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Indigenous Agricultural Knowledge in Vedic and Early Post-Vedic India: Sustainable Practices and Ecological Wisdom

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Abstract:
Agriculture formed the backbone of socio-economic life in the Vedic and early post-Vedic India. This paper explores the indigenous agricultural knowledge systems of the period, focusing on tools, techniques and practices for management of land, water and seeds. Taking insights from the Vedic texts such as the Rigveda, Atharvaveda, and others, it examines the cultivation of major crops, the use of wooden ploughs, and natural manures, and irrigation methods. The study highlights how these practices reflect deep ecological wisdom, sustaining soil fertility, conserving water resources and preserving biodiversity long before the advent of modern agricultural science. By situating Vedic agriculture within the wider discourse of sustainability, this paper underscores the relevance of traditional knowledge systems to contemporary debates on environmentally responsible farming.

Keywords: Indigenous Agricultural, Vedic Knowledge, Post-Vedic India, Ecological Wisdom, Vedic Texts.

1. Introduction:

Agriculture has always remained a crucial part of the economy. It is a practice that sustains the latter's life. During the Vedic era, it became so important that Rigveda states agriculture as the best job. (Khurana and Katyayan, 2024). Even, about seventy-five hymns of the four Vedas deal with aspects of agriculture (Choudhary, 2023, 62). And as there were no scientific advancements at that time, all the agrarian practices were sustainable, signaling to the great ecological wisdom of the populace. Also, it shall be kept in mind that farming was not merely an economic activity, but it was entwined with cosmology, ritual and social order. As, in Rigveda, agriculture is said to be the means of honor and prosperity (10.117.7). The Vedic sagas were aware of the necessity of agriculture (Choudhary, 2023, 61-62). Hence, we find 'Krishi' in Vedic texts reiterated.

2. Objectives:

1. To understand the importance of agriculture in Vedic and the early post-Vedic periods.
2. To investigate the indigenous aspects and techniques that different practices included.
3. To understand the practices of sustainability and ecological wisdom.
4. To investigate the continuities of such practices in later periods of Indian agriculture.
5. To analyze the then techniques and modern-day ones.

3. Methodology:

This research follows a qualitative and interpretive design, primarily relying on textual analysis of Vedic literature and supported by secondary historical, archaeological, and Indological scholarship. The study adopts a historical approach to examine indigenous agricultural knowledge in Vedic and early post-Vedic India, with an emphasis on ecological balance and sustainability.

4. Data Collection Methods:

1. Textual Extraction**:** Systematic identification and collection of relevant hymns, verses, and passages referring to agriculture, tools, irrigation, and manuring from primary Vedic texts.
2. Ecological Lens**:** Evaluation of Vedic agricultural practices through the lens of ecological balance, including soil fertility, water conservation, and biodiversity preservation.
3. Sustainability Perspective**:** Comparative analysis of Vedic practices with contemporary debates on sustainable farming, highlighting their continuity and relevance in modern agricultural discourse.

5. Indigenous Techniques and Tools:

Methods of farming have been discussed in Vedic literature. First requirement of farming is fertile soil. Cultivation areas in different phases of history are thus traced to fertile soils like mountain clay, alluvial soils of river – plain and black cotton soil particularly only to Deccan trap adjoining some parts of central and western India. Farmers of the Rigvedic period were knowledgeable in recognizing various kinds of soils (Aithal, 2022, 131). There is great deal of similarity between methods of farming mentioned in Atharvaveda and modern methods. In Satapatha Brahmana the whole process of farming has been described in four words Karsana (cultivating the field), Vapana (sowing seeds), Lavana (reaping the harvest), Maida (Threshing). The word Krishti comes from the ploughing of the land. Cultivatable fertile land was ploughed and prepared for sowing seeds. As ploughing was regarded as an important process in cultivation, it was celebrated with prayers in the favor of the ploughman. Satapatha Brahmana gives detailed information about the tools used in process of agriculture. The ploughed land was known as Urvara or Kshetra. The rope tied around the neck of oxen was called Vata. Sowing, being an important process in cultivation, was given due attention. One of the mantras in Rigveda says on sowing "Harness the ploughs fit on the yokes, now that the womb of earth is ready to sow the seeds there in…" The tools and appliances used in farming have also been mentioned in Atharvaveda. People invented sophisticated implements. The plough share is frequently mentioned in the Rig-Veda and later Vedic literature. It was made of iron (Atharvaveda 3.17.3) and Khadira wood (Atharvaveda 5.6.6). The mere plough was probably known as langela. A large and heavy plough was called Sīra. Another mantra says, "Attach the 'Sīra', spread apart the yokes, sow the seeds into the prepared womb." The reaped crop was threshed to separate grains from the stalk. After threshing there was winnowing. The Atharvaveda also mentions holding Surpa, winnowing the husk, using husk for cows, collecting rice after separating its husk. Cleaning of grain by pounding it in mortar has been also being described. The cleaned grains were stored in large earthen pots after measuring their quantity. The pots used in measuring were called Urdara before being stored in the granaries called Sthivis. Satapatha Brahmana too mentions agricultural process as consisting of ploughing, sowing, reaping and threshing (Kaur, 2014, 361). People possessed fair knowledge of fertility of land, selection and treatment of seeds, seasons of sowing and harvesting, rotation of crops, manuring and other practices (Aithal, 2022, 131).

