# A Review - Cowpathy and Vedic Krishi to improve Soil Health

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***Abstract—*** *The goal of this study is to assess the effectiveness and efficiency of some cowpathy and vedic krishi input. Organic farming uses the following systems to safe guard soil health and enhance the biological performance of crop plants. These systems are Vrkshayurveda, Panchagavya, Kunapajala, Beejamrit, Jeevamirit, Compost tea, Matka khad, Vermiwash and Amrutpani. In vedic krishi and cowpathy, low input costs are complemented by ecological and socioeconomic conditions that suit the needs of vast segments of farming communities composed of small and marginal farmers. All of the Cowpathy and vedic krishi inputs have been shown to significantly boost the productivity of many crops and suppress a wide variety of plant pathogens. Plants that are grown with Panchagavya and the beneficial microorganisms it contains are better able to fight off pathogens and provide nutrients without chemical fertilizers / pesticides. Vermiwash, Beejamrit and Jeevamirit all proved effective as foliar treatments in enhancing the productivity and preventing the spread of disease.*

***Keywords— Cowpathy, Vrkshayurveda, Panchagavya, Kunapajala, Beejamrit, Jeevamirit, Compost tea, Matka khad, Vermiwash, Amrutpani.***

## I. INTRODUCTION

Cowpathy and vedic krishi techniques require low input costs and adapt well to the ecological and socioeconomic conditions of small and marginal farmers. They have been found to be quite effective in increasing agricultural productivity. By producing antibacterial and antifungal compounds, hormones and siderophores, cowpathy and vedic krishi inputs were shown to be highly effective in enhancing the productivity of different crops and suppressing the growth of various plant pathogens.

In Vedic farming, the cow and farm life were deeply connected. The “original organic fertilizer” was called “Panchakavya” (Panchagavya) meaning five substances [cow manure, cow urine, milk, yogurt and ghee]. These same ingredients when mixed with water, the product is called “Amrit -pani”. This nutritious nectar is then used to water the plantings, yielding bountiful, healthy crops. The Rishis taught that seeds should first be coated in ghee an d honey before sowing to help them germinate, making them strong and resistant to disease for their lifetime. Additionally cow urine and bitter neem are bottled, kept in the sunlight, and sprayed over crops for an effective, natural pesticide against insects.

### 1.1 Cowpathy

In Cowpathy, cow products are used for healing purposes. It has emerged as a modern offshoot of traditional Ayurveda. It largely utilizes the top five products derived from cows. Milk, urine, dung, ghee, and curd are the five components of cow origin used in cowpathy healing system. Panchagavya Therapy and Cow Urine Therapy are the two variants of Cowpathy that are currently used.

### 1.2 Vedic krishi

During the Vedic period, the Vedic people used leaf litter, cow dung, and other trash to add fertility to their land by decomposing it. This made the soil more fertile and allowed them to plant good crops.

Historically, Maharshi Vasishtha served the divine cow Kamdhenu, and Maharshi Dhanvantari offered a wonder medicine, Panchgavya, to mankind as a wonder medicine. In Sanskrit, these five products are individually called "Gavyas" and collectively, "Panchgavyas". Cowpathy has many beneficial effects on the body. By utilizing bio-fertilizers derived from cow urine and dung, it is possible to restore soil fertility and prevent food from being contaminated with certain chemicals, which can pose health risks. There is no other fertilizer as cheap and as harmless as dung fertilizer. Traditionally, Vedic people

grew wheat, barley, and other eatable nut which were the primary food items Vedic people's another achievement was Manuring. During the Vedic period, people used waste items like leaves, cow dung, and other materials to aid in the decomposition of the agriculture land. The process increased the fertility of good crops on the land.

Some vedic inputs are- Panchgavya, Vermiwash, Compost Tea, Matka khad, Beejamrit and Jeevamrit.

- Vermiwash give high yield.
- A study found that Panchgavya was most effective in controlling cauliflower stalk rot.
- For seed treatment, beejamrit was found to be the most effective.
- Compost Tea, Matka khad, Jeevamrit is used as foliar sprays to control plant pathogens.

The dung is excellent farmyard manure, and if processed into vermicompost, a very small amount is sufficient for a large field. Even though there are many claims made, they need to be validated scientifically. For cowpathy products to be accepted and popular worldwide in terms of agricultural, energy resource, and nutritional applications, scientific validation of the products is required in order to maximize the power that cowpathy can offer to humanity. Although it hasn't been scientifically validated, people are using it and getting benefits from it. There are multiple threats to food security including undernourishment and overconsumption, rising food prices, population growth, rapid diet transitions, threats to agricultural production, inefficient production practices and supply chains, and declining investment in food system research. Food insecurity causes widespread human suffering along with degradation of natural resources, migration to urban areas and across borders, and political and economic instability. As the global population grows to 9 billion people by 2050, the food system is under additional pressure. Agricultural practices such as land clearing and inefficient fertilizer and organic residue use contribute significantly to greenhouse gas emissions. Further, refrigeration and other supply-chain activities contribute to greenhouse gas emissions from the farm gate to consumers. Many agricultural systems are depleting soil fertility, biodiversity, and water resources as the global demand for food, feed, and bio-energy crops increases. The gap between potential and actual crop yields is wide in many regions. It is estimated that 12 million hectares of agricultural land a year are lost to land degradation, which could produce 20 million tonnes of grain. In the global food system, one third of food produced for human consumption is lost or wasted.

