Organic Fertilizer

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Introduction

- **"An *organic fertilizer* refers to a soil amendment derived from natural sources that guarantees, at least, the minimum percentages of nitrogen, phosphate, and potash."**
- Virtually any organic material can be used as a fertilizer; however, materials vary considerably in the concentration of plant nutrients they contain and the rate which these nutrients are released for the plant use.

Why we use organic fertilizers?

- Our most important natural resource is the soil that is why it is crucial to save and protect it considering the present and also the future.
- It is our task to preserve the humus top soil and to increase its organic matter contents, to improve the nutrient providing ability and carry on an environment-friendly nutrient management.

Types of organic fertilizers

- Organic fertilizers can be grouped into the following categories;

1. Manures and composts
2. Green manures
3. Plant, stubble and root residues
4. Other fertilizers

1. Manure and compost

- Out of all the organic fertilizers, good quality manure is excellent source of organic nutrients, which consists of solid and liquid feces and litter.
- Fresh manure may be available from the livestock operations. Commercial, packaged manures generally contain composted material.

Animal manure and Compost

2. Green manure

- Green fertilizing is a method of organic fertilizing when a plant is produced for the purpose of turning its whole mass into the soil as a fertilizer before it begins to bloom.
- Green manures are crops grown for the express purpose of plowing them in, thus increasing the fertility through the incorporation of nutrients and organic matter into the soil.
- Leguminous plants such as clover are often use for this, as they fix nitrogen using ***Rhizobia*** bacteria in specialized nodes in the root structure.

3. Plant, stubble and root residues

- The roots of cultivated plants play a significant role in the maintenance of the fertility, digestion of nutrients and improving the structure of the soil.
- They have a great advantage on the organic manures that they homogenously net in the soil and in this way the organic material distribution is even.
- The amount of the root residues is considerable, in the upper 200 mm layer of the soil expressed in dry matter per hectare the values are the following: **peas** 600kg, **maize** 2500kg, **sunflower** 3900kg.

4. Other fertilizers

- **Peat**, is also suitable for organic fertilizing, primarily to correct the harmful characteristics of manures and sub serve composting.
- Its advantages are the great hygroscopic ability and bactericidal effect, which facilitate the use of malodorous materials and the considerable decrease of the number of pathogens.

4. Other fertilizers

- **Lime** is a naturally occurring material produced by crushing rocks containing high amounts of calcium and magnesium carbonates.
- The inhabitants of the coasts have been using the nutrient supply of the **algae** (***Fucaceae*** and **sea-weed**) to improve the soil for centuries.

Peat and lime

Fertilizer application method

- Organic materials can be broadcast on the surface and tilled or watered into soil, or applied in a narrow band on or beneath the surface.
- Two main types of broadcast applicators are available: the **drop spreader** and the **rotary spreader**

Factors effecting the nutrient availability

- Soil pH
- Organic matter
- Soil texture
- Climate
- Crop removal
- Soil compaction
- Nutrient interaction

Advantages of using organic fertilizers

- Soil structure
- Hydraulic conductivity
- Field capacity
- Reduced erosion
- Non-toxic food
- On farm production
- Low capital investment
- Employment
- Fertility of the soil
- Safe environment

Disadvantages of using organic fertilizer

- Takes longer time
- High demand and low supply
- Simple but messy and inconvenient