6. Irrigation:

Several mantras in Vedic literature deal with the importance of rain for good crops. Rig-Veda mentions four kinds of water used for irrigation purposes. They are- a. Divyāh (Rainwater) b. Khanitrimāh (Water of wells) c. Svayamjāh (Spring water) d. Samudrārthāh (The water of the rivers falling into sea) (Kaur, 2014, 361). From the various hymns in Vedic literature that pray to God for rainfall, it is easy to assume that the Vedic agricultural system mainly depended on rainwater. Likewise, the vristi sukta of Atharvaveda also described the great necessity of rainwater for agriculture. At a place of Rigveda has been referred to as water irrigation from a well. According to Rigveda wells were divided into two classes such as permanent wells and artificial wells. Fixed wells had sufficient water throughout the year. Also did Atharvaveda clearly mention irrigation of agricultural land by digging the canals. Hence, it seems that they were aware of uncertain rainfall. Therefore, they used different artificial sources of water for irrigation (Choudhary, 2023, 65-66).

7. Sustainability and Ecological Wisdom:

Sustainable practices and ecological wisdom of the people can broadly be understood from two parameters- manuring and water conservation. Manuring the soil was ensured so as to maintain its fertility which ultimately resulted in preventing it from going barren. In other words, it can be said that manure is the food of plants. The terms 'Sakan', 'Shak', 'Shok' i.e. in Vedic literature have referred to manure. In a hymn of Rigveda 'Ribhus are shown as extracting the sakrit (dung) from the sheds'. Similarly, according to Atharvaveda, 'cows have stated the feeders of the people as providing manure to their crops'. Satapatha Brahmana also announced that 'dry cow dung (Karlra) was used for making the fields more productive. During the Vedic era, dung, garbage i.e. was heaped up at a particular place away from the village or cowshed, which produced manure, and maid-slavers were employed to spread it on the agricultural land to make it more fertile. But if the amount of dung was less, then the farmer would spread it on land instated of maid-slaves. Even, here it should be notable in Vedic scriptures that no other chemical fertilizers were used in agriculture for more production except dung. But, in that era, sacrificial ashes were considered as better manure than dung. Because a part of the smoke and fly ash produced by sacrifices (yajna) get mixed in the atmosphere and fall on the vegetation during the rainfalls. And another part of the smoke and fly ash produced by sacrifices (yajna) spread everywhere into earth through wind and fall on the vegetation. In this way, this organic fertilizer is spread everywhere by rainwater and streaming air and helps to nourish the plants. As this organic manure is produced in less time, with less cost and less labor, that's why it has been considered the best manure than cow dung (Choudhary, 2023, 66).

Also, the importance of water to living beings was always understood and has been stated by the Vedic seers as: "Water is like a mother to this world. It is the sovereign of the world. It holds divine wealth, immortality, pious deeds in its possession for the welfare of the living beings" (Rigveda 10.30.10 to 12). "Water is the basis of all that is good in life. The most beautiful things happen to us because water provides us with vigor" (Rigveda 10.9.1). The same mantra is repeated in the Atharvaveda (1.5.1) and is repeated in our rituals even today. "Water exercises maximum control over the living beings on earth" (Atharvaveda 1.5.4) (Sadhale, 2006, 106).

8. Continuities into Later Indian Agriculture:

In ancient India- Vedic period, agriculture was never an Industry, nor a means to make profit. Agriculture could yield profit, but it should not be profit. The basic need of human life is only for food grains. Whatever

we offer to the land that is agriculture is returned to us, magnified manifold. Culture has been enriched by human beings who have their roots in the soil all over the world. Agriculture is the mainstay of living beings. Mechanized agriculture is developed in the west. India, in the modern period, has tried to imitate the west to some extent. But the ancient practice of cultivation on a large scale is even now very popular. Even today, the use of ploughs, organic manures, dependency on rainwater for irrigation at some places, and limited use of chemical fertilizers can be seen. Vedas may be regarded as the source of inspiration for agricultural practices in India. Our elders understood and practiced it intelligently. That is the reason why they felt the presence of lord in everything at every moment. They also sang his glory and regarded every living and non-living thing as part and parcel of the mighty lord. So, from Vedic period to till date agriculture remains the important and major source of food supply to humans and animals and are still and continue to depend on it (Aithal, 2022, 133).

9. Conclusion:

Indigenous agricultural knowledge in Vedic and early post -Vedic India have remained crucial as it depicted the practices of sustainability and ecological wisdom. Vedas, that have been some of the many oldest texts existing on this earth are significant evidences of the intellectual techniques adopted for farming, irrigation, strengthening soil fertility and sustaining water availability. No doubt, are these texts the most vital sources of indigenous methods of agriculture that fueled sustainability. And as we discuss today on the topics of sustainable development or give sustainable development goals to be achieved by 2030, we look back to our ancient texts for taking references from their practices. As in this modernized world, we witness the spurt in production with the increasing population everywhere, we know that resources are limited and the sooner they are adapted to better techniques of conservation, the best will they continue serving more generations to come. Hence, it is important for us to introspect and develop sustainability as sooner as possible.

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