The heavy use of chemicals in agriculture has weakened the ecological base, as well as degrading soil, water, and food quality. A growing awareness has exposed the benefits of implementing "organic farming" as a remedy to modern chemical agriculture. Panthagavya (cowpathy), Jeevamruth, and Beejamruth are eco-friendly, cheaper preparations made from cow dung, urine, milk, curd, ghee and milk. Plant growth stimulants such as Panchagavya are efficient at enhancing agricultural efficiency. Fruits and vegetables are increased in nutritional value when using it because it protects them against diseases and activates soil.

## II. INPUTS OF VEDIC KRISHI AND ITS PREPARATION

### 2.1 Panchgavya

Panchagavya is an organic manure product. Cow dung, urine, milk, Desi cow ghee, and curd are the main ingredients. Organic farming uses Panchagavya because it plays an active role in plant growth as well as increasing immunity. Panchagavya is known for increasing immunity and promoting plant growth. Cow urine and dung are the main ingredients. Mixing it with water and spraying it on fields is the most common way to irrigate them. As the most favourable organic manure for agricultural fields, panchgavya is a crucial aspect of organic farming practices. As a result, it eliminates the need for synthetic fertilizers, pesticides, insecticides, and antibiotics. Panchgavya may not be as cost-effective or beneficial as any other manure. By acting as an organic fertilizer, it is able to enhance soil fertility, enhance earthworm quality, and promote crop health.

**Preparation Method**

The procedure described by Natarajan (2002) is as follows:

Mix fresh cow dung (7 kg) and cow ghee (1 kilogramme) well before incubating for two days. After that, combine 3 litres of cow urine with 10 litres of water and stir thoroughly for one week in the mornings and evenings. Then, at a 1:6 ratio, add sugarcane juice (3 litre) or jaggery mixed in water. 2 litres cow milk, 2 litres cow curd, 3 litres tender coconut water, 100 g yeast, ripe banana (12). For three weeks, stir the solution vigorously and properly in the mornings and nights.

Finally, Panchagavya is complete and ready to use.

**Recommended dosage-**

- Spray system: A 3 percent solution was determined to be the most effective when compared to the other concentrations tested. All crops benefit from three litres of Panchagavya per 100 litres of water. Power sprayers with a 10 litre capacity may require 300 ml per tank. Sediments must be filtered when using a power sprayer, and when using hand driven sprayers, a nozzle with a larger pore size must be utilised.
- Flow system: The Panchagavya solution can be blended with irrigation water at a rate of 50 litres per acre and applied via drip irrigation or flow irrigation.
- Seed/seedling treatment: Soak the seeds or dip the seedlings in a 3 percent Panchagavya solution before planting. It is sufficient to soak for 20 minutes. Turmeric, ginger, and turmeric rhizomes.
- Seed storage: Dip the seeds in a 3 percent Panchagavya solution before drying and storing them.

### 2.2 Vermiwash

Vermiwash is an organic drainage made from vermicompost units. All dissolved substances are carried by the water that flows through the vermiculture, resulting in the washing of live and dead earthworms, soil microorganisms, and decomposed organic debris. It is a valuable source of plant nutrients in organic agriculture since it is high in dissolved minerals and amino acids.

Vermiwash is a natural product made from organic matter vermicomposting by a large population of earthworms (Aghamohammadi et al., 2016; Thakur and Sood, 2019). Depending on the raw organic matter utilised for vermicomposting, the content and quality of vermicompost/vermiwash varies. Vermicompost and vermiwash made from the same organic matter have nearly identical compositions. Hormones, mucus, enzymes, vitamins, proteins, various macro and micronutrients, and a huge variety of bacteria are among the substances that separate the two products (Das et al., 2014; Nadana et al., 2020). Due to the presence of key antimicrobial and anti pest compounds, it can be used as a fertiliser to increase crop output as well as for disease suppression and pest control (Kanchan et al., 2013; Thakur and Sood, 2019; Nadana et al., 2020).

Many nutrients, vitamins, and growth hormones are found in vermiwash/vermicompost, which function as disease and pest suppressants (MacHfudz et al., 2020). When compared to solid vermicompost, its liquid form (vermiwash) is more ideal because of its bioavailability, which allows it to reach the targeted area surrounding the roots of plants quickly (Sulaiman and Mohamad, 2020). The more it liquefied the more bioavailable and easily absorbed it became by plants for disease suppression. There was a study indicating the effect of vermiwash and mucus extracted from Eisenia fetida on Fusarium graminearum dramatically prevented the pathogenic fungus's growth, which had a major impact on wheat (Triticum aestivum L.) quality and productivity (Akinnuoye-Adelabu et al., 2019).

Vermiwash is a natural substance that can be used in a way that is environmentally friendly. As a result, we've gone over the importance of vermiwash in disease control, disease suppression mechanisms, vermiwash components used in disease suppression, and pest control in order to apply these scientific facts in agriculture to improve crop output. (Triticum aestivum var. aestivum L.) (Akinnuoye-Adelabu et al., 2019).

