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PLANT NOURISHMENT AND YIELD ENHANCING METHODS IN VRIKSHAYURVEDA

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ABSTRACT:

Vrikshayurveda is the ancient Indian science of plant life. Its name means '*Ayurveda* for trees'. Vrikshayurveda was well evolved in ancient times, these concepts are mentioned in *Vedas* like *Rigveda* and *Atharvaveda* and also in *Samhitas*, it mentions various aspects of plant cultivation techniques for proper soil management, irrigation practices, and the use of natural fertilizers and pest control methods. It also provides the guidelines for the conservation of natural resources, estimation of groundwater, construction of water reservoirs, etc. At present time various chemical fertilizers are used to enhance yield many of these lead to health issues like cancer, developmental problems in children, allergies like skin rashes, hormonal imbalance etc. so by following our ancient methods mentioned in *Vrikshayurveda* can enhances yield and also quality of plants and can reestablish the biodiversity which is been disturbed.

KEY WORDS: *Vrikshayurveda,* Yield, Health, Fertilizer

INTRODUCTION:

Vrikshayurveda is the ancient Indian science of plant life deals with the healthy growth of plants and their productivity.[1] It has been systematically explained in various texts of Vrikshayurveda. Vrikshayurveda is well evolved in ancient time, these concepts are mentioned in Vedas like Rigveda and Atharvaveda, in puranas like Agni purana (A. D 900) and Vishnudharmottara purana, in Samhitas like Sharangadhara Samhita, Kashyapa Samhita and Surapala's Vrikshayurveda is deals all aspect of plants.[2]

Ayurveda is based on principles of nature and Vrikshayurveda is based on principles of Ayurveda and nature. Hence, they go hand in hand with same basic principles. As the aim of Ayurveda is to achieve happy, healthy and peaceful life and that of Vrikshayurveda is to provide the same to plants.[3] For achieving this Vrikshayurveda mentions techniques for proper soil management, irrigation practices, and the use of natural fertilizers and pest control methods etc.

Inorganic fertilizers and pesticides, while beneficial for crop yields, carry significant negative impacts. These chemicals can cause soil degradation, reducing its fertility over time. Pesticides often harm non-target organisms, leading to a loss of biodiversity. Additionally, runoff from fields can contaminate water bodies, causing eutrophication and harming aquatic life. There are also potential health risks to humans from exposure to these chemicals, including respiratory problems and other chronic conditions. Sustainable practices and organic alternatives are increasingly important to mitigate these adverse effects. So, it's very important to look back our ancient methods of plant for use of organic materials and techniques to enhance soil fertility, protect crops from pests, and improve overall plant health as well as human health.

This article is an attempt to gather the Plant nourishment and Yield enhancing methods from *Surapala's Vrikshayurveda* and *Upavana Vinoda* of Sharangadhara Samhita which are can be practiced in present time. these methods not only enhance yield but also increase quality of plants mainly medicinal plants. these also offers numerous benefits from promoting environmental sustainability and economic viability.

OBJECTIVE: The idea of this literature is to listing out plant nourishment methods mentioned in Vrikshayurveda which all can be practiced in present time easily to enhance yield and maintain quality of plants.

MATERIALS AND METHODS:

Surapala's Vrikshayurveda, Upavanavinoda of Sharangdhara, articles and web pages.

SR. NO	METHOD	EFFECT
1	Treating Patola (Trichosanthes cucumerina) with hay fire and profusely sprinkled with water mixed with oilcake[4]	Patola plant yields gourds
2	Watering with decoction of milk, Pancha Pallava, i.e., leaves of Amra (Mango) – Mangifera Indica, Jambu (Jamun) -Syzygium cumini, Kapittha (Wood Apple) - Feronia limonia ,Bijapura (Citron) - Citrus medica, Bilva (Bael) – Aegle marmelos [4]	Used to treat mango trees by this tree bear very fragrant and y fruits at an early date
3	If one applies powdered oil-cakes of white mustard or sesamum at the roof of plant	this method helps to increases speed of growth of the trees like *Kharjura (Phoenix dactylifera Linn)*, *Bilva* (Aegle marmelos) and *Lakucha* (*Artocarpus lacucha*) trees,
4	Watering with water in which husks are soaked	This method is used for mango trees (*Mangifera indica*), by this tree grow quickly
5	A decoction of clarified butter, *Kunapa* water, *Vacha (Acorus Calamus)* and pig's stool is used[4]	It is extremely favourable to the development of fruits of *Dadima (*Punica *granatum Linn)* trees
6	Treating with decoction made up of powder of *kulattha (Dolichos biflorus Linn)*[4]	It is favourable for the development of fruits of *Dadima* trees (*Punica granatum Linn*)
7	Liquid made of curd, fermented rice water, wine made out of rice, plum, sesamum, K*unapajala*.[4]	Treating *Naga Kesara (Mesua ferrea)* and *Kadamba* (*Neolamarckia cadamba*) which are fruiting bears furthermore innumerable flowers
8	Filling trenches with the decoction made up of *priyangu, gunja fruit, nimba, pippali, vacha, haridra, tila* and *sarshapa* – all taken in equal parts together with clarified butter and Asvakarna (*Dipterocarpus turbinatus*) (bark)[4]	*It helps Nagakesara (Mesua ferrea)* and *Champaka* (*Magnolia champaca*) for its luxurious growth.
9	Watering with clarified butter, milk and honey.[4]	*Kapittha* (*Limonia acidissima* L) and *bilwa* (*Aegle marmelos*) trees bear fruits which are sweet and full of fleshy substance and containing scanty number of seeds
10	Watering with the decoction of *Tila* and *Yashtimadhu (Glycyrrhiza glabra)* and with *kunapa* water[4]	A plum tree (*Syzygium Cumini*) bears fruits which are as sweet as sugar
11	Roots are pierced with the stings of scorpion and fumigated with clarified butter and watered with the fats of mice and pig.[4]	This method can be used to treat all creepers, plants said to be bear a greater number of fruits.
12	Watering with the urine of cows and kunapa water in summer[4]	*It helps Ketaki* tree (*Pandanus odorifer*) to bear fragrant flowers and sharp thorny leaves in the rainy season
13	Watering with the liquid compound of the Powders of *Kushta (Saussurea lappa), Patra, Murva (Marsdenia tenacissima),*	It can be used to treat any flowering tree; it helps to bear fragrant flowers in the course of a month

