

**Harvesting of fodder for cattle.** Fodder harvesting for animals was no less a crucial work for peasants. For they knew the challenging situation of cool and chilly winters when green grass was scarce and fields under ankle-deep snow. Besides rains and chill didn’t allow peasants to leave cattle free for roaming.

\(^7\) Local informant
Neither the traditional shepherd was available. He was off his job in late November and resumed his work again in late March. All cattle were present in the pen of peasant in winter when supplies were always scarce. This permanent situation prevailed upon the selection of crops which were cultivated. Besides he harvested as much grass as available in September and stored it in ropes and ricks hanging on trees or stored on stilts. The crops he harvested included iris (*krishm*). Sheep were very much found of it and the country of Kashmir was frequently dotted by there fields.

However where it was the question of the requirement of fodder for sheep which were raised comparatively on large scale because it provided large benefits, a special tree called willow were planted on massive scale. It was a cherished food for sheep, consumed in different ways. The willows were pruned in early autumn. Branches were twisted dried and stored on trees. During winters twists (*bachi*) were provided to sheep.

**GRAIN STORAGE**

While discussing the significance of storage Charles A. Reed, a well known authority on agriculture writes;

‘one of the first innovations found in sedentary and semi-sedentary villages is storage facilities. Storage is the key to the success of agriculture, and ultimately it made farming a more reliable and productive form of subsistence than hunting and gathering. In this way early agriculturists were able to store energy for lean periods and unpredictably bad years’.

**Importance of storage:** Grain storage method has been a paramount concern of the farming community. They devised methods suitable to grain and climatic conditions and spared no way to stock the provisions. In this endeavour certain techniques were borrowed from

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8. Local informant
without and certain methods were the result of indigenous efforts. Suffice to say that through the course of long history cultivators had felt the pulse of the production capacity of the local environment, faced the challenges of geography and tried to accommodated and adopt themselves to it with the best possible methods.

For the storage of essentials they compromised with their own comforts, readily lived in thatched huts but as for the storage of grain was concerned they were always extra cautious. Because it was ‘the only hope of survival’ and they preserved them in whatever way possible? Needless to say there were not less then seven methods of storage - *kuch, kho, zuis, kitch, lopun, yethran, daeil, math, mache, lij, noot,* and *wwor.*

**Storage technology:** Storage technology was devised in true spirit of the ethos of the local conditions. Fire, floods, official recovery and theft were main problems that haunted the cultivators in pre modern times as for the safety of the food grains were concerned. The dry climate of the autumn, the use of highly combustible substances like reeds and wood in the construction and paramount importance of fire in the daily life caused devastating conflagrations. Feudalistic setup was another challenge. A cultivator was left with minimum portion which never lost for full year. So he sometimes used pits for concealing grain from officials.\(^\text{10}\)

For chilly winters when land used to be covered under snow and the vegetable exposed to snow caused infections people devised an effective method to tackle the climatic challenge & keep the potherbs readily available. Horizontal pits known as *khou* were dug for the storage of vegetables like carrots, turnip and reddish and potato. The temperature of the earth preserved

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10. Ibid., p. 462.
them from cold which otherwise caused damage to them and rendered them unfit for consumption.

Besides there was another quite popular tradition of preserving food especially vegetables and store them for shortage season of winter. Anchar was stored in big pottery containers (math) and consumed throughout winter. No less care was given for the storage of other seasonal potherbs for their consumption in other months. Certain potherbs served as medicines and thus their storage was a must. In this regard wild vegetable such as hund, khitez, gule, abuj, woopalhak were gathered in spring, dried properly and preserved in willow containers (thuip). These containers remained hanged under roof so that exposure to sunlight exhausted the moisture. Moisture if any caused fungus to the vegetable. At the same time they also remained safe from rodents. Certain vegetable were twisted for preservation. It is pertinent to mention here that the preservation and storage of vegetables was mainly the work of womenfolk and they tested every herb for its food value. A casual visit to the countryside even at present times makes clear that how concerned people were for the storage of potherbs. Every residential building has garland of vegetables hung on its walls on the front side so that they are always exposed to sunlight. Sunlight served as a cheap and readily available preservative.11

**Animal fodder storage:** It was not merely human requirement that necessitated the storage of food items. Live stock had been a great wealth for the peasants. It produced vast benefits, labour for traction milk and meat. Besides, cattle kept the residential building warm during winters. The storage of fodder for winter months when cattle remained confined to sheds was a major concern for the cultivator. To ensure the wellbeing of his animal wealth special measures were taken to storage fodder. All possible efforts were made to get a

11. Local informant.
variety of fodders because different animals were fond of different food habits.

Willow was a favourite diet of sheep. It was not fed to cattle. Grass ropes (lav) were stored on trees for winter months. Willows were pruned in autumn, sheaved and stored on willows. Rice grass was consumed by cattle; goat and sheep did not like it. Rice grass was stored in ricks (gouni) in the threshing ground situated at a stones throw from residential house. Sometimes grass was stored in stilted ricks known as lood or katch. Stilted ricks were safe from rats, wondering animals and soil contact. Soil contact damaged the first layer either due to moisture or rodents easily shifted to the ricks and damaged it.12

Storage facilities: Numerous storage facilities were devised by cultivators for the safe and protracted preservation of the fodder both for themselves and the cattle. Storage was devised always in keeping in view the nature of crop and the purpose of usage. Largely cultivated crops like rice, wheat or maize consumed much space of storage. Storage facilities included land, pottery, earthenware and wood. They were readily available.

