

Panchagavya as Biofertilizer in Organic Farming

Madhav Sharma

UIAS, Chandigarh University (Mohali), Punjab

Email- madhavsharma4068@gmail.com

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Abstract -

Panchagavya is an organic product produced by using the use of five specific through-products of cow like cow dung, cow urine, cow milk, cow ghee, cow curd and other substances. It has the capability to play the function of promoting boom and supplying immunity in plant machine thereby confers resistance against pest and sicknesses. Panchagavya includes several vitamins i.e. macronutrients like N, P, okay and micronutrients which might be required for the growth and development of vegetation. The components like cow dung and cow urine enhances the insecticidal activity of panchagavya which can reduce the number of application hazardous chemicals on crops.

Keyword: panchagavya, cow dung, cow urine, cow milk

Introduction:

Panchagavya is an organic formulation, which in Sanskrit means the blend of five products obtained from cow i.e. milk, ghee, curd, dung and urine (all these products are individually called as “Gavya” and collectively named as panchagavya). Panchagavya has got reference in the scripts of Vedas (devine scripts of Indian wisdom) and Vrikshayurveda (Natarajan, 2002). In India, use of panchagavya in organic farming is gaining popularity in recent years especially in states like Tamil Nadu and Kerala. Panchagavya requires mainly five products of cow along with certain other ingredients as listed below (Natarajan, 2002; Pathak, 2002);(1) Fresh cow dung - 7 kg; (2) Cow urine - 3 l; (3) Cow milk - 2 l; (4) Cow curd - 1 kg(5) Cow ghee - 1 kg; (6) Sugarcane juice - 3 l or 500 g jaggary; (7) Tender coconut water – 3 l; (8) Riped banana – 12 Nos.; (9) 100 g yeast + 100 g jaggary dissolved in 2 l of warm water.

Beneficial Effects of Panchagavya- Panchagavya is a component of crop production and it plays a crucial role in each and every component of crop management like integrated soil fertility management, integrated pest management, and integrated disease management.

Use of Cattle dung and Panchagavya in diseases control

1. It increases immunity power in plants thereby confers resistance against pest and diseases
2. Various beneficial metabolites produced by microorganisms such as organic acids, hydrogen peroxide and antibiotics, which are effective against various pathogenic microorganisms

Effect of panchagavya on soil fertility and productivity

1. Panchagavya improves fertility status in soils by increasing macronutrients, micronutrients and beneficial microorganisms thus increase soil health.
2. It improves water holding capacity of soils because it acts as organic manure.
3. It encourages growth and reproduction of beneficial soil microorganisms
4. Increases nutrient uptake in plants and enhances plant growth.

Effect of panchagavya in different commercial crops-

➤ **Paddy**

- Increases tillering
- Absence of chaffy grains
- Grain weight is increases by 20%
- Improved cooking quality
- Harvest is advanced by 15 day

Mango

- Induces dense flowering with more female flowers
- Irregular or alternate bearing habit is not experienced and continues to fruit regularly
- Enhances keeping quality by 12 days in room temperature
- Flavour and aroma are extraordinary

Guava

- Higher TSS
- Shelf life is extended by 5 days

Banana

- In addition to adding with irrigation water and spraying, 3% solution (100 ml) was tied up at the naval end of the bunch after the male bud is removed. The bunch size becomes uniform. One month earlier harvest was witnessed. The size of the top and bottom hands was uniformly big.

Turmeric

- Enhances the yield by 22%
- Extra long fingers
- Ensure low drainage loss
- Narrows the ratio of mother and finger rhizomes
- Helps survival of dragon fly, spider etc which in turn reduce pest and disease load
- Sold for premium price as mother/seed rhizome
- Enriches the curcumin content

Effect of Panchagavya on plants

- **Leaf**

Plants sprayed with Panchagavya invariably produce bigger leaves and develop denser canopy. The photosynthetic system is activated for enhanced biological efficiency, enabling synthesis of maximum metabolites and photosynthetic.

- **Stem**

The trunk produces side shoots, which are sturdy and capable of carrying maximum fruits to maturity. Branching is comparatively high.

- **Roots**

The rooting is profuse and dense. Further they remain fresh for a long time. The roots spread and grow into deeper layers were also observed. All such roots help maximum intake of nutrients and water.

- **Yield**

There will be yield depression under normal circumstances, when the land is converted to organic farming from inorganic systems of culture. The key feature of Panchagavya is its efficacy to restore the yield level of all crops when the land is converted from inorganic cultural system to organic culture from the very first year. The harvest is advanced by 15 days in all the crops. It not only enhances the shelf life of vegetables, fruits and grains, but also improves the taste. By reducing or replacing costly chemical inputs, Panchagavya ensures higher profit and liberates the organic farmers from loan.

Dosage of Panchagavya recommended for field application

- **Spray system**

3% solution was found to be most effective compared to the higher and lower concentrations investigated. Three litres of Panchagavya to every 100 litres of water is ideal for all crops. The power sprayers of 10 litres capacity may need 300 ml/tank. When sprayed with power sprayer, sediments are to be filtered and when sprayed with hand operated sprayers, the nozzle with higher pore size has to be used.

- **Flow system**

The solution of Panchagavya can be mixed with irrigation water at 50 litres per hectare either through drip irrigation or flow irrigation

- **Seed/seedling treatment**

3% solution of Panchagavya can be used to soak the seeds or dip the seedlings before planting. Soaking for 20 minutes is sufficient. Rhizomes of Turmeric, Ginger and sets of Sugarcane can be soaked for 30 minutes before planting.

➤ **Seed storage**

3% of Panchagavya solution can be used to dip the seeds before drying and storing them.

Advantages of Panchagavya

- It improves soil health and fertility
- It is used against pest and diseases
- It increases yield and quality of produce
- No chemicals are used
- Eco-friendly approach
- Cost required for preparation is less
- No special techniques is required
- It gives multiple uses
- Reduces cost of cultivation by reducing chemicals like fertilizers,, pesticides,
- Fungicides, growth regulators etc
- Farmer friendly method

Conclusion-

The increasing concern for environmental safety and global demand for pesticide residue free food has evoked keen interest in crop production using eco-friendly products which are easily biodegradable and do not leave any harmful toxic residues besides conserving nature. So it is necessary to use natural products like Panchagavya to produce chemical residue free food crops and hence Panchagavya can play a major role in organic farming.

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