

Agricultural Implements in Vedic Literature

P.C. Muralidharan

Director, Kantaloor Sala Research Institute, Trivandrum, Kerala,
pcmuralidharan1981@gmail.com

Ever since the Vedic times, the distinguished position of our Ancient India has been extolled in various Sanskrit texts for its contribution in the field of Agriculture. Earlier, people were leading a kind of life, considering the Agricultural occupation as their very breath and identity.

Sage Parāśara, highlighting the importance of Agriculture in his text *Kṛṣiparāśara* (K.P. v.7) says that food is made with the collection of grains which do not happen without tilling the soil. Hence men should make huge efforts to augment the production of grains through the means of Agriculture:

अन्नं हि धान्यसञ्जातं धान्यं कृष्या विना न च।
तस्मात्सर्वं परित्यज्य कृषिं यत्नेन कारयेत्॥

He also declares that if there is no food, starvation will occur (K.P.v.5ab):

उपवासस्तथापि स्यात् अन्नाभावेन देहिनाम्॥

Agriculture is popularly known as *kṛṣikarma* or *kṛṣikārya* from the root 'kṛṣ' meaning 'to plough'. Elaborating on the word 'kṛṣi' Patañjali states that it does not merely, mean 'tilling'; it is to be understood largely as a science connecting the various activities related to Agriculture such as paying wages, supplying of seeds and oxen (*Mahābhāṣya* on Pā. III.1.26):

नानाक्रियाः कृषेरथाः नावश्यं कृषिर्विलेखने एव वर्तते। किं तर्हि प्रतिविधानेऽपि वर्तते। यदसौ भक्तबीज-बलीवर्देः प्रतिविधानं करोति सकृष्यर्थः।

Of the activities related to Agriculture mentioned above, we may also include providing implements for the successful completion of tilling. This paper shall concentrate on the implements used in farming such as *Lāngala* (Plough), *Yuga* (Yoke), *Khanitra* (Hoe), *Dātra* (Sickle), *Cālanī* (Sieve) and many more.

1. *Lāngala* (Plough)

The *Amarakośa* (A.K.) enumerates various implements which are extensively used in Agricultural operations. The commentators of A.K. explain the etymological derivations of these terms. According to *Liṅgāyasūrin*, the word *lāngala* (A.K. 2. 9. 13d) is derived from the root '*lagi gatau*' and hence 'that which goes piercing through the soil is *lāngala*': लङ्गति भुवोऽन्तः प्रविश्य गच्छति लाङ्गलम्।

This term is available in our literature from Vedic times. The *Rgveda* (RV 4.57.4) prays for happiness to all involved in the tilling of the soil namely, the oxen (*vāhāh*), the farmer (*nara*), the plough (*lāngala*) and the straps (*varatrā*) that tie the oxen to the plough:

शुनं वाहाः शुनं नरः शुनं कृषतु लाङ्गलम्।
शुनं वरत्रा बध्यन्तां शुनमष्टामुदिङ्गय॥

The *Vājasaneyā Samhitā* (12.71ab) acknowledges the fact that the *lāngala* is a primary component in agricultural activity:

लाङ्गलं पवीरवत्सुशेवं सोमपित्सरु।The commentator Mahīdhara explains this mantra saying that the *lāngala* which, if equipped with a ploughshare (*phāla*), aids the process of digging the soil; thereby it ensures auspiciousness

to the *yajamana* (sacrificer):

... कीदृशं लाङ्गलं पवीरवत् . . . फालसंयुक्तम्।
तथा सुशेवं . . .शोभनसुखकरं . . .। तथा सोमपित्सरु
सोमं पिबतीति सोमपा यजमानः तस्मिन्सोमपि
यजमाननिमित्तं त्सरति भूमिं खनतीति . . .।

The same mantra occurring in the Atharvaveda (3.17.3) is explained by Sāyana slightly differently. He says that the mantra here wishes that the plough, which is like a thunderbolt, be soft enough in the hands of farmer who produces the grains that will be useful in the making of '*tsaru*' to be offered in the Somayāga:

यद्वज्रमिव निशितधारं लाङ्गलाग्रे प्रोतं सदयोमयं
शल्यं भूमिं विपाटयति तत्सहितम्। कर्षकस्य सुखकरं
व्रीह्यादिसम्पादनद्वारा सोमयागनिष्पादकः त्सरुःभूमौ
प्रच्छन्नगमनम् . . . एवं गुणविशिष्टं लाङ्गलम् . . .
उद्धरतु।

Whatever be it, it is clear that *lāngala* had been in use from the Vedic times in India for tilling the soil.