Baskets: Baskets were most indispensable in storage. They were light and locally available. There were not less than half a dozen different types of baskets. Most of them were used as containers in which grains were loaded to shift them to the main storage place. Baskets were general equipment and usually lifted by womenfolk on her head.

Baskets were made of osiers procured from the marshy lands and forests. Usually baskets had cavities or after some usage the willow dried, shrink and felt loose. The pours were closed by applying a leap of oilcakes or apricots. This was usually done with a particular basket known as fotur. It was of medium size suitable for carriage of rice. Baskets were carried by women folk

12. Local informant.
on their head. A base hewn out of grass of circular shape known as *aeer* was set on the centre of the head. It was circular in shape and open in the middle. It provided balance to the head load. At the same time it protected head from injury. There were different kinds of baskets- *paj, foth, kranjul, ziin*.

**Earthenware:** Earthenware such as *lopun* or *tawin* served as an import storage devise. It was all made of mud by family womenfolk. About six feet long with ½ feet top, bottom almost three feet and in the middle five feet circumference. Almost four inches thick it was immobile and usually framed on the spot where it was always left. At the bottom it used to have an exit hole from where stored items were taken out. Earthen silos almost had a capacity of three to four *kharwars*. These silos were generally used for the storage of grains reserved for seeds. For it may be mentioned here that this storage technique was resistant to fire, very economic and lasted for years together.\(^{13}\)

**Pottery:** Pottery is an important tool for storage. It seems to appear only after agriculture has been established. Pottery has been a characteristic feature of sedentary people and nomadic people least use it.\(^{14}\) In Kashmir the history of pottery goes back to 5000 BP. Burzohom site presents a vivid picture of pottery used for the storage of provisions of daily use.\(^{15}\)

The storage requirements of cultivators were different and thus different types of pots were used. For the storage of rice (*tomul*) a pot *matth* was used. For the storage of potherbs or pulses a small pot called as *liij* was used. For the preservation of seeds *vaar* was used. Sometimes large pots (*math*) measuring five ft long and four ft width with the capacity of 100 kgs of food was used for storage. A section of society known as *kral* served this requirement of people.

\(^{13}\) local Informant  
\(^{14}\) Charles Reed, op. cit., p. 539.  
\(^{15}\) Aijaz Bandy, *Prehistoric Kashmir*, pp.112-146.
In return they received a portion of grains against the sale of pots.\textsuperscript{16}

\textbf{Subterranean granaries (ziius):} In certain parts of Valley especially Pulwama and Budgam which are known for karewas and immune from floods we come across an important storage technique devised for the preservation of rice. It was known as \textit{ziius}. It was an underground storage pit dug out by local potter in the courtyard or sometimes in the floor of the house. At the top entry was small just enough for the entry of a person however below it had a space measuring about ten ft in diameter and six to nine feet in height. Basement was plane. After the pits were carved out its walls were mud coated and then a fire was burnt in it. It was baked in side so that its walls become strong and do not loose soil.

In certain cases people didn’t fire the walls of the pits. Only their sides were applied a mud coat. Before the rice was stored in autumn in these pits a fire was burnt in the pit so that incase of some moisture if any it was removed from the pits. At the same time the smoke so produced killed the insects and pests. Before rice was stored the floor of the pit was covered by grass. Besides floor the sides of the pit was also covered with grass so that soil does not mingle with the rice. As the level of the rice increased in the pit while depositing rice simultaneously layers of grass were added. This process continued till the pit was covered by grass, pressed hard and sealed by wattle and daub.\textsuperscript{17}

Each pit had a capacity of about eighteen karwars of rice. The number of pits was subject to the production of crop. Some families had more than one pit

\textsuperscript{16} Local informant.

\textsuperscript{17} Information collected during field study in district Pulwama, Budgam and Guraz
also.\(^{18}\) This grains were recovered with the help of *lunguin*. It was a small container made of osiers. It had a capacity of one to one and a half kg of rice. It was used for the recovery of rice stored in *ziis*. In order to stop the passage of grains from the gapes if any or that with the passage of time the osiers dried and felt loose, a soil cover was applied inside it.\(^{19}\)

**Mobile granaries:** It has always been a paramount concern of the establishment to supply rice to the city people engaged in state service and ‘industrial food production’. Besides cities had always been centre of political activities and favourite residential areas of the people of power. Usually the land settled for city had dense population.

For a smooth distribution government had devised ration system. Rice was collected from villages. This system was known as *mujwaza* or *kush kharid*. Rice was then stored in large boats known as *Janis-i-nav* [grain boats]. These boats were anchored near the concerned village and the rice procured was stored in it. These were spacious boats and carried almost five hundred kharvars of rice at a time. After procurement these mobile granaries were ferried back to main city and anchored at distribution point known as *ghat*. Although the tradition of mobile granaries has seized now in Kashmir but the *ghat* term has survived and it is popularly used for the ration depot.

