

f. Organic Farming:

Organic farming of farming system has been used in Dayalbagh. Organic farming is a system in which the use of chemicals such as synthetic fertilizers, insecticides, herbicides, fungicides are reduced to a minimum and the biological potential of the soil and underground water resources are conserved and protected from natural and human induced degradation or depletion. It adopts suitable cropping models like agro-forestry and methods of organic replenishment.⁶

Objectives:

- ✓ To produce food of high quality in sufficient quantity,
- ✓ To work in harmony with the natural system,
- ✓ To maintain the genetic bio-diversity of the production system,
- ✓ To promote sustainable use of natural resources

Organic Manures:

It has been a regular practice to add chemical fertilizers into the soil to enrich it with essential nutrients, more particularly NPK. Of late it has been realized that application of inorganic fertilizers causes soil infertility due to accumulation of salts. Therefore, the use of organic fertilizers such as manure, compost, green manure, vermin-compost and bio-fertilizers etc. is now preferred.⁶

Farm yard manure: decomposed mixture of dung and urine of farm animal along with the litter and leftover materials from roughages or fodder fed to the cattle. FYM contains 0.5%N, 0.2% P, and 0.5% K respectively.⁶

Compost: a mass of rotted organic matter made from waste is called compost. The compost is made from farm waste like sugarcane trash, paddy straw, weeds and other plants. Compost contains 0.5% N, 0.15% P and 0.5% K respectively.⁶

Green Manure: green un-composed plant materials used as manure are called green manure. It is formed in two ways:

- ✓ By growing green manure crops
- ✓ By collecting green leaves from plants grown in waste lands.⁶

Vermi-composting: Vermi-composting is the use of earthworms for composting organic residue. It is estimated that 1000 tons of waste organic matter can be converted by earthworms into 300tons of vermi-compost. Earthworms weighing about 0.5-0.6 kg consume large quantity of organic matter and excrete soil as casts. The weight of the material passing through the body each day is almost equal to the weight of the earthworm.⁶

Advantage of vermi-composting:

- ✓ Vermi-compost is a rich mixture of major, micronutrients containing 3% N, 1% P and 1.5% K.

- ✓ It is excellent base for the establishment of beneficial free living and symbiotic microbes as it increases total microbial population of nitrogen fixing bacteria and Actinomycetes.
- ✓ The symbiotic mycorrhiza on plant root system increases the VAM propagules survival up to 11 months on earthworm casts.
- ✓ Increased microbial activity also improves the availability of soil phosphorus and nitrogen.
- ✓ A number of plant growth promoters are observed in earthworm's casts.
- ✓ Quick response can be obtained
- ✓ Helps in aerating the soil⁶

Role of earth worms in Vermi-composting:

Earthworms help in the preparation of compost and maintaining soil health as follows:

- ✓ Improvement in soil fertility,
- ✓ Amelioration of physical condition of soil,
- ✓ Mixing of sub soil and top soil,
- ✓ Correction of undetermined deficiencies in plants,
- ✓ In re-cycling of city and rural wastes, sewage waste, waste water, sludge and industrial waste e.g. paper, food and wood industry,
- ✓ Supplementing traditional feed,
- ✓ Used in Unani system of medicine for treatment of diseases.⁶

Organic Manures and Chemical Fertilizers:

| Organic Manures | Chemical Fertilizers |
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| Provide all three primary essential elements i.e. N, P and K. | Provide only one or two primary essential elements i.e. N, P, K or N+P, N+K etc. |
| Suitable for all types of land | Not suitable for all types of land |
| Improve the physical condition of the soils. | Do not improve physical condition of soils. |
| Checks soil erosion. | Do not check soil erosion. |
| Improve water-holding capacity of soil. | Do not improve water-holding capacity of soil. |
| Reduce the evaporation of soil water. | Do not reduce evaporation of soil water. |
| Provide microelements also. | Do not provide microelement. |
| Amount of essential elements available in very little quantity. | Comparably large amount of available essential elements. |
| Should be applied well before 2 months, at least a fortnight before sowing activity. | Can be applied before sowing, at the time of sowing and after sowing activity. |
| Can not be applied in standing crops. | Can be applied in standing crops specially N ₂ in installments. |
| Can not be applied in the form of liquid solution. | Can be applied as foliar application, in liquid form. |
| Required to be thoroughly mixed into the soil after broadcasting it. | Can be applied as localized placement top dressing or basal dressing. |
| Do not require any kind of technical knowledge. | Require technical know how of the fertilizers and their application effects etc. |

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| Farmers can prepare into their own fields. | Can be synthesized in fertilizer factories only. |
| Economical | Costly |
| Transportation cost is more. | Transportation cost is very less. |
| Its impact in the fields remains up to 2-3 years. | Repeatedly application after each crop even after 4 months. |
| By its continuous application the conditions are improved. | By its continuous application soils become either acidic or alkaline. |
| Provide organic matter to the soil. | Do not provide organic matter to the soil. |

6. Source: Book; Agriculture Operation, Dayalbagh Educational Institute