**Prepration method-**

Vermiwash is a liquid that is derived from vermicompost, which is made by feeding earthworms raw materials such as leaf litter, cow manure, or other organic materials (Tharmaraj et al., 2011) Vermiwash/vermicomposting could be made in batch or continuous manner on larger and smaller scales. The batch mode of preparation necessitates the inoculation of verms/worms on a regular basis, whereas the continuous mode of preparation necessitates the continual manufacture of goods once the worms have been inoculated with a continuous supply of raw materials (Munroe, 2007). To generate vermicompost/vermiwash, Tharmaraj et al. (2011) used Lampito mauritii, an anecic endemic earthworm to India, as well as two foreign species Eisenia fetida and Eudrilus eugeniae. Tharmaraj et al. (2011) used (2 2 2m) (length, width, and depth) to make the vermipits, with the strata being arranged from bottom to top. The bottom layer was filled with stones or coconut shell to absorb excess water from the composting pit, which was added from the top. The second layer was filled with sandy soil to prevent excess water from accumulating in the medium, and the third layer was made up of organic soil and old compost that had been inoculated with earthworms. In the fourth layer, cow manure and leaf litter were mixed in a 1:2 ratio

and added to the pit. Finally, coconut fronds were utilised to cover the pit on the top layer to protect it from direct sunlight and keep the medium moist enough.

### 2.3 Compost tea

We can make compost tea, either aerated compost tea or non-aerated compost tea, by mixing compost with water and culturing for a short amount of time. Non-aerated compost tea and/or actions that boost microbial population densities during the manufacturing process. It's possible to add more nutrients and adjuvant. The application system determines whether or not compost should be filtered. Tea should be had prior to application. Leaching produces compost tea, which is a liquid. Nutrients and bacteria, fungus, nematodes, and protozoa extraction After being aerated, finished compost is placed in a mesh or nylon bag and steeped in water for a length of time. Typically, a form of sugar is used as bacteria by an air pump. It's made from compost. Compost teas are utilised for their plant-friendly properties. Compost is steeped in water for a period of time while being aerated in a mesh or nylon bag. Typically, a form of sugar is used as bacteria by an air pump. It's made from compost. Compost teas are utilised for their plant-friendly properties. When applied as soil drenches or foliar sprays, compost teas help to prevent plant disease. Compost tea is being considered as a possible replacement to synthetic chemical fungicides. Disease suppressive effects can be found in a variety of agricultural systems, although their effectiveness varies.

Compost tea is a product made by extracting microorganisms and nutrients from compost. Specific forms of compost help to maintain a healthy balance of fungal organisms, which live in the soil. A healthy soil food web's organisms serve to:

- Protect roots and other plants from infections and
- Plants require nutrition.
- Plants' general health will improve.

### 2.4 Matka khad

Using a mud pot, prepare organic manure. The materials used to make such manure are readily available at home or at the local market, and the majority of the materials used are entirely domestic. In organic farming, his organic manure serves as a substitute for chemical fertilizers. In organic farming, its organic manure serves as a substitute for chemical fertilizers. In comparison to chemical fertilizers, the absorption rate of nutrients by the plant is much higher in this manure. It can be used as a drenching agent in crops that grow at a distance, such as cotton and vegetables. It will produce fantastic results. Vegetative growth, flowering, and fruiting will all be outstanding. It is a very effective method of fertilizing the crop naturally if the farmer practices organic farming.

**Preparation method**

Make a good bacterial culture by mixing 10 litres indigenous cow urine, 10 kilogrammes fresh cow dung, half kilogramme jaggery, and one kilogramme gramme flour in a big pot for 5-7 days. In a damp or rainy field, mix the Matka compost with 200 litres of water and sprinkle well per acre between the crops in any crop. Every 15 days, repeat the process. The crop will be good, the output will be higher, the land will be better, and no fertiliser will be necessary. In this method, the farmer can be self-sufficient and produce tasty and healthy poison-free, chemical-free vegetables. 5. You can use irrigation water or drip irrigation to apply this Matka compost. By mixing one Matka compost well in 400 litres of water and putting the solution near the plant (1 Matka per acre), good results can be obtained. If this solution is sifted through cotton fabric and sprayed on crops, the plants will produce more flowers and fruits. (Tajindera Pal singh; 2021)

### 2.5 Beejamrit

Beejamrit is an ancient organic compound frequently used in organic and natural farming in India as a seed treatment. Cow dung, cow urine, and forest soil, which is frequently mixed with limestone, make up this low-cost input. In organic agriculture, incubating seeds in Beejamrit prepared overnight before sowing in the field is a traditional practice among the agricultural community. Beejamrit refers to Beej (seed) that has been dipped in Amrit (meaning magical liquid). It's a natural organic fertilizer that's manufactured from cow dung and urine. Overnight, virgin forest soils and, in some circumstances, limestone are added to the input (Sreenivasa et al. 2009; Sharma et al. 2021). This organic tonic is also advised as a foliar spray on the agricultural farm, notably for vegetables and fruit crops, in addition to its possible role as a seed protectant (Chadha et al. 2012). The Beejamrit formulation, as previously said, is made up of a variety of microflora, including various plant growth-promoting bacteria capable of creating plant growth regulators.