For durability these boats were made of deodar. Each boat comprised of three compartments. Generally they were almost three feet deep, nine feet wide and more or less fifty feet long. Each boat lasted for about ten to fifteen years. Rice was generally stored open without sacks. Since mobile granaries were private in nature and were hired by public distribution department there was a

\(^{18}\) Information collected from Mr. Ghulam Rasool Wani. r/o village Chew Kalan Pulwama Kashmir.

\(^{19}\) Local informant.
lot of possibility for adulteration. The people generally complained of impurities in the rice which at times were genuine. Surely the boat owners were notorious for embezzlement. They always compensated the embezzled portion by adding equal proportion of sand or soil with the rice.\textsuperscript{20}

**Storage buildings:** Besides subterranean pits, earthenware and pottery cultivators used a special building for storage. In fact the buildings of the cultivators were of three types-residential building, cattle sheds and granaries. The granary was known as *kutch*, an erection like a huge sentry-box in which the grain was stored.\textsuperscript{21} It was all made of wood standing on stilts. Wood was used because cultivators believed that it did not allow causing spontaneous heat within the stored items and at the same time grains also dried. It may be mentioned here that after harvesting there happened to be no scope for drying rice in the open for quick milling with mortar and pestle for the temperature was low and the over caste often cloudy. Rice granary comprised of one or two sections (*gaub*). It used to have a ladder on outer side. In middle of the top there used to be a manhole which was used for the deposition of rice. In certain cases it had a hole at the bottom for taking rice out.\textsuperscript{22}

It was constructed on stilts because peasants could not afford to waste even a single grain. In pre modern times there was no fool proof plaster system which could serve as a deterrent against rodents and keep the grains soil free. Only red ochre was used. It was wood that sufficed this purpose. The bottom floor of the granary remained about three feet above ground and thus there was least chance of moisture or rodent damage. Stilts also made room for the accommodation of dogs at night and they simultaneously guarded the stores.

\textsuperscript{20} Local informant.
\textsuperscript{21} Walter R. Lawrence, op. cit., p. 248.
\textsuperscript{22} ibid.
**Round granaries:** In certain cases grains were stored in reed mats. The mats were folded in standing posture and thus the space formed was used for storage. For enhancing the strength of the mat loops were used. The top was then covered by the pieces of mat and mud. This type of storage was usually common among people involved in industrial food production activities. These round granaries were put at the top stories of the residential buildings and annually made new.\(^{23}\)

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\(^{23}\) Local informant.
CONCLUSION

There is a great future for agriculture in Kashmir.

[Walter Lawrence]

Mechanization of agriculture is just a few decades old phenomenon in Kashmir. Tractors came in eighties, chemical fertilizer a little earlier in fifties. Institutions to transmit knowledge and conduct research on farming and crops are still en route to the field. And the fields are virtually in the hands of pre modern generation. Suffice to say past is still dominantly prevailing on the agriculture of Kashmir which is manifest in its infrastructure, crop culture and practices. But yes change has set in this vital sector. One can not deny it. Though it is not altogether new, it is also not totally the old. It is on the way of a major transition. What were the peculiarities of the ‘the practice of cultivating the soil in order to produce crops’ i.e. agriculture\(^1\) that was adopted long back about five thousand years before? After studying various aspects of this what we popularly call as pre-modern or pre-mechanized phase of agriculture that continued up to the sixties and seventies of the 20\(^{th}\) century we come across some interesting lessons about the living and life of Kashmir. Surely they are many sided. Where they illuminate the basics of settlement pattern of Kashmir on the one side, on the other hand they throw no less light on the other any less important aspects of Kashmir history.

One of the major, manifest and a permanent contribution of the agriculture is the settlement pattern of Kashmir. The settlement pattern and spread of rice culture that was the somum bonum of crop culture shared a common history and the latter always promoted the former. It was not trade or

\(^1\) W. G. Moore, A Dictionary of Geography, p. 9.
routes that promoted new settlement. The fact remains that roads hardly existed before 19th century and trade was limited to certain commodities like salt or tea. Rest of the requirements of day to day use the rural people produced themselves. When one takes a cursory look on the map of Kashmir and verify the situation of villages it becomes quite clear that they are situated near some *kuhl*. The same *kuhl* supplied water for domestic use and irrigated the lands around for food supply. It is no wonder that the nearer a village was to a kuhl the more safe its fields were. Perhaps it was because of this important factor that *siraab* villages were agriculturally more fortunate than *paiaab* villages. This was probably one of the main reasons that in Kashmir history settlements initially started from upper areas and there was late settlement in the low lying areas. Suffice to say that *kuhls* determined the time and trend of settlement in Kashmir.

There is no denying the fact that right from its beginning diffusion that is spread of practices from one culture to another has been the hallmark of agricultural history of Kashmir. We find Kashmir in live relations with its rich civilizational neighbourhood. These relations served channels which enriched with innovations not only the agriculture but other innumerable aspects also. Agriculture testifies to the active participation of this apparently a small and isolated land in the broad world happenings. This participation when studied in the context of time seems not a mean achievement. Definitely distance kept communities cut off till a century ago.

