



Organic Farming in Three Spices

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The human civilization developing from hunting and gathering to present day agriculture has undergone several changes that have rechanneled the directions of agricultural activities for sustainable development. These changes have resulted in the depletion of production bases in many fertile grounds coupled with contamination of natural resources and human health hazards. The mainstream agriculture is the conventional agriculture where, synthetic inputs such as fertilizers and pesticides are used, wherein the degree of its usage varies among farmers. Exposure to these inputs in the occupational setting, particularly the people at work and those living in close proximity to fields, where chemicals are applied and stored, are prone to health hazards leading to serious illness that could be fatal. Pesticides as well as fertilizers can infiltrate through the soil, contaminating the water bodies and posing risk to the aquatic life. Pesticides when not judiciously used may disrupt natural biological pest control mechanisms and result in more vigorous pest attacks.

An alternate path to curtail the issues of conventional agriculture is to adopt organic

farming. Organic farming is a crop and livestock based production approach respecting the rules of nature and excluding the use of chemical inputs like, pesticides, fertilizers, growth hormones, veterinary drugs and genetically modified organisms (GMOs). The Codex Alimentarius Commission defines organic agriculture as holistic food production management system which promotes and enhances healthy agro-ecosystem including biodiversity, biological cycles and soil biological activity. The primary objective of organic farming is to maximize the use of on-farm resources and minimize off-farm resources. In organic farming, all the components of production system *i.e.*, plant, animal, soil, water and microorganisms are protected and targets to produce nutritive, healthy and residue-free food.

Spices have been a prominent commodity adorning matchless position in trade and commerce since the ancient and medieval times. Spices which are produced by following the standard organic farming methods are called organic spices. Various spice crops like black pepper, ginger, turmeric, cardamom, chilli, clove and vanilla are grown organically. The important



factors driving the demand for organic spices are healthy life style, medicinal uses, dietary, food processing etc.

Different methods of organic farming

Organic agriculture involves the natural method like crop rotation, biological pest management, compost making etc. In organic farming, the farmers use fertilizers as well as pesticides by following the dosage limitations strictly. There are different kinds of organic farming systems. The common forms of organic farming include, permaculture, biodynamic farming, do nothing farming, no-till farming, etc. All these techniques involve cultivation using minimum mechanical equipments. In organic farming farmers are required to use traditional farming techniques along with some latest technology. Moreover, the organic farming techniques are based on biological processes and usually come under the field of agro ecology.

The general principles of organic production adopted from the Canadian Organic Standards (2006) are as follows:

1. Protect the environment, minimize soil degradation and erosion, decrease pollution, optimize biological productivity and promote a sound state of health.
2. Maintain long term soil fertility by optimizing conditions for biological activity within the soil.
3. Maintain biological diversity within the system.
4. Use recycled materials and resources to the greatest extent possible within the enterprise.
5. Provide attentive care that promote health and meets the behavioural needs of livestock.
6. Prepare organic products, emphasizing careful

processing, and handling methods in order to maintain the organic integrity and vital qualities of the products at all stages of production.

7. Depend on renewable resources in locally organized agricultural systems.

Importance of organic farming

Organic farming is of great importance and there are a number of benefit from organic farming.

- Organic farming limits the use of highly toxic synthetic fertilizers, pesticides, and thus make the food items healthier, tastier, nutritive and residue free.
- Organic farming is cost effective, energy saving and protects the environment. The organic inputs employed are user friendly and eco friendly, that help to scale down the level of pollution.
- By adopting organic farming the ecological balance between the flora and fauna can be maintained in a natural way.

Nutrient management

Mainly animal manures, compost, green manures, bio-fertilizers and mixed organic fertilizers are used in organic farming. Nitrogen is provided by legume crops having nitrogen fixing symbiotic bacteria and by soil inhabiting non symbiotic bacteria. Enrichment of phosphorus in soil is done by incorporation of rock phosphate, AMF (arbuscular mycorrhizal fungi -solubilizes phosphorus for greater availability to the plants) and VAM (vesicular arbuscular mycorrhizal fungi) treated compost. Potassium is provided by wood ash, sea weeds, and tobacco stem, used alone or in combination with others. Besides permanent mulching layer reduces the potassium leaching and application of lime 2-3 months before planting rectifies soil acidity.

Pest, disease and weed management

Green manuring, use of balanced fertilizers, mulching, proper care in the nursery, etc., play vital role in protecting crop health from the attack of insects and pathogens. The following practices are recommended to maintain adequate plant health:

1. Use of *Trichoderma* in nursery mixtures, soil application and seed treatment.