	Musta (Cyperus rotundus), Tagara(Valeriana wallichii) and Ushira(Vetiveria zizanioides)[4]	
14	Application to the roots with *Siddhartha* (white mustard), *Kadali* (plantain leaf), stools of a pig and cat in equal parts mixed with clarified butter, smear the trunks and fumigate.[4]	This help trees to become free from all diseases, grow luxuriantly and the branches become graced with flowers and a number of bees
15	fumigating tree with barley wine, fermented rice water and clarified butter and smearing its trunk with paste made up of *Vidanga (Embelia ribes)* and *Tila(*sesamum) with milk or *kunapa* water4	This method helps Sisoo tree(Dalbergia sissoo) to grows very luxuriantly
16	Watering roots with milk, the fat of pig, and then sown in earth and sprinkled over with spring water, [4]	This method helps any fruiting tree to sprout very quickly and to bear very sweet fruits
17	Trees which are smoked heavily by a mixture of ghee, *vidanga*, milk-water, and honey[5]	Trees become full of flowers and fruits in a short time
18	when pierced with a sharp instrument (literally, with a sting of a scorpion), smoked with the fat of *saphari* (a tiny, shining fish), and sprinkled with the marrow of a hog and mouse.[5]	Creeper bears abundant number of fruits and flowers
19	Nourishing roots with powdered excreta of cocks and sprinkled with water mixed with fish fat.[5]	The grape creeper bends down with flowers and fruits
20	Treating with water mixed with ripe fruits of *ankola*, ghee, honey, and marrow of a boar (Male pig).[5]	The mango trees are nourished well and bears sweeter and bigger fruits
21	Treating with soup of black gram, salt water, powder of barley, or husk-water in abundant quantity[5]	Coconut trees always produce big fruit
22	Treating with water mixed with white mustard, barley, husk, and oil cake[5]	Nourishes trees of the type of date (Phoenix dactylifera), and *kamala (Nelumbo nucifera)*
23	Watering with plenty of *triphala* i.e Amalaki (*Emblica officinalis*), Bibhitaki (*Terminalia bellirica*), and Haritaki (*Terminalia chebula*) decoction and covered immediately with husk[5]	This helps jackfruit tree to bear many fruits of a bigger size, very sweet and without seeds
24	Watering profusely with the mixture of *yastimadhuka*, sesame, and honey and also with *kunapa* at the root[5]	*By this method Kola* plant bears fruits which are big and sweet in taste
25	Smearing trees with a mixture of ghee, honey, *krsara* (spiced food preparation with sesame, rice, and peas), and lodhra, enriched with the thick paste of barley or when smeared and smoked well with sesame, honey, and barley for twelve days and watered with milk-water[5]	*Karkandhu (Carissa carandas), lakuca (Artocarpus lakoocha), badari (Ziziphus mauritiana), Dhatri(Emblica officinalis) and jambu (Syzygium cumini) at* blossoming time bear good Fruits
26	Sprinkling with mixture of jaggery, ghee, milk, and honey[5]	The *bilva* and the *kapittha* trees bear plenty of juicy fruits.

27	Treating well with the fermented water mixed with milk, fish flesh, cow dung, rice, and with the thick water of sesame cake.[5]	The *matulungi* tree(Citrus medica)with produces fruits which are extremely sweet, soft, fleshy, and big in size.
28	Fomenting slightly with hay fire and profusely feeding with water mixed with milk[5]	Mallika (Jasminum sambac) produces abundant flowers

DISCUSSION:

Now a days plants grown with chemical fertilizers and modern methods are leading to various health issues like nutritional deficiency, developmental problems in childrens, allergis and even serious conditions like cancer.so bringing back our ancient practices in agriculture field is very essential. Now a days the demand for organic agriculture has been steadily increasing over the years due to consumers awareness, environmental concern, government support etc. maintaining quality of medicinal plants is also very essential without which treatment may fail to cure disease conditions. For this bringing back Vrikshayurveda method of plant nourishment is essential in medical field as well as in agriculture field.

