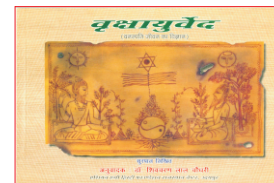


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VRIKSHAYURVED FARMING NEWS



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Chief Editor's Note :

"The most spectacular success of independent India- gaining self-sufficiency in food production came at a cost. With sustainability of our production systems at risk, we are reminded about the ignorance of our ancient texts.

Using Surapal's Vrikshayurveda and model methods of agriculture we can not only scientifically prove the sayings of the text but also establish some novel modified methods for the sustainable agricultural systems. Small farmers from several states in the country have successfully taken the lead in adopting ancient practices and having bountiful harvests."

- J Kumar

Famous agricultural scientists of India

Courtesy: Dr SK Khandelwal, Secretary, Asian Agri-History Foundation Rajasthan Chapter, Department of Molecular Biology & Biotechnology, Rajasthan College of Agriculture, MPUAT, Udaipur

Agriculture is a process that converts the environment for the sufficient production of plants and animals for human utilization. It involves deep research and techniques that our agriculture scientists develop to improvise agriculture productivity in terms of quality and quantity. Three famous agriculture scientists of India who have made tremendous contributions to Indian agriculture are described here,

Dr. Mankumbo Sambasivan Swaminathan [07.08.1925- to date] is a renowned agriculturist and leader, known for his part in India's Green Revolution, a programme for which he planned for introduction and evaluation of various high-quality dwarf wheat from Mexico in several places in India. Swaminathan is called as Father of the Green Revolution in India because of his leadership in developing high-yielding wheat varieties in India together with several wheat breeders. His leadership made the Indian agriculture stronger and helped India become self-sufficient in food grains and helped solve the problem of hunger and poverty. He is the founder of the MS Swaminathan Research Foundation. He helped India to attain sustainable agricultural development by using sustainable



varieties, fertilizers and pesticides and preservation of biodiversity for sustainable food security. This movement has been called as "Evergreen revolution" by him. Dr Swaminathan is well recognized all over the world and received many awards such as among which the prominent ones include Padma Bhushan in 1972, the World Food Prize in 1987, Padma Vibhushan in 1989, and Tyler Prize for Environmental Achievement in 1991.

Dr. Benjamin Peary Pal [26.05.1906 – 14.06.1989] was an Indian plant breeder and an expert in the science of soil management and crop production. He was appointed as the Director of the Indian Agricultural Research Institute in New Delhi and as the first Director- General of the Indian Council of Agricultural Research. He worked on wheat genetics and breeding, and he was also known for the love of rose varieties. He was a bachelor and donated his whole property to the Indian Council of Agricultural Research. He received many awards including Padma Shri in 1959 and Padma Bhushan in 1968.



Dr. Hem Singh Pruthi [23.02.1897 - 23.12.1969] was an Indian expert in zoology, concerned with insects that served as an Imperial Entomologist, being the first native Indian to occupy that position. He was appointed as an Assistant Superintendent at the Zoological Survey of India at Calcutta and worked mainly on the Hemiptera. He then connected with the Indian Agricultural Research Institute and became the Imperial Entomologist. In 1938, he formed the Entomologist Society of India. He was a plant conservation advisor to India's Government and helped set up a locust warning system. He published a book on Agricultural Entomology in 1963. Several genera of hemipterans have named after him, including Pruthiana, Pruthiorosius, and Pruthius.



Modern agronomic concepts and practices mentioned in Kautilya's Arthshastra

(Courtesy: Dr. Sunita T Pandey, Professor Agronomy, & Secretary Asian Agri-History Foundation, GBPAU&T, Pantnagar-263145, Uttarakhand)

Kautilya (321-296 BCE), also known as Chanakya, was a great scholar of his time. Indeed, he could be considered a pioneer of the

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art of statecraft, a brilliant intellectual, and a great teacher. During Kautilya's time, agriculture, cattle breeding, and trade were grouped into a science called Varta. Agriculture of today receives policy and administrative support from government officials. All these actions have been indicated in the chapter 14 entitled Sitadhyaksha (The Superintendent of Agriculture) of book No. 2 of treatise Kautilya's Arthshastra. This chapter includes following modern Agronomic concepts and practices.