The system of cultivation in Kashmir was what is known as *ekfasli*.\(^2\) The land produced only one crop in the year. Its main reason was that the climate did not allow of a complete double harvest as in the plains of India and the lower hill.....it was not thus common practice to take two crops from the land. Neither wheat nor rice allowed of a second crop the same year; they both occupied the

\[^{2}\] Lawrence, op. cit., p. 329.
soil for too many months.³

What was the single crop that was cultivated? It was rice. Rice was in Kashmir the most important crop of all so much so that it dominated cultivation in Kashmir. In fact it was the chief crop. All other crops like wheat, barley, maize or millets were supplementary or emergency crops cultivated only when and where the climatic conditions didn’t permit to follow rice cultivation. The fact remains that beyond vaar [a small plot of land used for the cultivation of vegetables] whatever land were available cultivator’s first priority was to sow rice on it. They considered no crop worthy of attention save rice. In the given circumstances one need not to be surprised if one hears peasants always repeating in daily discussion ‘let rice grow rest we can manage.’

It may be mentioned here that people’s total dependence on rice had its own social risks. It was a strong factor responsible for food scarcity because when rice crop failed there was no other crop parallel to rice to meet the food requirement of the people. The rice crop also fell victim to other natural calamities like rai, handur, davok, hailstorm and floods. What happened in such difficult situations the people often experienced famine in which the very producers of anaj [grains] became the main pry because of having been robbed of their share for feeding the people of city.⁴ In addition to this malnutrition, contagious diseases and deaths and resultant depopulation marred the life of rural people. Even during normal time’s people run short of food stuff when the crop

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4. Whether a Kashmiri cultivator works much or little, he is left with barely enough to get along on till next harvest. He is a machine to produce shali for a very large and mostly idle city population……. [He] is compelled to grow shali, and in many years to part with it below its proper market rate, that the city may be content. If the harvest is too little for both, the city must be supplied, and is supplied, with any force that may be necessary, and the cultivator and his children must go without. ….. The Pandits and the city population have a right to be well fed whether there is a famine or not at two Chilki rupees per kharwar. Lawrence, op. cit., p. 272.
was near to be harvested. This situation found its expression in the saying that *datien batta ti gonien faka*. It was because of this situation that the cultivators, though very rarely, cultivated red and white rice in the same field. Because it was a common notion among peasantry that once these two varieties were cultivated together in the same field they ran a race and that harvest came more quickly.

Unlike present times when commercialization is heavily prevailing upon the choice of crops to be cultivated and even we find horticulture especially the apple orchards swiftly encroaching upon paddy lands the agriculture of our period was subsistence in nature. Subsistence agriculture is characterized by growing crops for self use. Domestic requirements are given first preference. Market is no priority. So we find the agricultural classes cultivated merely for subsistence, and were happy if they struggled through the year with a minimum of hungry days.\(^5\) In fact the living of a cultivator revolved round *zeit, meit ti fieit* i.e. clothing, hunger and health. For him *khien maiet ti naiel zeit gayie baied dovlaet* food to eat and cloths to cover body was great wealth, an ideal way of living.\(^6\) Commercial element was almost absent in peasants mind. What mattered for a cultivator was quantity. It was a common concern of farming people. They often used to say that *khar gatzie nairin-* let there be quantity. Quantity was a security. Storage element was quite dominant. The peasant didn’t sell but stored their crops in whatever form possible.

In the subsistence agriculture of Kashmir the cash crops were a few. Save the crops such as saffron and grapes where we have sources saying that ‘the markets were stoked with Kashmiri grapes’\(^7\) no crop was cultivated for market. As for saffron and grapes were concerned they covered very little land where due to certain constraints irrigation was not possible and thus rice had no scope.

\(^5\) Lawrence, op. cit., p. 396.
\(^6\) Nazir, *Kashir Dapiet*, Culture Academy Srinagar, p. 95.
\(^7\) *Ain-i-Akbari*, op. cit., p. 68.
Otherwise it was a testified fact that ‘Kashmiris considered no crop worthy of attention save rice.’

The pattern of cultivation was extensive and not intensive. Extensive agriculture is that type of agriculture where the increase in crop production is attempted by bringing more area under plough. On the other hand, agriculture is called intensive if the production is sought to be increased on the same tract by using higher agricultural inputs. Owing to abundance of cultivable land compared to available population agriculture was extensive in Kashmir. Besides there was no fallowing system found in the pre-green revolution agriculture of Kashmir. Fallowing means leaving land without crops for a year or two so that it regains soil nutrients and its cropping capacity is increased. The cultivators in Kashmir could not effort to lay land fallow for gaining fertility. Thus they invested all possible efforts to procure manures and for that matter ‘wasted nothing which was useful in agriculture.’

