

VEDIC AGRICULTURAL SYSTEM-THE BASE OF MODERN AGRONOMY

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Abstract

To keep pace with the basic need of fast changeable world modern science of soil management and crop production is also progressing. But it is very interesting to note that the Vedic agricultural system was very enriched as supported by the numerous references to different stages of cultivation-ploughing, sowing, harvesting, threshing and presentation of agricultural production, etc. Different types of farmers cornfield, granaries, agricultural implements of Vedic literature give us a clear idea of developed agronomy. Two Vedic terms of farmers Karsivana and Kinasa the linguistic basis of later word Kisan, remind us the motto of Indian agricultural society 'jay jawan jay kisan'.

As food is the basic need of human being and for which a developed agricultural system is most essential. Vedic seers have also given top priority on Agronomy.

Three types of cornfields *urvara* (fertile), *irina* and *sasypa*, corn from cultivable land (*krstipacya*) and uncultivable land, irrigation, different types of food production *brihi* (rice), *yava*, *masa*, *tila*, *mudga*, *khalva*, *priyangu*, *anu* (fine rice), *syamaka*, *nivara*, *godhuma* and *masura*, use of different fertilizers, various agricultural implements, etc. give us an idea of developed agronomy.

An attempt has been made in this paper to study a systematic investigation on the Vedic agricultural system to prove it as the base of modern agronomy.

Since the primary requirement of any being is food (*anna*), man started to think for its production, because without production consumption is impossible. India is basically an agricultural country and it is well-known that about 67% of its total population earns its livelihood from agriculture. It is the base of Indian agronomy or rural economy and the proper management of land is most essential for the same. India has sufficient fertile land (*urvarā kṣetra*), well irrigated by rivers to provide the food of each and every living being of this country. To keep pace with this basic need of fast changeable world, modern progressive thoughts in this area with a scientific approach on soil management and crop production, may be an important subject of modern research for the development of India and its people. But at the same time the researcher should peep into the origin of Indian agricultural system.

As food is the basic need of human being (*jīvanti svadhyā annena martyāḥ*¹⁾ and for which a developed agricultural system is most essential, Vedic seers have

also given top priority on the same (*annaṃ vai kṛṣiḥ*²⁾. The Śatapatha Brāhmaṇa gives a clear description of four important stages of agricultural crop-production: (i) act of tilling or ploughing a land (*karṣaṇa*), (ii) sowing of seeds (*vapana*), (iii) reaping or harvesting a ripen crop (*lavana*) and (iv) threshing (*mardana*) of corns for getting the grains (*kṛṣanto ha smaiva pūrve vapanto yanti lunanto'pare mṛṇantaḥ śaśvaddhaibhyo'kṛṣṭapacyā evauśadhayaḥ pecire*³⁾. Different types of farmers, cultivation, agricultural land, ploughing with bulls, sowing the seeds of best quality, irrigation, fertilizer or manure, agricultural implements and preservation of crops in granaries etc. give us the basic idea of Vedic agricultural system. An attempt has been made here to give a systematic representation on these fundamental ideas of Vedic agricultural system to prove it as the base of rural economy.

The term agriculture is actually a combination of two Latin words *ager* 'field' and *cultura* 'cultivation', closely related with two Sanskrit terms '*kṣetra*' or *bhūmi*

and *karṣaṇa* or *kṛṣṭi* (a synonym of *manuṣya*⁴), to denote people associated with cultivation. *Kṛṣi* is reflected in several vedic mantras. Two entire vedic hymns on agriculture (Rgveda IV.57 and Atharvaveda III.17) and more than two hundred vedic references on land farming, different agricultural implements, irrigation, farmers, fertilizers, crops, etc. are sufficient to get a clear idea on the vedic agricultural system.

The Rgveda (X.34.13) advises for land-farming as the best means of gaining wealth '*kṛṣimit kṛṣasva vitte ramasva bahumanyamānaḥ*'. According to the Atharvaveda (VIII.10.24) the king Pṛthu Vainya, a scion of Vaivasvata Manu invented cultivation and produced crops. People used to take these crops as the means of living and cultivation was accepted as the best rural profession (*tām pṛthīm vainyo 'dhok tām kṛṣim ca sasyam cādhok, te kṛṣim ca sasyam ca manuṣyā upajīvanti, kṛṣṭarādhirupajīvanīyo bhavati*). Aśvins are also treated as cultivator with the sowing of barley grain in the tilled fields by means of a plough (*yavam vṛkeṇāśvinā vapanteṣam*⁵; *yavam vṛkeṇa karṣathāḥ*⁶).