**Preparation method**

The Beejamrit input was made as described before (Bishoi et al. 2017), with the exception that the cow dung, cow urine, and lime were mixed at predetermined proportions. Cow manure and cow urine were gathered from indigenous Sahiwal cross breed cattle grazing in India's Narendrapur Ramakrishna Mission Ashrama for this study. Collecting these elements from indigenous cow breeds is a ritual in India. In comparison to the previous procedure, Gurukul protocol called for adding 5-times more limestone or 250 grammes every 20 litres of Beejamrit preparation (Bishoi et al. 2017). After that, forest soils were added to the mixed components. It's worth noting that forest soils are thought to be critical for enriching this input with microbial load. Forest soils were gathered in Rajabhatkhawa forest village in North Bengal, India, for this study. The Beejamrit solution was incubated for various periods after mixing all of the above ingredients (0-day as control, 1-day, 2-days, 3-days, 4-days, 5-days, 6-days, and 7-days). After a certain number of days of incubation, the Beejamrit samples were collected and processed through a fine muslin cloth to obtain the final results.

### 2.6 Jeevamrit

It is an organic fertilizer that works well as a substitute for chemical fertilizers. It's a great supply of biomass, natural carbon, nitrogen, phosphorus, calcium, and other nutrients that plants need to grow and develop. It is a liquid fertiliser made from natural ingredients. It's prepared by combining water, cow dung, and urine with mud from the same location where the manure would be spread later. Food is subsequently added to help the microorganisms grow faster, such as jaggery or flour.

**Preparation method-**

Cow dung (20 kg), cow urine (20 litres), gramme flour (Besan) (1-2 kg), jaggery (1-2 kg), soil (from trees near the field), and a handful of water (200 litres) are the ingredients in Jeevamrit. These components should be thoroughly combined and stored in a cool, dry location away from direct sunlight. For 4 days, the mixture must be stirred a few times (10 minutes each time). After the ingredients have fermented, Jeevamrit is ready to use. It can now be used for a period of two to three days.

After the eighth day of preparation, the number of bacterial colonies in the liquid begins to decrease. 200 litres of solution are applied to one acre of land by irrigation water or direct soil application.

### 2.7 Amrutpani

Amrut is a divine beverage that refreshes the gods and has the ability to resuscitate the dead. Amrutpani invigorates living soil and transforms dead soil into living soil in the same way. Amrutpani is liquid manure made using the Rishi-Krishi Despande process, which is ahimsak. Amrutpani, like Panchagavya, is used to promote soil fertility (TNAU 2016)

**Prepration method**

**Ingredients-**

- 1/4 kilo of butter from cows (ghee)
- 12 kg honey
- 10 kilogramme cow manure
- 200L of water
- Mix a quarter kilo of ghee with 10 kilos of cow manure well. Mix in half a kg of honey and 200 litres of water while constantly swirling. Amrutpani is the result of this process.

**How to use**

After dipping into Amrutpani, sugarcane, turmeric, ginger, and other plants should be planted. The roots of transplanted seedlings can be soaked in Amrutpani before planting in cases when the seedlings are transferred. Amrutpani can be mixed in the main watering channel while watering sugarcane and other crops with canal or well water, stirring constantly. Seed dressing is required for rain-fed or monsoon crops. Amrutpani should be soaked into the soil while it is moist. Not directly on the plants, but between the rows. The minimal amount of water required soaking the space around seedlings of crops such as chilli, tobacco, or fruit trees should be Amrutpani. Amrutpani in excess is always helpful and will not hurt the body (TNAU 2016)

## III. FARMING COMES UNDER VEDIC KRISHI-

### 3.1 Vriksharyurveda (vrkshya farming)

The ancient science of plant life is known as Vrikshayurveda. Its name directly means to "Ayurveda for Trees." Vrikshayurveda is concerned with the healthy growth and productivity of all tree species. Vrikshayurveda improves plant yield and eliminates the need for pesticides to combat pests and illnesses. Because of their high nutritional content and quick decomposition, leguminous tree leaves have long been employed as green leaf manures in agriculture; and the significance of plant extracts in growth promotion, pest and disease management has been studied by the author for the past ten years. It is past time to completely study the knowledge available in ancient texts in order to find a new path out, and this paper summarises a decade of scholarly work done along these lines. Under the auspices of this type of research, the methodology and procedures used to cultivate various crops have been compiled and a new name, Vrikshayurvedic Farming, has emerged. Vrikshayurvedic farming is a scientific reorientation of India's eco-friendly ancient agricultural system by returning to traditional and natural ways of food production and adopting traditional and indigenous practices and methods for crop cultivation; by utilising trees, plants, and animal products, by products, extracts, and other means with the goal of improving food quality. 2012 (Swaminathan). This is the first time in history that the author has coined a definition.

#### 3.1.1 Scope of vrikshyaryuveda

The importance of understanding Vrkshayurveda in modern scientific agriculture must be highlighted because food consumers are becoming more aware of the environmentally devastating and harmful effects of various agrochemicals used for pest control, disease management, crop nutrition, growth regulation, and promotion. A thorough understanding of Vrkshayurveda, as well as knowledge of commonly used trees and plant species and methods for soil health building, crop growth enhancement, pest and disease control and management, and extending the shelf life of food grains, would be extremely beneficial to agricultural scientists of various disciplines.

