International Journal for Modern Trends in Science and Technology
Volume: 03, Issue No: 08, August 2017
ISSN: 2455-3778
http://www.ijmtst.com

Study of Panchagavya Natural Organic Manure and its Uses in Medicinal Field

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To Cite this Article
Shantha A R, "Study of Panchagavya Natural Organic Manure and its Uses in Medicinal Field", *International Journal for Modern Trends in Science and Technology*, Vol. 03, Issue 08, August 2017, pp.-230-233.

ABSTRACT

Humans rely heavily on crop plants for sustenance. Evidence suggests that prehistoric humans cultivated crops as far back as 10,000 years ago to secure food. Archaeological findings, such as carvings in Palestine, indicate that humans, as early as 2500 BC, attempted to enhance crop production by ploughing the soil. Since then, various efforts have been made to improve soil fertility and support plant growth through different methods. Panchagavya, an economical and natural organic manure, enhances soil fertility by introducing beneficial microorganisms. It is prepared using five key components derived from indigenous cattle: cow dung, cow urine, milk, curd, and ghee. Each component contributes uniquely to enriching soil quality and promoting plant growth.

KEYWORDS: *Panchagavya, Natural Organic Manure, Hosanagara.*

INTRODUCTION

During the Middle Ages and up to the 17th century, agricultural practices saw minimal advancement. The scientific exploration of agricultural methods and plant growth gained momentum in the 17th century, driven by the increasing food demands of a growing population. Significant experiments on the role of nutrient elements in plant growth, conducted by pioneers such as J.B. Van Helmond and J.R. Glauber, demonstrated that supplementing crops with specific nutrients could enhance productivity. Subsequently, many beneficial practices were adopted by foreign nations from traditional agricultural systems. Historically, indigenous agricultural methods refrained from using inorganic fertilizers, focusing instead on natural techniques to maintain soil fertility.

However, as population growth surged, food production became intensive, with higher outputs extracted from limited agricultural land. This led to the widespread use of inorganic fertilizers, pesticides, and insecticides, driven by marketing campaigns from multinational corporations. While these inputs temporarily boosted crop yields, their excessive usage deteriorated soil quality, harmed consumers by introducing toxins into the food chain, and caused environmental degradation. Furthermore, these chemical inputs were prohibitively expensive and contributed to economic hardships among farmers, pushing many into financial crises and, in some cases, leading to suicides. This issue has emerged as a significant socio-economic challenge in India.

Indian agricultural scientists have worked extensively to address these challenges, proposing various solutions. While some efforts focused primarily on increasing crop yields, they often neglected the critical aspect of improving soil fertility. Additionally, many proposed solutions were costly and inaccessible to small-scale farmers. Given India's current struggles with economic recessions and financial instability, there is an

urgent need for cost-effective, natural, and chemical-free agricultural practices that enhance soil fertility and crop productivity sustainably.

In response to this problem, Mr. Subhash Palekar, a renowned agricultural scientist and advocate of natural farming from Maharashtra, has developed a suite of organic and economical farming techniques. These methods emphasize increasing soil fertility, enhancing crop yield, and producing chemical-free crops using naturally available materials at minimal cost.

One of Palekar's notable contributions is "Panchagavya," a natural liquid bio-fertilizer. It serves as a comprehensive solution for agricultural prosperity, fostering a favourable environment for microorganisms that facilitate the availability of essential nutrients such as nitrogen, phosphorus, and potassium to plants. Panchagavya represents an innovative and sustainable approach to enhancing soil fertility and supporting robust agricultural production.

Panchagavya product are rich in nutrition, amino acids, protein, vitamins, minerals & hormones these products are known to cure several human diseases and enhance immune power and also good for animals which provides rich nutrition and helps to boost the immune system.

MATERIALS AND METHODS

Study area

Karnataka, a state in western India predominantly inhabited by Kannada-speaking people, comprises 31 districts, including Shivamogga. Shivamogga features both Malnad and semi-Malnad regions and is divided into several taluks, one of which is Hosanagara, located about 55 kilometres west of Shivamogga.

Near Hosanagara lies the ancient village of Shree Ramachandrapura, known for its rich biodiversity, including diverse flora, fauna, and cattle breeds. The village has a population of approximately 900 to 1,028, with a literacy rate of 60%. Agriculture is the primary occupation, and the residents benefit from various government-provided facilities.