According to the Yajurveda, land or agricultural field is the primary need for cultivation and it is the best place for sowing seed (*kiṁ vāvapanam mahat, bhūmir āvapanam mahat*⁷) and one should produce good crops (*susasyāḥ kṛṣiskṛdhṛ*⁸). In the vedic period the duty of a king was also to look after the progress of agriculture (*kṛṣyai tvā kṣemāya tvā rayyai tvā poṣāya tvā*⁹). The Taittirīya Saṁhitā also records the importance of cultivation and suggests to cultivate properly for yielding good crops (*kṛṣyai tvā susasyāyai*¹⁰; *annam kṛṣir vṛṣṭir vaṣaṭ svāhā*¹¹). The Atharvaveda (III.17) gives importance on *kṛṣi* and for producing good harvest it records a prayer to king Bhaga to let the ploughing go deep (*bhago no rājā ni kṛṣim tanotu*¹²). The Kāthaka Saṁhitā also prescribes deep ploughing for the rich production of paddy and barley (*adho dūram kṣaned adho vā asyā (pṛthivyāḥ) vīryam, vīryasyābhikṛptyai tasmāt sukrṣṭe vrīhiyavā pacyante ... tadimā prajā upajīvanti*¹³). But according to modern agriculturists deep ploughing is not at all necessary for producing good crops like paddy, etc. in India. The same

text also suggests to produce rich crops from agriculture (*kṛṣim susasyām utkṛdhṛ*¹⁴).

Since rain is most essential for agriculture, cloud is praised as personified deity (*tat kṛṣiḥ parjanya devatā*¹⁵). Agriculture depends not only on water but also on all the five primal elements. For production of crops all these *pañcamahābhūtas* are most essential in different forms. Earth or land or soil is the primary need for sowing seeds. Water supplies the essential sap for growing the plants, in the form of rainfall or irrigation from river etc. Without heat (*tejas*) growth is impossible. Air (*vāyu*) is essential for fertility. Maruts are praised as grinder of soil (*pipiṣvati*¹⁶). Without space crops cannot take shape. So agriculture depends on all the natural phenomenon. Hence the Śatapatha Brāhmaṇa says: *sarvadevatyā vai kṛṣiḥ*¹⁷.

To denote the agricultural field or cornfield the term *kṣetra* is mostly used in the vedic literature. The lord of field '*Kṣetrasya pati*'¹⁸ is actually the presiding deity of field, praised in the Vedas for good crops. Different types of agricultural lands are mentioned in the Vedas: cornfield full of ripened corns (*pakvam kṣetrāt kāmādughā ma eṣā*¹⁹), barren land, pastureless land (*agavyūti kṣetram*²⁰), *khila* or *khilyā* i.e. waste land (*khile gā viṣṭhitā iva*²¹), *urvarā* or fertile land (*apnasvatīṣu urvarāsu iṣṭan*²²), etc. Indra is treated as the possessor of thousands of fertile lands (*tam naḥ sahasrabharam urvarāsām*²³). The Rgveda also records that due to the blazing of fire the fertile or productive land are changed in waste or uncultivable land (*uta khilyā urvarāṇām bhavanti*²⁴).

Different types of farmers are recorded in the Vedas and they are named according to their works, viz. *kārṣivana* 'cultivator', *kīnāśa* 'farmer', *sīrapati* 'ploughman', *vapa* 'sower', *dhānyakṛt* 'sower of paddy seeds' and *iḍavā* 'carrier of ripen corns or grains to a granary'. The vedic terms *kārṣivana* and *kīnāśa*, the linguistic basis of later word *kiṣāṇa*, remind us the motto of Indian agricultural society - '*jay jawān jai kīsān*'. The Atharvaveda records that the gods ploughed a cornfield to produce this barley, where the ploughman is Indra and the Maruts are the cultivators who give rich gifts (*devā imam madhunā samyutam yavam sarasvatyāmadhi maṇau avacarkṣuḥ, indra āsīt sīrapatiḥ śatakratuḥ, kīnāśa āsan*

