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Agricultural Principles in Kṛṣiparāśara

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Abstract - The Kṛṣiparāśara, an ancient Sanskrit text attributed to Sage Parāśara, offers profound insights into agricultural science and practices that align seamlessly with the ethos of sustainability and environmental harmony. This paper explores the agricultural principles detailed in the Kṛṣiparāśara, emphasizing its relevance to the Indian Knowledge System and its potential to address contemporary agricultural challenges.

The Kṛṣiparāśara serves as a comprehensive treatise encompassing various aspects of agriculture, including soil preparation, crop selection, irrigation techniques, seasonal planning, and pest management. The text highlights an integrated approach to farming, blending scientific observations with spiritual and ecological perspectives. Notable principles such as land classification, astrological influences on farming, and natural methods of enhancing soil fertility underscore the ancient wisdom's relevance in mitigating modern issues like soil degradation, climate unpredictability, and the overuse of chemical fertilizers.

This research investigates how the text's principles can contribute to sustainable farming practices and organic agriculture, resonating with global calls for eco-friendly farming. By analysing key verses and contextualizing them within modern agronomy, the study bridges the gap between traditional agricultural knowledge and contemporary scientific practices. Additionally, the paper discusses how Kṛṣiparāśara reflects the socio-cultural significance of agriculture in ancient India, fostering a holistic understanding of the relationship between humans and nature.

In revitalizing the agricultural heritage embedded in the Kṛṣiparāśara, this research underscores the importance of integrating indigenous knowledge systems into academic discourse and policymaking. The findings aim to inspire the adaptation of ancient practices for modern agricultural innovation, ensuring food security, ecological balance, and a sustainable future. This exploration not only reaffirms the timelessness of Vedic wisdom but also highlights its transformative potential for India's agrarian landscape in the 21st century.

Keywords: Kṛṣiparāśara, sustainable agriculture, Indian knowledge system, traditional farming, ecological balance, food security.

1. INTRODUCTION

Agriculture has been the backbone of Indian civilization since ancient times, with texts like the Kṛṣiparāśara serving as repositories of traditional knowledge. Attributed to Sage Parāśara, this text is a seminal work on agricultural science, offering a holistic approach to farming that integrates ecological, spiritual, and practical dimensions. In an era marked by environmental degradation, climate change, and unsustainable farming practices, the Kṛṣiparāśara provides valuable insights that resonate with modern sustainable agriculture. Kṛṣiparāśara is not merely a manual of agricultural techniques; it is a philosophical treatise that underscores the ethical and spiritual dimensions of farming. The text emphasizes the importance of living in harmony with nature and recognizing the interdependence of all living beings.

This paper aims to explore the agricultural principles outlined in the Kṛṣiparāśara, highlighting their relevance to contemporary farming challenges. By analysing its teachings on soil management, crop selection, irrigation, and pest control, the study seeks to bridge the gap between ancient wisdom and modern agronomy. Furthermore, it emphasizes the socio-cultural and ecological significance of agriculture in ancient India, as reflected in the text.

Fig -1: Agricultural Principles in Kṛṣiparāśara

2. HISTORICAL AND CULTURAL CONTEXT OF AGRICULTURE IN SANSKRIT LITERATURE

Agriculture has been an integral part of Indian civilization since ancient times, as reflected in various Sanskrit texts, including the Vedas, Smṛtis, Purāṇas, and specialized treatises on farming. The earliest references to agriculture can be found in the Ṛgveda, where agricultural practices such as plowing (kṛṣi), sowing, and irrigation are mentioned. Hymns dedicated to Indra and Varuṇa highlight the dependence of agriculture on rainfall and water management. The Atharvaveda further elaborates on soil fertility, crop protection, and rituals for bountiful harvests.

In the post-Vedic period, Dharmaśāstra texts like Manusmṛti and Yājñavalkya Smṛti provided legal and ethical guidelines related to land ownership, taxation, and agricultural duties. The Arthaśāstra of Kauṭilya (4th century BCE) offers detailed discussions on agrarian

policies, irrigation techniques, and state-sponsored agricultural projects, emphasizing the economic significance of farming.

The Rāmāyaṇa and Mahābhārata also contain extensive references to agriculture, often linking it with governance and dharma. The Purāṇas, including the Matsya Purāṇa and Agni Purāṇa, describe agricultural deities, seasons (ṛtus), and traditional farming methods, reflecting the deep cultural connection between agriculture and religious practices.

Specialized agrarian texts such as Kṛṣiparāśara (attributed to Sage Parāśara) and Kāśyapīya Kṛṣisūktam provide systematic knowledge on soil classification, crop rotation, water management, and organic fertilizers. Kṛṣiparāśara, in particular, stands as a seminal text in Sanskrit agricultural literature, offering insights into traditional farming wisdom that remained relevant for centuries.

During the medieval period, Sanskrit treatises like Vṛkṣāyurveda by Sūrapāla focused on plant science and agricultural sustainability, highlighting early Indian knowledge of horticulture and botany. Various regional

and vernacular texts built upon these Sanskrit foundations, ensuring the continuity of agrarian knowledge across generations.

Thus, Sanskrit literature presents a rich repository of agricultural principles, integrating scientific, economic, and spiritual dimensions of farming. The study of Kṛṣiparāśara within this literary tradition provides valuable insights into the agronomic practices that shaped India's agricultural heritage.

The Kṛṣiparāśara is part of a rich tradition of agricultural literature in ancient India, which includes texts like the Arthaśāstra and Vṛkṣāyurveda. These texts reflect the deep connection between agriculture and Indian culture, where farming was not merely an economic activity but a way of life imbued with spiritual and ethical values. The Kṛṣiparāśara stands out for its systematic and scientific approach to agriculture, offering practical guidance while emphasizing harmony with nature.

3. KṚṢIPARĀŚARA: THE FIRST AGRICULTURAL LITERATURE OF ODISHA

The Kṛṣiparāśara is recognized as the earliest and most significant agrarian text in Odisha, highlighting the deep-rooted agricultural traditions of the region. The highest number of manuscripts of this text have been written and preserved in Odisha, indicating its profound influence on the local farming community. According to the published catalogue of Odishan Manuscripts, 15 manuscripts of Kṛṣiparāśara are preserved in the Odisha State Museum, while 10 manuscripts are housed in the Acārya Śrī Surendrasūrisvarji Tattvajñānaśālā Library in Ahmedabad, Gujarat. Additionally, one manuscript is preserved in Sambalpur University, further affirming Odisha's pivotal role in the preservation and propagation of this text.

The Kṛṣiparāśara provides a detailed account of traditional agricultural techniques, particularly those employed in paddy cultivation in Odisha. Key practices such as Mayikādāna (seed treatment), the establishment of Medhi (a platform in the harvesting field), and puṣyayātrā (nabānna bhakṣaṇa ceremonial consumption of the first rice harvest) are extensively described in the text. These agricultural rituals are still followed in Odisha, especially in Western Odisha, where the Nuakhai Festival is celebrated annually with great grandeur, symbolizing the first consumption of newly harvested rice.

Furthermore, the significance of Kṛṣiparāśara in Odisha is evident through multiple translations and literary adaptations in the Odia language. For instance, Varṣā Maṅgala, an Odia poetic translation, reflects the impact of this text on Odishan literature. The presence of such literary adaptations demonstrates the widespread acceptance and integration of Kṛṣiparāśara into Odisha's cultural and agrarian practices.

Given its deep association with Odisha's agricultural heritage, its extensive manuscript preservation within the state, and its influence on farming traditions and literary works, Kṛṣiparāśara stands as the first agricultural literature of Odisha, shaping both historical and contemporary agronomic practices in the region. The author of Kṛṣiparāśara, Sage Parāśara, is mainly a resident of the western part of Odisha.

Fig -2: Kṛṣiparāśara Manuscript in Odia script

Time of the Kṛṣiparāśara Text

The Kṛṣiparāśara text provides crucial internal evidence regarding its period of composition. One of the key indicators is the use of the Śaka Era (Śaka Saṁvat) in its discussion of Rājanayana (royal astrological calculations) and Meghanayana (cloud observations for agricultural purposes). The Śaka Era was officially introduced by the Kushan Emperor Kaniṣka in 78 CE, marking a significant chronological reference within the text.

Based on this evidence, scholars deduce that the composition of Kṛṣiparāśara likely took place in the 4th or 5th century CE. This estimation aligns with the period when agrarian sciences, astronomical calculations, and systematic farming practices were being extensively documented in India. The text's references to astronomical calculations and agricultural observations using the Śaka Era suggest that it was written at a time when this dating system was already well established and in common use.

