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 confield, granaries, agricultural implements of Vedic literature give us a clear idea of developed agronomy. Two Vedic terms of farmers Karsivaha and Kinaspa the linguistic basis of later word Kisana, 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 gop priority on Agronomy.

Three types of cornfields urvara (fertile), irina and sasyapa, corn from cultivable land (krstipaca) 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 is as the base of modern agronomy.

Since the primary requirement of any being is food (annma), 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 (urvara ksetra), 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 (jivanti svadhaya annena martyâh) and for which a developed agricultural system is most essential, Vedic seers have also given top priority on the same (annam vai krsih). The Satapatha Brahma gives a clear description of four important stages of agricultural crop-production: (i) act of tilling or ploughing a land (karsana), (ii) sowing of seeds (vapana), (iii) reaping or harvesting a ripen crop (lavana) and (iv) threshing (mardana) of corns for getting the grains (krsanto ha smaiva pürve vapanto yanti lunanto'pare mrntantah ssvaddhaibhyo krsiapacya evausadhaya pecire). 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 ‘ksetra’ or bhumi
and kārṣaṇa or kṛṣṭi (a synonym of manuṣya), to denote people associated with cultivation. Kṛṣṭi 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 vīte ramasva bahumanyamānāḥ’. According to the Atharvaveda (VIII.10.24) the king Prithu 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 prthim vainyo’dhok tām kṛṣim ca sasyam cādhok, te kṛṣim ca sasyam ca manuṣyā upaśivanti, kṛṣṭarādhirupajīvanti bhavati). Āśvins are also treated as cultivator with the sowing of barley grain in the tilled fields by means of a plough (yavam vrkaśināvā vapantesam; yavam vrkaṇa kārṣathalāh).

According to the Yajurveda, land or agricultural field is the primary need for cultivation and it is the best place for sowing seed (kim vāvapanam mahat, bhūmir āvapanam mahat) and one should produce good crops (susasyā kṛśiskṛdh). In the vedic period the duty of a king was also to look after the progress of agriculture (kṛṣayai tvā kṣemāya tvā rayayai tvā poṣayai tvā). The Taittiriya Samhitā also records the importance of cultivation and suggests to cultivate properly for yielding good crops (kṛṣayai tvā susasyāyai; annam kṛṣī vrśīr vasaṭ svāhā). The Atharvaveda (III.17) gives importance on kṛṣī and for producing good harvest it records a prayer to king Bhaga to let the ploughing go deep (bhago no rājā ni kṛṣim tanotu). The Kathaka Samhitā also prescribes deep ploughing for the rich production of paddy and barley (adho dūram khaned adho vā asyā (prthivyāḥ) viryam, viryasyābhikṛtyai tasmāt sukṛṭe vrhiyavā pacyante ... tadimā prajā upaśivanti). 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 uktṛdh).

Since rain is most essential for agriculture, cloud is praised as personified deity (tat kṛṣih parjanyo devatā). Agriculture depends not only on water but also on all the five primal elements. For production of crops all these pāncamahābhūtas 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 (vāyū) is essential for fertility. Maruts are praised as grinders of soil (pipśvati). Without space crops cannot take shape. So agriculture depends on all the natural phenomenon. Hence the Śatapatha Brāhmaṇa says: sardevatayā vai kṛṣih.

To denote the agricultural field or cornfield the term kṣetra is mostly used in the vedic literature. The lord of field ‘Ksetrazya pati’ 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 (pakṣam kṣetat kāmadughma eṣā), barren land, pastureless land (agavyati kṣetram), khila or khilya, i.e. waste land (khile gā viṣhīhā īva), urvara or fertile land (apnasatiṣu urvarāsū īṣanī), etc. Indra is treated as the possessor of thousands of fertile lands (tām nāh sahasrabharam urvarāsā). 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 urvarānām bhavant).