*marutaḥ sudānavaḥ*²⁵). *Kārṣivana* or cultivators are also known as *annavid* (*nikhananto agre kārṣivanā annavidō*²⁶). Farmers are used to toil the land with ox for the production of sweet beverage (*śrameṇa anaḍvān kilālaṃ kīnāśascābhi gacchataḥ*²⁷). For refreshment a ploughman is most essential (*irāyai kīnāśam*²⁸). The expert sower of paddy seeds are known as *dhānyakṛt* (*vapanto bījamiva dhānyākṛtaḥ*²⁹). According to the Śatapatha Brāhmaṇa Gandharvas were also competent cultivators possessing winnow and barley (*gandharvā āsuḥ śūrpaṃ yavamān kṛṣir udvālavan dhānāntarvān*³⁰).

In the Vedas ploughing is recorded as an auspicious mark of happiness indicating prosperity. *Śuna* (prosperity or happiness) and *sīra* (plough) are two deified objects related with agriculture (*śunāsīrāvīmāṃ vācam juṣethām*³¹). Following two mantras depict a real picture of tilling a land with the bullocks, happily by a farmer:

*śunaṃ vāhāḥ śunaṃ naraḥ śunaṃ kṛṣatu
lāṅgalam*

*śunaṃ varatrā badhyantām śunaṃ
aṣṭrāmudīṅgayaḥ*³²

All the agricultural objects like plough, ox, ploughman, the binding rope, the goad, etc. are the mark of prosperity. Again, as a symbol of prosperity, *śuna* and *sīra* are conjointly praised:

śunaṃ naḥ phāla vi kṛṣantu bhūmiṃ

śunaṃ kīnāśā abhi yantu vāhaiḥ.

śunaṃ parjanya madhunā payobhiḥ

*śunāsīrā śunaṃ asmāsu dhattam*³³

Here we find that the ploughman is tilling the land happily with the sharpened ploughshares and praying to cloud for sufficient rain. The Atharvaveda records a beautiful *mantra* describing a wellshaped, lance-pointed and sharpened plough with a handle (*lāṅgalaṃ pavīravat suśīmaṃ somasatsaru*³⁴).

Mainly two agricultural seasons are noticed in the Vedas - Kharif (July to October) and Ravi (November to March/April) as two principle seasonal crops (*dviḥ saṃvatsarasya sasyaṃ pacate*³⁵). Generally, most of the agricultural crops take three months time for complete

production and hence at least four seasonal harvests are mentioned in the Taittirīya Saṃhitā (*yavaṃ grīṣmāya auṣadhīr varṣābhyo vrīhiñcharade māṣatilau hemantaśiśīrābhyām*³⁶). These are the time of ripen crops like barely for summer, medicinal herbs for the rainy season, paddy in autumn, and beans and sesamum in winter. According to the Kauṣītaki Brāhmaṇa, after one day of *citra amāvasyā* (i.e. *citra śukla pratipadā*), the winter crops are ready for harvesting (*caitrasyāmāvasyāyā ekāha upariṣṭād dikṣerannāgataṃ sasyaṃ bhavati*³⁷).

In this context agricultural implements may be discussed in brief. Though we cannot compare the agricultural implements of vedic period with the modern advanced and scientific implements of agriculture but old and rough implements like wooden plough with a sharpened ploughshare for tilling the agricultural land with bullocks is still the base of rural economy. To indicate a plough following terms are used in the Vedas³⁸: *lāṅgala*, *sīra* and *sīla*. *Phāla* and *stega* denote ploughshare which actually tills the soil; *sītā* means a furrow or trenched part of soil, tilled by a ploughshare. The term *īśa* means the plough-stilt or the long wooden stich connected with the plough; *yuga* means a yoke and *varatrā* denotes a rope for binding the bulls with the yoke and plough. Handle of a plough is known as *tsaru* in the Vedas. For controlling the yoked oxen two implements are used - *aṣṭrā* and *tottra* to denote a goad. *Sṛṇi* and *dātra* 'sickle' (cf. *dātāram* in Santali language) are used for reaping the harvest (*lavana*). *Khanitra* (shovel) is also used in the Vedas for digging the soil. The Vedas record the use of *śūrpa* for winnowing the corns like paddy, barley, etc. and *titaṃ* for cleaning the flour made of barley (*saktumiva titaunā punantaḥ*³⁹). The two terms *sīra* and *laya* are used conjointly for two functions furrowing and harrowing a field respectively (*sīrañca me layaśca me*⁴⁰).

