

AGRICULTURAL IMPLEMENTS IN ANCIENT INDIA

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Abstract

The people who were purely dependent upon hunting and food gathering, gradually started the use of stone tools for digging the field and clearance of the forests. Polished stone axe or Celt with its edge carefully, ground was an important tool, which, enabled the neolithic man to obtain a foothold in the forests¹. In the forest clearing, these farmers started the cultivation of crops. Very often fire was used for burning forests. Later on, stone hoes with wooden handle were invented.

The Vedic literature furnished names of different kinds of agricultural tools, such as spade, picks, plough and sickle, which were made of wood and copper and rarley of iron⁷. Plough was by far the most important implement for which terms like sira⁸, sita⁹, langala¹⁰ have been given in the Vedic literature. In Rigveda the Ashvins are praised as inventing ploughing in agriculture and offering it to Manu¹¹. The Atharvaveda¹² referred to Prithu Vainya as the first inventor of ploughing in agriculture¹².

Barring mechanisation, if we look to the present scenario of agricultural development in rainfed farming system as well as in areas such as eastern Uttar Pradesh, we find the farmers using century old agricultural implements. This proves beyond doubt the efficacy of these equipment. Surprisingly the nomenclature also remains the same with slight modification. Although it is not the concern of this study, but a need to examine the spread, use, impact and vernacular names etc. deserves close examination. The continuity of the ancient tradition in this context is beyond imagination.

While the people were hunting wild animals subsisting on leaves and fruits of the jungle tree in India, a remarkable development took place that is the discovery of agriculture. The people who were purely dependent upon hunting and food gathering, gradually started the use of stone tools for digging the field and clearance of the forests. Polished stone axe or Celt with its edge carefully, ground was an important tool, which, enabled the neolithic man to obtain a foothold in the forests¹. In the forest clearing, these farmers started the cultivation of crops. Very often fire was used for burning forests. Later on, stone hoes with wooden handle were invented².

The Neolithic man, who never thought that his small hunting tools will take over the form of agricultural implements, can be credited to evolution of agricultural implements. The size of Harappan

towns itself indicate that it was a plough agriculture with dependence of bullock for draught³. There is indirect evidence of the existence of the plough in the Harappan time. At the site of Kalibangan in western Rajasthan a ploughed field was discovered by Lal, B.B. and Thapar, B.K.⁴. This is the earliest ploughed field so far excavated anywhere in the world. Hence, there was no possibility of finding an actual wooden plough from a Harappan site. So it is not clear till now that the ploughed field of Kalibangan site was ploughed by which type of implement⁵. However, a terracotta model of plough has been discovered from Mohenjo-daro⁶.

The Vedic literature furnished names of different kinds of agricultural tools, such as spade, picks, plough and sickle, which were made of wood and copper and rarley of iron⁷. Plough was by far the

most important implement for which terms like *sira*⁸, *sita*⁹, *langala*¹⁰ have been given in the *Vedic* literature. In *Rigveda* the *Ashvins* are praised as inventing ploughing in agriculture and offering it to Manu¹¹. The *Atharvaveda*¹² referred to *Prithu Vainya* as the first inventor of ploughing in agriculture¹².

The *Vedic* plough was an implement fashioned with a eye to beauty and artistic taste. It was evidently something of which the owner could be proud of¹³. It was made of hard wood like *Udumbara* (*Ficus glomerata*) and *Khadira* (*Acacia catchu*) so that the land could be easily ploughed¹⁴. This plough was generally drawn by two oxen¹⁵. But, some times their number increased upto six¹⁶, eight¹⁷, twelve¹⁸ even twenty four¹⁹. On the basis of these references it has been argued that such unusual numbers of oxen point either to deep ploughing or to hardness of the soil²⁰. It may be inferred that the unusal number of oxen represents the area of land possesed by the farmers.

Various words were used for the plough: *vrika*, *sira*, *langala*,. The ploughshare was known as *plaha*, while the word *sita* was used for furrow²¹. The plough used was evidently of the same type as the wooden plough being used today, in which the 'V' shaped plough bottom pushes the soil on both the sides of the furrow²².

The use of plough in agriculture and yoking its with oxen may be regarded as one of the fundamental discovery of agriculture (implementation and technology) made by our ancient in the *Vedic* age. The improved plough of today is not very much different from the traditional one. In tractor, oxen have been replaced by power²³.

