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# UNIT 8 RIVER VALLEY CIVILISATION

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## 8.0 INTRODUCTION

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The river valley civilisation that developed in India in the third millennium BC is generally known as Indus civilisation or the Harappa civilisation. As has been noted in the preceding unit (7), the environmental condition in the West and South Asian region had become conducive to the growth of agriculture at the end of the Pleistocene period, about 10,000 years ago. Originating in West Asia the agriculture soon spread in India in different regions. One of the regions, identified as the Indus region, provided peculiar environmental conditions that supported agriculture in the flood plains of Indus and other rivers of the region. Several sedimentary settlements have been unearthed by the archaeologists in this region yielding evidence of early agriculture and permanent habitation. Such settlements were in fact the precursor of a fully developed urban civilisation. It sustained on the same agricultural practice that had mediated the emergence of sedimentary settlements in the region in the past and that was essentially based on the flood plains of the river as the principal area of agricultural activity. Since seasonal inundation of the river valleys and subsequent deposit of rich alluvial soil was a principal feature supporting agriculture we also call Indus civilisation as the River Valley Civilisation. In this unit we propose to study the agriculture pattern of Indus civilisation based on archaeological data uncovered so far. Since archaeological records, generally, are not even in their details, there is a possibility that some aspects relating to agriculture would appear as dense in details and therefore descriptive while others would appear as providing bare details only.

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## 8.1 THE ANTECEDANTS

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The flood-plains of rivers supporting agriculture has been a typical environmental activity in the Indus region. It gave rise to habitations that sustained on a mix of agricultural and nomadic practices. Some major sites of this type excavated in the region are Kili Ghul Muhammad, Rana Ghundai and Mehrgarh. The result of excavation at Mehrgarh have been particularly rewarding. Mehrgarh was an early food-producing village located on the banks of the Bolan river that flowed through the Kachi plain which is an extension of the Indus valley. Possehl highlights the

strategic importance of the site thus: “The Bolan River provides a major route of communication between the Indus Valley and Baluchistan. It is the principal hydrological feature of the Kachi Plain today where it runs along the eastern edge of Mehrgarh. The Bolan Pass is a relatively easy route to the Quetta Valley and central Baluchistan. Mehrgarh sits at a strategic place, at the base of this route, just off the central plain of the Indus River. This is a very important, special location; a hub of communication, a place where peoples met and mixed.” (*The Indus Civilisation, A Contemporary Perspective*, op.cit., p.25). It is clear that the richness of material evidence from Mehrgarh is perfectly in tune with its situational importance. We shall examine the evidence from this site to understand the background of Indus valley agriculture.

Mehrgarh is a unique site as it provides evidence from nearly ‘every phase of the Neolithic Revolution’ extending roughly from 7000 BC to 3800 BC (cf. *Prehistory*, op.cit, p.51). Settlements at Mehrgarh have been found spread almost in a line. The overlap is absent as the settlers moved from one place to another along the Bolan River. This movement was from North to South with three distinct periods -I, II and III - of settlement noticeable. As stated by Possehl “A great deal of information on the paleobotany of Mehrgarh is available. The collection from Period I is especially rich. The dominant plant of Period I is domesticated, naked six-row barley. There are two other varieties of domesticated barley as well. Domesticated wheat is present in the form of einkorn, emmer and a free-threshing hard durum [all are different varieties of wheat], but in amounts much smaller than the barley sample. The noncereals so far identified for the period include the Indian jujube [*ber*] and dates, represented by stones in Period I and II” (*The Indus Civilisation, A Contemporary Perspective*, op.cit, p.27). It is thus evident that the beginning of the Indus civilisation was marked by an already existing system of agriculture at permanent settlements in the river valleys of the region. This system, as we have noted subsequently, in Block 4, Unit 12, was sustaining on the seasonal alluvial deposits brought by the floods in the rivers. The take-off stage for Indus civilisation was thus available and the results of further developments were astonishing as has been shown by the growth, expanse, and prosperity of Indus civilisation.