We find the *Taittirīya Samhitā* (6.6.7) according great importance to the chantings of *Rgveda* and *Sāmaveda*, while using this implement in the preparation of the field:

... यथा वै लाङ्गलेनोर्वरां प्रभिन्दन्ति एवं ऋक्सामे
यज्ञं प्र भिन्तः . . .।

Patañjali refers to a person sitting in a relaxed manner, as “he ploughs with five-ploughs” (probably five labourers) (V.3.55) :
एकान्ते तूष्णीम् आसीन उच्यते-पञ्चभिर्हलैः कृषति
इति।

Synonyms of *Lāngala*

Although the term *lāngala* is popular among the Vedic texts, Pāṇini refers to it in most of the *sūtras*¹ as *hala*; in some places, the same has been mentioned by him *sīra*². While identifying the plough Patañjali also uses the term *sīra* like Pāṇini:

गोतरोऽयं यश्शकटं वहति सीरं च।

The plough has been referred to as *vrka* by the Nirukta (6.26), as the tip of the plough pierces through the soil layers of the earth: वृको लाङ्गलं भवति। विकर्तनात्।

The words *sīra*, *godāraṇa* and *hala* are referred to by A.K.(2.913d-14a) as synonyms of *lāngala*: . . .लाङ्गलम् हलम् ॥ गोदारणं च सीरः

. . .।The iconic character Balarāma who is always depicted of holding the plough, is referred to by A.K.(I.1.25a) as सीरपाणिः (*sīrapāṇiḥ*)(the bearer of plough).The Atharvaveda, (6.30.1c) while referring to the celestial god

Indra uses the term सीरपतिः (*sīrapatiḥ*).

Other Related Terms

1. The plough, drawn by bullocks in the agricultural field, was generally called as *hālika* (or) *sairika*³.
2. The term referring to a kind of plough employed for ploughing the hardest of soil, was known as *hali* (or) *jityā* (Pā.III.1.117) :

विपूयविनीयजित्या मुञ्जकल्कहलिषु।

¹ Pā. III.2.183; IV.3.124; IV.4.76 ; IV.4.80.

²Pā.VI.2.187 : स्फिगपूतवीणाञ्जोऽध्वकुक्षिसीरनामनामच।

³*SiddhāntaKaumudī* on Pā.IV.4.81:यथा-
हलंवहतिहालिकः।सैरिकः।

3. The *Mahābhāṣya* on Pā. I.1.72⁴ refers to the area brought under cultivation as *halyā* (or) *sītyā*.

4. The *Vājasaneyā Samhitā* (12.70) calls *sītā* (furrow) as *lāṅgala-paddhati* when they say – " May the furrows be drenched with honey, ghee and water":

सीतालाङ्गलपद्धतिर्मधुनाघृतेनोदकेनसंसिच्यताम्।

5.1.0. The *Rgveda* (4.57.6a) prays to the furrow thus: अर्वाचीसुभगेभवसीते। and the following *mantra* (4.57.7b) prays to Indra to take hold of her and Pūṣā to guide her.

