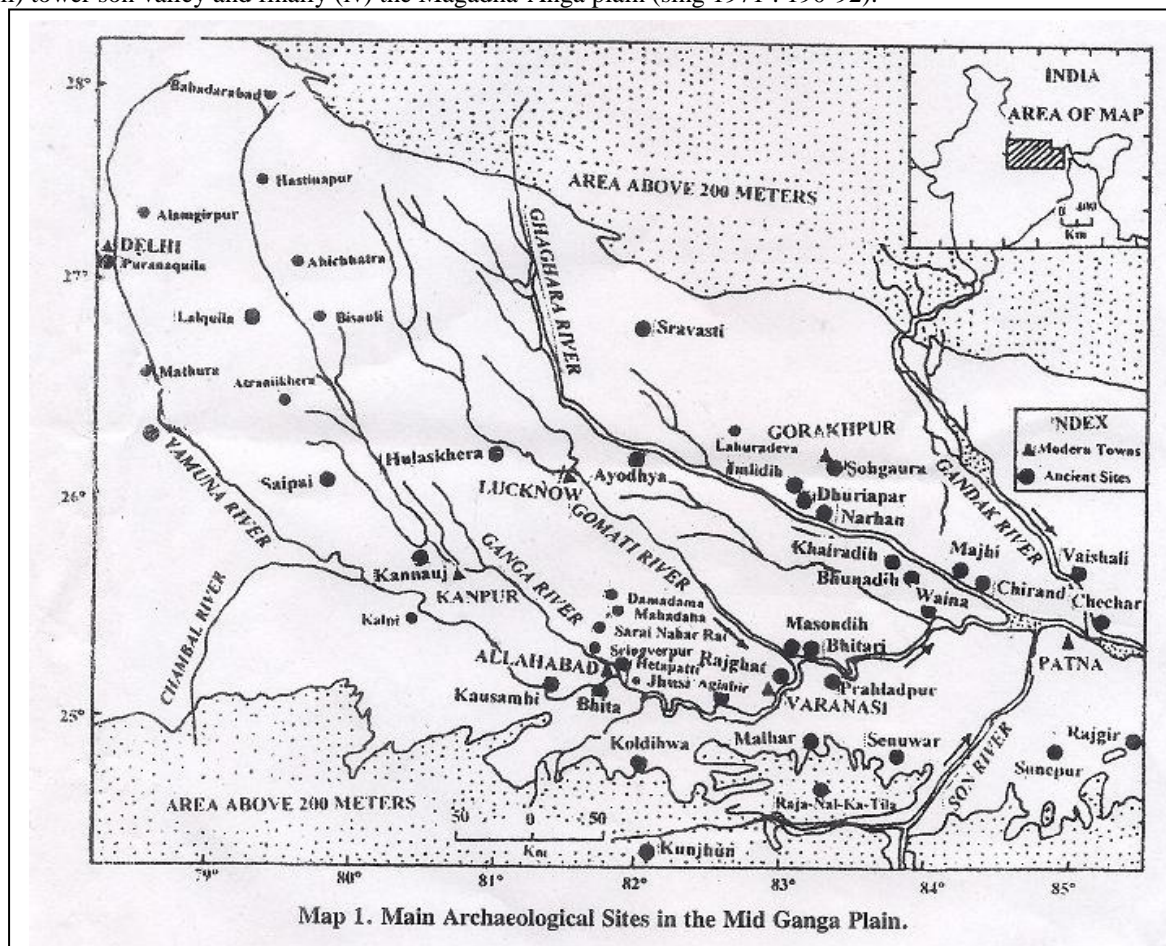


EARLY CENTRES OF ORIGIN OF AGRICULTURE IN THE MIDDLE GANGA PLAIN

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The Ganga plain has played a major role in the origin and development of the history and Archaeology of India. It is divisible into three main units: (1) Upper Ganga plain (ii) Middle Ganga Plain and (iii) Lower Ganga Plain. The Ganga and its tributaries, the major drainage systems provide a vast fertile alluvium track and serve as a strong base for early human occupations in Middle Ganga plain (Singh : 1971-183-193). The Middle Ganga plain ($24^{\circ} 30' N$ - $27^{\circ} 50' N$. and $81^{\circ} 47' E$ - $87^{\circ} 50' E$) measuring about 144, 409 sq.km. is bounded by the Himalayan tarai in the north, Vindhyan plateau in the south, Ganga-Yamuna confluence in the west and Bihar-Bengal border in the east. On the basis of the river system, the middle Ganga plain is sub-divided into the Ganga plain North and Ganga Plain south. The Ganga plain north is further sub-divisible into (1) the Ganga-Ghaghara doab (ii) the Ghaghara-Gandak interfluvium, (iii) Gandak-Kosi interfluvium and (iv) Kasi-Mahananda interfluvium and the latter, i.e. the Ganga Plain south into (1) West of Karmansa (ii) Karmanasa east interfluvium (iii) tower son valley and finally (iv) the Magadha-Anga plain (sing 1971 : 190-92).