Panchagavya: A Natural Solution to Restore Soil Fertility Lost to Chemical Farming

Panchagavya is a bio-fertilizer designed to rejuvenate soil fertility diminished by prolonged chemical farming. It is prepared using readily available natural materials, commonly known and accessible to farmers. The formulation consists of five primary cow-derived products, combined in a specific ratio to undergo fermentation, resulting in the final product called Panchagavya. The components include:

1. Milk
2. Curd
3. Cow dung
4. Cow urine
5. Ghee (clarified butter)

Preparation Process:

The preparation of Panchagavya involves the following steps:

1. Use a wide-mouthed plastic, clay, or wooden container.
2. Mix cow dung and ghee thoroughly in the container using a wooden stick.
3. Cover the container with a thick cloth to protect the mixture from insects.
4. On the fourth day, gradually incorporate the remaining ingredients: milk, cow urine, and curd.
5. Allow the mixture to ferment for 15 days, ensuring regular stirring during the process.

Application Methods:

Panchagavya can be applied to crop fields using various techniques:

- Dilution with water: Typically mixed with water for application.
- Foliar spray: Used as a spray on crops.
- Drip irrigation: Delivered directly to the soil through irrigation systems.
- Sprinkling: Applied evenly across the field.

Panchagavya serves as an eco-friendly and sustainable agricultural input, enhancing soil health and promoting crop growth while eliminating dependency on synthetic fertilizers.

RESULT AND DISCUSSION

- In Shree Ramachandrapura people have adopted many kinds of organic farming like vermicomposting panchagavya.
- During our study period in Shree Ramachandrapura, we came to know that about 20% of total population adopted the non-expensive natural organic manure to their crop field, the farmers have got information about panchagavya, the farmers were happy due to competitively increase in the yield year by year. It is also a good thing that in global market the food products obtained from using natural organic manure have got great demand.
- On the other hand, the financial status of the farmers was much better than before, now the farmers never turn towards the inorganic fertilizers like NPK insecticides & etc.
- The easy preparation process does not hinder

the adaption of Panchagavya.

Panchagavya, an economical and natural organic manure, enhances soil fertility by introducing beneficial microorganisms. It is prepared using five key components derived from indigenous cattle: cow dung, cow urine, milk, curd, and ghee. Each component contributes uniquely to enriching soil quality and promoting plant growth.

Role of Ingredients in Panchagavya

During this study, the indigenous cow dung and urine were emphasized due to their rich microbial content. Cow dung contains numerous phosphate-solubilizing bacteria (PSBs), such as Bacillus siliceous, which oxidize minerals, along with Mycorrhiza fungi. These microbes multiply rapidly (doubling in approximately 20 minutes), ensuring an abundant supply of phosphorous and essential nutrients like potassium and sulphur to plants.

Cow dung also houses nitrogen-fixing bacteria, including Azotobacter, Azospirillum, and Beijerinckia, which convert atmospheric nitrogen into plant-usable forms. PSBs secrete 16 essential bioactive compounds directed toward plant root caps, effectively eliminating phosphorus deficiencies. Furthermore, Bacillus species play a crucial role in delivering potash, while oxidants in cow dung supply sulphur. Bacteria like Ferroces aid in the assimilation of trace elements such as iron, magnesium, boron, and copper.

Milk, curd, and ghee are added to Panchagavya for their medicinal and microbial support properties. These components facilitate the proliferation of lactic acid bacteria, such as Lactobacillus bulgaricus and Streptococcus lactic, which enhance disease resistance in plants by suppressing harmful pathogens. These dairy derivatives also act as growth promoters for beneficial microbes and improve soil texture.

Mechanisms Enhancing Soil and Plant Health

The fungal component, predominantly Mycorrhiza, plays a pivotal role in nutrient cycling. Mycorrhizal associations improve water and nutrient uptake, enhance plant immunity, and break down organic matter into humus, enriching soil organic carbon. This symbiotic fungus also increases plant resilience to biotic and abiotic stresses, particularly in regions like Maharashtra and Karnataka where its prevalence is significant.

Panchagavya also accelerates the decomposition of organic matter, ensuring nutrient recycling and maintaining a sustainable agroecosystem. The microbial community in Panchagavya is tailored to the soil it is applied to, reducing the adaptation period required for maximum efficacy when introduced into the field.

Implications for Sustainable Agriculture

Panchagavya not only serves as an organic soil conditioner but also addresses contemporary agricultural challenges like soil degradation, nutrient depletion, and the adverse effects of synthetic chemicals. Its microbial diversity fosters holistic soil health, ensuring sustainable crop productivity while being cost-effective and environmentally friendly.

Given its multifaceted benefits, Panchagavya is a promising solution for sustainable farming practices and soil restoration, making it an essential focus area for further agricultural research and development.