Timely Sowing: For ensuring the timely sowing operation, which is critical to obtain high yields, Kautilya emphasised on assuring the availability of all other resources of crop production including human resources on priority to carry out all other farm operations well in time i.e. from ploughing to harvesting of the crop to the timely sowing of the next crop.

Rainfall Prediction and Choice of Crops: It is very significant to note that a rain gauge was used during Kautilya's period. The optimum distribution of rainfall during a season for crop growth and high yield has been indicated. Clearly this must have been based on keen observations over many years; perhaps these observations might have been made much before Kautilya's time. By the time of Kautilya, forecasting rainfall based on planetary movements and related phenomena were practiced widely. There was so much confidence in the astrological prediction of a rainy season that the choice of crop was made on the basis of the prediction. These astrological models of predicting rainfall must be functional, or else Kautilya would have ignored them. Kautilya's statements on the distribution and adequacy of rain match well with the needs of rainfed crops. These have stood the test of time.

Season's Classification: Kautilya has already mentioned in the chapter Sitadhyaksha, the Sanskrit names for different cropping seasons i.e. kedara for wet crops, haimana for winter crop, and graishmika for summer crops. These names were existing in India till the West/Centra Asians invaded and ruled India for centuries. They introduced the Arabic words for seasons, which are used so widely today (kharif (rainy season), rabi (post-rainy season), and zaid (summer season) that hardly anyone even remembers the perfectly appropriate Sanskrit words.

Use of Available Residual Moisture: The practice of growing cucurbits (cucumber, melons of different kinds, pumpkin, etc.) on river banks continues even today all over India from the river Ganges in the North to the Pamba River deep down South, on the available residual moisture in the soil. This is an outstanding example of a sustained practice, which ensures utilization of moisture available in what one could call wastelands (i.e. river banks). Similarly, the moisture requirements of different types of crops viz. vegetables, herbs, and fodder crops were well understood by the time of Kautilya.

Plant Protection: The practice of exposing seeds in dew in the night and drying it under the sun during the day is certainly very interesting as mentioned by Kautilya, much before systemic fungicides became available to the farmers in 1960s to control internally seed-borne smut disease in cereals. This practice could initiate activation of fungi and bacteria present on the seed surface or just under the seed coat under the night dew and then their death on exposure to sun during the day time, and thus freeing the seed

from potential seed-borne pathogens. Similar instances of other practices of plant protection namely the use of honey which is mildly antimicrobial, cow dung, etc. which could facilitate the biocontrol of potential of pathogens have been mentioned for various crops.

Top Dressing in Paddy Crop: Kautilya recommended topdressing the plots of young rice seedlings with large numbers of tiny weed fish in standing water. Milky extract from Euphorbia species was also poured in the fish containing plots. We know today that species of Euphorbia have fish killing property, because of the presence of diterpenes (ingenol-esters). The intention therefore was to release the fish and kill them to make nitrogen, phosphorus, calcium, etc. from the decomposing fish available. Clearly an ingenious method of top-dressing rice with manure!

The Success stories of the farmers using Vrikshayurveda-based farming practices

A. Success story of Anitha C. from Muzhappilangad panchayath: a women farmer practicing Vrikshayurveda farming system in Kannur district of Kerala

(Courtesy: CV Jidesh, Secretary, Kerala Chapter of Asian Agri-History Foundation (KCAAHF); Mobile: 9446052342)

Anitha C. received training on Vrikshayurveda farming system from Kerala Chapter of the Asian Agri-History Foundation (KCAAHF) during 2016. Earlier, she was practicing organic farming by application of solid organic manure with little success, less yield and higher incidence of pests and diseases. But she was determined to explore more practices for a successful organic farming.

