



## Panchagavya: Low Cost Organic Input for Agricultural and Horticultural Crops

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Panchagavya is highly effective organic manure which is used by Indian farmers from the times of Vedas. The panchagavya enhance the biological efficiency of plants and stimulates their growth through the actions of microorganisms and micro nutrients contained in it. The amendment of Panchagavya enhanced organic contains in soil. The key feature of Panchagavya was its efficacy to restore the yield level of all crops. The application of Panchagavya for control of plant Paghogen and increase in population of plant growth promoting rhizobacteria (PGPR).

### Introduction

Now a day In-organic farming using Chemical fertilizers, pesticides and herbicides, is causing health problems to humans, animals and birds. Environmental pollution is caused and excess water is consumed due to in-organic farming. Soils are getting deteriorated year after year due to excessive and indiscriminate use of chemical fertilizers, pesticides and herbicides. Chemical fertilizer quantity has to be increased constantly. In in-organic farming chemical fertilizers used provide momentary growth and do not help improve soil fertility at all. At this juncture, a keen awareness has sprung on the adoption of "organic farming" as a remedy to cure the ills of modern chemical agriculture. It is very much essential to develop a strong workable and compatible package of nutrient management through organic resources for various crops based on scientific facts, local conditions and economic viability. Panchagavya is a foliar nutrition prepared by organic growers of Tamil Nadu and used widely for various agricultural and horticultural crops. Panchagavya is a mixture of five products from cow an animal which is considered equal to god in Indian culture. The word panch means five and gavya means products.so panchagavya is a mixture of five products from Cow. When suitably mixed and used, these have miraculous effects. Panchagavya is used in different means such as foliar spray, soil application along with irrigation water, seed or seedling treatment etc. For foliar spray 3% concentration is being adopted by organic farmers using hand-operated sprayers with high pore sized nozzle.

### Benefit Effect of Panchagavya

**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 photosynthates.

**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.

**Drought hardiness:** A thin oily film is formed on the leaves and stems, thus reducing the evaporation of water. The deep and extensive roots developed by the plants allow withstanding long dry periods. Both the above factors contribute to reduce the irrigation water requirement by 30% and to ensure drought hardiness.

**Table 1: Ingredients for making panchagavya**

ingredients	quantity
Biogas slurry or cow dung	5 kg
Cow's urine	3 litres
Cow's milk	2 litres
Curd from cow's milk	2 litres
Ghee from cow's butter	1 litres
Sugarcane juice	3 litres
Tender coconut water	3 litres
Banana	12 numbers

### Preparation method

Panchagavya an organic product has the potential to play the role of promoting growth and providing immunity in plant system. It consists of five products viz. cow dung, cow urine, milk, curd and ghee. For preparation of panchgavya need a wide mouthed mud pot concrete tank or plastic cans. Metal containers should not be used. First put the fresh cow dung and cows ghee into the container and mix it thoroughly twice daily for three days. On the fourth day add the rest of the ingredients and stir it twice daily for 15 days. The pan stock solution will be ready after the 18<sup>th</sup>. It should be kept in the shade and covered with a wire mesh or plastic mosquito net to prevent houseflies from laying egg and the formation of maggots (worms) in the solution. If sugarcane juice is not available add 500g of jiggery dissolved in 3 litres of water.

Likewise, if toddy is not available add 100g of yeast powder and 10g of jiggery to 2 litter of warm water. After 30 minutes, add this solution to replace toddy in panchagavya. Another method is 2 litter of tender coconut water and keeps it in closed plastic container for 10 days. After fermantion it becomes toddy. This solution can be prepared before hand and used replace toddy. When stirred twice daily, the panchagavya solution can be kept for 6 months without any deterioration in its quality. Whenever the solution becomes thick due to evaporation of water over a long period, suitable quality of water can be added to keep it in a liquid state.

**Table 2 : Chemical composition in panchagavya**

pH :	5.45	Sodium :	90
EC dSm <sup>2</sup> :	10.22	Calcium :	25
Total N (ppm) :	229	IAA (ppm) :	8.5
Total P (ppm) :	209	GA (ppm) :	3.5
Total K (ppm) :	232		

**Recommended dosage**

**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.

**Table 3 : Time of application of Panchakavya for different crops is given as follows**

Crops	Time schedule
Rice	10,15,30 and 50th days after transpalnting
Sunflower	30,45 and 60 days after sowing (DAS)
Black gram	Rainfed: 1 <sup>st</sup> flowering and 15 days after flowering Irrigated: 15, 25 and 40 DAS
Green gram	15, 25, 30, 40 and 50 days after sowing
Castor	30 and 45 days after sowing
Groundnut	25 and 30th days after sowing
Bhendi	30, 45, 60 and 75 days after sowing
Moringa	Before flowering and during pod formation
Tomato	Nursery and 40 days after transplanting seed treatment with 1 % for 12 hrs
Onion	0, 45 and 60 days after transplanting
Rose	At the time of pruning and budding
Jasmine	Bud initiation and setting
Vanilla	Dipping setts before planting

**Conclusion**

Panchagavya contains growth hormones, macro and micro nutrients along with the effective microorganisms in the Panchagavya. Since it has all the nutrients it is widely used for the agriculture and horticulture crop as biofertilizer and biopesticide. As Panchagavya induces the synergistic effect with bio-fertilizers and soil microorganisms, it leads to soil fertility, improved water and nutrient-holding capacity. Therefore, it can be recommended as an alternate source of nutrients for organic cultivation of crops.

**References**

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