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Book Review

Cultivation practices of plants in classics of vrikshayurveda

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INTRODUCTION

Agricultural practises have existed in India from the dawn of time. Ayurveda is a healing method based on the use of medicinal plants. Nowadays, there is a growing demand for herbs, which leads to plant exploitation, which results in habitat loss. As a result, new ways for cultivating and preserving medicinal plants should be devised. Various ayurvedic and *krishisastra* texts mention a variety of ways for plant development. We should employ the ideas of the Acharyas to improve farming practises. This article is a small venture to get an idea about the cultivation practices in classics.

Vrkshayurveda is a branch of Ayurveda that deals with plant life. It covers gardening, planting, nutrition, plant diseases, and treatments. Vedas, Chanakya arthasastra, Agnipurana, Krishiparasara, Brihatsamhita, Upavanavinoda, Surapal's vriksahyurveda, and others all describe the concept of vrikshayurveda. Plants and their various purposes are mentioned in Vedic literature such as the Samhitas, Aranyakas, Upanishads, and Vedangas. The term vrikshayurveda first appears in the Arthasastra of Kautilya. The employment of this knowledge for agricultural purposes circa 320 BC indicates that it was a well-established subject. By 550 BC, Vrikshayurveda had established itself as a unique field.

Suitable land and soil for cultivation

Many works of literature begins with a statement about the value of flora. What are the advantages of cultivating a plant for a person? This stresses the significance of biodiversity protection. Surapal considers *vriksha* to be on par with humans, if not more so. He claims that planting a tree is equivalent to having ten sons. After that, there is a mention of plants that can be grown around the house. There are both good and bad evils associated with this. Before we start cultivating, we need to know about the propagation method, adequate soil, and climatic conditions for culture, all of which contribute to increase productivity.

Jangala, anupa, and sadharana are the three divisions of *Bhumi*. The arid region of *Jangala Desa*, the marshy swampy lands of *Anupa*, and the typical places of *Sadharana. Sobhanjana (Moringa oleifera), Sreephala (Aegle marmelos), Saptaparna (Alstonia scholaris), Sephalika (Nyctanthes arbortristis), Sami (Prosopis cineraria), Karira (Capparis aphylla), Karkandu (Zizyphus sativa), Nimba (Azadiracta indica), and Asoka (Saraca asoca)* are some of the plants that can be grown in a *jangala desa. Panasa (Artocarpus hetreophylla), lakuca (Artocarpus lakuca), taali (Borasses flabillifer), vamsa (Bambusa arundinaceae), jambu (Eugenia jambolana), tilaka (Wendlandia heynei), vata (Ficus benghalensis), kadambha (Anthocephals kadamba), aamrata (Spondias Mangifera), kharjura (Phoenix dactylifera), puga (Areca catechu), kadali (Musa sapientum), tinisa (Ougenia oojeinensis), mrdwika (Vitis vinifera), ketaki (Pandanus odorattis), nalikera (Cocs nucifera)* are some of the plants that may be planted in *anupa desa*.In *Sadharana desa* plants like *bijapura (Citrus*

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medica), punnaga (Calophyllum inophyllum), campa (Michelia champaka), aamra (Mangiferaindica), atimuktaka (Aganosma caryophyllata), priyangu (Callicarpa macrophylla), dadima (Punica granatum).If the plants are cultivating according to their proper bhumi its production will be more. There is also a mention of the availability of subsurface water supply by investigating the availability of particular plants in a field.This idea also can make use of in a field to dig well or pond for watering plants.

Method of propagation

Plants are divided into four orders by Caraka. *Vanaspati, Vaanaspatya, Oshadhis*, and *Virudhas* according to their swaroopa.Plants can be propagated in a variety of ways, including seeds, stem cuttings, roots, graftings, apical parts, and leaves. Seed propagation is fairly common. Propagation by bulbous roots, underground stems, and cuts is mentioned in the *Arthasastra*. According to the *Brhatsamhita*, grafting is preferable than stem cuttings. One method involves placing a cutting from one plant into the root of another plant that has been separated from its trunk. The second method involves putting a cutting from one tree into the stem of another; the cutting is referred to as a scion, while the parent plant is referred to as a stock. Seeds are used to cultivate *haridra, sunti, vaca, ativisha, katurohini, usira, jambu, vilwa, amra, madhuka, priyangu, nagakeasra, and punnaga*. Cuttings of *Tambula, Sindhuvara Tagara* .Reeds and sugarcane are grown from the joints, whereas *Dadima,patola ,plaksha karavira ,vata, mallika*, and *udumbara* are grown from the seeds and stalks.