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## 8.2 THE ENVIRONMENTAL CONDITIONS

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An understanding of the environmental conditions in the Indus area is of importance because the region today falls in a semi-arid zone and may perhaps not sustain agriculture in the same measure in which archaeological evidence provides a testimony. The study of environmental conditions in the Indus area has evoked some debate as to different climatic conditions obtaining at the time of the flourish of Indus culture. We find it worthwhile to at least outline the contours of this debate to help us understand more clearly the environmental setting in which the agricultural developments in Indus civilisation took place.

“Based on the work pioneered by Sir Aural Stein (1931) [famous archaeologist whose area of focus was the North-West] and the writings of V. Gordon Childe [*Man Makes Himself* and *What Happened in History?*]”, says Possehl, “it was once thought that all of the Near East and the Western parts of South Asia had been subjected to severe post-Pleistocene desiccation. The presence of stone dams called *gabarbands* and large numbers of prehistoric archaeological sites in areas now almost devoid of settled peoples seemed to fit such an hypothesis”

(*Ancient Cities of the Indus*, New Delhi, 1979, p.221). This view gave rise to the belief that arid environmental condition in this region was the consequence of an exploitative human activity that denuded the region of its natural resources contrary to the view that severe climatic fluctuations caused the degradation. Subsequently three studies focusing on climatic conditions of Indus culture appeared between 1961 and 1971 which extended the discussion further. The first, in time sequence, was a study undertaken jointly by Robert L. Raikes and Robert H. Dyson, Jr. ('The Prehistoric Climate of Baluchistan and the Indus Valley' in *American Anthropologist*, Vol.63, No.2, 1961, pp.265-81 reprinted in G.L. Possehl, ed. *Ancient Cities of the Indus* pp.223-33). They reexamined "the arguments and evidence presented in support of the hypothesis of desiccation in Baluchistan" and came to the conclusion that aridity in the region was not a consequence of any severe climatic variation but was the result of human activity of degrading nature over a long period of time. (cf. Robert L. Raikes and Robert H. Dyson, *op.cit.*, p.223-33). The two other studies are by Gurdip Singh ('The Indus Valley Culture' in *Archaeology and Physical Anthropology in Oceania*, Vol. 6, No.2, 1971, pp.177-89 reprinted in G.L. Possehl ed., *Ancient Cities of the Indus* pp.234-42) and by C. Ramaswamy ('Monsoon over the Indus Valley During the Harappan Period' in *Nature*, Vol. 217, No. 5129, 1968, pp.628-29 reprinted in G.L. Possehl ed. *Ancient Cities of the Indus*, pp.243-44). Gurdip Singh's study is based on the pollen data gathered from Sambhar, Didwana and Lunkaransar Lakes in Rajasthan which are all salt lakes. He is of the opinion that a climatic change occurring at about 2000 BC increased the salinity of these lakes; by implication therefore the same aridity affected the Indus region. Ramaswamy puts forward the case for climatic variation rather directly. He says that there is adequate archaeological evidence to suggest that the Harappans, who flourished in the Indus Valley between 2500 and 1700  $\pm$  100 BC, lived in climatic conditions that were much more moist than the conditions that exist in the region today. "These conclusions" he asserts "are further supported by the recent discovery of considerable reserves of ground water [vide K.L. Rao, *Indian Geohydrology*, Vol. 1, 1965, p.2] in the arid region of extreme West Rajasthan close to the Indus Valley. Carbon - 14 tests carried out by staff of the Tata Institute of Fundamental Research in Bombay, at a place called Palana, 14 miles South of Bikaner (28°00' N., 73°18' E.) indicate that the ground water there is about 5,000 - year old, this being the upper limit of the true age of the water" (Reprint, *op.cit.*, p.243).