After receiving training on the preparation of herbal Kunapajala, cow urine-based pesticides and decoction for drought tolerance, she started preparing various inputs as per guidance of KCAAHF. She applied herbal Kunapajala and cow urine-based pesticide in vegetable and field crops, viz. cabbage, cauliflower, radish, green chilli, brinjal, bhindi, cowpeas and marigold, and she shared her vrikshayurveda experience with KCAAHF.

Her field was near the Muzhappilangad drive on a beach. Most people visiting the beach started noticing her crops due to their better crop stand, enquired about mode of cultivation practices and purchased vegetables at premium price, realizing that her produce was safe to eat and pesticide-free. She shared her vrikshayurveda experience in leading Malayalam newspapers, magazines, radio, TV channels. These resulted in better sales from her farm gate. Convinced with her better Vrikshayurveda farming practices experience, she has now started training farmers of other panchayaths about Vrikshayurveda farming system as per guidance of KCAAHF.

From 2016 onwards Anitha is practicing and popularizing herbal Kunapajala and cow urine-based pesticide among vegetables and paddy farmers of Kannur district. She is also supplying herbal Kunapajala and cow urine-based pesticide to other farmers in addition to providing training. For paddy, she applied herbal Kunapajala at three growth stages, viz. at nursery stage (@ 50 ml per litre), at tillering stage and flowering initiation stage (@100 ml per litre), both basal application and foliar spray. Cow urine-based pesticide applied as foliar spray (@ 5 to 10 ml per litre) for

managing sucking insect pests. For vegetables, herbal Kunapajala was applied at weekly intervals (@100 ml per litre) as basal application and foliar spray.

During 2020-21 crop season, she got a yield of 200 kg of bhindi from an area of 5 cent (200 sqm) with a local variety (Anakombam). She received maximum price as she marketed this as Vrikshayurveda bhindi. She also cultivated cucumber, salad cucumber, ash gourd, radish, green chillies, tapioca and marigold. This season she is cultivating paddy in 40 cent (1600 sqm) area (using a local variety Muthumani and high yielding variety Uma). She now strongly believes that her success in organic farming is because of Vrikshayurveda farming system, popularized by KCAAHF.



A. Manoj Chandra Upadhyay, Vill – Kaneli, Post – Jyoli, District Almora, (Mobile: 7042022807)

(Courtesy: Dr. Sunita T Pandey, Professor Agronomy & Secretary Asian Agri-History Foundation, GBPAU&T, Pantnagar-263145, Uttarakhand)

Mr. Manoj Chandra Upadhyay said that he had been practicing organic agriculture in 25 nali area (5000 sq meter). Since March 2020 he opted agriculture as source of his livelihood. He realized that plant protection was a challenge in organic agriculture as he also faced this challenge. He participated in a training course organized by Dr Sunita T Pandey under the project “Exploring Livelihood Potential of Wild Growing Stinging Nettle (*Urtica dioica*) in Uttarakhand” funded by Ministry of Environment, Forest and Climate Change Government of India under the National Mission of Himalayan Studies (NMHS), Government of India. The training was organized through KVK Matela, Almora. In the training he came to know about the liquid fermented organic multipurpose concoction “Herbal Kunapajala” a preparation based on principles of Vrikshayurveda and modified by AAHF, which provides good nutrition to soil and plants together with good control of insects and diseases.

Due to an excessive rainfall this year, the problem of fruit rot, flower drop, and attack by fungal diseases affected most of the crops of kharif season. In this situation, Mr Manoj Chandra used Herbal Kunapajala in eggplant, capsicum, ginger, cucurbits, flowers, and he was astonished to see the good results. In comparison to the previous years through out in rainy season. This year, he got higher productivity from all the vegetable crops compared with the previous years because of the use of Herbal Kunapajala.