Crop rotation is an important agricultural technique employed to make optimum use of land and simultaneously add to the fertility of soil. In crop rotation, instead of continues cultivation of a particular crop, the land is alternatively brought under the cultivation of different crops. Wherever there is scope for it, it is fondly followed. But in the agriculture under discussion cultivators had little choice for it. There was no favourable substitute for rice and rotation of crops was thus no norm. If at all a cultivator had to go for crop rotation it was always under compulsion. Cultivators sowed other crops on rice land only when all hopes of rice cultivation diminished. How scared the cultivators were about crop rotation it is lively communicated by our sources which write that ‘if a cultivator can obtain water and has manure he will continue

8. Lawrence, op. cit., p. 319.
to grow rice, and he will not dream of anything like crop rotation.9

In the pre-green revolution agriculture of Kashmir cultivation of crops without live stock was beyond the thinking of a cultivator. Therefore cattle formed a part and parcel of cultivation. Bullock was the real beauty of the stable of a peasant, more valuable than a cow. And with out cow a rural family was incomplete, in fact devoid of a great boon. Cattle not only sufficed the crucial requirement of bullocks required for the traction of plough but they also mitigated a far more crucial urgency. They supplied manure for land, milk for food, wool for cloths and warmth to keep the house comfortable during hard winters. In order to ensure the wellbeing of cattle cultivators had to take into cognizance the requirement of fodder for them. They reserved such land where rice could not be cultivated for crops suitable for livestock. The crops like flax, pulses (muth), willow and iris included among those cultigens. Small wonder to find that during the period of agriculture under discussion the landscape of Kashmir was characterized by extensive cultivation of willow and there were large patches of land reserved for the cultivation of iris.

Where we find the permanent villages permanently engaged in plough we also find that even pastures were not spared if they had a scope for crops. People residing at a close distance to the pastures practised transhumance. In summer they took their cattle to the higher reaches for grazing. Besides they also had land there and cultivated crops like pulses, maize and potato. Some of them also grazed the sheep of the people living in lower areas. They were paid at the rate of 4 trak (1 trak =5 kg) of rice per head.10 In the month of May they started shifting to the margs [pastures]. They left their permanent houses and occupied the kothas already cons-tructed in the shifted areas,11 resided and roamed their

10. Local informant.
11. Kotha is a residential hut. The roof is plane made of logs with a soil cover above. The construction is simple and people do it with out any carpenters assistance.
cattle there up to September. Then packed up their baggages and shifted to their permanent houses to spend the hard winters. Villages like Sarbal, Sonamarg, Gagangir in Narvav area and Kamrazipora, Aglar, Abhama, Sangarwani, Khygam and Keller in Pulwama, Reshivadi, Lachipora and Maya in Uri, and Katawali, Faqirbagh, Bandibala, in Chandusa shifted to pastures in summer for stock care and cultivation.\textsuperscript{12}

Intensive labour was required to conduct the different operations of this extensive agriculture. For that matter cultivators sought help from his domestic animals also. But they were relevant for certain operations only. Human hand was must for maximum operations but it was not available sufficiently. To mitigate the manpower requirement of agriculture society responded in a number of ways. It evolved a peculiar social fabric which was characterized by extended families, taboos against disintegration of joint families, preferences on having sons rather than daughters, common prevalence of early marriages, household servants, and the emergence of a peculiar social institution in Kashmir known as \textit{khana nisheen gardamand or garipaeth}. Added to these steps there was another practice prevailing among village people. It was known as \textit{laguen} [sharecropping]. All these practices point to the fact that there was not sufficient population to cater to the needs of the cultivation. This fact is also borne by our sources. Those observers who traveled to Kashmir in the late 19\textsuperscript{th} century noted with a heavy heart that in Kashmir, ‘the agricultural population is not yet sufficient for the full and proper cultivation of the soil.’\textsuperscript{13} They were of the opinion that ‘as population increases, attention will be directed to the cultivation of the large karewa lands and to the reclamation of the swamps’.\textsuperscript{14} According to them ‘with the swamps to be drained, and the karewa land to be irrigated by the channels and wells, there is a great future for agriculture in Kashmir.’\textsuperscript{15} They

\textsuperscript{12.} Local informant
\textsuperscript{13.} Lawrence, op. cit., p. 411.
\textsuperscript{14.} Ibid., p. 356.
\textsuperscript{15.} Ibid., p. 357.
were of the opinion that ‘steady increase in population’ formed one among two important conditions ‘wanted to make Kashmir one of the most fertile and prosperous countries in the world.’

The need of adequate manpower required in agriculture work gave impetus to early marriages. Marriages were conducted at the very early age, in fact before the girls and boys attained puberty. An important feature of marriages was that they were generally conducted within family relations, mostly in the same locality and normally among same professional background. A major purpose of these early marriages was to add to the family strength. It helped in two ways first the bride herself was an addition in family’s working strength. Secondly it kept the family candle burning. It was generally observed that brides hand was asked in the background of nareichoche i.e. want of human resource. Male births were most favoured because their muscular strength was more suitable to the exertions of hard agricultural work. It is therefore little wonder to know that whenever a new male baby was born it was said that ploughman has born (dand vool zav, nend mohnu zav ) or a weeding labour has born.

Likewise the lack of labour was mitigated by some other important institutions evolved during the course of time. Those were the institutions of talbmohnu and khanidamand. Talbmohnu or hired family worker did most of the agriculture work. He ploughed the land, looked after cattle in the pasture, cleaned dung from stables and even milked the cows. He was round the clock in the house like other family members eating what they eat and wearing what they wore. In return to his services he received some kharwars of rice annually.