Thus, considering the historical introduction of the Śaka Era and the contextual references within Kṛṣiparāśara, it is reasonable to conclude that the text was composed sometime between the 4th and 5th centuries CE, making it one of the earliest agrarian treatises in Indian history.

Subjects covered in Kṛṣiparāśara:

The Kṛṣiparāśara is a foundational text on ancient Indian agricultural science, offering a comprehensive guide to various aspects of farming. It provides systematic knowledge on agricultural practices, meteorology, irrigation management, and rituals associated with farming. The text integrates practical farming techniques with astrological

and religious principles, reflecting the holistic approach of ancient Indian agricultural wisdom. The major subjects covered in Kṛṣiparāśara include:

Significance of Agriculture (Kṛṣimahattvam) – Discusses the importance of agriculture as the backbone of society and economic prosperity.

Royal Patronage (Rājānayanam) – Highlights the king's role in promoting agriculture and ensuring the welfare of farmers.

Rainfall Prediction and Classification – Includes detailed observations on rainfall in different months:

1. Meghānayanam (Cloud Formation)
2. Jalāḍhakanirṇayaḥ (Determining Water Availability)
3. Pauṣavṛṣṭijñānam (Rainfall in Pauṣa)
4. Māghavṛṣṭijñānam (Rainfall in Māgha)
5. Phālgunavṛṣṭijñānam (Rainfall in Phālguna)
6. Chaitravṛṣṭijñānam (Rainfall in Chaitra)
7. Vaiśākhavṛṣṭijñānam (Rainfall in Vaiśākha)
8. Jyeṣṭhavṛṣṭijñānam (Rainfall in Jyeṣṭha)
9. Āṣāḍhavṛṣṭijñānam (Rainfall in Āṣāḍha)
10. Śrāvaṇavṛṣṭijñānam (Rainfall in Śrāvaṇa)
11. Sadyovṛṣṭijñānam (Sudden Rainfall Phenomena)

12. Grahasañcāre Vṛṣṭilakṣaṇam (Rainfall Based on Planetary Movements)
13. Anāvṛṣṭilakṣaṇam (Signs of Drought)

Agricultural Practices – Covers various aspects of farming, including:

1. Kṛṣyavekṣaṇam (Examination of Crops)
2. Vāhanavidhānam (Use of Ploughing Implements and Animals)
3. Halasāmagrīkathanam (Details of Ploughing Equipment)
4. Hala-Prasāraṇam (Proper Timing for Ploughing)
5. Bījasthāpanavidhiḥ (Seed Preservation Techniques)
6. Ropaṇavidhiḥ (Methods of Transplantation)
7. Dhānyakaṭṭanavidhiḥ (Harvesting of Grains)
8. Dhānyanistṛṇīkaraṇam (Threshing Methods)

Water Management and Preservation:

1. Bhādrajalamokṣaṇam (Releasing Water for Crops in Bhādrapada)
2. Jalarakṣaṇam (Water Conservation Techniques)
3. Mārge Muṣṭigrahaṇam (Observation of Soil Moisture in Paths)

Livestock Management :

1. Goparvakathanam (Rituals and Observations Related to Cattle)
2. Goyātrāpraveśau (Cattle Migration and Entry into New Lands)
3. Gomayakūṭoddhāraḥ (Management of Cow Dung for Agricultural Use)

Agricultural Rituals and Omens :

1. Pauṣe Puṣyayātrākathanam (Special Puṣya Nakṣatra Observations for Farming)
2. Āḍhakalakṣaṇam (Indicators of Fertile Land)
3. Dhānyavyādhikhaṇḍamantraḥ (Mantras for Protection Against Crop Diseases)
4. Dhānyasthāpanam (Methods of Grain Storage)

The text blends empirical agricultural knowledge with astrology and spiritual traditions, demonstrating how ancient Indian farmers relied on both scientific observations and divine guidance to optimize their agricultural activities. The prescriptions in Kṛṣiparāśara reflect a deep understanding of environmental patterns and their impact on agriculture, forming a significant part of India's traditional knowledge system.

Importance of Agriculture

It goes without saying that agriculture was given due importance in Vedic seers knew that agriculture was the only option for food security. Food, as everybody knows, is basic necessity of human being. Agriculture is helpful is attaining all the four goals of life. Human life is dependent on Anna and production of Anna is dependent of agriculture. Hence, agriculture is basic necessity of human life. Yajurveda says that one should make effort for producing abundant grains through agriculture.[1] Men depend for their lives on

agriculture " te kṛṣiṃ ca sasyaṃ ca manuṣyā upajīvani".[2] Speaking about the importance of agriculture, Vedic seer says-O gambler, stop gambling, and engage yourself in agriculture, which is regarded as most valuable wealth, so that you will earn wealth, happiness, cattle and happy married life. You respect this wealth and are content with this wealth.

"akṣairmā dīvyaḥ kṛṣimit kṛṣasva vitte ramasva bahumanyamānaḥ ।

tatra gāvaḥ kitava tatra jāyā tanme vi caṣṭe savitāyamaryaḥ ॥" [3]

The Ṛgveda further adds that the cultivator is bound to get plentiful crops and immense wealth.

The Atharvaveda also highlights the importance of agriculture. Agricultural work use to be practiced by skilled persons. Poets and scholars took this occupation and did farming for happiness. Agriculture was a delighted occupation which Gods like Indra and Puṣā were also engaged. Success in agriculture leads to success in life. The person possessing abundant food grains is respected as a great man in the society. Through agriculture one can acquire vigour, energy and power. In the Yajurveda and Taittiriya Saṁhitā agriculture is regarded as the means of human welfare. It is the source of prosperity and sustenance. It gives grain, strength and lustre. In Taittiriya Saṁhitā agriculture has been described as Chandas (metre). In other words, it is the music that fills human life with delight. Chandas also means covering. As agriculture keeps human beings with happiness, it is known as Chandas. Bṛhatpārāśara says that there is no other religion than agriculture and no profitable business other than agriculture – "kṛṣeranyatra no dharmo na lābhaḥ kṛṣito'nyataḥ".[4] It further adds that there is no other means than agriculture for obtaining happiness, food, clothing, respect etc.

Kāśyapīyakṛṣisūkti mentions that production of grains and other vegetation are the sole purpose of highest fulfilment of the earth. The rich earth full of vegetation is the cause of growth of living beings-

"sasyādireva medinyāḥ parodharmaḥ paraṃ yaśaḥ ।

sasyapūrṇā vasumatī prāṇināṃ prāṇavardhinī ॥" [5]

Kṛṣiparāśara has discussed the importance of agriculture. It says that even a learned Brahmin who is proficient in all the four Vedas, who recites Śāstras and is intelligent, when is overpowered by Alakṣmī, is reduced to humiliation caused by begging for food with folded hands. And only through farming, one however ceases to be a suitor. By practicing agriculture alone one is bound to be bhūpati (master of the earth). People even having surplus of gold, silver, jewels and garments have to solicit farmers as earnestly as a devotee would pray God. People in spite of having gold ornaments in their necks, ears and hands have to suffer from hunger in absence of food. Food is life, food is also the strength, and food is everything. The divines, the demons, and all human beings depend on food for their survival. Food, verily, comes from grains and grains cannot be without agriculture. Therefore, leaving everything else one should strive for farming. Blessed is agriculture, holy is agriculture, and agriculture is life of all living creatures-

"caturvedāntago vipraḥ śāstravādī vicakṣaṇaḥ ।

alakṣmyā gṛhyate so'pi prārthanālāghavānvitaḥ ॥

ekayā ca punaḥ kṛṣyā prārthako naiva jāyate ।

kṛṣyānvito hi loke'smin bhūyādekaśca bhūpatiḥ ॥

suvarṇaraupyamāṇikyavasanairapi pūritāḥ ।

tathāpi prārthayantyeva kṛṣakān bhaktatṛṣṇayā ॥

kaṇṭhe karṇe ca haste ca suvarṇaṃ vidyate yadi l
upavāsastathā'pi syādannābhāvena dehinām ll
annaṃ prāṇā balaṃ cānnamannaṃ sarvārthasādhanam l
devāsuramanuṣyāśca sarve cānnopajīvinaḥll
annaṃ hi dhānyasañjātaṃ dhānyaṃ kṛṣyā vinā na ca l
tasmātsarvaṃ parityajya kṛṣiṃ yatnena kārayet ll
kṛṣirdhanyā kṛṣirmedhyā jantūnāṃ jīvanaṃ kṛṣiḥ l
hiṃsādidoṣayukto'pi mucyate'tithipūjanam ll" [6]

Various sūktas of Ṛgveda such as Kṣetrapati, Parjanya, Pṛthvī, Go, Āpaḥ, Akṣa, Viśvedeva and Araṇyanī have well described the importance of agriculture. Similarly various sūktas of Atharvaveda including Kṛṣi, Anna and Annasamṛddhi have talked about the significant of Agriculture.