इन्द्रःसीतांनिगृह्णातुतांपूषानुयच्छतु।Here,

Sayana explains the word *sīram* to mean *sītādhāarakāṣṭham*:

इन्द्रःदेवःसीतांसीताधारकाष्ठंनिगृह्णातु।तांसीतांपूषादेवःअनुयच्छतु- नियमयतु।

5.1.1. The *Śatapatha Brāhmaṇa* (7.2.2.29) lays down the information that the furrows be drawn in such a manner that two oxen may bind with the plough (*sīra*) along with the chanting of Yajurveda-mantra; so too, four furrows can be drawn; in another case twelve furrows are to be made silently, without chanting:

यजुषा द्वावनड्वाहौ युनक्ति तूष्णीं इतरान्यजुषा चतस्रः सीताः कृषति तूष्णीं इतराः।

This is explained by Sāyana as follows:

'यजुषा' मन्त्रेण "सीरा युञ्जन्ति" इत्यादिकेन' द्वौ धुर्यावनड्वाहौ युनक्ति' इतरान्' अनडुहोऽग्रे बध्यमानान्' तूष्णीं' युनक्ति। तथा 'चतस्रः सीताः' "यजुषा' मन्त्रेण' कृषति इतराः' द्वादशसीताः' तूष्णीं' कृषति ।

⁴रथसीताहलेभ्योसद्विधौप्रयोजनम् - रथ्यःपरमरथ्यः, सीत्यम्परसीत्यम्, हल्यापरमहल्या॥

2. Phāla (Ploughshare)

The *Rgveda* 4.57.8a prays to the plough to happily till the land:

शुनं नः फाला विकृषन्तु भूमिं . . . ।

The term *phālāḥis* explained by Sayana as *bhūmi-vidāraka-kāṣṭhāḥ* – “those that break the earth”; hence, the plough :

नःभूमिं फालाः भूमिविदारककाष्ठाः शुनं विकृषन्तु।

A.K. (2.9.13c.) defines *phālaḥ* as– " फलति विशीर्यते भूमिः अनेन इति फालः " (the earth is dug apart, 'जिफला विशरणे').

3. Yuga(Yoke)

The word *yuga* (yoke) has been used in the sense of binding. In AV (AV.III.17.2a), युनक्त सीरा वियुगा वि तनोत ...।Sayanācārya explains this as – “may the ploughs be bound with the yokes; and that the yokes be spread on the shoulders of oxen”.

हे कृषीवलाः सीरा युनक्त सीराणि लाङ्गलानि युगैः सह योजयतायुगा वि तनोत युगानि बलीवर्दानां स्कन्धेषु प्रसारयत।

4. Yoktra (Rope)

1. The bullocks are fastened to the *yuga* (yoke) by a rope called *yoktra* or leathern thongs called *naddhrī*.

2. In the RV in an address to the rivers by Vishvamitra the term *yoktra* has been used in the sense of ‘ropes’ (III.33.13b): .

. . . आपः योक्त्राणि मुञ्चत ।Here the commentator says, that the sage pleads with the rivers to loosen their waves of ropes: . . . तथा हे आपः यूयं योक्त्राणि ताः रज्जूः मुञ्चत ।

3. Again RV V.33.2, while praising on Lord Indra, says : . . . अर्कैः हरीणां वृषन्योक्त्रमश्रेः।Here, Sayanacarya makes his comments as, ' may the Celestial Lord attain us, whose hymns are like the binding ropes of the horses': . . . अर्कैः, अर्चनसाधनैः स्तोत्रैर्निमित्तभूतैः हरीणां रथे नियोज्यमानां अश्वानां योक्त्रं नियोजनरज्जुम् अश्रेः, 'आश्रयसि'।
4. In AV, the term, 'yoktra' is used to denote, ' binding' (A.V.II.30.6): . . . योक्त्रे सह वो युनज्मि।This has been explained by the commentator as keeping the relations in good harmony. . . . एकस्मिन् बन्धने स्नेहपाशे सह युनज्मि - सह बध्नामि ।
5. AK.2.9.13b gives the etymological derivation of the term, *yoktra*. This word is derived from the root, ' युञ् बन्धने' (or) युजिर्योगे i.e. to bind (or) to join. Here the commentator Lingayasurin through his commentary *Vivrti* explains that, the ropes that tie the neck region of the oxen is named *yoktr* :
यूयतेऽनेन बलीवर्दकण्ठ इति योक्त्रम्।

5. *Khanitra* (Spade/ Hoe)

A.K. defines the word *khanitra* as the equipment that digs up the earth – "खन्यते भूमिरनेन इति खनित्रम्". 'खनु अवदारणे⁵-means to dig-up.