According to Anbukkarasi and Sadasakthi (2013), Albizia lebbeck+ Annona squamosa had the best performance for physiological measures such as dry matter production, crop growth rate, and relative growth rate, as well as the maximum uptake of N, P, and K among the treatment combinations. Albizia lebbeck and Annona squamosa had the lowest occurrence of pests and illnesses. Annona squamosa was found in Albizia lebbeck. Swaminathan and Premalatha (2014) found that soil incorporation of fresh leaves of tree species Albizia lebbek (vagai), Senna siamea, Gliricidia sepium, Leucaena leucocephala, Delonix regia (Gulmoher), at a rate of 10 tha1 was done 45 days prior to sowing of green gramme and this served as basal nutrition to the crop, followed by or foli Gliricidia was discovered to be good for leaf integration, and Aegle marmellos was shown to be the best growth booster, followed by Morinda tinctoria.

#### 3.1.2 Vrkshayurveda for pest management

Annona squamosa (sugar apple) leaf and seed extracts, as well as their powders, were found to have insecticidal, antifeedant, and repellent properties against a variety of insects and pests (Vijayalakshmi et al., 2002).

Boomiraj and Christopher Lourduraj (2006) found that spraying herbal leaf extract with a high concentration of poultry manure and neem cake reduced the number of leaf hoppers, whiteflies, and aphids in bhindi.

Hot water and petroleum ether extracts of Ipomea carnea(bush morning glory), according to Rahuman et al. (2009), have the potential to be employed as an optimal eco-friendly strategy for the control of the primary lymphatic filariasis vector. Pest and weed incidence were also very low in the Albizia lebbek (silk plant) + Annona squamosa combination, which contributed to improved maize output (Nandhakumar, 2010).

Due to a decrease in the nematode populations that cause root gall, Artemisia nilagirica (mugwort or indian woemwood) was found to have longer shoots and greater shoot weight (Sukul et al., 2001). They also found that foliar spraying with Acacia auriculiformis (Auri) extract enhanced the number of leaves per plant, leaf and root protein content, and reduced the number of root galls, nematode population in roots, and rhizosphere soil when compared to the control.

Vrkshayurvedic farming is a method of farming that primarily uses trees and plants in whole or in part, as well as extracts, decoctions of parts of trees and plants, and smokes produced by burning tree parts, and avoids the use of harmful chemicals such as chemical fertilizers, pesticides, and herbicides for crop growth, soil health building, pest and disease control, and to maintain ecological balance and provide stability in production levels without poaching. With the growing popularity of Indian systems of medicine such as Siddha, Ayurveda, and Unani for body wellness, agriculturists, farm scientists, and

scholars will turn to one of the traditional time-tested traditions known as Vrkshayurvedic farming to assure higher food quality.

### 3.2 Yogic Agriculture

Yogic Agriculture is an approach that includes seed empowerment (through meditation), farmer mind and heart growth (by meditation), and integrated organic farming (via meditation). Farmers' ability to make a positive impact on their crops through meditation improves as their confidence grows.

Yogic farming, a psychoenergetic strategy for increasing agricultural output and nutritional content, is widely used in India, although only a few studies have been undertaken to demonstrate that it increases crop yield and nutritional content. Farmers from farming families who were also experienced meditators made up the first group. As a result, the impact on agricultural production was overwhelmingly good. The seeds, or a sample of the seeds, are deposited in a residence where meditation is regularly practiced. Seeds are routinely empowered for 10 days before sowing, 15-45 minutes in the morning and evening. The farmer imbues the seeds with thoughts of peace, love, and strength.

Countries such as Greece, Italy, South Africa, and others are conducting research on yogic farming techniques (Girme et al., 2019), which have been used in India since ancient times. The BKRYM approach is one of the resurrected ways that is now being used all around the world according to scientific evidence. Kumari et al. (2012) found that old Vedic practises are based on agroecology and are particularly successful for enhancing crop output, seed vigour, crop yields, and soil quality with low input costs. Vedic insights and comprehensive wisdom have been proven correct in every way. Yogic Agriculture is a type of agriculture that helps the ecology by achieving a powerful and elevated metaphysical condition through Raja yoga meditation, as well as eliminating the use of chemical pesticides and hazardous synthetic fertilisers (Ndiritu, 2015). It aids in the comprehension of various aspects of farming, resulting in enhanced self-esteem, increased productivity, improved soil health, a decrease in farmer suicides, and reduced family violence (Ramsay, 2012). In India's Finance Budget (July 2019), an endeavour was taken to propose and implement zero budget natural farming (ZBNF) (Anonymous, 2019). The primary goal was to make farming more inexpensive; lower overall costs, and supply people with clean and healthful agricultural goods. The concept of Brahma Kumaris' yogic agriculture technique including organic farming is also being promoted by the Indian Council of Scientific Research, the Indian Council of Agricultural Research, and the Union agricultural ministry (Girme et al., 2019).