Agricultural Instruments and Implementation:

The Kṛṣiparāśara gives a very detailed account of the different parts of plough. According to it the eight parts of a plow are:

1. Īṣā, the beam of the plow connected to yoke
2. Yuga, the yoke to which the oxen are tied
3. Sthāṇu, the wooden support of the plowshare
4. Niryola, the rod joined to the beam and used to control the direction of the plow
5. Niryolapāśikā, the handle for the farmers' grip on the plow
6. Aḍḍacalla, wood pegs fitted through holes on the yoke
7. Śaula, the plowshare consisting of an iron blade which digs up mud
8. Paccanī, the stick to drive the oxen.

Īṣā is five hands in length (the length from elbow to the tip of the middle finger is one hand). Sthāṇu should be five vitastis (the length from the tip of the thumb to the tip of the little finger of an extended palm is one vitasti). Niryola should be one and a half hand while Yuga should be extended up to the ears of the oxen. Niryolapāśikā and Aḍḍacalla should each measure twelve aṅgulas (the breadth of a finger is one aṅgula and twelve aṅgulas make one vitasti). Śaula should be of an aratni measure (the distance between the elbow and the tip of the little finger is one aratni). Paccanī should be strong, made of bamboo, with iron-end and should measure twelve and half or nine 'fists'. The circular Ābaddha (a disc-plow used on hard, virgin soil) should measure fifty four aṅgulas (in diameter); Yotra (the belt used round the neck of the ox) four hands and the rope (Rajjū) five. The Phālaka (plowshare) is stated to measure a hand' and four 'fingers' while phālikā resembling a leaf of an Arka shrub should measure nine aṅgulas. A Viddhaka (It is a harrow that plows multiple rows. This is used for sowing seed in dry soil) should have twenty-one spikes. A Madikā (It is a wooden plank fitted to the plow to level soil inundated with shallow water) measuring nine hands is recommended for several uses. This according to Parāśara, is the equipment of a plow. Farmers advised to make it sufficiently strong to be used fruitfully in the various activities of farming. Any implement which

is not manufactured as per the above said measurements will, at time of farming operations, obstruct the work at every step. There should be no doubt about it-

"iṣāyugahalasthāṇurniyolastasya pāśikāḥ ।
aḍḍacallaśca śailaśca paccanī ca halāṣṭakam ॥
pañcahastā bhavedīṣā sthāṇuḥ pañcavitastikaḥ ।
sārdhahastastu niryolo yugaṃ karṇasamānakam ॥
niryolaḥ pāśikā aḍḍacallastathaiva ca ।
dvādaśāṅgulamānau tu śaulo'ratnipramāṇakaḥ ॥
sārdhadvādaśamuṣṭirvā kāryā vā navamuṣṭikā ॥
dṛḍhā pañcanikā jñeyā lauhāgrā vaṃśasaṃbhavā ॥
ābaddho maṇḍalākāraścatuḥpañcāśadaṅgulaḥ ।
yotraṃ hastacatuṣkaṃ syāt rajjuḥ pañcakarātmikā ॥
pañcāṅgulyadhiko hasto hasto vā phālakaḥ smṛtaḥ ।
arkasya patrasadṛśī phālikā tu navāṅgulā ॥
ekaviṃśatiśalyastu viddhakaḥ parikīrtitaḥ ।
navahastā tu madikā praśastā sarvakarmasu ॥
iyaṃ hi halasāmagrī parāśaramunermatā ।
sudṛḍhā kṛṣakaiḥ kāryā śubhadā sarvakarmasu ॥
adṛḍhāyuktamānā yā sāmagrī vāhanasya ca ।
vighnaṃ pade pade kuryātkarṣakāle na saṃśayaḥ ॥" [7]

Fig -3: Odishan Agricultural Instruments

Key Agricultural Principles in the Kṛṣiparāśara

The Kṛṣiparāśara is one of the earliest Sanskrit texts dedicated to agriculture, attributed to the sage Parāśara. It provides a systematic account of agricultural principles, emphasizing the role of seasons, soil types, plowing techniques, seed selection, and irrigation methods. The text integrates practical farming

knowledge with astrological and religious considerations, reflecting the deep connection between agriculture and traditional wisdom in ancient India. Below are some key agricultural principles discussed in the Kṛṣiparāśara:

Management of Agriculture

Farms yield gold if properly managed but lead to poverty if neglected

"phalatyavekṣitā svarṇaṃ dainyaṃ saivānavekṣitā ।

kṛṣiḥ kṛṣipurāṇajña ityuvāca parāśaraḥ ॥" [8]

Farms should never be left to the care of anyone other than oneself.

"piturantaḥpuraṃ dadyānmāturdadyānmahānasam ।

goṣu cātmasamaṃ dadyāt svayameva kṛṣiṃ vrajet ॥" [9]

Only the capable, motivated by the welfare of people should undertake farming. An incapable farmer lands himself in poverty-

"samarthena kṛṣiḥ kāryā lokānāṃ hitakāmayā ।

asamartho hi kṛṣako bhikṣāṃ prāpnoti mānavaḥ ॥"[10]

An agriculturist who looks after the welfare of his cattle, visits his farms daily, has knowledge of the seasons is careful about the seeds, and is industrious is rewarded with harvests of all kinds and never perishes –

"gohitaḥ kṣetragāmī ca kālajño bījatatparaḥ ।

vitandraḥ sarvaśasyāḍhyaḥ kṛṣako nāvasīdati ॥" [11]

4. THE DETERMINATION OF THE KING OF THE YEAR FOR RAINFALL PREDICTION (RĀJANAYANA)

In Kṛṣiparāśara, the process of determining the King of the Year (Rājanayana) is essential for predicting rainfall patterns and agricultural prospects. This principle is based on planetary positions and follows a mathematical approach to identify the ruling planet (Rāja) and the minister (Mantrī), both of which influence seasonal weather conditions.

"śākaṁ triguṇitaṁ kṛtvā dviyutaṁ muninā haret /

bhāgaśiṣṭo nṛpo jñeyo nṛpānmantrī caturthakaḥ //" [12]

The Śaka year is multiplied by three, and after adding two, it is divided by seven. The remainder determines the King, while the fourth planet from the King is the Minister.

Method of Calculation:

To find the ruling planet of the year, the Śaka era year is multiplied by three, and then two is added to the product. The resulting number is divided by seven, and the remainder determines the ruling planet, following the sequence of the seven planets (starting from the Sun). The fourth planet from the ruling one is designated as the minister, who also plays a crucial role in influencing weather patterns.

Example Calculation:

For Śaka 1922 (+ 78) (Gregorian 2000 CE):

Multiply by 3: 1922 × 3 = 5766

Add 2: 5766 + 2 = 5768

Divide by 7: 5768 ÷ 7 = 0

5768÷7, remainder = 0

When the remainder is 0, the divisor (7) is considered, corresponding to Śani (Saturn) as the King. The fourth planet from Saturn is Maṅgala (Mars), making it the minister.

Table -1:

Sl. No.	Name of the planet	Remainder Number
	Sūrya– Sun	1
	Chandra) – Moon	2
	Maṅgala – Mars	3
	Budha – Mercury	4
	Guru – Jupiter	5
	Śukra – Venus	6
	Śani – Saturn	7 (0)

This method provides insights into yearly climate conditions, as each planet governs specific weather attributes. For example, Saturn as the ruler often signifies irregular rainfall, droughts, or harsh climatic conditions, while Mars as the minister may indicate storms, high temperatures, and possible agricultural difficulties.

The Result of Rainfall Quantity as per the King of the Year

In Kṛṣiparāśara, the prediction of rainfall for the year is closely associated with the ruling planet (Rāja) of the year. Each planetary ruler influences the quality and quantity of rainfall, thereby affecting agricultural productivity, human health, and overall prosperity. The text provides an astrological framework where the planetary ruler determines whether the year will witness abundant rains, droughts, or moderate precipitation.