17. During field study when I asked the people about the age at their marriage I met interesting answers. One of the respondents told me that ‘I was always married’, another lady said ‘I don’t know when I was married’. The third one said, ‘last time I was talking to my wife. By the way I asked her, do you have shoud [idea] when we were married?’
Khanadamand was one of the popular institutions of marriage. Families with no male heir or with less male didn’t marry out their daughters. They were married but their husbands also lived with them at their parent’s house and helped in the agricultural activities. This institution helped the process of intermixture of people not only from different areas but from different caste as well. It may be noted here that the villages in Kashmir were generally inhabited by a particular caste (zat) like Mir, Bhat, Dar, Ganie etc. but through this system other caste were added to the social caste composition of a village. And where khanidamand and talbmochnu did not suffice the demand of manpower required for the work at fields or they didn’t get available at all, the asamies followed another way to crop and cultivate the land. This was known as laguen. Land was let to other family having sufficient manpower and the produce was shared on fifty- fifty basis.\(^\text{18}\)

Pre-green revolution agriculture had its own technology. This technology depended on human or animal power. It was either a human hand or a hump of a bullock that handled a hoe or furrowed soil by a plow. However both were limited or had limitation. They could not be put on continues use nor generated artificially. For major agricultural activities people resorted to collective efforts and helped each other at the peak seasons. It gave boost to cooperation and corporate feelings among the peasants and made the social relations organic and live. The sharing of manpower (poshun, palzun, sadun, kadh) and animal power (alsoud, bajwat) were notable aspects of the life of rural people engaged in crop cultivation.

We have seen that the land on which cultivators worked day in and day out did not belong to them. They had just ‘shadowy rights in the land.’ Contemporary...

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18. Local informant.
rary sources have scribbled with a sorry tune that ‘the cultivator is considered to have rights neither to his land nor to his crops’. Further they write that ‘the Kashmiri cultivators have hitherto been treated as serfs, and have literally been forced to cultivate. They had no interest in their land, and were liable to any moment to be called to work for officials or men of influence. In fact the feudalistic agrarian structure, in which a peasant worked, was most exploitative in nature. It had no sympathy with tillers and took them for granted. Thus in spite of ‘the valley containing nearly everything which should make life enjoyable’ general populace consisting mostly on cultivators was often living under the pall of eviction, draughts, famines and hunger. Starvation had become their lot despite the fact that they worked hard and had sufficient knowledge of their job. It was an attested fact certified by no less a person than Lawrence who spent six years in Kashmir and observed every social aspect with a keen eye that a Kashmiri cultivator ‘is an excellent cultivator when he is working for himself’ and ‘unless they are working for their own benefit they never exert themselves.’ The fact remains that the life long experiences of plunder had made peasant a pessimist. He was always gripped in the old fear that anything good would either be seized or would lead to an enhancement of revenue.

Heavens played its own part in agriculture. It set the rhythm of the routine life of a peasant. Sont set him ready for land, summers made him always present at the land, harud left him deadly busy and winters were no less than hibernation. Need less to say seasonal cycles seldom were smooth. Frequent foods, untimely snow, prolonged rains and hundur were various climatic calamities that left peasantry destitute and forlorn. It is not for nothing that they always prayed for

19. Lawrence, op. cit., p. 272
20. Ibid., p. 278.
22. Ibid., p. 277.
23. Ibid., p. 280.
24. Ibid., p. 347.
the safety from *asmani balaies* [natural calamities] and *zameni balaies* [earthly calamities]. They did not conclude with praying only. Material too was put in. In this they evolved a long list of ceremonies so that the hidden and horrifying dangers to his crop were mitigated or avoided. For that purpose they arranged *bandars*, distributed *tahier*, conducted *khatims*, and donated the yield of a plot of cropped land for the services of some shrine. In case there were no timely showers people took water pots to the different *ziyarats* or if rains continued unabated *alams* were taken to different shrines.25

It is an established fact that agriculture was the principal occupation followed by a principal class of society. Its importance was also established. But it was not so remunerative as to attract other people. It just kept one alive and even at times failed in that also. Besides the whole burden of taxation and beggar fell on rural shoulders and what is more the State generally gave first preference to the urban people.26 Thus despite the fact that society badly required food security and food producers didn’t suffice the labour demand of land, the other classes of society didn’t opt for agriculture. This situation is summed up lively by a keen observer of 19th century Kashmir who writes, ‘I asked some boatmen, when they intend to take to agriculture. One old man at once replied, ‘we shall take to agriculture when the river Jehlum dries up.’27 Neither the State policies were encouraging in the direction, ‘to make the title in the land valuable and an object of desire.’28 Perhaps it is because of this social environment that we hardly find any traces of agriculture labour throughout agricultural history in Kashmir. Nor do we find other sections mobilizing towards agriculture for their livelihood. Thus in a society where people belonged to ‘religion of plough’ and plough had

25. Local informant.

26. It is a commonly said in the countryside of Kashmir that there are seven *barkatas* [wealth’s]. Six are in city and the seventh also shifts to city at night. This speaks a lot regarding the importance the city enjoyed as compared to rural areas.
a good scope for employment, want of sufficient food was a hard reality. It would not be an exaggeration to note here that barring a few reigns of two or three rulers which hardly consist of a century and one and a half decade agriculture was not attended in commensurate with its importance. In the known history except Avantivarman and Sultan Zain-ul-abidin no ruler made the ‘lands useful’.