Different types of farmers are recorded in the Vedas and they are named according to their works, viz. kārṣīvā ‘cultivator’, kīnāśa ‘farmer’, sīrāpāti ‘ploughman’, vapa ‘sower’, dhānyakṛt ‘sower of paddy seeds’ and īdavā ‘carrier of ripen corns or grains to a granary’. The vedic terms kārṣīvāna and kīnāśa, the linguistic basis of later word kisāna, remind us the motto of Indian agricultural society – ‘jai jawān jai kisān’. 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 imaṁ madhunā samyutam yavam sarasvatyāmadhi maṇau avacarkṛṣuh, indra āśīt sīrāpatiḥ ūtakratuḥ, kīnāśa āsan.
marutaḥ sudānavaḥ
deśo. Kārśīvana or cultivators are also
known as annavid (nīkananto agre kārśīvanā annavid)
Farmers are used to toil the land with ox for the production
of sweet beverage (śraṇeṇa anādvan kīlām kīnasascābhi
gacchataḥ). For refreshment a ploughman is most
essential (irāyai kīnasam). The expert sower of paddy
seeds are known as dhānyakṛt (vapanto bijamiva
dhānyakṛtāḥ). According to the Satapatha Brāhmaṇa
Gandharvas were also competent cultivators possessing
winnow and barley (gandharvā asuh śūrpaṃ yavamān
kṛṣṭi udvālavan dhanāntarvān).

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 (śunāśirvādm ācām
jusethǎm). Following two mantras depict a real picture
of tilling a land with the bullocks, happily by a farmer:

śunāṃ vāhah śunāṃ naraḥ śunāṃ kṛṣṭu
lāṅgalaṃ
śunāṃ varaṭrā badhyantām śunāṃ
aśtrāmudīṅgayaḥ.

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:

śunāṃ naḥ phalā vi kṛṣantu bhūmiṃ
śunāṃ kīnāśā abhi yantu vāhah,
śunāṃ parjanyo madhunā payobhiḥ
śunāśrā śunāṃ asmāsu dhattam.

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 well-shaped, lance-pointed
and sharpened plough with a handle (lāṅgalaṃ paviravat
suśīmaṃ somasatsarṇa).

Mainly two agricultural seasons are noticed in
the Vedas - Kharif (July to October) and Ravi (November
to March/April) as two principle seasonal crops (dvīḥ
samvatsarasaya sasyaṃ pacaṭe). 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 Śaṃhitā (yavam griśmāya
auṣadhir varṣābhyo vṛīhiṃcharade māṣatilau
hemantaśiśirābhāṃ). 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 Kauśitaki Brāhmaṇa, after one
day of caitra amāvasyā (i.e. caitra śukla pratipadā), the
winter crops are ready for harvesting (caitraśyāmāvasyāyā
ekāha upariṣṭād dikṣerannāgatam sasyaṃ bhavati).

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 Vedas: lāṅgala,
sīra and sīla. Phala and stege denote ploughshare which
actually tills the soil; sītā means a furrow or trench part
of soil, tilled by a ploughshare. The term iśa means the
plough-stilt or the long wooden stich connected with the
plough; yuga means a yoke and varaṭrā 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 - aśtrā and
tottra to denote a goad. Śrṇi and dātra ‘sickle’ (cf. dātaram
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 sūrpa for winnowing
the coxns like paddy, barley, etc. and titau for cleaning
the flour made of barley (saktumiva titauṇa punantaḥ).
The two terms sīra and sāya are used conjointly for two
functions furrowing and harrowing a field respectively
(sīraṇča me layaśca me).

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 (kṛṣića me vrṣića me)
but as a substitute the vedic farmers take the help of man-
made irrigation system for watering the cornfield. The
Ṛgveda (VII.49.2) describes four types of irrigated water
- (1) rain (divyāḥ), (2) from well (khanitrimā), (3) natural (svayamjāh) and (4) from those rivers which are mixed with sea (samudrārthāh). Artificial irrigation could be guessed from the vedic terms ‘khanitrimā āpah’⁴² for irrigation from well and hradaṃ kulyā⁴³ 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 kariṣa, śakan, śakṛt, etc. They know that the use of adequate cowdung in an agricultural field results to a rich harvest (kariṣinīṃ phalavatīṃ svadhām,⁴⁴ nityapuṣṭāṃ kariṣinīṃ⁴⁵).