Rainfall Predictions Based on the King of the Year

Sūrya (Sun) as King – The year will experience scanty rainfall (mandā vṛṣṭiḥ), persistent winds, and an increase in eye diseases, fevers, and general calamities.

"cakṣūrogo jvarāriṣṭaṁ sarvopadrava eva ca /

mandā vṛṣṭiḥ sadā vāto yatrābde bhāskaro nṛpaḥ //" [13]

Candra (Moon) as King – The year will bring abundant rainfall (ugrā vṛṣṭiḥ), leading to fertile lands, good harvests, and overall health among people.

"yasmīn saṁvatsare caiva candro rājā bhaved dhruvam /

kuryāt śasyānvitāṁ pṛthvīṁ nairujaṁ cāpi mānave //" [14]

Maṅgala (Mars) as King – The year will see low and irregular rainfall (mandā vṛṣṭiḥ), resulting in crop failures, food shortages, and increased diseases among humans.

"śasyahānirbhavettatra nityaṁ rogaśca mānave /

yasminnabde kujo rājā śasyaśūnyā ca medinī //" [15]

Budha (Mercury) as King – The year will have excellent rainfall (uttamā vṛṣṭiḥ), ensuring a good harvest, prosperous trade, and general well-being.

"nairujaṁ supracāraśca subhikṣaṁ kṣitimaṇḍale /

yatrābde candrajo rājā sarvaśasyā ca medinī //" [16]

Bṛhaspati (Jupiter) as King – The year will witness balanced and auspicious rainfall (śobhanā vṛṣṭiḥ), fostering moral stability, mental peace, and abundant agricultural yield.

"dharmasthitir manaḥ sthairyaṁ vṛṣṭikāraṇamuttamam /

yasminnabde gurū rājā sarvā vasumatī mahī //" [17]

Śukra (Venus) as King – The year will result in high agricultural productivity and great prosperity, bringing wealth and grain abundance.

"nṛpāṇāṁ vardhanaṁ nityaṁ dhanadhānyādikaṁ phalam /

rājā daityaguruḥ kuryāt sarvaśasyaṁ rasātalam //" [18]

Śani (Saturn) as King – The year will be marked by drought (vṛṣṭihīnā), dusty and barren lands, war, and increased diseases.

"saṃgrāmo vātavṛṣṭiśca rogopadrava eva ca ।

mandavṛṣṭiḥ sadā vāto nṛpe saṃvatsare śanau ॥" [19]

Significance of the Minister's Influence

Just as the planetary King influences rainfall, the Minister (Mantrī) also has a secondary impact on climatic conditions. The text states:

"yathā vṛṣṭiphalaṁ proktaṁ vatsaragrahabhūpatau /

tadvadvṛṣṭiphalaṁ jñeyaṁ vijñairvatsaramantriṇi //" [20]

Just as the King of the Year determines rainfall, learned individuals must also consider the planetary Minister's influence for complete meteorological predictions.

The ancient text Kṛṣiparāśara integrates astrology and meteorology, providing a systematic method to predict annual rainfall based on the ruling planet. These forecasts played a crucial role in agrarian planning, guiding farmers on sowing, irrigation, and overall agricultural strategy. The detailed planetary influence illustrates a sophisticated understanding of natural cycles, reflecting the depth of Vedic agricultural science.

The Prediction of Rainfall Quantity Based on Cloud Names

In Kṛṣiparāśara, the method of predicting rainfall quantity is closely associated with the type of clouds (Megha). This system, known as Meghanayana (the determination of rain clouds), relies on a mathematical

approach using the Śaka year to identify the predominant cloud type of the year. Each cloud type influences the amount and distribution of rainfall, making this method essential for agricultural planning.

Method of Calculation:

To determine the ruling cloud (Meghādhipati), three is added to the Śaka year, and the sum is divided by four. The remainder corresponds to one of the four cloud types in sequential order:

1. Āvarta (āvarta) – Scattered rainfall in specific regions
2. Saṁvarta (saṁvarta) – Uniform and widespread rainfall
3. Puṣkara (puṣkara) – Sparse and insufficient rainfall
4. Droṇa (droṇa) – Heavy rainfall across vast areas

Example Calculation:

For Śaka 1922, Add 3: 1922 + 3 = 1925

Divide by 4: 1925 ÷ 4 1925÷4, remainder = 1

A remainder of 1 corresponds to Āvarta, meaning rainfall will be scattered and regionally limited.

This method provides valuable insight into annual weather patterns, allowing farmers to anticipate the availability of water and plan agricultural activities accordingly. If Droṇa is the ruling cloud, it indicates a year of heavy rains, whereas Puṣkara suggests drought-like conditions. Sanskrit Verses:

"śakābdaṁ vahnisaṁyuktaṁ vedabhāgasamāvṛtam /

śeṣaṁ meghaṁ vijānīyādāvartādi yathākramam //" [21]

By adding three to the Śaka year and dividing the sum by four, the remainder corresponds to one of the clouds in sequential order, beginning with Āvarta.

"āvartaścaiva saṁvartaḥ puṣkaro droṇa eva ca /

catvāro jaladāḥ proktā āvartādi yathākramam //" [22]

The four types of clouds Āvarta, Saṁvarta, Puṣkara, and Droṇa are described in this order.

"ekadeśena cāvartaḥ saṁvartaḥ sarvato jalam /

puṣkare duṣkaraṁ vāri droṇe bahujalā mahī //" [23]

The Āvarta cloud causes rainfall in specific regions, Saṁvarta brings widespread rainfall, Puṣkara yields very little rain, while Droṇa results in excessive rainfall across the land.

Classification of Clouds and Their Role in Rainfall

Just as winds (Vāyu) are classified into various types, clouds (Megha) are also categorized based on their nature and their capacity to bring rainfall. Kṛṣiparāśara specifically mentions four primary types of clouds, each influencing agricultural outcomes differently:

1. Saṁvartaka – These clouds possess the capacity to cause torrential and even catastrophic rainfall, often leading to floods.
2. Āvartaka – These are dry clouds that wander across the sky due to strong winds but do not produce rainfall.

3. Puṣkara – These clouds are weak in their ability to bring rain and occasionally provide minimal precipitation.
4. Droṇa – These clouds bring well-regulated and sufficient rainfall, making them highly beneficial for agriculture.

Among these, Saṁvartaka clouds can result in excessive and destructive rains, while Āvartaka clouds are dry and ineffective for agriculture. The Puṣkara clouds contribute to light and infrequent rain, whereas Droṇa clouds are considered ideal for ensuring proper crop growth. Sanskrit Verse:

"āvartto nirjalo meghaḥ saṁvartaśca bahūdakaḥ /

puṣkaro duṣkara jalaḥ droṇo sasyaprapūrakaḥ //"

The Āvarta cloud is dry and does not bring rain. The Saṁvarta cloud is full of water and capable of causing heavy rains. The Puṣkara cloud brings minimal rain, while the Droṇa cloud provides the necessary rainfall to nourish crops. This classification plays a crucial role in agricultural planning, as understanding the dominant cloud type of a particular year can help farmers prepare for potential droughts, excessive rains, or optimal farming conditions.

5. THE PREDICTION OF SIGNS INDICATING SUDDEN RAINFALL

In Kṛṣiparāśara, various natural signs are described that indicate the occurrence of sudden rainfall (sadyovṛṣṭi). These signs are based on the behaviour of animals, insects, birds, and atmospheric conditions, which serve as reliable indicators for predicting imminent rain. Such knowledge was crucial for ancient agrarian societies, as it helped farmers prepare for unexpected showers that could affect their crops.

Key Indicators of Sudden Rainfall:

Interaction with Water – If a person stands inside water, holds water in their hands, or inquires about rainfall while being near a water body, rain is expected to occur soon.

"jalastha jalahasto vā nikaṭe'tha jalasyaṁ vā /

pṛṣṭā pṛcchati vṛṣṭyarthaṁ vṛṣṭiḥ saṁjāyate'cirāt //"[24]

Behavior of Insects and Amphibians –

When ants (pipīlikā) emerge carrying their eggs, it indicates imminent rainfall. If frogs (bhekaḥ) suddenly start croaking, rain is expected to follow soon.