With the use of Herbal Kunapajala the sizes of fruits of brinjal, capsicum and cucumber were significantly increased. He has also used Herbal Kunapajala in ginger crop and is waiting for the

results. Herbal Kunapajala is working as a fungicide, insecticide, liquid manure and growth promoter and a boon for organic farming. Having been convinced himself, now Mr Manoj motivates other farmers of his vicinity also.

In his opinion, Herbal Kunapajala is a gift from Asian Agri-History Foundation (AAHF) for the small and marginal farmers for implementing organic farming in their area. He believes that the use of Herbal Kunapajala is capable of reducing the cost of organic farming and to increase the household income for their better livelihood prospects. He said that “he is now making several other products from the nettle grass besides Herbal Kunapajala under the guidance of scientists involved in this project. He further emphasized that “The uniqueness of Herbal Kunapajala is that it also works as rejuvenator for the plants”. He expressed his obligation to AAHF and the project team, and a strong desire to use Herbal Kunapajala in other crops also.



A. Ranjeet Singh Bisht, Village & Post Office Dhamus, District Almora, (Mobile. 7530904077)

(Courtesy: Dr. Sunita T Pandey, Professor Agronomy & Executive Secretary, Asian Agri-History Foundation, GBPAU&T, Pantnagar-263145, Uttarakhand)

Ranjeet Singh Bisht is doing organic farming for the last one year. He uses only Herbal Kunapajala in his organic farming and is getting very good results. This year, he sold 15 quintals of tomato, just because of the application of Herbal Kunapajala, and got 12-15 kg tomato fruits per plant. In spite of the sandy soil of his field, he is getting very good yield of vegetables after the regular application of Herbal



Kunapajala. He expressed his thanks to Dr Sunita T Pandey and Dr Uma Naulia for their guidance in preparing and using the Herbal Kunapajala. He also shares his success story of the revival of his peach plants after application of Herbal Kunapajala to other farmers of his vicinity. The same happened in tomato plants (file photo). He recommends that other farmers should also use Herbal Kunapajala. If they do, then they will forget to use any other biofertilizer and other fertilizers. He has also sown a plot with 5 q seed of ginger crop and using Herbal Kunapajala for its cultivation. He is getting good plant growth and waiting to see its results in ginger as there is huge problem of fungal diseases in rhizome. According to him,

Herbal Kunapajala provides strength to the plant to fight diseases and insects. We can also call it bio-insecticide in addition to bio-fertilizer.

Use of Vrikshayurveda herbs/practices in animal husbandry

(Courtesy: Ajay Kumar Upadhyay and Ayushi Pathak, Department of Veterinary Public Health and Epidemiology, College of Veterinary and Animal Sciences, Pantnagar)

Vrikshayurveda, the Science of Plant Life, is one of the strategies which include the use of wisdom, skills and experiences of Ayurveda to plants for their improved growth and productivity and improvement of livelihood. It helps farmers to solve most of their problems in plants and animals by their own logic and innovations. Some of the herbs used in Vrikshayurveda have found good use for use for different purposes in animals. Although their documentation is hardly done and only verbal transmission is followed and so it is vulnerable to extinction with time, if not stored or documented properly. Vrikshayurveda is not only indigenous but is also cost-effective, compatible to the society and believed by the farmers for its efficacy. Lately, scientific community dealing with animals has also started appreciating the value of Vrikshayurveda herbs for animal use but there is still a lot to achieve.

Some of the documented Vrikshayurveda herbs for treating various animal diseases are as follows:

1. Dysentery: Leaves of Antamul (*Hemidesmus indicus*) with honey, sap from extract of Thankuni (Indian pennywort, *Centella asiatica*), Patharkuchi (*Coleus aromaticus*) and Durba (*Dhuh grass*, *Cynodon dactylon*).