Map 1. Main Archaeological Sites in the Mid Ganga Plain.

The Middle Ganga plain was a meeting point of different cultures of north, south, east and west. The divine gospels contained in some of the Upanisads, were conceived and preached in this region. It is the land associated with the story of Ramayana. The deductive portions of the Mahabharata are supposed to have got their final shape in this region. It was also a nerve centre of the political, economic and religious upheavals of 6th Century B.C. and witnessed the second urbanization of the subcontinent.

The middle Ganga plain is now credited with one of the early centres of origin of agriculture and domestication, which paved the way for development of the Neolithic and Chalcolithic Cultures and Civilization in the early Iron age in the area. The evidence of such transition in India is found in the Mesolithic Cultures, which suggests that the agriculture and domestication was a slow developmental process, extending across several millennia but it had a revolutionary effect on human history. The evidence of wild rice, millet, jujube etc. from excavations of the Mesolithic sites and scenes of plants in the rock paintings in the hilly regions indicate that the plant food was included in the Mesolithic diet. A good number of grinding stones from many of the sites also suggest that the wild grains were pasted for consumption (Misra 2002, 2007-2008). Their artifact inventory comprises microliths and debitage, plenty of sand stone fragments and other raw materials brought from the Vindhyan region. Fragments of querns, mullers, hammerstones, etc. fashioned on sand stone, quartzite and basalt have been reported. This indicate that the Mesolithic people used to collect wild seeds, edible roots, etc. for supplementing their dietary items. On this context the occurrence of wild rice from the late Mesolithic phase at Chopani Mando assumes considerable importance.

The changing climatic conditions during early and middle phase of Holocene in the middle Ganga plain played a significant role in the evolution of early farming cultures. The excavations and explorations conducted during the last five decades by university of Allahabad, Banaras Hindu University, Deen Dayal Upadhyay University Gorakhpur, University of Patna, U.P. state Archaeology Department and Patna circle of the Archaeology Department and Patna circle of the Archaeological survey of India have furnished a complete cultural sequence of the region- Epipalaeolithic, Mesolithic, Neolithic, Chalcolithic, Early Iron Age, NBPW, Sunga-Kushana, Gupta and Early Medieval periods.

Neolithic Settlement:

The first stage of food production in human history is termed Neolithic world wide. The pustoral and farming practices of this early stage are characterized by incipient traits. The location of the Neolithic settlements near the flood plain of the rivers indicate that the Neolithic people were aware of the role of river for cultivation. These are sedentary settlements, generally situated in shallow basin-shaped bluff surrounded by natural ridges.

Subsistence:

The subsistence of the Neolithic people was based on the exploration of plants and animals, by domestication as well as by hunting and gathering. The evidence of cultivation of plants has been found in the form of rice husk used as degraissant in the pottery as well as charred grains of rice of domesticated variety. The cultivated variety of rice has been identified as *Oryza Sativa* and wild variety are *oryza nivara* and *Oryza rufigona* (Vishnu-Mittra and Sharman.d.) The available evidence, thus, indicates that besides agriculture and domestication the Neolithic people of the Mid Ganga plain also practiced hunting, catching and fishing.

Material Culture:

The ceramic industry of the Neolithic Gangetic plain is rich and varied. The available evidence indicates that in the early stage of the culture as indicated at Chirand, Lahuradeva, Jhusi and Hetapatti people were using hand made pottery but subsequently the slow wheel appears to have been used for the purpose. Occurrence of painted shards has been reported from Imlidih Khurd, Lahuradeva, Chirand and Senuwar. The cord-impressed ware has been found in Neolithic context at Chirand, Sohagaura, Lahuradewa, Jhusi and Hetapatti in the Middle Gangetic plain. The salient feature of each of the five excavation are enumerated below.