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 (hatam tardam samaṅkam ākhum aśvinī 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 Rgveda:

yunaktu sīra vi yuga tanudhvam krte yonau vapatehā bijam,girā ca śṛṣṭih sabharā asanno nediya itsrnyah pakvameyāt.⁴⁷

After reaping the ripen corn, they bound into bundles and beaten out or threshed onto the floor of granary (khaḷe na parsān prati hanmi⁴⁸).

In agriculture a farmer really gets happiness when he finds the production from three types of cornfields - urvarā (fertile), iriṇā (barren land) and śaspya (marshy land), corn from cultivable land (kṛṣṭapacya) and the corn ripen in unploughed land (akraṣṭapacye asane dhāṇye⁴⁹).

The Yajurveda records twelve types of food-grains in the following mantra:

brihayaśca me, yavāśca me, māśāśca me, tilāśca me, mudgāśca me, khalvāśca me, priyaṅgavaśca me, anāvāśca me, śyāmākāśca me, nivārāśca me, godhūmāśca me, masūrāśca me, yajñena kalpantām.⁵⁰

These twelve corns are: vrīhi (paddy), yava (barley), māśa (a kind of bean, Phaseolus radiatus), tila (sesamum), mudgā (a kind of bean, Phaseolus mungo), KHALVA (chick-pea or pulses, canāka), priyaṅgū (panic seed, Panicum italicum), apu (millet, Panicum miliaceum), śyāmāka (a kind of millet, Panicum frumentaceum), nīvāra (wild rice), godhūmā (wheat), and masūrā (a kind of lentil, Ervum hirsutum). It is very interesting to note that most of these cultivated grains are known as dhāṇya in the Brhadāraṇyaka 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 linum’ (daśa grāmyāṇi dhāṇyāṇi bhavanti, vrīhīvāśtiśāmaśa apupriyāṅgavo godhūmāśca masūrāśca khalvāśca khalakulāśca⁵¹).

In the Vedic period, preservation of food-grains in granary was known to the people. The term khaḷa is used in the Vedas for ‘threshing floor’ and khalapā is a granary made of bamboo mats. The terms - ārda, sthivi and kṛḍara are used in the Vedas in the sense of granary or treasure house e.g. ‘tāṁ ārdaṁ na prṇatā yavena⁵₂ ‘as a granary filled with barley’, ‘nirgā upe yavam iva sthivibhyah⁵³ ‘as men bring barley from granaries’, ‘samiddho aṇjan kṛḍaram 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. Rgveda I.117.21
6. *ibid.* VIII.22.6
7. Yajurveda XXIII.45-46
8. *ibid.* IV.10
9. *ibid.* IX.22; also cf. Taittiriya Samhitā VII.1.11.1
10. Taittiriya Samhitā L2.2.3; VI.1.3.7
11. *ibid.* VII.3.12.1
12. Atharvaveda III.12.4
13. Kāthaka Samhitā XXV.4
14. *ibid.* II.3
15. Maitrāyaṇī Samhitā II.13.14
16. Rgveda I.168.7
17. Śatapatha Brāhmaṇa VII.2.2.12
18. Rgveda IV.57.1-3; also cf. Atharvaveda II.8.5; XX.143.8; Taittiriya Samhitā II.2.1.5
19. Atharvaveda XI.1.28
20. Rgveda VI.47.20
21. Atharvaveda VII.115.4
22. Rgveda 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. Rgveda X.94.13
30. Śatapatha Brāhmaṇa XI.2.3.9
31. Rgveda 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. Taittiriya Samhitā V.1.7.3
36. *ibid.* VII.2.10.2
37. Kausītaki Brāhmaṇa XIX.3
38. Ṛgveda IV.57.4-8
39. *ibid.* X.71.2
40. Yajurveda XVIII.7
41. *ibid.* XVIII.9
42. Rgveda VII.49.2
43. *ibid.* III.45.3
44. Atharvaveda XIX.31.3
45. Rgveda Khilasūkta II.6.9
46. Atharvaveda VI.50.1-3
47. Rgveda X.101.3
48. *ibid.* X.48.7
49. Atharvaveda V.29.7
50. Yajurveda XVIII.12; also cf. Taittiriya Samhitā IV.7.4.2
51. Brhadāranyaka Upaniṣad VI.3.13
52. Rgveda II.14.11
53. *ibid.* X.68.3
54. Yajurveda XXIX.1