Many methods are mentioned in Vrikshayurveda which enhances yield and produce quality plants , some of them can be used for benefits of all the plants like using Kunapajala , smoking with vidanga (*Embelia ribes*), milk etc. some methods are specially indicated for particular type of plant like Sprinkling with mixture of jaggery, ghee, milk, and honey for increasing yield and taste of bilva (*Aegle marmelos*), Watering profusely with the mixture of yastimadhuka (*Glycyrrhiza glabra*), sesame, and honey and also with kunapa at the root for getting big and tasty kola fruits. Many of the researches are going now a days for ensuring capability Vrikshayurveda methods in agriculture. some of researches are already done and showed very successful result in enhancing yield and quality.

Surapala described and praised a fertilizer cum natural pesticide made from fish and animal waste called *KUNAPAJAL*. This fertilizer was made and applied in the tea gardens of Assam, Darjeeling and the Nilgiris and in the coffee estates of Karnataka. What emerged was nothing short of miraculous. Various pest such as red spider mite and helopeltis which the tea gardens were unable to eliminate using chemical methods, were eliminated effortlessly with *kunapa jal* within a few months. Moreover, the tea bushes produced more green leaf and the fertility of the soil also increased as indicated by the return of earthworms in the soil. Laboratory soil tests showed that pesticide residues had been eliminated from the soil of these gardens within 4-6 months of steady and regular application of *kunapa jal* and other liquid manures. It contains aminoacids, sugars, fatty acids, keratins,macro and micronutrient which helps for growth of plants[6]

The usage of white mustard also been explained in Vrikshayurveda and it contains enzyme sinalbin. This enzyme helps in pest colonization and it act as antifungal. Moreover, white mustard has longer effect.

Oil cakes, also known as press cakes, are byproducts of oil extraction from various oilseeds. They are highly beneficial as organic fertilizers for plants due to their high nutrient content, Oil cakes are rich in nitrogen, phosphorus, potassium (NPK), and other essential micronutrients. These nutrients are vital for plant growth and development, They enhance soil structure, water-holding capacity, and cation exchange capacity, Oil cakes contain fungitoxic biomolecules and secondary metabolites like phenolic acids and flavonoids, which help suppress soil-borne pathogens and reduce disease severity, hey promote microbial activity in the soil, which aids in nutrient cycling and improves soil fertility.[7]

Proline is one of the amino acids found in milk that can promote disease resistance in plants. When plants absorb proline, it helps in osmotic adjustment, stabilizes proteins and membranes, and acts as a scavenger for reactive oxygen species. This can enhance the plant's stress tolerance and overall health.[8]

Honey contains increased levels of cytokinins, which are plant hormones that promote cell division and growth. These hormones play a vital role in protecting plants from drought and stress by regulating water retention and improving overall plant vigor. [9]The presence of proline in honey can induce systemic resistance in plants, enhancing their ability to withstand various stresses.[10]

Usage of Cow dung is explained in many Vrikshayurveda , it is rich in essential nutrients such as nitrogen (N), phosphorus (P), potassium (K), and other micronutrients that are crucial for plant growth. These nutrients help in promoting healthy plant development and improving crop yields.[11]

White mustard contains the enzyme sinalbin, which is known for its antifungal properties. When sinalbin is hydrolyzed, it produces allyl isothiocyanate, which has been shown to inhibit the growth of various fungal pathogens. This makes white mustard an effective natural pesticide and helps in pest colonization control.[12]

So like this for every method mentioned in Vrikshayurveda for nourishing plants has a scientific reason ,Many researches are initiated in field of agriculture and in medical field to prove these methods scientifically and assess their efficacy. So it's important to bring them back in practice for wellbeing of plants , biodiversity and as well as human beings.

CONCLUSION:

The current guidelines such as WHO Guidelines on Quality control methods for Medicinal plant materials; Guidelines for methodologies on Research & Evaluation of Research of Traditional medicine, Good Agricultural and Collection Practices etc., have provided immense support and guidance in this field. Besides this, commendable efforts have been made by National Medicinal Plants Board, Ministry of AYUSH, Government of India and issued Guidelines on Good Agricultural Practices and Good Field Collection practices for Indian Medicinal Plants in particular.

The ignorance of our ancient texts is responsible for the degeneration of the agriculture practices. With the help of ancient texts and model methods of agriculture we can not only scientifically prove the sayings of the text but we could also establish some novel modified methods for the agricultural systems .*Vrikshayurveda* can also play an important role in the field of intercropping and organic fertilizers and can play a crucial role to build the ecofriendly environment.

So further research works are necessary to access the effects of these methods and to prove then scientifically

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