"uttiṣṭhatyaṇḍamādāya yadā caiva pipīlikā /

bhekaḥ śabdāyate'kasmāt tadā vṛṣṭirbhaved dhruvam //" [25]

Movements of Small Animals –

If cats (viḍāla), mongooses (nakula), snakes (sarpa), and other burrowing creatures become restless and start running around, sudden rain is highly probable. Swarming and erratic movements of śalabha also signify approaching rain.

"viḍālā nakulāḥ sarpā ye cānye vā vileśayāḥ /

dhāvanti śalabhā mattāḥ sadyovṛṣṭirbhaved dhruvam //" [26]

Children's Play and Peacocks' Dance –

When children start constructing bridges with dust on roads, it is an omen of sudden rain. The dancing of peacocks is a well-known traditional sign of imminent showers.

"kurvanta bālakā mārge dhūlibhiḥ setubandhanam /

mayūrāścaiva nṛtyanti sadyovṛṣṭirbhaved dhruvam //" [27]

Physical Sensations and Snakes' Climbing Behavior –

Individuals suffering from joint pain or rheumatic ailments often feel increased discomfort just before sudden rainfall. If a snake climbs to the top of a tree, it is considered a strong indication of imminent rain.

"āghātavātaduṣṭānāṁ nṛṇāṁ vyathā yadi /

vṛkṣāgrārohaṇaṁ cāheḥ sadyovarṣaṇalakṣaṇam //" [28]

Behavior of Aquatic Birds and Atmospheric Sounds –

Water birds drying their wings in the sun is a common sign of upcoming showers. The widespread chirping and buzzing of insects in the sky also indicate that rain will soon follow.

"pakṣayoḥ śoṣaṇaṁ raudre khagānāmambu-cāriṇām /

jhiñjhīravas tathākāśe sadyovarṣaṇalakṣaṇam //" [29]

These traditional meteorological observations, deeply rooted in nature's patterns, reflect the wisdom of ancient Indian agricultural science and continue to be relevant in rural settings where modern forecasting tools are absent.

6. AUSPICIOUS AND INAUSPICIOUS DAYS FOR PLOUGHING

The treatise Kṛṣiparāśara provides a systematic approach to determining the right time for ploughing (hala-prasāraṇa), emphasizing the importance of specific nakṣatras (lunar constellations), planetary days, and lunar dates (tithis) to ensure agricultural prosperity. The selection of an auspicious time for ploughing was believed to influence the growth of crops, prevent natural calamities, and safeguard farmers from economic or existential crises.

According to Kṛṣiparāśara, ploughing should be conducted under favourable nakṣatras such as Svātī, Uttaraphālgunī, Uttarāṣāḍhā, Uttarabhādrapadā, Rohiṇī, Mṛgaśirā, Mūla, Punarvasu, Puṣya, Śravaṇa, and Hasta. These lunar constellations are traditionally associated with fertility, stability, and growth, ensuring a bountiful harvest.

The treatise also prescribes specific days of the week for ploughing. Fridays, Mondays, and Thursdays particularly Wednesdays are considered most favourable for agricultural activities, as these days are ruled by benefice planets (Śukra, Candra, and Guru), which are believed to enhance fertility and crop yield. On the other hand, ploughing on Tuesdays, Sundays, and Saturdays is discouraged, as these days are ruled by malefic planets (Maṅgala, Sūrya, and Śani), which could lead to disturbances such as political turmoil or natural disasters.

Furthermore, Kṛṣiparāśara recommends specific tithis for commencing agricultural activities. Days such as Daśamī, Ekādaśī, Dvitīyā, Pañcamī, Trayodaśī, Tṛtīyāand Saptamī are considered auspicious, whereas Pratipadā, Dvādaśī, Ṣaṣṭhī, Amāvasyā, Aṣṭamī, Navamī, Caturthī, and Caturdaśī are regarded as inauspicious due to their association with famine, pestilence, and misfortune.

Additionally, planetary alignments (lagna) play a crucial role in ploughing decisions. The zodiac signs Vṛṣabha (Taurus), Mīna (Pisces), Kanyā (Virgo), Mithuna (Gemini), Dhanu (Sagittarius), and Vṛścika (Scorpio) are considered auspicious, while Meṣa (Aries,), Karkaṭa (Cancer), Siṁha (Leo), Kumbha (Aquarius), Makara (Capricorn), and Tulā (Libra) are deemed inauspicious due to their association with loss, dangers, and calamities.

By adhering to these astrological principles, ancient Indian farmers sought to harmonize their agricultural practices with cosmic influences, thereby ensuring prosperity and sustainability. The alignment of farming activities with celestial movements underscores the deep integration of astrology with agrarian traditions in ancient India. Relevant Ślokas from Kṛṣiparāśara:

"anilottararohiṇyāṃ mṛgamūlapunarvasau ।
puṣyaśravaṇahastāsu kuryāddhalaprasāraṇam ॥
halaprasāraṇaṃ kāryaṃ kṛṣakaiḥ śasyavṛddhaye ।
śukrendujīvavāreṣu śaśijasya viśeṣataḥ ॥
bhaumārkadivase caiva tathā ca śanivāsare ।
kṛṣikarmasamārambho rājyopadravamādiśet ॥
daśamyekādaśī caiva dvitīyā pañcamī tathā ।
trayodaśī tṛtīyā ca saptamī ca śubhāvahā ॥
śasyakṣayaḥ pratipadi dvādaśyāṃ badhabandhanam ।
bahuvighnakarī ṣaṣṭhī kuhūḥ karṣakanāśinī ॥
hantyaṣṭamī balīvardānnavamī sasyaghātinī ।
caturthī kīṭajananī patiṃ hanti caturdaśī ॥
vṛṣe mīne ca kanyāyāṃ yugme dhanuṣi vṛścike ।
eteṣu śubhalagneṣu kuryāddhalaprasāraṇam ॥
meṣalagne paśuṃ hanyāt karkaṭe jalajādbhayam।
siṃhe sarpabhayaṃ caiva kumbhe caurabhayaṃ tathā ॥
makare sasya nāśaḥ syāt tulāyāṃ prāṇasaṃśayaḥ ।
tasmāllagnaṃ prayatnena kṛṣyārambhe vicārayet ॥" [30]

This structured knowledge system in Kṛṣiparāśara reflects an advanced understanding of the interaction between celestial forces and agricultural cycles, demonstrating the scientific and philosophical depth of ancient Indian agricultural wisdom.

7. OPTIMAL SEED SOWING TECHNIQUES

The ancient text Kṛṣiparāśara provides detailed guidelines on the ideal seed-sowing methods (Bījavapana Vidhi), emphasizing the importance of proper timing, lunar constellations (nakṣatra), and planetary

influences. The selection of the right time for sowing ensures optimal germination, growth, and yield of crops.

1. The Best Time for Sowing

The text prescribes different months for sowing seeds based on their effectiveness:

- Vaiśākha (April-May): Considered the most auspicious for sowing.
- Jyeṣṭha (May-June): Moderate results.
- Āṣāḍha (June-July): Inferior results.
- Śrāvaṇa (July-August): The least favorable.

"vaiśākhe vapanaṁ śreṣṭhaṁ jyeṣṭhe tu madhyamaṁ smṛtam /

āṣāḍhe cādhamaṁ proktaṁ śrāvaṇe cādhamādhamam //" [31]

Sowing seeds in Vaiśākha is the best, in Jyeṣṭha it is of medium quality, in Āṣāḍha it is inferior, and in Śrāvaṇa it is the least favourable.

2. Sowing for Transplantation

For crops that require transplantation, seeds should be sown in the hot months of Jyeṣṭha and Āṣāḍha. Sowing in Śrāvaṇa yields poor results, and in Bhādrapada (August-September), it is the worst.

"ropaṇārthaṁ tu bījānāṁ śucau vapanamuttamam /

śrāvaṇe cādhamaṁ proktaṁ bhādre caivādhamādhamam //" [32]

Sowing seeds for transplantation is best in the dry period (Jyeṣṭha-Āṣāḍha). In Śrāvaṇa, it is inferior, and in Bhādrapada, it is the least effective.

3. Auspicious Nakṣatras for Sowing

The text highlights specific lunar constellations (nakṣatras) that favour agricultural success:

Ideal nakṣatras: Uttarā Phālgunī, Uttarāṣāḍhā, Uttarā Bhādrapadā, Mūla, Jyeṣṭhā, Anurādhā, Maghā, Mṛgaśira, Rohiṇī, Hasta, and Revatī.