Chirand

Chirand is situated on the confluence of Ganga and Ghaghara rivers, about 11km east of Chapra in district Saran. The excavation at this site was conducted by the Patna University and the Deptt. of Archaeology and Museums, Government of Bihar. This excavation was conducted by B.P. Sinha and his team intermittently for about ten seasons.

Waina:

The ancient settlement of Waina (Lat. 25° 45' 5" N; Long. 84° 0' 5" E) is situated Ballia, U.P. on the left bank of old bed of Chhoti Sarju, a tributary of the Ganga.

Khairadih:

Located on the right bank of river Ghaghara, a tributary of the Ganga in district Ballia, Khairadih contains the relics of a township of the Kushana period. The affluent nature the settlement is fully born out by the Kushana period cultural remains in the settlement pattern, especially in its town planning. The horizontal excavation of 1980-86 revealed well laid town planning with roads running in the cardinal direction joined by lanes at right angles. These are flanked by houses, some of them having underground structures, possibly for storage. The roads are brick-paved with traces of rut-marks at places. The use of full sized bricks the broad square pillared structure underline the significance of a particular building that housed coins (Singh, 1990-91 : 78-86)

Bhunadih: The ancient settlement at Bhunadih (Lat. 25° 59' 10", Long. 84° 5' 10") is located 2 Km. east of Janwan on the right bank of Bahara nala, about 28 Km. north of Ballia town on the Ballia-Sikanderpur road. The mound extends in an area of about 4 acres and the extant height gradually rises to well over a metre.

Sohgaura :

The ancient settlement of Sohgaura (Lat. 26° 30' 30" N ; Long. 83° 15' 25" E.) is situated at the confluence of the Rapti and Ami rivers in a district Gorakhpur.

Imlidih Khurd:

The ancient settlement of Imlidih (Lat. 26°30'30" ; Long. 83° 12' 5") is an inconspicuous, featureless mound located on the left bank of Kuwano, a tributary of Ghaghara river. It was excavated during 1992, 1993 and 1995 by us (Singh 1991-92 ; 1992-1993; 1993-94).

Dhuriapar:

The ancient settlement of Dhuriapar (Lat. 26° 15' 25" N. Long. 83° 14' 31" E) is situated on the left bank of the Kuwano river about 46 Kms. south of Gorakhpur.

Lahuradewa:

The ancient settlement of Lahuradewa (Lat. 26° 46' N; Long. 82° 57' E.) is located in Kuwano-Ami Doab in district Sant Kabir Nagar. It is about 5 Km. south to the Bhujaini-crossing situated on the Basti-Gorakhpur Highway No. 28.

Jhusi:

The ancient settlement of Jhusi (Lat. 25° 26' 10" N.; Long 81° 54' 30" E) is situated at the confluence of the Ganga and Yamuna in Allahabad district have revealed a long and continuous cultural sequence ranging from Mesolithic to early medieval periods through Chalcolithic, pre N.B. PW with iron and N.B.P.W. periods.

Hetapatti:

The ancient settlement of Hetapatti (Lat. 25° 29' 0" N; Long. 80° 55' 31' E.) is situated Allahabad, U.P. on the left bank of the Ganga.

The explorations conducted in the eastern part of the mid Ganga valley during the last five decades have resulted in identification of several Neolithic settlements, and the region is emerging as one of the independent centres of origins of rice cultivation. Earlier the traces of early farming culture in the middle Ganga plain were found in three geographical zones; in Bihar, in the northern slopes of the Vindhyas and in the Saryupar plains of eastern Uttar Pradesh (Singh 1998). Primary context sites pertaining to the Neolithic culture have been reported in eastern Uttar Pradesh and Bihar. The important excavated sites in Uttar Pradesh include Jhusi (Misra *et al.* 2002-2003) and Hetapatti (Pal and Gupta 2005) in Allahabad, Bhunadih (Singh and Singh 1997-98) and Waina (Singh and Singh 1995-96) in Ballia (Singh *et al.* 1994-95), Sohgaura (IAR 1974-75: 46-47, Chaturvedi 1985) and Imlidih Khurd (Singh 1992-93, 1993-94) in Gorakhpur, Lahuradewa (Tewari *et al.* 2001-2002, 2002-2003, 2004-2005, 2007-2008) in Sant Kabirnagar district, while Chirand (IAR 1981-82 : 13-14, Verma 1971, Narain 1970, Varma 1998, Sinha 1994, Roy 1989) in Saran, Chechar Kutubpur (IAR 1977-78 : 17-18) in Vaisali, Taradih (IAR 1984-85 : 9-10, IAR 1986-87: 23-24, IAR 1987-88: 9-11) in Gaya, Maner (IAR 1985-86: 11-12, 1986-87 : 25-26, IAR 1987-88: 11-12, IAR 1988-89: 7-8) in Patna and Senuwar (Singh 1990, 1997, 2001, 2004) in Rohtas district in Bihar. Most of these excavated sites are multi-culture sites having yielded archaeological relics ranging from Neolithic to early historical periods (Misra-2007).