Ākhana or *ākhāna* is also an instrument like *khanitra* meant for uprooting the weeds.

⁵Ibid. 2.9.12d.

6. *Dātra* (Sickle)

The well grown grain bearing crops, were chopped off using a sickle was known as *dātra* (RV8.78.10ab):

तवेदिन्द्राहमाशसाहस्तेदात्रंचनाददे।

According to Yāska the sickle was called *dātra* in the north and *dāti* in the east⁶ :हेइन्द्रतवेत्तवैवआशसाआशंसनेनत्वमस्मदीयंक्षेत्रंयवस मृद्धंकरोषीत्याशंसनेनहस्तेदात्रंचनलवनसाधनंदात्रम पिआददेस्वीकरोमि।

Vivrti on A.K. 2.9.13 explains *dātra* as "an equipment by which the grass is being chopped off: दातिभिन्तिअनेनतृणमितिदात्रम्।This is a kind of knife, the external structure of which can be seen as having a little bend, facilitating the chopping activity in a more precise manner.

This Vedic term has come into use later as *lavitra*⁷.(अ.ध्या.III.2.184)

7. *Parasu* (Axe) and Pruning

In the case of crops the de-weeding process is said to be more beneficial for them while in the case of large plants and trees the time tested pruning technique is said to be more effective. RV8.40.6 refers to pruning as "Cut off the foe, like an old pruner cuts off the protruding branches of a creeper":

अपिवृश्चपुराणवद्रततेरिवगुष्पितमोजोदासस्यदम्भय ।

RV8.73.17 refers to *paraśu* or the axe when it says that the Asvins were looked

⁶Nir.II.2.

⁷Also refer अ.को. 2.9.13a.

upon by the *Rṣi* as an axe-armed man looks upon a tree :

अश्विनासुविचाकशद्वृक्षंपरशुमाँइव।

8. *Cālanī* (Sieve)

Another agricultural equipment known as *cālanī* (sieve) which is said to have been used for removing the chaff or light grains from the midst of healthy grains. *AK* defines *cālanī* as the instrument by which the grains are sifted:

चाल्यतेअनयाइतिचालनी।

9. *Sūrpa* (Winnow)

This instrument is called as *titau* during Vedic times (RV.10.71.2a): सक्तुमिवतितउनापुनन्तो. . . . "winnowing it (speech) as men winnow barley with a sieve ". This implement is also referred to as *pavitra* by the *Maitrāyaṇī Samhitā* (2.5.5) when it says that the chaffs are removed from the grains.

Śūrpa is another term used for indicating the winnow since it separates the chaffs or fragment grains from the rice (A.K.2.9.26a) – शीर्यतेविशीर्यतेतुषादिःअनेनशूर्पम्।

Agricultural Tools Enumerated By *Kṛṣiparāśara*

Sage *Parāśara* does not end up talking about the defining features of plough alone; he goes one step further of explaining the usefulness of its accessories besides their sizes. Here the details of the eight accessories which precede their sizes are given below in the

following (*Kṛṣiparāśara*, 112):

(i) *īṣā* (the pole of the plough), (ii) *yuga* (the yoke) , (iii) *hala-sthānu* (the trunk of the

plough), (iv) *niryola* (the rod of the plough exclusive of the pole and the share), (v) *niryolapāśikā* (iron plates that fix the share to the *niryola*), (vi) *aḍḍacalla* (pin of yoke where the bull is tied), (vii) *śaula* (an extra piece of wood to fix *niryola* to the pole and (viii) *paccanī* (goad for driving the bulls):

