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ORIGINAL PAPER



## Role of organic inputs for Organic Farming

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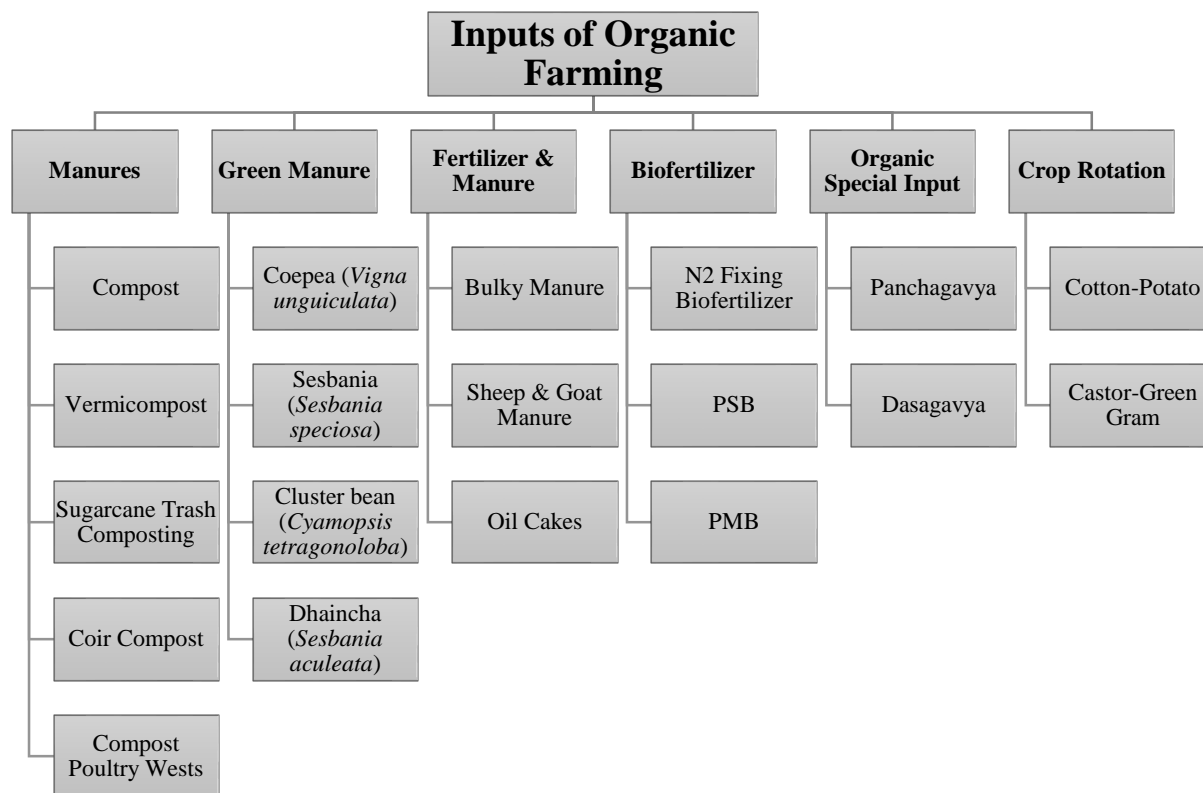
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**O**rganic farming is a farming method that avoids or limits the use of synthetically compounded fertilisers, pesticides, growth regulators, genetically modified organisms and livestock food additives. It involves aspects like crop rotations, the use of crop residues, animal manures, legumes, green manures, off farm organic wastes, biofertilizers, mechanical cultivation, mineral bearing rocks, and aspects of biological control are also used to the greatest extent possible to maintain soil productivity as well as sustainability and tillage to supply plant nutrients and to control crop harming insect, weeds, and other pests.

Organic farming is thus significant because it is a holistic production management method that supports and improves agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. Many studies have demonstrated that organic farming methods can deliver higher yields than conventional farming methods. Significant differences in soil health indicators, such as nitrogen mineralization potential and microbial population and diversity, can also be detected in organic farms. Organic farms' improved soil health resulted in significantly decreased insect and disease incidence. Small-scale integrated agricultural systems have the ability to reinvigorate rural areas and economies.



## MANURES

Manure is an organic matter formed from solid animal waste that is used to improve soil quality and increase crop production.

**Compost:** Compost has long been regarded as a good soil additive. Most people understand that composting is an efficient approach to promote healthy plant output, save money, reduce the need of chemical fertilisers, and protect natural resources. Compost is a stable organic matter that enhances soil physical, chemical, and biological qualities, ultimately improving soil quality and crop yield.

**Vermicompost:** Vermicompost is nothing more than earthworm excreta that is high in humus and nutrients. Vermicompost contains all of the needed plant nutrients. It has a positive impact on overall plant growth, promotes the growth of new shoots and leaves, and improves the quality and shelf life of the produce.

**Sugarcane Trash Composting:** The assimilation of sugarcane waste in the soil affects the physical, chemical, and biological aspects of the soil. Soil EC is reduced, water holding capacity is improved, soil aggregation is improved, and soil porosity is improved. Sugarcane trash incorporation reduces soil bulk density while increasing infiltration rate and decreasing penetration resistance.