There is no more information available about the *Vedic* plough. Though, it is mentioned in *Vedic* literature that the plough (*sira*) was attached to a pole (*isa*) and a yoke (*yuga*) was attached to it at its upper side²⁴. While ploughing the field, the ploughman controlled the plough and bullock with the help of handle (*tsuru* or *muthia*) and a stick (*astra*)

respectively²⁵. Some of the *vedic* texts mentioned more than two oxen yoked to the plough. Sometimes their number increased upto four, six, eight, twelve and twenty four²⁶. It is to be noted that such numbers of oxen have been mentioned as yoked to a plough only for ploughing the sacrificial ground and never in connection with the ploughing of agricultural fields²⁷. The *vedic* texts inform that such number of oxen are symbolical in nature, the six oxen represents six seasons and twelve oxen signify twelve months of a year and twenty four oxen represent twenty four *pakshas* of a year²⁸. So they should not be taken in the sense of usual numbers of oxen in actual agricultural operations.

Beside the plough, the *Brahamana* texts inform us about the form of *abhri*²⁹. Though *abhri* was a digging tool and it has been translated into spade by the authors of *Vedic index*³⁰. It was hollow³¹, or a span long and some of them were a cubit long³². Generally, an hollow³¹, or a span long and some of them were a cubit long³². Generally, an *abhri* was sharp on one side only but some of them had sharp edges on both sides of the lower portion due to which they were compared with the tongue of a person³³. The word *abhri* is also mentioned in *Yajurveda*³⁴. But the *abhri*, in the sense of spade, does not occur in *Rigveda*³⁵. The word *khanitra* for spade or shovel occurs in the *Rigveda*³⁶. Similarly, we have the work *khanitra* for a digger in *Yajurveda*³⁷. *Khanitram* in *Jaiminiya Brahamana* and *Khanitrena* in the *Tandya Brahamana*³⁸.

The standing crops when ripe, were harvested with sickles (*dantya*³⁹, *datra*⁴⁰ or *srim*⁴¹). The word 'datra' was made of 'da' which means 'to cut'⁴². The word *parsu*, in the sense of sickle, is also mentioned in *Atharvaveda*⁴³. *Bhardwaja Srauta Sutra* mentioned that the *darbha* grass to be used in *somayaga* should be cut with a sickle made of the rib of either a horse or a bull⁴⁴. Later, sickles made of copper and iron were used for harvesting crops which is confirmed by an iron sickle blade which was found from Hastinapur⁴⁵. The harvested crop was collected and

bundles were made out of it⁴⁶, which were carried to the threshing floor. Oxen were used for separating grains from stems by treading them. Occasionally, smaller bundles were beaten out on the floor for separating grains from the plants⁴⁷. Then with the help of winnowing basket (*surpa*⁴⁸ and *titau*⁴⁹) grains were separated from the chaff. *Surpa* was made of reeds or cane or rushes or strips of bamboo⁵⁰. Some domestic instruments for cleaning corns like *ulukhal*, *musala*, *surpa*, *titau* are also mentioned in *Atharvaveda*⁵¹.

In the course of time, the importance of agricultural implements was proceeding ahead. In post-Vedic period, the use of iron implements brought a revolutionary change in agricultural development, *Mahabharata* mentioned the plough as a basic implement of agriculture and described it as a reverent thing⁵². It is also mentioned in the *Mahabharata* that the sacrificial land was ploughed by a golden plough at a time of *Vaishnava* sacrifice.⁵³ *Ramayana* has also described about the golden plough, when Mithila was facing a severe draught, the King Janak ploughed the field with the golden plough⁵⁴. The word plough was to be used in some *Sutras of Astadhyayi*. Although, the *Vedic laagala* term is not seen in the hymns but the term *sira* is acquainted as plough in the hymns⁵⁵. The *langala* home in *Mahabhashya* is probably connected in the sense of *langala*⁵⁶. Plough (*hala*) and *Sira* were synonyms of *langala*⁵⁷. There were two types of plough big and small plough in accordance with the hardness of the soil. The big plough was spoken as '*halih*' and it also knew as '*jitya*'⁵⁸.

Panini classified the farmers into three classes on the basis of the plough⁵⁹.

1. *Ahali*-who did not have their own plough, they were also known as *athahala*, *apasira* and *uplangala*.

2. *Suhali*-who had superior quality of plough.

3. *Durhali*-whose plough to be rubbed off.

The term like *isa* (handle of the plough), *potra*

(middle part of the plough) and *kusika* (*phala* which was made of iron and attached with *potra*) occurred in the *Astadhyayi*⁶⁰. The term *kusika* is known as *phala* in the *Vedic* literature and great epics⁶¹. The plough was attached to a pole (*isa*) and a *yoka* (*yuga*) was attached to it at 'its upper side'⁶². The *yoke* had two ends, which were kept and fastened on the shoulders of oxen with chords. Therefore, the bullocks were likely to be called '*yugya*'⁶³. In *Buddha* literature, the *yuga* was used in the sense of the measure of plough and in *jain* literature it was used for the *yoka* of bullock-cart⁶⁴.