By 2022, the government of the National Democratic Alliance wants to increase farmers' income and increase agricultural yields. Yoga farming, according to Union Agriculture Minister Radha Mohan Singh, can play a big part. He also claims that the Centre will encourage yogic farming to help boost the country's agricultural output. "We would support the concept of yogic farming under the Prampragat Krishi Vikas Yojana, which also encourages organic farming," Singh said during an organic farming event.

Traditional agricultural practices, like as organic farming, are being supported, according to the government, because excessive use of pesticides and fertilisers has deteriorated soil quality. Professor Sunita Pande of the Govind Ballabh Pant University of Agriculture and Technology's Agronomy Department reports that continuing wheat research using yogic farming practices has yielded promising results.

## IV. EFFECT OF SHASYAGAVYA AND KUNAPAJALA ON CROP YIELD

Some of the earliest documented records of liquid organic manures like Kunapajala and Shasyagavya and their usage in ancient India may be found in Vedic literature. The **Kunapajala-** Kunapajala Sanskrit term kunapa means "dead body odour," "smell," while "jala" means "water." Kunapajala is a word that means "dead body water." It primarily consists of cow dung, cowurine, water, and any animal flesh, such as the flesh of fish, poultry fowl, or other animals. Fresh cow dung, cow urine, animal waste, and water are combined in a bucket according to the following ratios 1:1:1:2 Then, in a shady location, allow this combination to ferment for 25 -30 aerobically (stirring twice in a day). Following filtration, a percent aqueous solution of Kunapajala is sprayed on the standing crop at - day intervals, preferably in the evening. Any aromatic leaves like lemon, lemongrass, etc., or peels of lemon, orange, sweet orange, etc., should be applied 1 - 2 days before spraying to eradicate the bad odour of the items.

The nutrients in these liquid organic compounds are absorbed by plants through their roots, leaves, and stems. These encourage biological activity in the soil, as well as nutrient availability for crops. Molasses/rice washed water, pulse powder; ripe fruits, yeast culture, and other ingredients can be added to any of these liquid organic goods.

### 4.1 Shasyagavya

Cow dung, cow urine, vegetable waste/crop residues, and water are the elements in this example. Vegetable waste and crop wastes are chopped first. Then fresh cow dung, cow urine, chopped organic waste, and water are mixed appropriately in a 1:1:1:2 ratios and aerobically fermented for 10-12 days (stirring twice in a day). The fermented Sasyagavya will be sprayed on standing crops as a 5 percent and 10 percent aqueous solution up to 30 days of germination and 30 days after germination, respectively, after 10-12 days of preparation. It's also used to soak soil with irrigation water before sowing and/or after sowing.

### 4.2 Effect on crop yield

Shasyagavya 10 and 20 percent and Kunapajala 5 and 10 percent produced higher yields in black gm. Shasyagavya produced the highest yield of 20%. (0.11 kg m-2). The only yield parameter that differed significantly between treatments in mustard was 1,000 seed weight. The average 1,000 seed weight in Shasyagavya 10% spray was maximum (2.56 g) and least (1.5 g) in control. It's worth noticing that Kunapajala (3%) produced better results for the majority of the characters than the other therapies. Charcoal outperformed glycerol among the two carriers evaluated. In addition, we discovered that carrier-based preparations could be stored for at least three months without losing quality.

When compared to the control and chemical fertilizer groups, Asha (2006) found that Kunapajala treated Langali (Gloriosa superba Linn) plants produced exceptional results in terms of overall plant growth and fruiting. Improved adjustments in the formulation of Kunapajala by adding Panchagavya provide great effects when applied to plants, according to Narayanan. Mishra researched paddy development using Kunapajala for 10 days and found significant increases in plant height, leaf length, inflorescence length, number of grains per inflorescence, and other growth indicators. When compared to plants with artificial fertilizer cultivated without Kunapajala, Bhat Ramesh and Vasanthi (2008) found that plants grown with Kunapajala have a higher number of branches, higher yield, fruits with fewer seeds, and lower susceptibility to illnesses.

According to Deshmukh et al. (2012), kunapajala therapy outperforms both conventional and organic farming in terms of physiological, biochemical, and enzymatic enhancement in tomato leaves in organic farming conditions. Chadha et al. (2012) discovered that using vermiwash increased yield by 60, 10, 26, and 27 percent in Knol khol (211.67qha-1 ), onion (177.81qha-1 ), French-bean (16.3qha-1 seed yield), Pea (16.3qha-1) and rice (28.45qha-1 ), respectively, as compared to control. Panchagavya, Matka Khad, Vermiwash, and Jeevamrt were also found to be useful as foliars in increasing crop productivity and treating numerous plant infections.

