

Beneficial Effects of Panchagavya Application on Field Crops

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Introduction

During the present scenario all over the world, efforts are being made to work towards eco- friendly agriculture. Over the years, chemicals used in agriculture have caused extensive damage to the quality of soil, crops, water and to human and animal health. We are now striving to go back to organic and natural farming techniques. A key ingredient of organic farming, Panchagavya, has been handed down to us from our ancestors and has been used successfully over the generations. Organic farming is based on the system-oriented approach and the use of organic liquid product like panchagavya resulted in higher growth, yield and quality of crops and hence there had been an increasing interest in the use of liquid formulations. Panchagavya is made from the blend of five cow-derived products. In Sanskrit Panch mean five and gavya means cow. Panchagavya, a mixture of five cow products namely dung, urine, milk, curds and ghee. Panchagavya has uses, not only in the field of agriculture, but can also be used for the improvement of human medicine, to active soil, to protect plants from diseases and animal health. For example, in plants Panchagavya promotes growth, yield and immunity and is also an organic pesticide. For animals, Panchagavya stimulates the production of anti-bodies increasing immunity. In humans, Panchagavya has been reported to increase appetite, heal wounds, and as a cure for white patches.

Method of preparation of Panchagavya

Panchagavya uses only organic products and can be made at home. Panchagavya has to be prepared in a wide mouth container made of mud, concrete or plastic. The container should not be made of any metal.

In an earthen container, first mix fresh cow dung 7 kg and cow ghee 1 kg thoroughly and keep it for 3 days. Mix it twice daily (morning/evening) at least for 15 minutes.



Add 10 litres of cow urine and 10 litres of water and mix thoroughly. Keep it for 15 days with regular mixing in the morning and evening hours.



Add 3 litres of cow milk, 2 kg cow curd and also 500 g jaggery as an additive and mix them completely.



This solution should be kept for 12 days and should be stirred twice daily (morning/evening) at least for 15 minutes each time to facilitates aerobic microbial activity.



Panchagavya stock solution will be ready after proper sieving through a fine cloth.

Physico chemical and biological properties

Physico-chemical properties of Panchagavya revealed that they possess almost all the major nutrients, micro nutrients and growth hormones (IAA & GA) required for crop growth. Predominance of fermentative microorganisms like yeast and lactobacillus might be due to the combined effect of low pH, milk products and addition of jaggery/sugarcane juice as substrate for their growth. The low pH of the medium was due to the production of organic acids by the fermentative microbes as evidenced by the population dynamics. Lactobacillus produces various beneficial metabolites such as organic acids and antibiotics, which are effective against other pathogenic microorganisms besides its growth.

Storing of Panchagavya:

Panchagavya should be kept in the shade and be covered at all times. Care has to be taken that no insect falls in the mixture or lays eggs in it. To prevent this, the container should always be covered with a wire mesh or plastic cover, muslin or fine cloth. Panchagavya can be stored for 60 days without any effect to its quality, provided that it is kept in the shade and

is being stirred twice a day. In the event that the solution thickens over time, water must be added appropriately.

Dosage of Panchagavya:

- ❖ For spraying: 3% of the solution in water *i.e.*, 3 litres of panchagavya to every 100 litres of water is the most appropriate proportion for spraying.
- ❖ For irrigation: For irrigation, the amount of panchagavya per litres should be 20 litres/acre.
- ❖ For seed treatment: Soak the seeds for 20 minutes in 3% Panchagavya solution in water before planting. Similarly, rhizomes of turmeric or ginger and cutting of sugarcane should be soaked for 30 minutes before planting.

Frequency of use: Before flowering- once in 15 days (two sprays)

Flowering stage- once in 10 days (two sprays)

Fruit bearing stage- once.

Effect of Panchagavya

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

Advantages of Panchagavya application

1. It improves soil health and fertility greatly.
2. It is used for protection against pest and diseases.

3. Yield and quality of produce is increased.
4. Chemicals aren't used in preparing panchagavya.
5. It is an Environment-friendly approach.
6. Cost required for preparation of panchagavya formulation is less.
7. No special techniques is required.
8. It have multiple uses.
9. Reduces cost of cultivation by reducing chemicals like fertilizers, pesticides, fungicides, growth regulators etc.
10. Farmer friendly method.

Conclusion

Organic farming in recent years is gaining impetus due to realization of inherent advantages as it confers in sustaining crop production and also in maintaining dynamic soil nutrient status and safe environment. 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. All the five components are easily available to the farmer and can be made easily by the farmer himself thereby reducing the initial investment. It is rich in growth enhancing substances like organic compounds, hormones, micro and macro nutrients and minerals besides having antibacterial and insecticidal properties. Panchagavya enhances the productivity by increasing the growth of roots, stems, branches and leaves finally contributing to the overall high yield and yield attributes.