Inauspicious nakṣatras: Śrāvaṇa, Pūrva Phālgunī, Pūrvaṣāḍhā, Pūrva Bhādrapadā, Viśākhā, Bharaṇī, Ārdrā, Svātī, and Āśleṣā. Sowing during these results in poor yields.

"uttaratrayamūlendra-maitrapaitrendudhātṛṣu /

hastāyāmatha revatyāṁ bījavapanamuttamam //

"viṣṇupūrvāviśākhāsu yāmyaraudrānilāhiṣu /

bījasya vapanaṁ kṛtvā bījamāpnoti mānavaḥ //" [33]

4. Avoiding Inauspicious Days

Seed sowing should avoid pairs of consecutive days (vārayugma), as it is believed to attract pests.

Sowing on Tuesday (Maṅgala) may lead to rodent infestations, while sowing on Saturday (Śani) invites insect plagues. Seeds should not be sown on inauspicious lunar days (tithis) like Caturthī, Navamī, and Caturdaśī, especially when the moon is waning.

"vapane ropaṇe caiva vārayugmaṁ vivarjayet /

mūṣikāṇāṁ bhayaṁ bhaume mande śalabhakīṭayoḥ //

na vāpayettithau rikte kṣīṇe some viśeṣataḥ /

evaṁ samyak prayuñjānaḥ sasyavṛddhimavāpnuyāt //" [34]

The meticulous seed-sowing guidelines in Kṛṣiparāśara reflect an advanced understanding of agricultural timing, lunar influences, and ecological factors. By following these principles, farmers in ancient India ensured higher productivity, pest control, and resilience against climatic uncertainties.

The Practice of Māyikā Dāna: Ensuring Uniform Seed Germination

In Kṛṣiparāśara, the practice of Māyikā Dāna refers to the essential agricultural process of levelling the soil after sowing seeds. This technique ensures uniform seed germination and optimal growth conditions for crops.

Importance of Māyikā Dāna:

After sowing the seeds, farmers must perform Māyikā Dāna, which involves levelling the soil to cover the seeds evenly. This process helps in maintaining soil moisture, protecting seeds from birds, and ensuring uniform germination. If this step is neglected, seed growth becomes irregular, leading to uneven crop development and reduced yield. Sanskrit Verse:

"bījasya vapanaṁ kṛtvā mayikāṁ tatra dāpayet /

tadabhāvena bījānāṁ samajanma na jāyate //" [35]

After sowing seeds, one must perform Māyikā. Without it, the seeds will not sprout uniformly.

This traditional wisdom highlights the significance of proper post-sowing soil management in ensuring successful crop production.

Fig -4: Māyikā Dāna Practice of a Farmer

Method of Planting and Weeding (Cutting) of Paddy

The Kṛṣiparāśara provides a detailed methodology for planting and grafting rice crops, emphasizing the distinction between direct sowing (Vapana) and transplantation (Ropaṇa). The text highlights optimal spacing, seasonal considerations, and best practices for ensuring a healthy and productive yield.

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Types of Paddy Planting:

There are two primary methods of planting Paddy:

1. **Vapana (Direct Sowing):** This method involves sowing seeds directly in the field. Seeds sown in this way remain free from diseases.
2. **Ropaṇa (Transplantation):** Here, seedlings are first grown in nurseries and then transplanted. However, according to Kṛṣiparāśara, transplanted rice plants are more susceptible to diseases.

"vapanaṁ ropaṇaṁ caiva bījaṁ syādubhayātmakam /

vapanaṁ roganirmuktaṁ ropaṇaṁ sagadaṁ sadā //" [36]

The method of planting is twofold direct sowing and transplantation. Seeds that are directly sown remain free from diseases, whereas transplanted seedlings are always prone to diseases.

Fig -5: Vapana, Ropaṇa Practice of Farmer

Precaution in Transplantation:

Paddy that has attained a tree-like structure should not be uprooted, as they lose their fertility when relocated. Seeds that have become too firm in the soil will not yield crops if transplanted.

"na vṛkṣarūpaṁ dhānyānāṁ bījākarṣaṇamācaret /

na phalanti dṛḍhāḥ sarve bījāḥ kedārasaṁsthitāḥ //" [37]

Paddy that has developed a tree-like form should not be uprooted; as such plants will not bear grains once they become firmly established in the soil.

Optimal Spacing and Seasonal Considerations:

Spacing and the time of transplantation play a crucial role in crop health.

1. In Karka Rāśi (Cancer) / Śrāvaṇa month, seeds should be sown one hand apart.
2. In Siṁha Rāśi (Leo) / Bhādrapada month, seeds should be spaced half a hand apart.
3. In Kanyā Rāśi (Virgo) / Āśvina month, the optimal distance is four fingers apart.

"hastāntaraṁ karkaṭe ca siṁhe hastārdhameva ca /

ropaṇaṁ sarvasasyānāṁ kanyāyāṁ caturaṅgulam //" [38]

In the Cancer period (Śrāvaṇa), grains should be sown with a hand's distance, in Leo (Bhādrapada) half a hand's distance, and in Virgo (Āśvina), four fingers apart.

Thinning (Akaṭṭana) of Paddy Plants

To ensure a good harvest, the text advises thinning out excess seedlings during specific months:

1. Āṣāḍha (June-July) or Śrāvaṇa (July-August): Ideal for thinning.
2. Bhādrapada (August-September): Thinning results in a 50% reduction in yield.
3. Āśvina (September-October): No significant yield can be expected.

"āṣāḍhe śrāvaṇe māsi dhānyam-ākattayed-budhaḥ /

anākattaṁ tu yaddhānyaṁ yathā bījaṁ tathaiva hi //" [39]

A wise farmer should thin out paddy plants in Āṣāḍha or Śrāvaṇa. If not thinned at the right time, the yield will remain minimal, similar to seeds left unharvested.

"karkaṭe kaṭṭayed dhānyam avṛṣṭau kṛṣitatparaḥ /

bhādre cārdhaphalaprāptiḥ phalāśā naiva cāśvine //" [40]

A dedicated farmer should weed rice fields in Śrāvaṇa if there is no rainfall. In Bhādrapada, only half the yield will be obtained, and in Āśvina, there will be no expectation of crops.

Land Considerations:

Rice planting and transplanting should not be done in low-lying lands, as excessive water retention harms growth. Instead, only weeds should be removed, and no additional fertilizer should be added.

"na nimnabhūmau dhānyasya kuryāt kaṭṭana ropaṇe /

na ca sārapradānaṁ tu tṛṇamātraṁ tu śodhayet //" [41]

In low-lying fields, neither transplantation nor fertilizer application should be done; only weeds should be cleared.

The Kṛṣiparāśara emphasizes that rice cultivation is an intricate process, where the method of sowing, transplanting, weeding, and spacing significantly impacts the final yield. These practices, deeply rooted in astrological and seasonal observations, help ensure a successful yield while maintaining the health of the crops. Ancient agricultural wisdom provided in the text aligns closely with modern agronomy, reinforcing the importance of following time-tested practices for a successful harvest.

The Method of Removal of Weeds from Paddy Fields

In Kṛṣiparāśara, the process of removing weeds from paddy fields (Dhānya Nistrīṇīkaraṇam) is emphasized as a critical practice for ensuring the healthy growth and higher yield of rice crops. The verses suggest a detailed methodology for removing weeds, as well as the benefits that follow such practices.

The removal of weeds (tṛṇa) from rice fields is considered essential for the proper growth of the crop. Even if the rice is well-developed, if the weeds are not properly removed, the crop will not yield its full potential. Fields free from weeds are said to flourish abundantly, whereas the presence of weeds diminishes the crop's productivity.

Furthermore, during specific months such as Sāvaṇa (July-August) and Bhādra (August-September), the rice plants, if cleared of weeds, will later grow back and produce a higher yield. This practice is considered doubly beneficial, as the crop's overall growth is boosted when weeds are cleared twice during the Ashvini (September-October) month.

The removal of weeds from the fields is also described as a metaphor for the ideal agricultural practice, where a farm free from weeds is equated to a "Kamadhenu," the mythical wish-fulfilling cow, symbolizing prosperity and abundance in farming. Sanskrit Verses:

"niṣpannamapi yaddhānyaṁ na kṛtaṁ tṛṇavarjitam /

na samyak phalamāpnōti tṛṇakṣīṇā kṛṣiḥ bhavet //" [42]

Even if the rice has been properly grown, it will not yield good results unless the weeds are removed. Farming devoid of weeds leads to better productivity.