Table: Neolithic Sites in the Middle Ganga Plain

Name of the Site	Location	Excavated by	Thickness	Reference
Jhusi (Lat 25° 26' 10" N Long 81° 54' 30" E)	Allahabad, U.P., on the confluence of the Ganga and Yamuna	University of Allahabad	1.5m	Misra <i>et al.</i> 2002-03
Hetapatti (Lat 25° 29' 0" N. Long 81° 55' 31" E)	Allahabad, U.P., on the left bank of the Ganga.	University of Allahabad	60 cm	Pal and Gupta 2005
Bhunadih (Lat 25° 19' 10" N Long 84° 5' 11" E)	Ballia, U.P., on the right bank of Bahera nala, a tributary of Ghaghara.	Banaras Hindu University	About 50 cm	Singh and Singh 1997-98
Waina (Lat 25° 45' 5" N Long 84° 5" E)	Ballia, U.P. on the left bank of old bed of Chhoti Sarju (Tons), a tributary of the Ganga.	Banaras Hindu University	About 40 cm	Singh and Singh 1995-96
Lahuradewa (Lat 26° 46' N Long 82° 57' E)	Sant Kabir Nagar, U.P. on a horseshoe lake.	State Archaeology, U.P.	45 cm	Tewari <i>et al.</i> 2002-2003
Sohgaura (Lat 26° 30' 30" N; Long 83° 15' 25" E)	Gorakhpur, U.P., on the confluence of Ami and Rapti.	Gorakhpur University	60 cm	Chaturvedi 1985
Imlidih (Lat 26° 30' 30" N, Long 83° 12' 5" E)	Gorakhpur, U.P., on the left bank of the Kuwano river, a tributary of the Ghaghara.	Banaras Hindu University	50-60 cm	Singh 1992-93
Chirand (Lat 25° 45' 5" N Long 84° 50' E)	Saran, Bihar, on the confluence of the Ghaghara and Ganga.	State Archaeology, Bihar and Patna University.	3.5m	S.R. Roy 1989
Chechan-Kutubpur (Lat 25° 30' 10" N, Long 85° 30' 45" E)	Vaishali, Bihar, on the left bank of the Ganga.	ASI, Patna Circle		IAR 1977-78 17-18
Taradih (Lat 24° 42' N Long	Gaya, Bihar, South-west of	State Archaeology,	70 cm	IAR 1984-85 9-10, IAR

85° 0' E)	Mahabodhi temple.	Bihar		1986-87 23-24, IAR 1987-88 9-11
Maner (Lat 25° 30' 45" N Long 84° 45' 25" E)	Patna, Bihar, on the bank of the Ganga.	Patna University	3.45	IAR 1985-86 11-12, 1986-87, 25-26, IAR 1987-88, 11-12, IAR 1988-89, 7-8.
Senuwar (Lat 24° 56" N Long 83° 56' E)	Rohtas, Bihar, Right bank of Kudra river.	Banaras Hindu University.	1.50m	IAR 1986-87; 26-28

Table: Showing the Main Ceramics, Shapes and Painting Traditions of Neolithic Stage in middle Ganga Plain