### 4.3 Cow urine's (Cowpathy) Efficacy as a Plant Growth Enhancer and Antifungal Agent-

Various pathogens, such as bacteria, fungus, viruses, nematodes, and mycoplasma, cause illnesses in vegetable plants. Fungi are the most active pathogens among them, producing both qualitative and quantitative damage. Methi and Bhindi damping off and wilting are linked to fungi such as Fusarium oxysporum, Rhizoctonia solani, and Sclerotium rolfsii (Okra). Plant diseases have a vital role in agriculture, both in terms of productivity and cost. Chemical compounds are one of the most extensively utilised ways for controlling plant diseases. Overuse and abuse of these chemical agents, on the other hand, resulted in certain dangerous side effects. The high cost, toxicity to nontarget organisms, residual issue, and development of disease resistance are all disadvantages of these compounds. This circumstance increased people's interest in looking for other disease-control options. Natural compounds, particularly those derived from plants, may be promising candidates for usage against phytopathogenic fungus. When compared to manufactured compounds, the usage of these substances is risk-free. Cow urine was highly regarded in ancient Ayurveda for its medicinal value. Okra contains nutrients that may have a variety of health benefits, including a lower risk of a variety of significant medical issues.

[1]. Cow urine is one of the constituents in "Panchagavya" (urine, dung, milk, curd, and ghee), which has various therapeutic characteristics and is the best therapy for fungal and bacterial infections [2]. It contains antibacterial, antibiotic, and germicidal properties. Cow urine, as a result, has the ability to eliminate a wide range of pathogens while simultaneously boosting immunity [3]. Cow urine has a variety of helpful ingredients, such as chemical qualities, potentialities, and constituents that aid in the removal of all infectious-agent-induced ill effects and body imbalances. 95 percent of cow urine is water, 2.5 percent is urea, and the remaining 2.5 percent is salts, hormones, enzymes, and minerals. [4]. Cow urine has been proposed as a biofertilizer and biopesticide in agricultural operations [5], since it may destroy a variety of pesticide and herbicide resistant bacteria, viruses, and fungus. Cow urine is combined with plant extracts to make a disinfectant that is biodegradable, environmentally safe, and effective against germs [6]. Cow urine is used by the majority of people in India to

treat a variety of disorders due to its medicinal properties. Antioxidant, antidiabetic, anticancer, antiprotozoal, and insecticidal properties have been found in cow urine.

### 4.4 Increase in yield and soil health with cowpathy-

Cowpathy enhances fertility by boosting organic matter content, macronutrients, and micronutrients, as well as increasing plant nutrient intake. It also promotes the growth and reproduction of beneficial soil microbes. Panchagavya has been reported to aid in the improvement of soil physical qualities by increasing porosity and preserving aggregate stability. Panchagavya has a significant impact on soil chemical characteristics because of its neutral pH, which functions as a pH moderator in both alkaline and acidic soils (6.82). It also improved soil nutrient status and increased nutrient uptakes due to higher solubilization.

In terms of leaf size, plants sprayed with panchagavya grow larger leaves and a denser canopy. The photosynthetic system is turned on to boost biological efficiency and allow for the production of more metabolites and photosynthates. The trunk of the stem develops side shoots, which are strong and capable of carrying the maximum number of fruits to maturity.

The amount of branching is relatively considerable. The rooting is profuse and dense in the case of roots. Furthermore, they keep for a long period. The roots were also seen spreading and growing into deeper strata. All of these roots aid in nutrition and water absorption.

The yield parameters of Abelmoschus esculentus were raised in 3 percent panchagavya spray as compared to control and other concentrations, according to Rajasekaran and Balakrishanan,. Similarly, groundnut (Ravikumar et al., 2012) and black and green gramme (Brito and Girija,). In Arachis hypogaea (Subramaniyan) and Vigna radiate, Vigna mungo, and Oryza sativa (Tharmaraj, 2011), photosynthetic pigments such as chl. A, chl. B, and carotenoid were elevated in 3 percent panchagavya spray and decreased in control. When compared to control in Coleus forskohili, Kanimozhi, observed that application of Panchagavya at 4% spray was superior in terms of root yield

According to Palekar Jeevamruth includes a large quantity of microbial load that multiplies in the soil and functions as a tonic to boost microbial activity.

According to Swaminathan, Panchagavya improved crop biological efficiency as well as the quality of fruits and vegetables produced. It also improves the fertility of the soil. Similarly, Sanjibani improves soil fertility, agricultural productivity, and product quality while simultaneously acting as a pest repellant. Higher microbial load and growth harmones, according to Vasanthkumar and Devakumar et al. , may have promoted soil biomass, hence sustaining the availability and uptake of applied as well as native soil nutrients, resulting in improved crop growth and production.

According to Vennila and Jayanthi (2008), applying the full recommended fertiliser dose together with the panchagavya spray (2%) improved the number of fruits per plant, fruit weight g fruit-1, and fruit output q ha-1 of okra. According to Sreenivasa , Panchagavya, Beejamruth, and Jeevamruth made from cow products are known to contain beneficial microflora such as Azospirillum, Azotobacter, phosphobacteria, Pseudomonas, lactic acid bacteria, and Methylotrophs in large numbers, as well as some useful fungi and actinomyctes. Reddy et al. (2010) found that applying biodigester liquid manures to numerous field crops resulted in increased production levels. Similarly, Siddaram (2012) showed that rice yields increased when biodigester liquid manures were used. Spraying with Panchagavya has a substantial impact on capsicum yield per acre.