27. Lawrence, op. cit., p. 424.
28. Ibid., p. 423.
Glossary

_Apykal_  
Period prior to harvesting season characterized by shortage of food

_Anwach_  
Under this practice fields were divided into as many parts as required. The elders then on their own with the consensus brought some stones or whatever possible nearby and gave it the symbolic value of fields. Then they were thrown open and some third person or the beneficiaries themselves were told to pick. And accordingly land was divided

_Aachur_  
Untrained ox

_Aabyari_  
Irrigation

_Agrahara_  
Free land grants given to Brahmanas in ancient times

_Auduuk_  
Rearing chicken, swan or duck on fifty fifty basis

_Aarain_  
Vegetable grower

_Asboh_  
Distribution of crops or surplus food member wise at the time of family split

_Asami_  
Occupant of village land

_Asami_  
Rice before threshing board

_Alam_  
Peasants visiting shrines for solution to unabated rains

_Alsoud_  
See _baij_ below

_Asthana_  
Shrine

_Aara_  
Mountain streams

_Auchkur_  
A point where water is diverted into the field

_Adrien_  
Searching for unwanted things in rice nurseries perior to the
deposition of seeds

*Bandars* Distribution of cooked food in the name of Allah for favourable weather conditions

*Boitrat* Earth

*Bagh* Piece of land

*Boog* Marriage gift to brides

*Bara* Sheep wether

*Baij / bajwat* Oxen team formation by two cultivators sharing each one and ploughing alternatively. It is also called *alsoud* in south Kashmir

*Banjar* Waste or fallow-land, fit for cultivation

*Bairi* Earthen boundaries marking a limit of a cultivated plot

*Chakdar* Land lord

*Chaupan* Shepherd

*Daij* Cultivated plot

*Danei* Paddy

*Damaras* Feudal lords of medieval Kashmir.

*Dour* A piece of land with earthen boundaries all-around

*Dongij* Locker in which sheep were penned

*Danai* Sheep tax

*Danduer* Vegetable grower

*Dar* Land

*Danda* Fine of paying another sheep to the owner if a shepherded didn’t furnish *nayael*

*Gruis* Agriculturist

*Garpaeit* A type of marriage in which grooms were brought for girls to live with them at their parental house

*Grist* Agriculture
<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gaan</strong></td>
<td>Cattle shed</td>
</tr>
<tr>
<td><strong>Galwan</strong></td>
<td>Horse dealer</td>
</tr>
<tr>
<td><strong>Gund</strong></td>
<td>Land surrounded all around by bunds</td>
</tr>
<tr>
<td><strong>Gour vaan</strong></td>
<td>Cattle collection point for daily grazing</td>
</tr>
<tr>
<td><strong>Gam</strong></td>
<td>Village</td>
</tr>
<tr>
<td><strong>Huel</strong></td>
<td>Manure</td>
</tr>
<tr>
<td><strong>Hathai</strong></td>
<td>A generic term for the offence of cow killing during Dogra rule. Now used for an unpardonable offence in Kashmir</td>
</tr>
<tr>
<td><strong>Hakay</strong></td>
<td>Annual work of a bullock</td>
</tr>
<tr>
<td><strong>Hoouir</strong></td>
<td>Oxen team</td>
</tr>
<tr>
<td><strong>Haauj</strong></td>
<td>Cattle shed in Gura</td>
</tr>
<tr>
<td><strong>Janajat</strong></td>
<td>Population of a village including agriculturist and menials</td>
</tr>
<tr>
<td><strong>Jarib</strong></td>
<td>A land measurement</td>
</tr>
<tr>
<td><strong>Hundur</strong></td>
<td>Rice less paddy crop caused due to early snowfall or cold wave</td>
</tr>
<tr>
<td><strong>Kanal</strong></td>
<td>Kanal is equal to 20 marla of land, each marla is equal to 272 sq feet</td>
</tr>
<tr>
<td><strong>Kharwar</strong></td>
<td>Ass load equal to eighty kg.</td>
</tr>
<tr>
<td><strong>Kuhl</strong></td>
<td>Water channel for irrigation</td>
</tr>
<tr>
<td><strong>Kaith</strong></td>
<td>Half sleeves trouser</td>
</tr>
<tr>
<td><strong>Khal</strong></td>
<td>Threshing ground</td>
</tr>
<tr>
<td><strong>Kun-i</strong></td>
<td>In rice a grain with un-husked cover</td>
</tr>
<tr>
<td><strong>Khalur</strong></td>
<td>Dead calves skin filled with grass employed to lure cow for milk cows</td>
</tr>
<tr>
<td><strong>Kuitch</strong></td>
<td>Stilted grass rick</td>
</tr>
<tr>
<td><strong>Kaad</strong></td>
<td>Mutual manpower assistance in agriculture operations</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Kenalu</td>
<td>Rice land ploughed under water</td>
</tr>
<tr>
<td>Karewa</td>
<td>Table land</td>
</tr>
<tr>
<td>Kha</td>
<td>Land under crops</td>
</tr>
<tr>
<td>Kulwan</td>
<td>Canal cleaning</td>
</tr>
<tr>
<td>Komuil</td>
<td>Land tiller</td>
</tr>
<tr>
<td>Kashtkar</td>
<td>Tenet</td>
</tr>
<tr>
<td>Kush kharid</td>
<td>Rice recovery for State store</td>
</tr>
<tr>
<td>Kharif</td>
<td>Autumn crop</td>
</tr>
<tr>
<td>Kundalas</td>
<td>Circular dykes</td>
</tr>
<tr>
<td>Khud rou</td>
<td>Wildly grown</td>
</tr>
<tr>
<td>Kasht</td>
<td>Cultivate</td>
</tr>
<tr>
<td>Khatims</td>
<td>A special function to feed <em>pirs</em> who recite the prescribed <em>kilmats</em> [notes] so that no untoward thing happens</td>
</tr>
<tr>
<td>Kazkal</td>
<td>Scarcity period of food</td>
</tr>
<tr>
<td>Khok</td>
<td>Scarecrow</td>
</tr>
<tr>
<td>Khaluiers</td>
<td>Grass filled skin of a dead calf</td>
</tr>
<tr>
<td>Lahin</td>
<td>Cattle which neither produced milk nor were used for ploughing</td>
</tr>
<tr>
<td>Looueed</td>
<td>Stilted grass rick</td>
</tr>
<tr>
<td>Louer</td>
<td>Turn to receive irrigation</td>
</tr>
<tr>
<td>Lav</td>
<td>Twisted ropes of hay stored on trees</td>
</tr>
<tr>
<td>Logul</td>
<td>Difficult to handle</td>
</tr>
<tr>
<td>Mava</td>
<td>Trained ox</td>
</tr>
<tr>
<td>Mauza</td>
<td>Revenue term for a village</td>
</tr>
<tr>
<td>Manwats</td>
<td>About 2 ¾ lbs</td>
</tr>
<tr>
<td>Mujawaza</td>
<td>Payment of land revenue in kind</td>
</tr>
<tr>
<td>Malkum</td>
<td>Silt used manure</td>
</tr>
<tr>
<td>Mirab</td>
<td>Water baileif</td>
</tr>
</tbody>
</table>
Marli 272 sq ft of land
Mourr Hencoop
Maal Live stock
Nala Mountain stream
Nuer Pasture
Numbal Swamps
Nangar Menials, thirty six in number
Nour Wooden pipe for irrigation.
Neigai Place were fodder was left for cattle
Nayael Skin of a dead animal
Patwari Village accountant
Popasag Final watering of rice