The issue was subjected to a scrutiny in later years. It has now been found that the three studies discussed above do not give clinching evidence in support of the view that there indeed has been a marked climatic shift in the region since the days of Indus civilisation. Irfan Habib asserts that the climatic - shift view is "inconsistent with the drainage system at Mohenjo Daro and Kalibangan which could not have withstood any heavier rainfall than what the area now receives. If an 'arid' phase really followed a 'wet' phase in the present geological age (Holocene), then the change must have long preceded the Indus civilisation" (*The Indus Civilisation, A People's History of India*, 2, New Delhi, 2002, p.24). Similarly, for Gurdip Singh's study Possehl writes: "The changing salinity of these lakes, which appears to be well documented, need not be attributed to changes in rainfall. The geology of Rajasthan is complex. The three lakes investigated are hypersaline today, but there are also fresh water lakes in this same region (Lakes Pushkar and Ganger). This observation leads to the conclusion that under one climatic regime in Rajasthan, there can be both fresh water and hypersaline lakes, calling into question the Singh hypothesis" (*The Indus Civilisation, A Contemporary Perspective*, *op.cit.*, p.9).

It can now be safely contended that on the whole there has been no significant shift in climate in the Indus area. The region has remained semi-arid since the beginning of the Indus Civilisation with inadequate rainfall so as not to support agriculture without the assistance of supplementary irrigation. The flood-plain agriculture of the Indus civilisation was characteristic of the climatic conditions and the peculiar behaviour of seasonal floods in the rivers.

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## 8.3 INDUS AGRICULTURE

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Indus agriculture was the outcome of the agriculturally productive potentialities of the region about which we have given you details in Section 8.1 above. The fact that it sustained the development of such an important civilisation is in itself adequate proof of these potentialities. Irfan Habib has attempted an estimation of the population of the Indus civilisation to show the number that lived on Indus agriculture we reproduce his interesting account below: "The number of inhabitants that this large area (nearly 700,000 square kilometers) contained has been variously estimated, the estimates ranging from one to five million. Perhaps, it is more reasonable to set it at a point somewhere midway. Given a total of about 150,000 persons assignable to Mohenjo Daro and Harappa together, the total urban population could not have been less than 250,000, bearing in mind the fact that large urban sites like Ganweriwala in Bahawalpur and Lakhmirwala in the Indian Punjab still remain unexcavated. At the height of de-urbanisation in India during the nineteenth century, the rural population was nearly nine times the urban. With a much lower level of agricultural productivity than in the nineteenth century, it will be difficult to assume that sufficient food for the urban population was grown in the Indus civilisation by a rural population less than fifteen times its number. Such a ratio would give a total population of four million for the entire territory of the Indus civilisation, or nearly six persons per square kilometer. This would compare with nearly 50 persons per square kilometer in the same area in 1901. (In 1991 the corresponding figure was about 180 persons!) The comparison helps us to see how sparsely populated the Indus basin must still have been at the time of the Indus civilisation" (*The Indus Civilisation, op.cit.* pp.22-24).

How such an increase in agricultural production was achieved does no more remain a puzzle if we carefully examine the method of agriculture and the tools etc. used for the purpose. We have already ruled out the tentative suggestions that climate was more favourable then than it has been now. Advanced agricultural tools and a more organised method seem to be more likely factors influencing agricultural production. We shall discuss this in detail in the ensuing sub-sections.

### 8.3.1 Method and Tools

In a region which did not have sufficient rainfall for supporting agriculture recourse was taken, as has been noted above, to the flood-plains of the rivers which had the tendency of depositing every year soft and fertile alluvial soil along their banks during the summer months. The agricultural pattern of Indus civilisation was thus geared accordingly and it is useful to understand the river behaviour at some length to truly appreciate this feature. The Indus has a very large and wide flood plain and the alluvium deposit too is fairly deep. In fact the behavior of Indus is comparable with the two other river systems that were also the cradle of important ancient civilisation - the Nile and the Euphrates - Tigris river systems. A comparison of this type may help us place the Indus system in proper perspective.