Germination

Following the selection of the appropriate propagation method, the next stage is germination. Acharya explains various strategies for increasing germination capacity. Seeds derived from dried fruits that ripen naturally during the course of the season, sprinkled with milk, and dried for five days. Then it was smoked with mustard seeds and *vidanga. Cowdung, brihati* powder, *tila*, and *nala* can also be used. Sugarcane-like plants are plastered with a mixture of honey, clarified butter, hog fat, and cow dung at the cut end. Smear the bulbous roots with honey and clarified butter. All seeds that have been handled and kept in this manner are safe to use. Classics also mention the methods to ensure the growth of inflorescence, stems and foliage's also. One should first of all sow seeds in the seed bed, spread grasses over it and sprinkle milk and water and then when the seeds germinate remove the grass, dry the earth a little, and transplant these sprouts together with their roots and the earth attached thereto.

Plantation

On the subject of plantation, the Brihatsamhita goes into further depth. When a sprout planted grows one cubit in length, dig it out with the ground attached to it, apply *usira, vidanga*, and ghee glued together to its roots, and then replant it in a pit with cow dung. The length, breadth, and depth of the pit are all the same as a forearm. It's ideal to space trees 20 cubits apart, 16 cubits apart after that, and (Balasubramanian et al., 2018) cubits apart after that. Why is there such a chasm?.Reason for this is while the distance is not keep well then there will be a chance of interlinking of roots of those plants which may affect its growth. *Uttaraphalguna, Chitra, Mrgasirsha, Revati, Mula Visakha, Tisya, Sraaavana, Aswini*, and *Hasta* When a tree is put under its impact, it will thrive. The trees with undeveloped branches and leaves should be planted in the months of *Magha* and *Falgoon*. Plants with newly grown branches in the months of *Agrahaayana* and *Pousha*, and well-developed branches in the months of *Sravana* and *Bhadra*. When small trees are one forearm tall, they should be transplanted during the day in the right directions. Honey, lotus fibre, ghee, and *vidanga* should be applied to the roots. During the night time, large trees should be transplanted with their roots covered. The canopy (*mandapa*), quadrangular (*nandyavarta*), *swastika*, square enclosing circle (*caturasra*), *sarvatobhadra, nikunja* and in clusters are all tree planting designs. Mist, storms, smoke, fire, and insects must all be avoided at all costs.

Watering of plants

The rules for watering plants are also well outlined. Water well-rooted plants every alternate day in the winter, every evening in the spring, and three times a day in the summer. The ground linked to the roots of newly planted trees should be watered in the morning and evening. If the ditches have not dried up, overwatering causes indigestion (*ajirna*), so do not pour fresh water in them. Plants with *ajirna* are pale, leafless, infested with ants, have a fishy odour, and deficit in bark . Based on *desa ,jangala*:every morning and evening for 15 days ,*Sadharana*: morning and evening for 10 days, *Anupa*: once every 5 days.

Nourishment of plants

Plant nutrition necessitates the use of manure. Organic farming is gaining popularity these days. Fungicides are recognised to effectively manage soil borne illnesses in general and damping off in particular, but their widespread use has resulted in the creation of resistant plant pathogen strains, as well as the extinction of natural predators and parasites (Kumar et al., 2020). As a result, there is a need to alter existing circumstances and embrace new and distinct approaches. Vrikshayurveda concepts are discussed here. Sprinkle ghee with cold milk, sesame, goat and sheep

excreta, barley powder, and flesh of animals to encourage inflorescence and fruitification. It should be soaked in water for seven nights before being poured around the roots of plants. If the fruits of trees are destroyed, pouring cold water over them after they have been cooked with *kulattha, maasha, mudga, yava, and tila* will result in the growth of flowers and fruits.

kunapa jala

The production of fermented liquid manures from organic wastes.*Kunapajala* was the most significant innovation, which was reportedly a first in world agrihistory. *Kunapajala* is a natural organic product derived from animal and plant products that contains a significant amount of one or more primary nutrients such as nitrogen, phosphorus, and potassium, all of which are essential for plant growth..The literal meaning of *kunapa* is "smelling like a dead or stinking" (Shubhashree et al., 2018).Surapal's procedure involved collecting and storing animal wastes as and when they became available. Surapal enlarged the source of wastes to include other animals, particularly those with horns, despite the fact that dead boar wastes were stated first. *Kunapajala* could be made from almost any animal waste, giving farmers more options when it came to procuring their ingredients. To make *kunapa jala*, boil the flesh, fat, and marrow of deer, pig, fish, sheep, goat in water, then transfer the mixture to an earthen pot and add the compound milk, sesamum oil cake powders, honey,boiled *masha*, pulse decoctions, clarified butter, and hot water. There is no set amount of any of these ingredients; however, when the pot is placed in a warm environment for about a fortnight, the combination transforms into kunapa.