Partal A register with a *chkdar* wherein was recorded the detailed account of tenets i.e. land in their occupation and dues with them
Poeul A willow basket of large size used for milk. The pots containing milk were covered under it
Poaish Manure
Pah Fertilizer
Pai-i-aub Lower areas on canal
Poshun Help in agriculture work
Palzun Help in agriculture work
Rasum Free wood, fodder, poultry and blankets etc presented to *Chakdar* [Landlord]
Rabi Summer crops
Ramb Flock of sheep
Raiyat Subjects, payers of land-revenue
Rakh  Land reserved for horse rearing
Sar  Silt ditch
Sar-i-aub  Upper areas on a canal
Sadun  Help in agriculture work
Sut  Grinded maize or rice used in tea instead of bread
Talub mohinue  Household agriculture worker paid annually in kind
     Sometimes spent whole life in particular family
Taqavi  Monetary help in times of flood, famine or fires
Taif-i-dar  Social groups other than cultivators
Tsarah  Rope of vegetables
Tao  Ploughing dry rice fields
Tomul  Rice
Tahier  Boiled coloured rice distributed to people on certain occasions in the name of Go
Tathul  Wooden utensil used for serving boiled pulsed and maize to the sheep
Udar  Table land
Vaied  Vegetable garden
Vourus  Anniversary celebrations of saints
Vour  Cattle pen
Yup  Flood
Vat  Porridge of maize
Waf  Sowing season
Wattur  Broadcast
Ziyarats  Relic places of saints
Zaildar  Land lord
Zamindar  Cultivator
Zuis  Pit used for concealing grain from officials
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D) Travel Accounts


E) Oral Evidence

i. Interview with Habib-ul-lah Bhat resident of village Maenhel Shopian Kashmir.
ii. Interview with a *miliar* [vegetable grower], Abdul. Rahman Dar, resident of Bangar Mohalla Danamazar, Srinagar

iii. Interview with Nazir Ahmed Kotay resident of village Ussus Shangas, Anantnag Kashmir.

iv. Interview with Ali Mohammad Khan resident of village Markundal Sumbal Sonawari Kashmir.

v. Interview with Ghulam Rasool Genie Paray Mohalla Hajin Sonawari Kashmir age 70 years.

vi. Interview with Mohammad. Saber Bhat resident of village Sonnar Lolab, Kashmir.

F) Journals


*Science Journal Bio Invasions* Art. The alien flora of Kashmir Himalaya

*Asian journal of plant sciences* – 2007, ethno-Veterinary Medicinal Uses of Some Plant Species by the Gujar tribes of the Kashmir Himalaya