

## Panchagavya: Boosting Plant Growth and Enhancing Sustainability

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Panchagavya is an organic product produced using five different by-products of cows: cow dung, cow urine, cow milk, cow ghee, cow curd, along with other ingredients. It has the potential to promote growth and provide immunity in plant systems, thereby conferring resistance against pests and diseases. Panchagavya contains several nutrients, including macronutrients like N, P, K, and micronutrients required for the growth and development of plants. It also contains various amino acids, vitamins, growth regulators such as auxins and gibberellins, and beneficial microorganisms like *Pseudomonas*, *Azotobacter*, and phosphorus bacteria.

In India, Panchagavya, vermicompost, and farmyard manure are integral components of nutrient management in organic farming systems. A study noted that Panchagavya had the following populations: total bacteria:  $22 \times 10^9$  cfu ml<sup>-1</sup>, actinomycetes:  $60 \times 10^4$  cfu ml<sup>-1</sup>, phosphate solubilizers:  $103 \times 10^6$  cfu ml<sup>-1</sup>, fluorescent *Pseudomonas*:  $151 \times 10^5$  cfu ml<sup>-1</sup>, and nitrifiers:  $5.4 \times 10^6$  cfu ml<sup>-1</sup>. Additionally, it exhibited dehydrogenase activity of  $6.61 \mu\text{g g}^{-1} \text{h}^{-1}$  and microbial biomass carbon of  $89.6 \mu\text{g g}^{-1}$ .

### Panchagavya preparation

Panchagavya is a liquid fertilizer made from nine ingredients that are mixed together in a specific order:

- Cow dung: 7 kg
- Cow ghee: 1 kg
- Cow urine: 10 litres
- Water: 10 litres
- Cow milk: 3 litres
- Cow curd: 2 litres
- Tender coconut water: 3 litres
- Jaggery: 3 kg
- Yeast powder: 200 grams

### Here are some steps for preparing Panchagavya:

1. Mix the cow dung and ghee in a wide-mouth container made of mud, concrete, or plastic. Avoid metal containers.
2. Stir the mixture twice a day for three days.
3. On the fourth day, add the remaining ingredients.
4. Stir the mixture twice a day for 15 days.
5. On the 16<sup>th</sup> day, filter the mixture with a muslin cloth. The filtrate is ready to use as Panchagavya.

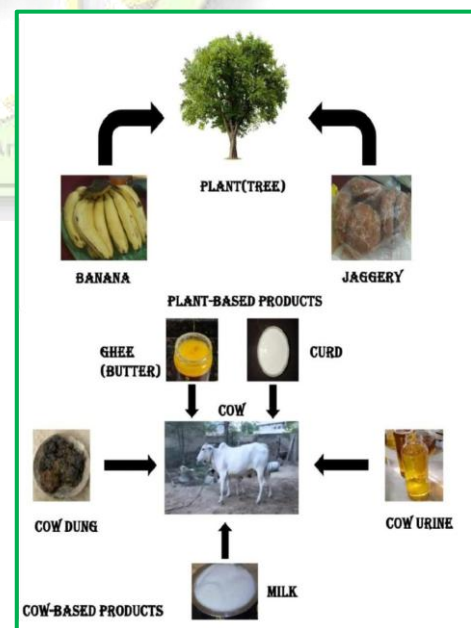


Figure 1: Ingredients of Panchagavya

6. Store the Panchagavya in closed containers with small holes in the cap to prevent bursting. Avoid airtight bottles.
7. Shake the bottle every three days to prevent fungal growth on the surface. Panchagavya can be diluted with water and used for spraying

### Benefits of Panchagavya

- Enhances plant development by supplying vital macronutrients and growth regulators.
- Enhances soil health by promoting the growth and activity of beneficial microorganisms.
- Boosts plant immunity, providing natural protection against pests and diseases.
- Enhances agricultural productivity by stimulating improved flowering and fruit development.
- Promotes sustainable and environmentally-friendly agriculture by minimising dependence on chemical inputs.
- Enhances the structure of the soil, improving its aeration and ability to retain water.
- Minimises agricultural costs by making use of readily accessible resources.
- Adaptable for use in many crops and agricultural systems.
- Reduces soil and water contamination, therefore increasing environmental well-being.
- Enhances the overall quality, flavour, and nutritional composition of agricultural products.



### Time schedule for applying Panchagavya to different crops

Crops	Time schedule
Rice	10,15,30 and 50 <sup>th</sup> days after transplanting
Sunflower	30,45 and 60 days after sowing
Black gram	Rainfed: 1st flowering and 15 days after flowering Irrigated: 15, 25 and 40 days after sowing
Green gram	15, 25, 30, 40 and 50 days after sowing
Castor	30 and 45 days after sowing
Ground nut	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 hra
Onion	0, 45 and 60 days after transplanting
Rose	At the time of pruning and budding
Jasmine	Bud initiation and setting
Vanila	Dipping setts before planting

### Conclusion

Panchagavya, which comes from products derived from cows, has a lot of promise in farming, medicine, cleaning up the environment, and other areas. In old Indian customs, it represents the peaceful connection between people, earth, and animals. Both traditional

knowledge and new science study confirm the idea that using Panchagavya can help plants grow, make the land more fertile, keep animals healthy, and protect the environment. More recent studies have shown that Panchagavya has many benefits, such as increasing food output, improving soil health, killing microbes, and improving people's and animals' health in general. But there are some problems that need to be fixed before Panchagavya medicines can be used effectively. Some of these are standardisation and quality control, scientific proof, the long-term stability of ingredients, cultural and religious issues, legal frameworks, toxic potential, cost-effectiveness, waste management, and adapting to different cultures. Taking care of these problems is necessary for Panchagavya practices to become widely accepted and used.

## References

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