"kulīrabhādraḥormadhye yaddhānnyaṁ nistrīṇaṁ bhavet /

tṛṇairapi tu sampūrṇaṁ taddhānnyam dviguṇaṁ bhavet //" [43]

When the rice is cleared of weeds during the months of Sāvaṇa and Bhādra, it will later grow back and yield twice the normal amount.

"dvivāraṁ āśvine māsi kṛtvā dhānyaṁ tu nistrīṇam /

atha pākavihīnaṁ hi dhānyaṁ phalati māṣavat //" [44]

During the month of Ashvini, removing the weeds twice from the rice fields leads to an underdeveloped crop that resembles Masha (black gram) in its yield but can still prove beneficial.

"tasmāt sarvaprayatnena nistrīṇāṁ kārayet kṛṣiṁ /

nistrīṇā hi kṛṣāṇānāṁ kṛṣiḥ kāmadhenu bhavet //" [45]

Therefore, all efforts should be made to clear the rice fields of weeds. A farm free from weeds is considered a "Kamadhenu" for farmers, symbolizing prosperity and success in agriculture.

Fig -6: Māyikā Dāna Practice of a Farmer

Water Management in Bhādrapada and Āśvina: Release and Preservation

Water management plays a crucial role in ensuring a successful agricultural yield, as emphasized in Kṛṣiparāśara. The text provides specific guidelines on water release (jalamokṣaṇa) in Bhādrapada and water preservation (jalarakṣaṇa) in Āśvina, ensuring optimal crop health and productivity.

Water Release in Bhādrapada (Bhādrajalamokṣaṇa)

During the month of Bhādrapada, excess water retention in paddy fields can lead to crop diseases and yield loss. Therefore, controlled drainage is recommended to maintain only the essential moisture required at the roots. The text explicitly warns that if rice plants remain submerged, they become susceptible to various afflictions, ultimately affecting the harvest.

"nairujyārthaṁ hi dhānyānāṁ jalaṁ bhādre vimocayet /

mūlamātrārpitaṁ tatra kārayejjalarakṣaṇam //" [46]

To protect the crop from diseases, excess water should be drained in Bhādrapada, leaving only the moisture necessary at the roots.

"bhādre ca jalasampūrṇaṁ dhānyaṁ vividhabādhakaiḥ /

prapīḍitaṁ kṛṣāṇānāṁ na datte phalamuttamam //" [47]

Rice plants fully submerged in water during Bhādrapada suffer from various afflictions and fail to provide a good yield for farmers.

Fig -7: Water Release in Bhādrapada

Water Preservation in Āśvina and Kārttika (Jalarakṣaṇa)

Following the monsoon, proper water Preservation in Āśvina (and Kārttika) becomes critical for sustaining soil moisture and supporting late-stage crop growth. The text advises that a farmer who neglects water conservation during this period is unlikely to secure a successful harvest.

"āśvine kārtike caiva dhānyasya jalarakṣaṇam /

na kṛtaṁ yena mūrkhena tasya kā sasyavāsanā //" [48]

A foolish farmer who does not conserve water during Āśvina and Kārttika should not expect a good harvest.

These principles demonstrate the sophisticated seasonal water management techniques that ancient Indian farmers followed, ensuring resilience against climatic variations and enhancing crop yields.

Fig -8: Water Preservation in Āśvina and Kārttika

Installation of Medhi (Central Pillar for Tying Oxen in the Threshing Ground)

The ancient agricultural text Kṛṣiparāśara provides detailed guidelines on the installation of Medhi, a central post used for tying oxen in the threshing ground. The correct placement, material selection, and auspicious timing of this installation are considered crucial for ensuring a prosperous harvest.

Fig -9: Installation of Medhi

Auspicious Timing and Rituals

The Medhi should be installed in the month of Mārgaśīrṣa (Agrahāyaṇa) on a favourable day. The process begins with digging a level pit in the threshing ground, which is then plastered with cow dung for purification. The post should then be carefully erected.

"kṛtvā tu khananaṁ mārge samaṁ gomayalepitam /

āropaṇīyo yatnena tatra medhiḥ śubhe'hani //" [49]

A level pit should be dug in the threshing ground and plastered with cow dung. The Medhi should be installed carefully on an auspicious day.

Additionally, the Medhi should bear a name associated with a woman, and it is recommended to install it when the Sun is in Vṛścika Rāśi (Scorpio). Such an installation is believed to bring prosperity and increase the yield of crops.

"strīnāmnā karṣakaiḥ kāryo medhirvṛścikabhāskare /

medhirguṇena kṛṣakaḥ sasyavṛddhimavāpnuyāt //" [50]

Farmers should install a Medhi named after a woman when the Sun is in Scorpio. By the virtue of the Medhi, the farmer will attain an abundant harvest.

Selection of Wood for Medhi

The text prescribes specific types of wood for making the Medhi. Ideal choices include:

1. Nyagrodha (Banyan)
2. Saptaparṇa (Alstonia Scholaris)
3. Gambhārī (Gmelina Arborea)

4. Śālmali (Silk Cotton Tree)
5. Audumbara (Cluster Fig)
6. Other trees that exude milky sap (kṣīra-vāhinī).

"nyagrodhaḥ saptaparṇaśca gambhārī śālmali tathā /

audumbarī viśeṣeṇa anyā vā kṣīravāhinī //" [51]

The Medhi should preferably be made from Nyagrodha, Saptaparṇa, Gambhārī, Śālmali, Audumbara, or any tree that produces milky sap.

If these trees are unavailable, a post made from a tree with a feminine name should be used. It should also be adorned with victory flags and protected with Neem and mustard leaves to ward off negative influences.

"vaṭādīnāṁ abhāve tu kāryā strīnāmadhārikā /

vaijayantīsasāmyukto nimbasarṣaparakṣitaḥ //" [52]

In the absence of the recommended trees, a post from a tree with a feminine name should be used. It should be decorated with victory flags and protected with Neem and mustard.

Prohibited Timings and Materials

The text warns against installing the Medhi in the month of Pauṣa, on inauspicious days, or under the Śravaṇa Nakṣatra, as these conditions are believed to cause a decline in grain yield.

"pauṣe medhirna cāropyaḥ krūrāhe śravaṇe tathā /

sasyavṛddhikaro mārge pauṣe sasyakṣayapradaḥ //" [53]

The Medhi should not be installed in Pauṣa, on inauspicious days, or under Śravaṇa Nakṣatra. Installation in Mārgaśīrṣa increases grain production, whereas installation in Pauṣa leads to crop destruction.

Additionally, using certain trees such as Kapittha (Wood Apple), Bilva (Bael), and Tṛṇarāja (Coconut) for the Medhi is discouraged, as it is believed to bring misfortune.

"kapitthavilvavaṁśānāṁ tṛṇarājasya caiva hi /

medhiḥ kāryo narairnaiva yadīcchedātmanaḥ śubham //" [54]

A person who desires prosperity should never make the Medhi from Kapittha, Bilva, or Tṛṇarāja (Coconut).

The installation of Medhi in Kṛṣiparāśara is not merely a physical activity but a ritualistic process embedded with astrological and botanical wisdom. The proper selection of materials, timing, and ritual observances is believed to ensure prosperity in farming and an abundant harvest. These principles reflect the deep connection between Vedic agricultural practices and cosmic influences, emphasizing the holistic approach of traditional Indian farming.

Seed conservation

Kṛṣiparāśara advocates for the conservation and use of traditional, locally adapted seed varieties. All seeds must be collected in Māgha or Phālguna.

"māghe vā phālgune māsi sarvabījāni saṃharet I

śoṣayedātape samyak tu naivādho vinidhāpayet II" [55]

After drying them up in the sun, they should be kept in small bundles after separating the husk. The seeds are closely tied up and must not be connection with any impurities. They become useless by coming in contact with fire, smoke, rain-water and fish. After sowing seeds, Vaiśākha is the best month. Jyeṣṭha tolerable, Āṣādha bad, and Śrāvaṇa worst. It emphasizes the conservation and utilization of traditional, locally adapted seed varieties through various methods. One, being pure and with a concentrated mind, should personally sow three handfuls of seeds moistened with cold water after meditating upon Indra.

"himavāriniṣiktasya bījasya tanmanāḥ śuciḥ ।

indraṃ citte samādhāya svayaṃ muṣṭatriyaṃ vapet ॥" [56]

Kṛṣiparāśara states that the cultivator with a delighted heart, having observed puṇyāha for paddy, should face eastward. The practices of Kṛṣiparāśara, help to maintain the genetic diversity of crops and ensures their resilience to changing environmental conditions.