2. Arthritis: Decoction of babul (*Acacia arabica*) root with mustard oil (1:3), hot fomentation with Akanda leaves (*Asclepiadaceae*, *Calotropis gigantea*) along with ghee.

3. Bloat: Mixture of Amlaki (*Embllica officinalis*), Haritaki (*Terminalia chebula*) and Bahera (*Terminalia bellirica*), decoction of stem bark of Kadam (*Anthocephalus chinensis*).

4. Retention of placenta: Mixture of jaggery, turmeric, soybean and sugar solution.

5. Mastitis: Turmeric is used for treating this disease.

6. Infertility: Onions (*Alium sepa*) mixed with salt, green bhang (*Cannabis sativa*), fenugreek and almond mixture can be given to the animal for increasing fertility.

The vast number of instances about indigenous knowledge in animal husbandry indicates the richness of age old wisdom and skills of people. The use of Vrikshayurveda herbs/practices may help in identification of many cost-effective yet sustainable methods for animal rearing which can be managed locally.

Ethno-veterinary medicinal plants

(Courtesy: Anuj Tewari, Assistant Professor, Department of Veterinary Microbiology, College of Veterinary and Animal Sciences, G. B. Pant University of Agriculture and Technology, Pantnagar-263145, Uttarakhand)

Salihotra was the first to be credited as an animal healer when he

wrote Ayurveda Materia Medica in Veterinary Medicine and Mrig [animal] and Hasti [elephant] Ayurveda. The first recorded veterinary hospital opened by King Ashoka in 1463 BCE, used Ayurvedic botanicals. Some of the important botanicals used for treatment of veterinary ailments are listed below.

1. Ashwagandha (*Withania somnifera*)

Ashwagandha, or Indian ginseng, is indicated as a daily rasayana, or anti-aging therapy. It is one of the most highly regarded and widely used Ayurvedic herbs, believed to increase energy and overall health as well as longevity. In veterinary practices it is used to treat fever, ulcer, expulsion of placenta, convulsive seizures, tissue healing, antibacterial and improve sexual vitality.

2. Boswellia serrata (Salai)

This is one of Ayurvedic medicines' most potent anti-inflammatory herbs. The most common use is for osteoarthritis, degenerative disc disease and any inflammatory condition of bones, joints and spine. It is also neuroprotective, analgesic and antifungal.

3. Turmeric (*Curcuma longa*)

Turmeric is a perennial herb-rhizome commonly used as a cooking spice. In Veterinary practices it is used for treatment of constipation, food poisoning, indigestion, neck sore, skin disease, bone fracture, ulcer dysentery, dislocation of bone, mastitis, expectorant, yoke galls, tissue healing.

4. Neem (*Azadirachta indica*)

Neem has attracted worldwide attention in the medical community due to its wide range of medicinal, insecticidal and fungicidal properties. In veterinary practices, neem is used for treatment of swellings and inflammation, constipation, dyspepsia, ulcer, prolapsed uterus, as mosquito repellent, indigestion, liver disorders, tissue healing, small pox.

5. Trifala

This is a combination of three herbs – Terminalia chebula (Haritaki), Terminalia belerica (Bahera), and Emblica officinalis (Amla). This long-revered herbal blend has been used for thousands of years and is referred to in almost every Ayurvedic textbook. It has synergistic action as well as digestive properties. It is also considered a powerful antioxidant. Moreover, Terminalia chebula is rich in tannins, amino acids, succinic acid and beta-sitosterol. The Terminalia belerica is rich in tannins. Emblica officinalis supports the immune system and is one of the best available sources of vitamin C. The Trifala has bowel-regulating and mild laxative properties. It is useful for respiratory and allergic illnesses as well as heavy metal toxicity. It is anti-ulcer, anti-cancer, anti-mutagenic, and promotes healthy eyes. In veterinary practices it is used to treat diarrhea, anthrax, dysentery, ulcer, stomachache, anorexia.

Attention

Please send your contributions to the Newsletter to

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