**Coir Compost:** It increases soil moisture by increasing water holding capacity (more than 5 times its dry weight). The application of composted coir pith significantly reduces the bulk density of both subsurface (15-30 cm) soil. Composted coir dust includes all plant nutrient elements and can be used as a supplement to inorganic fertilisers.

**Compost Poultry Wastes:** Animal manures especially poultry manure are rich in N and the nutrient value of the manure is reduced by loss of N through ammonia volatilization and denitrification. Good quality poultry manure can be obtained by mixing the poultry waste with selective carbonaceous material such as coir pith and inoculation with suitable microorganism. It can be used as an eco-friendly technique for the conversion of poultry waste into valuable compost.

### **GREEN MANURE**

Green manure refers to green undecomposed material used as manure. It is obtained in two ways: by cultivating green manure crops or by collecting green leaf from wastelands, field bunds, and forests. Improves soil structure, Increases water holding capacity and Decreases soil loss by erosion. Example as Cowpea (*Vigna unguiculata*), Sesbania (*Sesbania speciosa*), Cluster bean (*Cyamopsis tetragonoloba*), Dhaincha (*Sesbania aculeata*).

### **FERTILIZER & MANURE**

- Manures are plant and animal waste utilised to provide plant nutrients. After decomposition, they release nutrients.
- Bulky Manure, Sheep & Goat Manure, Oil Cakes.

### **BIO FERTILIZER**

Bio fertilizers are defined as preparations comprising living cells or latent cells of effective strains of microorganisms that improve crop plant nutrient uptake through interactions in the rhizosphere when supplied through seed or soil. They help accelerate some microbial processes in the soil, increasing the availability of nutrients in a form that plants can easily absorb.

i.e., N<sub>2</sub> Fixing Bio fertilizer, PSB, PMB

### **ORGANIC SPECIAL INPUT**

**Panchagavya:** Panchagavya, an organic product, has the ability to encourage development and provide immunity in the plant system. Panchagavya is made out of nine ingredients: cow dung, urine, milk, curd, jaggery, ghee, banana, tender coconut, and water. These have amazing powers when properly prepared and applied.

- Mango: Control irregular or alternate bearing. Increases blossoming density and the number of female flowers. Improves storage quality by 12 days in room temperature.

- Vegetables: Yield enhancement by 18% and in few cases like Cucumber, the yield is doubled. Wholesome vegetables with shiny and appealing skin. Extended shelf life. Very tasty with strong flavour.

**Dasagavya:** Dasagavya solution is filtered to prevent sprayer nozzle clogging and is recommended as a foliar spray at 3% dosage. Soaking seeds or dipping seedling roots in a 3% dasagavya solution for 20 minutes before planting improves seed germination and root development.

- Rose: Spraying 3 % dasagavya for control thrips and powdery mildew.
- Gerbera: Dasagavya as foliar spray is effective against gerbera powdery mildew.
- Tea: Regular 3 % dasagavya spraying at 15 days interval is effective against blister blight disease.

## CROP ROTATION

- Crop rotation is the method of planting multiple crops on the same piece of land in order to maintain soil health, maximize nutrients in the soil, and combat insect and weed pressure.
- Green manuring crop should be followed by grain crops.eg. dhaincha - rice, green gram/ cowpea – wheat / maize.
- Deep rooted crops should be succeeded by shallow rooted crops.
- Cotton-Potato, Castor-Green Gram.

**Table. 1. Nutrient Content & Dose in Different Organic Inputs.**

Inputs Techniques	Example	Nutrient Value (%)			Dose
		N	P	K	
Manures	Compost (FYM)	1.24	0.5	0.9	10-25 t/ha
	Vermicompost	0.5-1.50	0.1-0.30	0.15-0.56	3-5 t/ha
	Sugarcane Trash Composting	0.5	0.2	1.1	5 t/ha
	Coir Compost	1.24	0.06	1.20	5 t/ha
	Crop Residue Composting (cotton)	0.44	0.10	0.66	5 t/ha
	Composting of Poultry Wests	2.08	2.61	2.94	6 t/ha
Green Manure	Sesbania	2.71	0.53	2.21	-
	Dhaincha	3.50	0.60	1.20	-
	Sunhemp	2.30	0.50	1.80	-

Organic Special Inputs	Panchagavya	0.0229	0.0209	0.023	58 l/ha
Organic Fertilizer & Manure	Sheep & Goat Manure	3	1	2	3-4 t/ha
	Poultry Manure	3.03	2.63	1.4	2 t/ha
	Oil Cakes (Karanj)	3.9	0.9	1.2	6 q/ha

## CONCLUSION

Using organic inputs in agriculture is not a new trend for Indian farmers. Organic inputs like bio fertilizers, green manures, various bulky and oil cakes, special inputs like panchgavya and jivamrit, etc. are various options available for organic production. Based upon nutritional requirement and nature of crop, type of organic manure should be choose. Using of organic inputs in agriculture production not only helpful in sustainable agricultural production but also ecological sound.