Blood, cottonseed, fish meal, and emulsion are good sources of nitrogen, whereas compost from bird manures, bone meal, and other sources of phosphorus and potassium help to regulate root, bud, flower and fruit formation, cell division, sugar formation in the sap, chlorophyll production and photosynthesis, and increase crop resistance to disease (Shubhashree et al., 2018). Some studies are ongoing now a days regarding the effectiveness of *kunapajala*. Along with *kunapa jala panchagavya* is gaining in popularity these days. *Panchagavya* is a combination of five cow-derived items. Cowdung, urine, milk, ghee, and curd are the ingredients.The first three are direct products, whereas the latter two are derivative products. *Gavya* is the brand name for all of these goods.It is utilized in seed germination,as a spray for nourishment and to treat various diseases also. For manufacturing *panchagavya*, fresh cow products such as cowdung (3 kg), cow urine (3L), cow milk (2L), curd (2 kg), and cow ghee (1 kg) were collected. The required quantities of five materials were thoroughly mixed in a container and fermented for seven days, stired twice daily. In *panchagavya*, effective microorganisms are a mix of naturally occurring microbes, primarily lactic acid bacteria, yeast, actinomycetes, photosynthetic bacteria, and specific bacteria. *Panchagavya* contains chemolethotrops and autotrophic nitrifies, which proliferate on the leaves and boost ammonia intake and total N supply (Kumar et al., 2020). Individual treatments differed in their efficacy, but *panchagavya* and *kunapajala* were shown to be the most effective in terms of greater leaf nitrogen use, efficient photosynthetic activity, and increased production. *Panchagavya* promotes soil fertility by enhancing macronutrients, micronutrients, and beneficial microbes, resulting in improved soil health. It improves the soil's water holding capacity, increases plant nutrient uptake, and boosts plant development (Kumar et al., 2020). Earthworms, as well as their vermicast and body liquid (vermiwash), have been scientifically proven to be both growth promoters and plant defenders(Sinha et al., 2010).For the improvement of fruiting flowering of various plants, different nourishing formulations were explained in classics.

Plant diseases and treatment

The next step in the planting process is to safeguard them against infections and, if necessary, to treat them. Plants, like humans, are afflicted by diseases that are divided into two types: internal and external. Internal is caused by the *tridoshas* in Ayurveda, which are *vata*, *pitta*, and *kapha*. Its balance promotes health and has an imbalance effect in diseases, and the external one is influenced by insects, weather and other factors (Śārṅgadhara & Majumdar 1935). When a plant is infected with *vata* diseases, it becomes slender and bent, with knots on the trunk or leaves, and hard fruits with less juice and flavour. When trees are overwatered with sweet, oily, sour or cold substances in the winter and spring, *kapha* illnesses develop. Plants will take a long time to bear fruit, and the fruits will be pale, dwarfed, tasteless and premature. *Pitta* kind of diseases occurs at the end of summer when the clouds vanish and the trees are overly flooded with pungent, sour, salty, and hot and intense things. Yellowness of leaves, premature fruit drop, and dryness, paleness of leaves, flowers and fruits are the symptoms. When trees are exposed to heat or their roots are eaten away by insects, the leaves dry out, turn yellow, and become excessively pale, and lose their natural aroma. Fire, wind, continual shade, overcrowding by birds, excessive creeper development, and weed growth are all factors that kill trees. *Vata* diseases can be healed with flesh, marrow, and ghee. *Kunapajala* can also use. Using bitter, astringent decoctions of brihat panchamula (*Vilwa,Kashmari,Tarkaari,Paatala,Dunduka*) and coating roots with white mustard paste with watering of sesame and ash mixture, as well as removing the soil around the plant and replacing it with new ones, *kapha* diseases can be treated. Pitta disorders can be healed by consuming cool and sweet foods. Watering with milk, honey, *yashtimadhu* and *madhuka* decoctions.

Triphala, ghee, and honey can also be making use of. To cure the plants, scrape off the damaged areas with a knife, and then apply mud kneaded with ghee and *vidanga* to the affected areas, followed by a round of milk diluted with water poured around the roots. A hot decoction of *kulattha*, *maasha,mudga,tila*, and *yava* should be prepared for the treatment of bareness and sprinkled around the roots once cooled.Different kinds of insecticides were mentioned here. Watering a plant with cold water for seven days will helps to ward off insects from roots and branches. Paste made up of *kushta,sarshapa,vaca,ativisha* can be applied externaly for worm infestations. Smoking(dhupana) tree with *sarshapa,hin gu,vidanga,vaca,ushana,bhallataka* ,flesh of animals and birds. If a wound caused by insects is there in plants then apply paste of *vidanga,gomutra,ghee* and *sarshapa* then sprinkled with milk. Nyagrodha, udumbara, ghee and honey paste can also be anointed for wound healing. For a burnt tree the treatment is sprinkling water and milk then dhupana(smoked) with shells of crabs. Then fresh sprouts will develop. Treatment for plants which are struck by lightning and thunder is also well explained in classics. Anoint the plant with vidari, sugar, nagajihwa and tila mixture then sprinkle with milk water. Many treatment protocols and various dosage forms were explained very well in classics.