The post-Vedic literature described the other important implements beside the plough. The corners of the fields, which could not be ploughed by the plough, were dugged with the *kudala* or spade. The *Bhasya* spoke the term *khanitra*, *akhana*, *akhana*, *akha*, *akha*, *akhanic*, etc. for the spade⁶⁵. These differences in the name were likely to have been derived from different places⁶⁶.

The *Buddha* literature spoke that the ploughing was done with ploughs drawn by a oxen pair⁶⁷. After ploughing, clods in the earth were broken⁶⁸. A weeding instrument probably called '*khanitti*' or as modern *khurpa* is mentioned in *Mahavagga*⁷⁰. From the *jain* literatures it seems that different implements were used for improved agriculture. The different implements like *hala* (plough), *kuliya*, scissors (*kainchi*), *suppa*, *mai*; *Medica* etc. are described in *Prashnavyakarana*⁷¹. Three types of ploughs were used for ploughing : *hala*, *kuliya*, *dantalaga*⁷². *Nishithachurni*⁷³ mentioned that '*katholla*', which was made of wooden turned the soil. '*Sattha*' was used for weeding⁷⁴. Probably, it was a small iron implement like *khurpi*. An implement '*asida*' in *Bhagavatisuta*⁷⁵ was used for harvesting of ripped crops, which was similar to sickle or *dranti*. The harvesting of crop by *dranti* and sickle is also mentioned in *Gyatadharmakathanga* and *Nishithachurni*⁷⁶.

On the basis of the description in the *Ramayana* the main implements used in the

agriculture by the Ancient Indians may be listed as follow :

1. *Dattra*⁷⁷ - an implement of cutting, a sort of sickle or knife
2. *Khanitra*⁷⁸ - spade
3. *Kudala*⁷⁹ - hoe
4. *Kuthara*⁸⁰ - Parasu⁸¹ - axe
5. *Kshura*⁸² - iron blade
6. *Kalasha*⁸⁴ - water pot
7. *Kumbha*⁸⁵ - water jar
8. *Langala*⁸⁶ - a plough shaped beam
9. *Phala*⁸⁷ - Coulter
10. *Pitaka*⁸⁸ - basket
11. *Shula*⁸⁹ - pike
12. *Hala*⁹⁰ - plough share
13. *Tanka*⁹¹ - hatchet.

According to *Milindapanho*⁹² farmers used to cut their crops with the help of a short type implement like *cyth* or sickle. Archaeologists also accept the existence of this implement⁹³. Apart from this, sugarcane, maize and other crops like this were no possible to be cut with *cyth* or sickle. Possibly there was a long and thin implement made of iron used to cut the sugarcane and maize.

Abhidhana Ratnamala and *Abhidhana Chintamani* mentioned that plough was by far the most important implement for which term like *hala*, *langala*, *sira*, *phala*, *kusika*, *godarna* have been given⁹⁴. Apart from this, spade, goads, sickle, hoes etc. were also amongst other necessary implements for agriculture⁹⁵. The sickle appears to have assumed a form similar to the one found in modern days. It was provided with a wooden handle for the convenience of being easily hold by hand⁹⁶.

The *Kuvalayamalakaha*⁹⁷ mentioned that the plough (*halamanangala*) and yoke (*jotta*) were the implements for ploughing a field. The old Bengali literature revealed that plough, cleaver, sickle, frame ladder, stick, husking padal etc. were the common

agricultural tools, which were made by the village black smith and carpenters⁹⁸.

In the Gupta period iron ploughshare was used. According to Brihaspati⁹⁹, a ploughshare was to be formed by iron twelve palas in weight. It was to be 8 *angulas* long and 4 *angulas* broad of approximately 6 inches x 3 inches.

*Krishi Parasara*⁹⁹ described in detail the various components of plough. The eight parts of a plough are : *isa* (the beam of the plough connected to the yoke), *yuga* (the yoke to which the oxen are tied), *sthanu* the wooden support of plough share), *niryola* (the rod joined to the beam and used to control the direction of plough), *pasita* (the plate that fix the plough share to the *niryola*), *addacalla* (wooden pegs fitted through holes on the *yoke*), *shaula* (the plough share consisting of an iron blade, which digs up mud) and *paccani* (the stick to drive the oxen). Apart from this it also mentioned in *Krishi Parasara*, the circular *abadha*¹⁰⁰ (a disc plough used on hard virgin soil), *yotra* (the belt used round the neck of the ox) and the rope (*rajju*). The '*phalaka*'¹⁰² (to be used as substitute of *shaula*, is used on irrigated soil), *phalika* (used for deep ploughing), *viddhaka*¹⁰³ (is a harrow that ploughs multiple rows), *medica* (is wooden plank fitted to the plough to level soil inundated with shallow water). According to Majumdar and Banerjee¹⁰⁴ (1960) has now been changed into '*mai*' in Bengal. In eastern Uttar Pradesh it is known as '*pata*' or '*henga*' used for the same work.

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