A comparison of Indus with Nile and Euphrates - Tigris has been done by Shereen Ratnagar. She writes: "The Nile is, in contrast [to Indus], predictable and tame. It floods its extremely narrow valley between late June and September with a fair degree of regularity, the water standing in the fields for several weeks and then subsiding, thoroughly wetting and fertilizing the soil before it is time to sow. Wheat and barley require no further irrigation, even though Egypt is a hyper-arid land with less than ten centimeters of rainfall per year.

"The Indus too floods in the summer months, well before the wheat and barley sowing. It is at its highest level in August. But its annual water discharge is 207 billion cubic metres as against the 63 billion cubic metres of the Nile. Its catchment in the Himalaya is several times the magnitude of the Nile or Euphrates catchment, and it carries a huge amount of water at great speed" (*Understanding Harappa: Civilisation in the Greater Indus Valley*, New Delhi, 2001, pp.20-21). The flood plains of Indus, as is evident, were quite expansive and the alluvial deposit sufficiently deep for supporting agriculture, mainly the *rabi* crop, for the vast habitation settlements as that of the Indus civilisation. Shereen Ratnagar is quite perceptive when she says, "The locations of Harappan sites are not totally explained by climatic conditions. In fact rainfall, as in all arid regions of the world, is erratic - variability in Sind, for example, is 65 per cent. In ancient economics the aim was to minimize risk rather than to calculate the relative costs of input and output, for land and labour were not commodities that were bought and sold - much less so seed, fodder or natural fertilizer. Hence people chose to settle in areas with reliable resources - i.e. those annually inundated or, more important, with perennial springs or lakes or sweet-water wells close to the surface - rather than in areas with high but unreliable rainfall. ...It is truly a paradox that the plains of the mighty Indus did not offer potential for unlimited agricultural growth" (*Understanding Harappa*, *op.cit.* p.40).

The important evidence on agricultural tools comes from Kalibangan, Banwali, Jawaiwala and Shortughai. Two ploughed fields have been discovered by archaeologists from Kalibangan and from the Indus settlement at Shortughai. The sites at Banwali and Jawaiwala (in Bahawalpur, Western Panjab) have provided evidence relating to plough as an agricultural tool. The discovery of plough furrowed field at Kalibangan is of seminal significance as it proves the use of plough and the use of ox for drawing the plough - as a draught animal. The use of plough and ox as a draught animal for drawing the plough was a fundamental advance in agriculture. Irfan Habib notes its significance by asserting that the "plough greatly lessened the labour of peasants previously performing the same task manually with the hoe, and also enabled the same family to till a much larger area of land (probably double, to judge from studies of such change in contemporary sub-Saharan Africa). It accordingly brought about a substantial increase in yield per head of population" (*The Indus Civilisation*, *op.cit.*, p.10).

### 8.3.2 Crops

We have noted that Indus agriculture was mainly based on *rabi* crops which were actually the winter crops sown after the recession of floods by September or so. Wheat and barley were two main crops for which evidence was already there in Mehrgarh - they continued in the Indus civilisation. The other *rabi* crops, for which evidence has come from Indus period sites, were mustard, linseed, peas, lentil, gram. If not everywhere, at least in some localized place millets - grown in summers, and also rice have also been reported. Shereen Ratnagar writes:

“Available evidence indicates that rice (identified at Rangpur and Lothal in eastern Saurashtra) became an actual crop only in the second millennium BC in South Asia. Of the millets, coarse-grained and hardy plants suited to tracts with low rainfall and poor soils, foxtail or Italian millet is known in Harappan Kutch either as a weed or a wild plant. The more nutritious jowar and bajra were to be crops of a slightly later period but ragi was perhaps being grown around this time in Saurashtra and Kutch” (*Understanding Harappa, op.cit.*, p.18, n.1). The other evidence for crops is for date-seeds and grape-seeds and *ber* from Rohira and a species of vetches from Balakot. Though no direct evidence for cotton has been found it can be presumed that the crop that appeared around 4000 BC continued to be grown during the Indus civilisation.