ईषायुगहलस्थाणुःनिर्योलस्तस्यपाशिकाः।

अडुचल्लश्चशौलश्चपच्चनीचहलाष्टकम्॥

He further says that, for, the farming operations to be more effective, each of these accessories associated with the plough is to be in proper measurement. If that is not the case so, undoubtedly it may result in the Agricultural operations getting hindered at each phase of the ploughing and leading to undesirable outcomes making the entire cultivation exercise a futile one (119-20):

इयं च हलसामग्री पराशरमुनेर्मता।

सुदृढा कृषकैः कार्या शुभदा सर्वकर्मसु॥

अदृढायुक्तमाना या सामग्री वाहनस्य च।

विभ्रं पदे पदे कुर्यात्कर्षकाले न संशयः॥

Now, the measures of these instrument are given: *īṣā* is five *hasta* cubits long,

yuga up to the ears (of the animals?), *niryola* one and a half cubits, *niryolapāśikā* and *aḍḍacalla* about nine inches (taking the breadth of a finger to be an *aṅgula*, it is approximately three fourth of an inch), *hala-sthānu* is two and a half cubits, *śaula* nearly a cubit and the strong *paccanī* (made of bamboo with iron top) should be 18/9 *muṣṭis* (taking the traverse length of a fist to be approximately four inches) (113-15):

पञ्चहस्ता भवेदीषा स्थाणुः पञ्चवितस्तकः।

सार्धहस्तस्तु निर्योलो युगं कर्णसमानकम्॥

निर्योलपाशिका चैव अडुचल्लस्तथैव च।

द्वादशाङ्गुलमानौ तौ शौलोऽरत्त्रिप्रमाणकः॥

साद्धद्वादशमुष्टिर्वा कार्या वा नवमुष्टिका।
दृढा पञ्चनिका ज्ञेया लौहाग्रा वंशसंभवा॥

Besides acknowledging the usefulness of these accessories, Parāśara mentions a few more accessories which too are found to be aiding the ploughing activity effectively. They are *ābaddha* (a rod of iron which prevents the *niryola* from getting out of the pole) should be cylindrical and of 54 inches long, *yoktra* (the yoke) is four cubits in length and *rajju* (rope) must be five cubits long, *phālaka* (ploughshare) has to be one cubit or one cubit and four inches, *phālikā* (looking like a leaf of Arka) is of nine inches, *viddhaka* (a big hoeing instrument) having twenty one spikes and the *madikā* (the harrow) to be nine cubits long (116-18):

आबद्धो मण्डलाकारश्चतुः पञ्चाशदङ्गुलः।
योक्त्रं हस्तचतुष्कं स्यात्त्रज्जुः पञ्चकरात्मिका॥
पञ्चाङ्गुल्यधिको हस्तो हस्तो वा फालकः
स्मृतः।
अर्कस्य पत्रसदृशी फालिका तु नवाङ्गुला॥
एकविंशतिशल्यस्तु विद्धकः परिकीर्तितः।
नवहस्ता तु मदिका प्रशस्ता सर्वकर्मसु॥

Related Information

Vedic Literature elaborates the procedures of grains undergoing in the post harvesting period until it reaches the granary. The harvested crops bearing the grains are placed on the *khala* (threshing floor) (*Vivṛti* on AK, 2.9.15)– 'खलोनामधान्यराशिकरणस्थानम्। Though it is not termed an instrument, it has been instrumental in aiding the Agricultural activity of isolating the grains and pulses. A.K. refers to *medhiḥ* – मेधतेबलीवर्देः सङ्गच्छते मेधिः। which is actually a pillar that stands in the middle of threshing the floor where the grains are being separated

from the crops by means of employing the oxen –*khalah* ('A granary' where the grains are being stored').

The grains after putting into process of cleaning of chaffs on the threshing floor, have been carted away to the granary. During Rgvedic period, the two words *anas* (RV 3.33.10): ययाथ दूरादनसा रथेन and *śakaṭī* were used for referring the cart (RV 10.147.3): शकटीरिव सर्जति .