Sites	Cultural Periods	Ceramics	Reference
Sohgaura	Pd. I	Corded ware, Rusti-cated ware and small quantity of Red ware	Chaturvedi 1985 : 103-04
Chirand	Pd. I	Red ware, Grey ware (in less quantity), Black, Black & Red ware (largely hand-made and rarely made by turn-table method.	Verma 1970-71:21
Imlidih Khurd	Pd. I	Corded ware and plain Red ware.	Singh 1992-93:23-24
Lahuradeva	Pd. I A	Mainly course variety of Red ware, Black and Red ware which includes hand and wheel turned (slow wheel) varieties	
	Pd. I B	Course variety of Red ware, Black and Red ware with few sherds of Grey ware and Black were.	Tewari <i>et.al.</i> 2002-3:39-43
Seguwar	Pd. IA	Red ware and Burnished Red ware, Burnished Grey ware, Cord-impressed and Rusticated ware, crude Black and Red ware. All these have been distinguished mainly on the basis of surface treatment and other techno- logical details. All these are mainly wheel made, although hand-made are also found.	
	Pd. IB	All the preceding (IA) ceramics and common shapes are continue with improvement of surface treatment.	Singh 1988-89. 6-17.
Jhusi	Pd. I	Cord impressed ware, Rusticated ware, Burnished Red ware, Burnished black ware and crude Black and Red ware. The first three may considered as sub groups of Red ware. Pots are thick to medium in fabric and ill fired. Core of the pots are blackish, Grayish and occasionally reddish. Clay used for making pots is not well levigated and uneven surface of pots ware indicating that these pots are handmade.	Misra <i>et.al.</i> 2009:23
Hetapatti	Pd. I	Hand made pottery characterised by the Cord-impressed ware, Rusticated ware, ordinary Red ware and occasionally Burnished Red ware.	Pal 2007-08. 273

Recent excavations of the early farming culture sites in the Gangetic Plain have revealed interesting evidence of a center of early origin of agriculture in India. The excavations at Lahuradewa in Sant Kabir Nagar district and at Jhusi in Allahabad district have revealed a Neolithic culture characterized by mostly handmade ceramic industry, bone tools, beads of semi-precious stone, micro disc-beads of steatite, circular hut floors, cultivated and wild cereals and domesticated and wild animal bones. The comparative study of the culture with that of the Vindhya indicates that its origin lies in the Vindhyan Neolithic culture. The early chronology indicates that it was one of the early centres of origin of agriculture.

The problem of the antiquity of the Neolithic culture of the region is still not finally settled but now we have some relevant ¹⁴C dates from the excavated Neolithic sites of the Vindhya and Ganga Plain Considering three of C-14 dates reading 4530 ±185 BC (PRL 101), Koldihwa as dependable, the culture was dated to the 7th – 6th millennium BC (Sharma et al. 1980). But being the only site of such antiquity doubts were raised by several scholars. The ¹⁴C date belonging to the transitional phase of the Neolithic to Chalcolithic at Koldihwa is 1440 ± 120 BC (PRL 223). The absolute dates obtained from Mahagara also indicated a late date to the culture, though these dates have the possibility of contamination of samples. Two TL dates reading 2265 BC and 1616 BC and four ¹⁴C date reading 1440 ± 150 BC (PRL 409), 1330 ± 120 (PRL 408), 1440 ± 100 BC (PRL 407) and 1480 ± 110 BC (BSIP) have been obtained from the samples from Mahagara. These dates are not consistent with the stratigraphy possibly due to contamination of samples. In the light of calibrated ¹⁴C date obtained from Kunjhun, reading 3530-3335, the beginning of the Vindhyan Neolithic culture was proposed to 4th millennium BC. (Clark and Khanna 1989). Three ¹⁴C date have come to light from recent excavations at Lahuradewa in the middle Gangetic Plain, which read as 5320 ± 90 BP (BS 1951) (cal B.C. 4220, 4196, 4161) AND 6290 ± 160 BP (BS 1966) (cal BC 5298) (Tewari *et al.* 2001-2002, 2002-2003). Recently three relevant ¹⁴C dates have been obtained from Tokwa. When calibrated these read 6591 BC (BS-2417), 5976 BC (BS-2369), 4797 BC (BS-2464). An AMS ¹⁴C date for a carbonized domesticated rice would push the antiquity of the Neolithic culture at Lahuradewa in 7th millennium BC (Tewari *et. al.* 2004-2005: 40). From the Neolithic horizon of Jhusi three ¹⁴C dates have been obtained. These dates when calibrated, read 7477 BC (BS-2526), 5837 BC (BS-2524) and 6196

BC (BS-2525). The earliest date obtained from the site would put the beginning of the Neolithic culture of the site in 8th millennium B.C.

Regarding the span of the Neolithic culture, observations of P. Singh are very significant, domestication was a process which took considerable time and domestication of each type of domesticable animal and plant species would have taken place in different ecological niches at different times' (Singh 1991:5, Singh 2002: 128). In the Ganga Plain Neolithic culture and Neolithic way of life lasted for a long time starting from 8th – 7th millennium B.C. to 3rd – 2nd millennium B.C.

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