Water and soil management

Efficient water management techniques are a crucial component in Kṛṣiparāśara. Water management Practices such as drip irrigation, mulching, and rainwater harvesting help conserve water and ensure optimal moisture levels for crops. The most remarkable feature of this text is that it considers agriculture as depending merely on rainfall, and all forms of irrigation. According to Kṛṣiparāśara, one should safeguard the ladies of the house in the same way as one would protect the family by storing water. This text's most notable aspect is that it views agriculture as solely dependent on rainfall and all types of irrigation. Kṛṣiparāśara says that agriculture has rainfall at its root; life too has rainfall as its source. Therefore, at the outset, acquire knowledge of rainfall very carefully.

"vṛṣṭimūlā kṛṣiḥ sarvā vṛṣṭimūlaṃ ca jīvanam ।

tasmādādau prayatnena vṛṣṭijñānaṃ samācaret ॥" [57]

Soil conservation and regeneration are central to Kṛṣiparāśara. Techniques such as minimal tillage, cover cropping, and agroforestry are employed to improve soil structure, fertility, and microbial diversity. Kṛṣiparāśara describes the suitability of the soil for cultivation in different months. The soil is said to be like gold in Māgha, silver in Phālguna, Copper in Caitra and the cultivation in Hemanta is held to yield the richest produce. Seeds, their collection, preservation and sowing rules are discussed in this text.

Crop Protection:

Instead of relying on chemical pesticides, Kṛṣiparāśara promotes natural methods of pest and disease control. This includes the use of bio-pesticides, botanical extracts, and beneficial insects to manage pests while minimizing environmental impact. Kṛṣiparāśara emphasizes organic farming methods, avoiding synthetic chemicals and pesticides. Instead, it promotes the use of organic manures, compost and bio-fertilizers to improve soil health and fertility. According to Kṛṣiparāśara, cow-dung is the best manure for crop protection and blooming. This has been highly extolled to the point of veneration. Having powdered all that and dried it up in the sun, throw the manure into a pit in every field of Phālguna. Then, at the time of sowing, take out the manures; without manure, paddy plants grow up bereft of fruits.

"raudre saṃśoṣya t sarvaṃ kṛtvā guṇḍakarūpiṇam ।

phālgune pratikedāre sāraṃ garte nidhāpayet ॥

tato vapanakāle tu kuryāt sārovimocanam ।

vinā sāreṇa yaddhānyaṃ varddhate phalavarjitam ||" [58]

Parāśara says that with all care, render agricultural produce free from weeds. If weeds are removed, they become yield to cultivators. For freedom of paddy from disease, drain off water in Bhādra; preserve water then up to the roots only. Paddy, filled with water in Bhādra, is damaged by various maladies and does not yield the best produce to cultivators.

"nairujyārthaṃ hi dhānyānāṃ jalaṃ bhādre vamicayet |

mūlamātrārpitaṃ tatra kārayejjalarakṣaṇam ||" [59]

8. RELEVANCE TO CONTEMPORARY AGRICULTURE

The Kṛṣiparāśara, an ancient Sanskrit text on agriculture, offers profound insights into farming practices that remain relevant in contemporary agricultural discourse. The principles outlined in this treatise, despite being composed centuries ago, align closely with modern sustainable agricultural practices, including organic farming, water conservation, and crop rotation. By examining these aspects, it becomes evident that the holistic approach of Kṛṣiparāśara which integrates ecological balance, ethical considerations, and spiritual dimensions provides a valuable framework for addressing present-day agricultural challenges.

1. Organic Farming and Natural Resource Management

One of the most striking aspects of Kṛṣiparāśara is its emphasis on natural and organic farming methods. The text advocates the use of organic manure, cow dung, and compost to enhance soil fertility, reducing the dependency on chemical fertilizers. Modern organic farming follows a similar approach by encouraging the use of bio-fertilizers and sustainable soil management techniques. The excessive use of synthetic fertilizers and pesticides in contemporary agriculture has led to soil degradation, water pollution, and declining crop quality. The ancient wisdom in Kṛṣiparāśara suggests that maintaining soil health through natural means ensures long-term productivity, which is now a key concern in global agricultural policies.

Moreover, the use of gobara (cow dung) as a natural fertilizer is particularly noteworthy, as it aligns with modern efforts to revive indigenous agricultural practices. Countries worldwide are now promoting organic agriculture as a sustainable alternative to industrial farming, recognizing its benefits for both human health and the environment.

2. Water Conservation and Rain Forecasting

Water management is another crucial aspect discussed in Kṛṣiparāśara, and its insights are incredibly relevant today, given the global concerns over water scarcity and climate change. The text provides detailed guidance on rain forecasting, known as Vṛṣṭi Jñāna, where it describes how planetary movements, seasonal changes, and cloud formations influence rainfall patterns. This predictive knowledge allowed ancient farmers to plan their agricultural activities efficiently, ensuring better water utilization and crop sustainability.

In modern times, water conservation is a pressing issue, and farmers are adopting various techniques like rainwater harvesting, drip irrigation, and soil moisture conservation to cope with unpredictable weather conditions. The ancient wisdom embedded in Kṛṣiparāśara reinforces the importance of understanding natural climatic patterns, which can complement modern meteorological studies. Additionally, traditional water conservation methods such as step wells and check dams, which were used in ancient India, are being revived as part of sustainable water management strategies.

3. Crop Rotation and Soil Fertility

Another principle emphasized in Kṛṣiparāśara is crop rotation, a practice that prevents soil depletion and enhances fertility. The text advises cultivating different crops in successive seasons to maintain soil nutrients, a practice widely recognized in modern sustainable agriculture. Crop rotation helps prevent pest infestations, reduces dependency on chemical inputs, and improves overall yield.

For example, modern-day farmers often alternate nitrogen-fixing crops (such as legumes) with cereal crops to maintain soil balance. This technique, which has been practiced for centuries, is now being promoted as a solution to the harmful effects of monoculture farming. The wisdom of Kṛṣiparāśara serves as a reminder that traditional knowledge systems can guide present-day agricultural reforms.

4. A Holistic Approach to Agriculture

One of the most distinctive aspects of Kṛṣiparāśara is its holistic approach to agriculture, where farming is not merely a mechanical activity but a harmonious interaction between humans, nature, and divine forces. The text highlights the spiritual and ethical dimensions of farming, reinforcing the idea that agriculture should be conducted with respect for natural laws and cosmic rhythms.

This perspective aligns with modern agro-ecology, which promotes biodiversity, ethical land use, and community-based farming systems. In an era where industrial agriculture often leads to environmental degradation, deforestation, and loss of biodiversity, revisiting the principles of Kṛṣiparāśara offers valuable insights for creating a more sustainable and ethical agricultural system.

The agricultural principles enshrined in Kṛṣiparāśara offer a timeless guide for addressing contemporary challenges in farming. Its emphasis on organic methods, water conservation, crop rotation, and ecological harmony resonates with modern sustainability efforts. By integrating these ancient insights with contemporary scientific advancements, agriculture can be made more resilient, productive, and environmentally friendly. In essence, Kṛṣiparāśara serves as a bridge between the wisdom of the past and the needs of the future, demonstrating that sustainable agriculture is not a new concept but a rediscovery of time-tested practices.

9. CONCLUSION

Kṛṣiparāśara is a valuable repository of agricultural knowledge, offering a holistic approach that integrates practical techniques with ethical and spiritual considerations. The text emphasizes harmony with nature, sustainable farming practices, and the alignment of agricultural activities with celestial movements, reflecting a deep understanding of the interconnectedness of all life.

In the face of modern agricultural challenges such as environmental degradation, soil depletion, and climate change, the principles outlined in Kṛṣiparāśara remain highly relevant. By revisiting this ancient wisdom, farmers can adopt sustainable and ethical agricultural practices that ensure the health of both the land and future generations.

The text highlights the importance of conservation, organic farming, and plant harvesting techniques. It particularly emphasizes paddy cultivation and the judicious use of natural resources, encouraging a balanced ecosystem. In an era where the natural equilibrium is increasingly disturbed, exploring such traditional knowledge systems provides valuable insights into sustainable living.

To address the shortcomings of both contemporary and historical agricultural methods, an integration of traditional wisdom with modern advancements is essential. The study of Kṛṣiparāśara inspires individuals

to rediscover time-tested agricultural practices, enhancing their skills for the well-being of society and the nation as a whole.

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