Comparison between Panchagavya and inorganic fertilizer

Only about 35-40% farmers adopting the non-expensive natural organic manure i.e. panchagavya to their crop fields, in the below tables 1 & 2 shows compression of panchagavya with inorganic fertilizers.

Crops	Inorganic Fertilizer NPK	Panchagavya
Paddy	250kg/1crop	250lit/months
Sugarcane	700Kg/Crop	250lit/month
Arecanut	250kg/crop	250lit/month
Coconut	200kg/year	250lit/month

Crops	Expense		Labor		Farmer's NG	
	IF	Panchagavya	IF	Panchagavya	IF	Panchagavya
Paddy	2000	250	5	2	3000	4000
Sugarcane	6000	500	10	3	50000	650000
Arecanut	2000	350	6	2	30000	350000
Coconut	1500	300	3	2	30000	35000

In nature lots source providing NPK (Nitrogen, Phosphate, Potash) & micro nutrients, the task we have to do & that Activating the microorganism which were responsible for the availability of nutrients to plants, these bacterial provides NPK to plants without any extra expense by considering their points these is not necessary to add extra NPK to crop field.

Advantages of Panchagavya

1.Panchagavya for plants is perfect for organic farming

2.Quality of field increase considerably

3.Availability of micro-nutrients to plants

4.No loss of soil physical & biological properties

5.No environmental pollution

6.Pt & non expensive & does not need more labour

Disadvantages of Panchagavya

1. The one and only disadvantages of panchagavya is that its smell, it cannot tolerate by some peoples.

Medicinal Uses

1. Health Benefits

• DehaShuddlhikara - it's Cleanness & detoxifies the body, keeps the body channels patent & ensure avoidance of blockage & Sluggishness.

• KaphaVinashana - Balances Kapha very efficiently

2. Useful in Kapha Imbalance disorders such as:

• feeling heaviness, white discoloration, cold, cough, asthma, bronchitis,

• Excess sleep, Depressed Mood, lethargy, sedentary lifestyle habits.

• Excess craving for junk food sluggish Mind, slow thinking, lack decision making, and severe preostadiniation excessively oily skin.

3. Increase of oiliness- oily skin is due to kapha

4. Itching - pain is a vata Dosha symptom burning sensation is an obstruction of body channels-obstructions to the heart arteries by cholesterol leading to heart attack is caused due to kafa dosha increase, obstructions of blood vessels in the due to clotting, leads to a disease called deep vein Thrombosis, which is kapha dosha increase disorder

5. Tongue coating, inability to perceive taste Properly.

6. Stiffness of body joints, inability to move freely, inability to wake up early in the morning & exercise

7. Swelling, water retention, weight gain, as in case of hypothyroidism obesity, fat deposits on chest abdomen, of lacteal region rheumatic fever & rheumatoid arthritis

8. Pre diabetes & diabetes:

• Nausea - vomiting sensation, Secretions from Mouth 4 naval cavities. Early in the Morning.

9. Allergic Rhinitis:

• pale, cool, clammy skin, High cholesterol, heavier of heart, Myocarditis myocardiopathy cancer, fibroid, cysts. Tumours, Multinodular goitre, polycystic ovarian disorder.

Conclusion

Panchagavya represents a transformative approach to sustainable agriculture by integrating traditional knowledge with modern scientific principles. Its preparation and application harness the potential of naturally occurring microorganisms to enrich soil fertility, improve nutrient availability, and enhance plant growth, all while minimizing the environmental and economic burdens associated with chemical fertilizers.

The rich microbial diversity present in Panchagavya not only addresses critical issues like soil degradation and nutrient depletion but also improves plant immunity and resilience against diseases and environmental stresses. Its ability to recycle organic matter into humus and optimize nutrient cycling makes it a cornerstone of organic farming practices.

As a cost-effective, eco-friendly, and versatile organic manure, Panchagavya offers a sustainable alternative for modern agriculture, particularly in regions with limited access to expensive synthetic inputs. Its adoption can contribute significantly to ensuring food security, promoting soil health, and mitigating the adverse impacts of conventional farming methods. Further research and widespread implementation of Panchagavya could pave the way for more resilient and sustainable agricultural ecosystems globally.

References

[1] The Principles of Organic Farming" by Subhash Palekar

[2] Organic Farming: Theory and Practice" by Nammalvar

[3] Effect of Panchagavya on the Growth and Yield of Crops - Published in Asian Journal of Agricultural Research

[4] Influence of Panchagavya on Soil Microbial Population and Soil Fertility

[5] Published in International Journal of Agricultural and Food Science Technology