There is some more related information that adds to our understanding of Indus agriculture. Irfan Habib refers to an interesting evidence as he says, “Ovens, including tandoors, have been found at Kalibangan (Early Indus phase), taking the history of bread-making in India back to nearly 5,000 years ago” (*The Indus Civilisation, op.cit.*, p.11). Similarly the use of fibre and oil extracted from cotton and sesame has been deduced by Shereen Ratnagar. She also suggests that “oil from linseed (which may have been western Asiatic in origin) would have been used for lamps rather than for food” (*Understanding Harappa, op.cit.*, p.19).

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## 8.4 AN OVERVIEW

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We have discussed the main evidence pertaining to the environmental conditions and the agriculture of the Indus civilisation and have also attempted to establish a correlation between them. We now give an overview of the agricultural system and the subsistence pattern of the Indus region.

Possehl suggests that the 1000 or more settlements of Indus civilisation (1052 recorded so far) known today can be “hierarchically arranged” into large to medium to small sites. The small or in some cases medium sites were settlements of the village farming communities and pastoral camps with thin scatters of pottery and so signs of permanent architecture”. Further, “The Indus peoples were mostly farmer and herders. Barley seems to have been the principal food grain, except in the Sorath domain [Saurashtra region] where the people were cattle keepers par excellence who also raised goats, sheep, water buffalo and a variety of crops”. The main agricultural season in the Indus region was the *rabi* or winter cropping season. The flood plains were ready for agricultural activity from September onwards and were intensely used for raising *rabi* crops. “Whether rice was a cultivator of significance during the Mature Harappan”, doubts Possehl, “has yet to be determined”. (*The Indus Civilisation, op.cit.*, pp.63-4)

The crops of the Indus civilisation were wheat, barley, gram, peas, sesame, rape and cotton. In addition the people of the Indus region grew dates and grapes. They also collected *ber* or Indian jujube. Possehl says “They were also great fish eater, exploiting the rivers and lakes, especially in Sindh”. We also have information relating to *kharif* or summer crops from some Indus sites, as we have noted in earlier sections. The main *kharif* crops grown by them were *jowar* or African millet, *bajra* or pearl millet and *ragi* or finger millet. As noted by Possehl “The importance of these plants is that they are summer grasses that prosper during the Southwest monsoon, unlike wheat and barley, which are winter grasses that do not thrive as monsoon crops. The millets thus led to double or year-round cropping and were important, if not critical, additions to the prehistoric food supply.

“The appearance of these plants coincides with the beginnings, or at least the expansion, of significant maritime activity in the Arabian Gulf and Indian Ocean. It is proposed that an extension of his maritime activity took Indus sailors at least so far as the southern end of the Red Sea and possibly farther South along the East coast of Africa. It is in this environment that they came in contact with the millets, integrated them into their food supply, and eventually carried them back home to the subcontinent”. (*The Indus Civilisation, op.cit.*, pp.64-5).

In the end we can say that the livelihood pattern of the Indus peoples was, as suggested by Possehl, a “complementarity of settled agriculture and pastoralism. While there must have been a variety of occupations for the peoples of the Indus Civilisation, most of them would have been farmers and/or pastoralists. They produced the food that sustained the nonagricultural people in the great cities and towns of this civilisation”(ibid).

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## 8.5 EXERCISES

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- 1) Discuss the relationship between the behaviour of rivers in the Indus region and the growth of agriculture.
- 2) Examine the pattern of agriculture in the Indus Civilisation.
- 3) Why was *rabi* season the principle agricultural activity in the Indus region? Examine.

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## 8.6 SUGGESTED READING

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Gregory L. Possehl, *The Indus Civilisation, A Contemporary Perspective*, Vistaar Edition, New Delhi, 2003.

Irfan Habib, *The Indus Civilisation in A People's History of India*, 2, New Delhi, 2002.

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M.S. Randhwa, *A History of Agriculture in India, Volume I*, New Delhi, 1980.