Horticultural wonders

Botanical marvels, often known as horticulture wonders, are a fascinating topic in agricultural study. They produce flowers on creepers, transform trees into creepers, dwarf trees, longevity of ripeness, non-ripening, longevity of crop, destruction and quick rejuvenation, quick production of fruits, increasing the size of fruits and flowers at the very appearance, and transformation into another species. This botanical wonder can be linked to plant breeding. Plant breeding is the science of changing the traits of plants in order to produce desired characteristics. For a month, trees watered at the base with buttermilk, sugarcane juice combined with *gomamsa curna, vidanga*, and *oil* cakes also *Varahi*, *jira*, and sugarcane juice should be preserved for a month in a pot with ghee made in the moonlight, and when the mixture is well formed, it should be smeared on the tree roots and the basin filled with mud by these plants will produce gorgeous blossoms and fruits that are out of season. If a tree that normally produces pungent fruits is liberally smeared at the base with a paste made of *vidanga, yashti, yava*, milk, and jaggery, it will produce sweet nectar-like fruits. If a tree's chopped stem is covered with boiled sugarcane juice and sugarcane juice is applied to its roots, it will produce blossoms out of season. When *yashtimadhu*, sugar, *kushta*, and *madhuka* flowers are pasted together and placed to a tree's root, it produces fruits without seeds. Parthenocarpy is a method of producing fruits without seeds. If a tree is sprayed with *kulatha*, or a decoction consisting of *palasa*, *arjuna* and *tarkari* mixed with salt, it will lose its fruits and blooms. When a tree is planted in a pit dug in the earth with bricks all-around 4 1/2 cubits deep, it always remains dwarfish and bears blossoms and fruits. Dwarfing can be considered a good trait in gardening. Selective breeding, genetic engineering, or grafting on to dwarfing rootstocks can all be used to achieve this type of dwarfing. Dwarfing will aid in the production of trees in tiny locations in a short amount of time, which is advantageous in cultivation methods.

DISCUSSION

Classic vrikshayurvedic texts address a wide range of significant topics. Many of the subjects covered in this article have the potential to be of interest to many researchers. These organic growing methods have been used by cultivators for ages. The moment has come to reevaluate and put into practise natural methods that help avert numerous diseases. Due to the presence of heavy metals, chemicals from waste disposals, various pesticides, and fertilizers, the collecting of herbal remedies from untamed areas may cause some harmful effects in the body as the demand for these medicines rises. This will make the treatments undergoing with these medicines futile which indirectly affect the dignity of science. So various techniques explained here can be adopted for various medicinal plants cultivation which focus on a healthy productivity of new saplings within a short duration without losing its inborn potential.

CONCLUSION

The use of herbal drugs as medicine in ayurveda and other allied sciences is receiving acceptance from all over the world nowadays. People from other nations are also expressing an interest in the ideologies and underlying concepts of these sciences. We must therefore make the things more precise and authentic. The existence of these sciences would be questioned without the use of herbal remedies. Growing medicinal plants is one area we need to concentrate. The use of modern equipments, methodologies, and the obscure concepts revealed in the classics will aid in raising the standard of agriculture, paving the basis for widespread acceptance. Also proper interpretations of the ideas in vrikshayurveda will help to build an ecofriendly environment which will be beneficial for the all living beings in nature.

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REFERENCES

Balasubramanian AV, Arumugasamy S, Vijayalakshmi K, Subhashini S (2008). Plant products as biopesticides: building on traditional knowledge of Vrkshayurveda: Traditional Indian Plant Science.

Kumar K, Verma G, Veer R, Kumar S, Kumar P (2020). Exploitation of Panchagavya, benefits and eco-friendly management of plant diseases: A review.

Śārṅgadhara, & Majumdar GP. (1935). Upavana-vinoda: a Sanskrit treatise on arbori-horticulture. Indian Research Institute.

Shubhashree MN, Matapathi S & Dixit AK. (2018). Conservation and preservation of medicinal plants-leads from Ayurveda and Vrikshayurveda. Int J Complement Alt Med . 1: 275-279.

Sinha RK, Agarwal S, Chauhan K, Valani D (2010). The wonders of earthworms & its vermicompost in farm production: Charles Darwin's 'friends of farmers', with potential to replace destructive chemical fertilizers. Agric Sci. 1: 76.