Agricultural Equipments Today

Modern agricultural equipments which are mostly mechanically operated ones, have significantly reduced the human presence on the fields saved time and paved way for high agricultural yield than the manually operated mechanisms. Many tools over the centuries continue to be evolved till today depends on the growing necessities of the mankind in the world. We shall discuss upon the evolution of a few farming implements mentioned in this paper so far, in the light of modern technology.

In today's world we find the different varieties of ploughs being employed by farmers on the field. The natural functions of a plough however remains unchanged since the Vedic times. But the usage of different types of ploughs which we witness today, depends on the different soil conditions can certainly not be found in Vedic times. However it is worth to make a mention here on the reference to five ploughs made by Patañjali in his text *M.B.* referred in this paper⁸. With this it is understood that the idea of rationalizing the agricultural operation was in vogue among the people lived then.

⁸See pg.no.5

Mould board plough, disc plough, disc harrow plough are some of the ploughs used in modern times. The first type is used to cut, loosen, invert the furrow slice and provide a deep seed bed of good structure for seed bed preparation⁹. With the large steel discs mounted on it the second type is to cut, turn and in some cases breaks the furrow slices¹⁰. Disc harrow plough is said to be very useful for hard ground, full of stalks and grasses. It cuts the lumps of soil, clods and roots¹¹.

The time consuming and labour intensive harvesting work as was perceived in olden days, has been made easier with the equipment of Combine harvester available today, which does the harvesting, winnowing and threshing of crops such as rice, corn, wheat etc. Similarly, the manual weeding done in ancient times with the equipments khurpi, sickle, kudali, hoe etc., have been replaced with the mechanical weeding of self propelled power weeder, tractor operated rotary weeder and dry land weeder¹².

Conclusion

Despite many topics such as season, preparation of manures, irrigation, sowing, crop protection pertain to Agriculture among others, this paper has made an attempt on focusing on the implements and has shed some light on how they have been interpreted in the early Sanskrit and Vedic Literatures. All technological advancements, on light, witnessing today find roots in the theory of Edison who made the discovery on it. Similarly the main cause for the technological

development in the case of agricultural implements in today's world is undoubtedly our forefathers. The techniques, which they adopted using the tools such as plough, sickle, hoe, kudali etc., to make the farming operations more sustainable, have been developed and taken to the greater heights by people living in this century for the benefits of mankind at large.

Bibliography

1. *Kṛṣiparāśara* of Parāśara, Chowdhari Shri Narayan Singh, 1971.
2. *Vyākaraṇa Mahābhāṣya*, ed. by Vedavrat, Haryana Sahitya Samsthan, 1963.
3. *Amarakośa*, The Adyar Library and Research Centre, Chennai, 1971.
4. *Rgveda Samhitā* with Sāyanācārya's Commentary, Vaidik Samshodhan Mandal, Poona, 1976.
5. *Atharvaveda samhitā* with Sāyanācārya's Commentary, Vishveshvaranand Vedic Research Institute, 1960.
6. *Vājasaneyā Samhitā* with Mahīdhara's Commentary, Chowkamba Publications, Varanasi, 1972.
7. *Taittirīya Samhitā*, Vol-3. With English Translation & Notes by R.C.Kashyap, Shri Aurobindo Kapali Shastry Institute of Vedic Culture Bengaluru, 2004.
8. *The Nighaṇṭu and Nirukta*, Motilal Banarsidas, 1998.

⁹ Farm Machinery & Equipment-I, p.no-15.

¹⁰ Ibid. p.no-19.

¹¹ Ibid. p.no-22.

¹² Ibid. p.no-43

9. *Aṣṭādhyāyī*, Chowkamba, Varanasi, 2006.
10. *Satapatha Brāhmaṇa*, Vol-3, Gian Publications, 1987.
11. *Farm Machinery & Equipment-I 'A Practical Manual'* by Jagvir Dixit, Division of Agricultural Engineering, Srinagar, 2018.
12. *Shabda Veda - 'Maitrayaṇī Samhitā'*, ed. Kailash Chaturvedi, Patrika Publications, Rajasthan, 2010.