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PANCHGAVYA AS AN ORGANIC PREPARATION

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ARTICLE ID: 025

ABSTRACT

Panchgavya is a term used to describe organic product produced by using five different by-products of cow like cow dung, cow urine, cow milk, cow ghee, cow curd. It has the potential to play the role of promoting growth and providing immunity in plant system thereby it provides resistance against pest and diseases. Panchagavya contains several nutrients i.e. macronutrients like **N, P, K** and micronutrients which are required for the growth and development of plants and also contains various amino acids, vitamins, growth regulators like Auxins, Gibberellins and also beneficial microorganisms like pseudomonas, azotobacter and phospho bacteria .

COMPONENTS OF PANCHGAVYA PREPARATION

Panchagavya consists of five products viz. cow dung, cow urine, milk, curd, ghee and **three fortified products** viz. jaggery, , banana, Tender coconut water. When suitably mixed and used, these have beneficial effects.

Cow dung - 7 kg
Cow ghee - 1 kg
Cow milk - 3 liters
Cow curd - 2 liters
Fortified Additions for Panchgavya preparation
Tender coconut water - 3 liters
Jaggery - 3 kg
Well ripened poovan banana – 12 nos.
Jaggery and coconut water are used to accelerate the process of fermentation which also help in minimizing the bad odour.

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Mix the above two ingredients thoroughly both in morning and evening and keep it undisturbed for 3 days

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Cow Urine - 10 liters
Water - 10 liters

After 3 days mix cow urine with water and keep it undisturbed for 15 days with regular mixing both in morning and evening.

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Panchagavya will be prepared after 30 days.

MICROBIAL LOAD IN PANCHGAVYA

Physio-chemical properties of Panchagavya reveal that they possess almost all the major nutrients, micro nutrients and growth hormones (IAA & GA) required for crop growth. Presence of fermentative microorganisms like yeast and lactobacillus in more numbers might be due to the combined effect of low pH, milk products and the 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 proved by the population dynamics and organic detection by GC analysis. Lactobacillus helps in production various beneficial metabolites such as organic acids(OA), hydrogen peroxide(H_2O_2) and antibiotics, which are effective against other pathogenic microorganisms besides its growth. GC-MS analysis resulted in following compounds of fatty acids, alkanes, alconol, alcohol.

PHYSICO CHEMICAL AND BIOLOGICAL PROPERTIES OF PANCHAGAVYA

pH	**5.45**
EC dSm2	**10.22**
Total N (ppm)	**229**
Total P (ppm)	**209**
Total K(ppm)	**232**
Sodium	**90**
Calcium	**25**
GA	**3.5**
IAA (ppm)	**8.5**

CHEMICAL COMPOSITION OF PANCHGAVYA

Fungi	38800/ml
Bacteria	1880000/ml
Lactobacillus	2260000/ml
Total anaerobes	10000/ml
Acid formers	360/ml

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BENEFICIAL EFFECTS OF PANCHAGAVYA ON COMMERCIAL CROPS

Mango

1. Induces dense flowering with increased number of female flowers.
2. Irregular or alternate bearing habit is not experienced and regular fruiting is observed.
3. Enhancement of the shelf life by 12 days in room temperature.
4. Flavour and aroma are extraordinarily improved.

Guava

1. TSS content is higher.
2. Shelf life is extended by 5 days.

Turmeric

1. Enhancement by 22% in the yields.
2. Extra long fingers.
3. Drainage losses are less.
4. The ratio of mother to finger rhizomes is narrowed.
5. Helps in the survival of dragon fly, spider etc, which helps reduce pest and disease load.
6. Sold for premium price as mother/seed rhizome.
7. Curcumin content was enriched greatly in Turmeric.

Banana:

In addition to addition 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.

1. The size of the bunch becomes uniform.
2. Harvest was witnessed 1 month earlier in comparision to others.
3. The size of the top and bottom hands was uniformly big.

Paddy

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1. Tillering was increased.
2. Chaffy grains were absent.
3. Increase in Grain weight by 20%.
4. Cooking quality of grain is improved.
5. Harvest was done 15 days prior to other paddy crops.
6. Percentage of broken rice during milling was reduced.

Maize, Sorghum, Barley

1. Plant growth is increased.
2. Palatability is increased.
3. Increases nutrients in plants.
4. Crop is ready to be harvested in advance by 10 days.

Brinjal

1. Greeny and healthy plants are produced.
2. Fruits appear to be more attractive to eyes.
3. Resistance against *Leucinodes arbonalis* (Shoot and Fruit Borer) and sucking pests.
4. Increased fruit size and keeping quality.

Other vegetables

1. Increase in yield.
2. Extended shelf life.
3. Shiny outer skin.

General Advantages of Panchagavya

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 Panchgavya.
5. It is an Environment-friendly approach.

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6. Cost required for preparation of Panchgavya 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.

PROBLEMS, CONSTRAINTS, BARRIERS AND DIFFICULTIES IN ADOPTING PANCHAGAVYA

1. Lack of awareness about its uses amongst farmers.

2. Contamination occurs sometimes, during the process of fermentation which spoils the Organic Prepration.

3. The action of Panchgavya on Plants is not fast, it takes it's time and is therefore, slow.

4. Panchgavya products in markets is limited so, it's status of availability is not known to farmers.

5. It is non-selective in nature so, it encourages weed growth.

6. Utilization by farmers is also very less.

7. Poorly prepared Panchgavya formulation reduces the quality of produce sometimes.

CONCLUSION

The concern for environmental safety and global demand for pesticide residue free food is increasing and, this increase 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. There is a need to increase awareness amongst farmers about uses and advantages of Panchgavya.

Government should provide incentives for youth entrepreneurs involved with Organic Farming also a farmer to farmer interactions should be done by State Agriculture

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Departments and State Agriculture Universities from time to time to increase the awareness and popularity of Organic Farming amongst the masses.

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