A brief idea is now given here on irrigation, fertilizers, prevention from natural calamities etc. as revealed in the Vedas. Though the agriculture mainly depends on adequate rainfall (*kṛṣiśca me vṛṣṭiśca me*⁴¹) but as a substitute the vedic farmers take the help of man-made irrigation system for watering the cornfield. The R̥gveda (VII.49.2) describes four types of irrigated water

- (1) rain (*divyāḥ*), (2) from well (*khanitrimā*), (3) natural (*svayamjāḥ*) and (4) from those rivers which are mixed with sea (*samudrārthāḥ*). Artificial irrigation could be guessed from the vedic terms '*khanitrimā āpaḥ*'⁴² for irrigation from well and *hradaṃ kulyā*⁴³ for irrigation from canal.

For growing the yielding capacity, manures or fertilizers are also used in the agricultural field. Mostly cowdung is used as manure and it is known to the vedic seers as *karīṣa*, *śakan*, *śakṛt*, etc. They know that the use of adequate cowdung in an agricultural field results to a rich harvest (*karīṣiṇīm phalavatīm svadhām*,⁴⁴ *nityapuṣṭām karīṣiṇīm*⁴⁵).

Vedic seers are also conscious about the controlling method of natural calamities. The Atharvaveda records that the evils like moles, rats, birds, insects, excessive rain, and draught could damage the crops. The same could be prevented by some spells (*hataṃ tardaṃ samaṅkam ākhum aśvinā chintam... tarda hai, pataṅga hai jabhya hā upakvasa...*⁴⁶).

In crop production, harvesting is an important work as if the farmer is not able to collect the ripen corns in time surely he has to face a severe loss. The farmers plough the fields, scatter the good seed on fertile land which is fed and watered by natural phenomena but the ripen corn is cut or reaped by farmers with cutters like sickle etc. as cleared in the following mantra of Ṛgveda:

*yunaktu sīra vi yuga tanudhvam kṛte yonau
vapateha bījam, girā ca śruṣṭiḥ sabharā asanno
nedīya itsṇyaḥ pakvameyāt*.⁴⁷

After reaping the ripen corn, they bound into bundles and beaten out or threshed onto the floor of granary (*khale na parśān prati hanmi*⁴⁸).

In agriculture a farmer really gets happiness when he finds the production from three types of cornfields - *urvarā* (fertile), *iriṇa* (barren land) and *śaspya* (marshy land), corn from cultivable land (*kṛṣṭapacya*) and the corn ripen in unploughed land (*akṛṣṭapacye aśane dhānye*)⁴⁹. The Yajurveda records twelve types of food-grains in the following mantra:

*bṛīhayaśca me, yavāśca me, māśāśca me, tilāśca
me, mudgāśca me, khalvāśca me, priyaṅgavaśca*

*me, aṇavaśca me, śyāmākāśca me, nīvārāśca me,
godhūmāśca me, masūrāśca me, yajñena
kalpantām*.⁵⁰

These twelve corns are: *vṛīhi* (paddy), *yava* (barley), *māṣa* (a kind of bean, *Phaseolus radiatus*), *tila* (sesamum), *mudga* (a kind of bean, *Phaseolus mungo*), *Khalva* (chick-pea or pulses, *canaka*), *priyaṅgu* (panic seed, *Panicum italicum*), *aṇu* (millet, *Panicum miliaceum*), *śyāmāka* (a kind of millet, *Panicum frumentaceum*), *nīvāra* (wild rice), *godhūma* (wheat), and *masūra* (a kind of lentil, *Ervum hirsutum*). It is very interesting to note that most of these cultivated grains are known as *dhānya* in the Bṛhadāraṇyaka Upaniṣad as all these grains are most essential for sustaining life. According to this Upaniṣad there are ten cultivated grains: rice, barley, sesamum, beans, millet, panic seeds, wheat, lentils, pulses and vetches '*Doliches biflorus linn*' (*daśa grāmyāṇi dhānyāni bhavanti, vṛīhiyavāstīlamāśā aṇupriyaṅgavo godhūmāśca masūrāśca khalvāśca khalakulāśca*)⁵¹.