## V. EFFECT OF VEDIC KRISHI ON SOIL-

Mulching the soil surface with organic materials makes the soil soft, crushed, and humid, which encourages beneficial microorganisms to maintain bulk density and porosity in the soil. Organic farming has a spatial and temporal component to the enhancement of soil physical attributes. High amounts of organic matter and permanent soil cover, such as cover crops or mulch, improve water penetration and retention capacity, reducing the quantity of water needed for irrigation. Organic farming is better in places with excessive rainfall due to higher water absorption and less run-off in the field. FYM enhances total nitrogen and organic matter in the soil, which is a major substrate of cationic exchange and the warehouse of most of the available nitrogen, phosphorus, and sulphur. Microorganisms' primary source of energy, and a fundamental influence of soil structure. It is definitely a key controlling element for the C:N ratio, total and accessible nitrogen, N mineralization, soil moisture, microbial activity, and soil texture (Agehara and Warncke,Cabrera) . When comparing organically managed plots to nonorganically managed plots, significant differences and greater values of soil organic carbon, carbon stocks, and carbon sequestration rate were discovered.

Soil microbial biomass and microbial activity are critical for soil production to be sustained. A balanced ratio of microbial biomass and activity in soil is required to ensure regular delivery of nutrients to plants (Pandey and Singh, 2012) . In numerous crops, organic fertiliser treatment boosted nodule dry weight, photosynthetic rates, N2 fixation, N accumulation, and N concentration (Jannoura et al., 2014). Organic agro-ecosystem management, on the other hand, was found to have a significant impact on soil nutrients and enzyme activity while having a minor impact on soil microbial populations (Bowles et al., 2014).

## VI. IMPACT OF COWPATHY ON SOIL

Panchagavya, Jeevamruth, and Beejamruth are organic concoctions made from cow products that are environmentally friendly. Crop growth, yield, and quality improve when organic liquid products like Beejamruth, Jeevamruth, and Panchagavya are used. Cow dung, urine, milk, curd, ghee, legume flour, and jaggary are used to make these liquid organic solutions and Sreenivasa et al. (2010) found that they contain macronutrients, vital micronutrients, several vitamins, necessary amino acids, growth stimulating substances such as IAA and GA, and helpful microbes. According to Nileemas and Sreenivasa (2011), applying liquid organic manure to the soil stimulates biological activity and increases the availability of nutrients to the tomato crop. In comparison to control, Shivaprasad and Chittapur (2009) found that applying panchagavya at 3% for 10 days resulted in considerably greater yield per plant (86.95 g), yield per plot (1.220 kg), and yield per hectare (21.95 q). This is owing to a superior source-sink connection, which includes higher vegetative growth, more blooming, and more fruits that mature. This could be related to panchagavya's hormonal action, as well as an increase in plant photosynthetic activity, resulting in a better source-sink connection in chilli. According to Amalraj et al., (2013), panchagavya application can improve plant development by nitrogen fixation, growth hormone production, and phytopathogen suppression in a variety of plantation crops. Sakhubai et al., (2014) found that RDF increased plant height (103.10 cm), number of leaves per plant (75.62), leaf length (9.52 cm), and leaf breadth (9.03 cm), and yield parameters such as days to 50% flowering were earlier in T10 (VAM + Panchagavya + Amritpani (3 percent Drench and Spray) .

## VII. CONCLUSION

Panchgavya has proven its ability to benefit humanity and is a promising treatment for a variety of human illnesses. Although scientific efforts are needed to evaluate biological activity and safety, as well as create standards, the effects of Panchgavya should not be limited to ancient literature. To validate the composition, chemical behaviour, pharmacological activity, safety, toxicity profile, and mechanism of action of the active ingredients, each product must undergo extensive testing. It is also critical to educate the public and market Panchgavya items in order to draw international attention to India's rich heritage and literature.

Cows play an important role in our lives and biodiversity. Its offspring and cowpathy have a wide range of applications, including sustainable agriculture, human health and nutrition, biofertilizer production, non-conventional energy production, and ecosystem biodiversity preservation. Different local formulations were found to be effective in various crops, resulting in improved plant development and, as a result, agricultural output. All of these conventional agricultural inputs have a bright future in agriculture and the production of safe and nutritious food. Crops sprayed with Panchagavya and Kunapajala yielded substantially more than controls. Various plant diseases have also been reported to be suppressed by compost tea. Small farmers produce less than their potential due to a lack of adoption of best practises, which contributes to low productivity. Depending on their natural resource base, land quality, and links to local and regional markets, farmers' demand for technology varies. Using scientific approaches to develop best practises in agricultural production, such as adding organic inputs based on soil testing and optimising water use with micro-irrigation devices, can assist enhance productivity. Small farmers have a lot of room to improve their long-term productivity. To promote cowpathy's extremely valuable attributes and wide range of uses, an integrated approach is required.

As a result, Cowpathy, a fresh version of ancient science, appears to be a potential formulation in the next years. As a result, educating people about the advantages of cows and cowpathy can help solve problems such as a lack of food grains, fuel, nutrition, and soil health, as well as give an alternative source of energy. The harmful effects of fertilisers and pesticides, as well as the use of these environmentally friendly traditional agricultural inputs, provide alternative production technologies to organic farmers and new vistas to the scientific community for further validation and refinement of age-old Vedic Krishi practises in the current scenario to improve food and nutritional security, as well as save soil health and the environment. More research is needed to determine the best combinations for certain agro-ecological and farming systems.

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