Short Note

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Organic Farming and Soil Health

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Organic farming is need of hour for sustaining soil health and pollution free environment. It enhances crop productivity by maintaining soil fertility and profitability in long term basis. The quality of produce is also improved due to better soil health and resulting production. It is only organic farming that can show the better future of soil health.

Introduction

Organic agriculture is "ecological production management system that promotes and enhances bio-diversity, biological cycles, and soil biological activity approaches based on minimal use of off-farm inputs ecological harmony". Organic farming is "a production system, which avoids or largely excludes the use of inorganic fertilizers, pesticides, growth regulators and livestock feed additives." (Lampkin, 1990)

Why It Is Necessary?

With the development of high yielding varieties coupled with improved specified inputs such as fertilizers, pesticides, irrigation, etc., not only lead to environmental problems but also put threat to soil health.

Objective of Organic Farming

- To maintain high nutritional quality
- To work with natural system rather than seeking to dominate them
- To encourage and enhance the biological cycles with framing system
- To maintain and increase the long term fertility of soils
- To worked as a closed system with regard to organic matter and nutrient elements
- To give all livestock, conditions of life allows them to perform all aspects of their innate behavior
- To avoid all forms of pollution
- To maintain the genetic diversity of the agricultural system
- Allow agricultural producers an adequate return and satisfaction from their work including a safe working environment
- To consider the wider social and ecological impact of the farming system.

Advantages of Organic Farming

- Optimal conditions in the soil for high yields and good quality crops.
- Improve soil physical properties such as aeration, root penetration and WHC.
- Improve soil chemical properties and promote favorable chemical reactions.
- Improve plant growth and physiological activities of plants
- Reduce the need for purchased inputs.

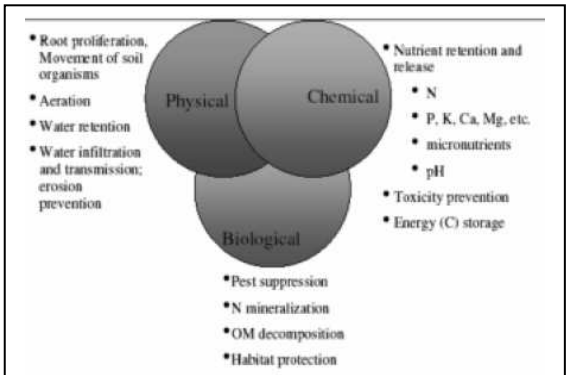
- Prevent environmental degradation and can be used to regenerate degraded areas.
- Minimized the pollution
- Provide healthier and nutritionally superior food.
- Organic fertilizers are considered as complete plant food.

Components of Organic Farming

(1) Organic manures
  (a) Bulky organic manures
  (b) Concentrated organic manures
  (c) Green manures
    (i) Green manuring in situ
    (ii) Green leaf manuring
(2) Recycling of organic waste
  (a) Compost
    (i) Vermicompost
    (ii) Phospho compost
    (iii) Bio compost
  (b) Crop residue management
(3) Bio fertilizers
(4) Integrated nutrient management
(5) Non-chemical weed control measures
(6) Biological pest management

An Introduction to Soil Health

Soil health can be defined as "the capacity of a specific kind of soil to function within natural and managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance soil and water quality, support human health and habitation" (Larson and Pierce, 1991). In simplest terms, Larson and Pierce, (1991) defined soil quality as "the fitness of soil for use" and Karlen et al., 1997 defined it as "the capacity of a soil to function".



Soil health is basically the integration of the soil physical, chemical and biological processes and function

The underlying principle in the use of the term "soil health" is that soil is not just an inert, lifeless growing medium, which modern farming tends to represent, rather it is a living, dynamic and ever-so-subtly changing whole environment. It turns out that soils highly fertile from the point of view of crop productivity are also lively from a biological point of view. It is a state of composite well-being in terms of biological, chemical and physical properties.

The term of soil health is used to assess the ability of a soil to

1. Sustain plant and animal productivity and diversity
2. Maintain or enhance water and air quality, and
3. Support human health and habitation
4. Soil health deal with both inherent and dynamic quality.

Influence of organic farming practices on soil properties

- Improve soil structure
- Increase water holding capacity
- Increase aeration
- Improve microbial activity

Green manuring effect on soil and crop

1) Macro and secondary nutrients
2) Micro nutrients
3) Yield of crops
4) Reclamation of alkali soils
5) Residual activities

Advantages of vermicompost on soil health

a) Favorable on soil biological life.
b) Increase water retention capacity of soil.
c) Increase the aeration of soil.
d) Promote establishment of microorganisms.
e) Production of better quality of compost.
f) Addition of auxins and actinomycetes.

Biofertilizer effect on soil health

- Biofertilizer are defined as "biofertilizers are the microbial inoculation which are capable of mobilizing nutritive elements required for the plants by fixing atmospheric nitrogen, solublizing and enhancing uptake of soil phosphorus and stimulating plant growth through synthesis of growth promoting substances and also help building up the microflora and in turn the soil in general"
- Generally biofertilizers are totally harmless, pollution free and low cost renewable agricultural inputs.

Conclusion

Organic farming is a welcome alternative by two angles for farmers, it is less financial draining, for the environment which will be less taxing to eco-system and would help to improve soil fertility. Quality of agricultural produce improves by organic manures than fertilizer because of the supply of all the growth principles besides all the essential plant nutrients. As a result metabolic function get regulated more effectively and hence improvement in the quality of produce. Food production of world fluctuates widely from place and year to year. As such, organic farming can ensure a ray of hope to sustain and increase productivity levels. The traditional organic farming coupled with bio-inputs like bio fertilizers, effective microorganisms and bio-pesticides may help to achieve the stability in agricultural production**.**

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