In the Vedic period, preservation of food-grains in granary was known to the people. The term *khala* is used in the Vedas for 'threshing floor' and *khalapā* is a granary made of bamboo mats. The terms - *ūrdara*, *sthivi* and *kṛdara* are used in the Vedas in the sense of granary or treasure house e.g. '*tām ūrdaraṃ na pṛṇatā yavena*'⁵² 'as a granary filled with barley', '*nirgā ūpe yavam iva sthivibhyaḥ*'⁵³ 'as men bring barley from granaries;', '*samiddho añjan kṛdaraṃ matinām*'⁵⁴ 'decking the treasure house or prayers', etc.

In fine, it may be said that the above study gives a clear picture of vedic agricultural system and it is the base of rural economy because the rural people could maintain their livelihood by engaging themselves in different types of agricultural work. Advancement of any field work depends on the long experience and hence the vedic agricultural system is the pioneer of modern agricultural system in India to provide adequate food to each and every people of this country.

References :

1. Atharvaveda XII.1.22
2. Śatapatha Brāhmaṇa VII.2.2.7
3. *ibid.* I.6.1.3
4. Nighaṇṭu II.3

5. Ṛgveda I.117.21
6. *ibid.* VIII.22.6
7. Yajurveda XXIII.45-46
8. *ibid.* IV.10
9. *ibid.* IX.22; also cf. Taittirīya Saṃhitā VII.1.11.1
10. Taittirīya Saṃhitā I.2.2.3; VI.1.3.7
11. *ibid.* VII.3.12.1
12. Atharvaveda III.12.4
13. Kāthaka Saṃhitā XXV.4
14. *ibid.* II.3
15. Maitrāyaṇī Saṃhitā II.13.14
16. Ṛgveda I.168.7
17. Śatapatha Brāhmaṇa VII.2.2.12
18. Ṛgveda IV.57.1-3; also cf. Atharvaveda II.8.5; XX.143.8; Taittirīya Saṃhitā II.2.1.5
19. Atharvaveda XI.1.28
20. Ṛgveda VI.47.20
21. Atharvaveda VII.115.4
22. Ṛgveda I.127.6
23. *ibid.* VI.20.1
24. *ibid.* X.142.3
25. Atharvaveda VI.30.1
26. *ibid.* VI.116.1
27. *ibid.* IV.11.10
28. Yajurveda XXX.11
29. Ṛgveda X.94.13
30. Śatapatha Brāhmaṇa XI.2.3.9
31. Ṛgveda IV.57.5; also cf. Atharvaveda III.17.7
32. *ibid.* IV.57.4; also cf. Atharvaveda III.17.6
33. *ibid.* IV.57.8; also cf. Atharvaveda III.17.5
34. Atharvaveda III.17.3
35. Taittirīya Saṃhitā V.1.7.3
36. *ibid.* VII.2.10.2
37. Kauṣītaki Brāhmaṇa XIX.3
38. Ṛgveda IV.57.4-8
39. *ibid.* X.71.2
40. Yajurveda XVIII.7
41. *ibid.* XVIII.9
42. Ṛgveda VII.49.2
43. *ibid.* III.45.3
44. Atharvaveda XIX.31.3
45. Ṛgveda Khilasūkta II.6.9
46. Atharvaveda VI.50.1-3
47. Ṛgveda X.101.3
48. *ibid.* X.48.7
49. Atharvaveda V.29.7
50. Yajurveda XVIII.12; also cf. Taittirīya Saṃhitā IV.7.4.2
51. Bṛhadāraṇyaka Upaniṣad VI.3.13
52. Ṛgveda II.14.11
53. *ibid.* X.68.3
54. Yajurveda XXIX.1