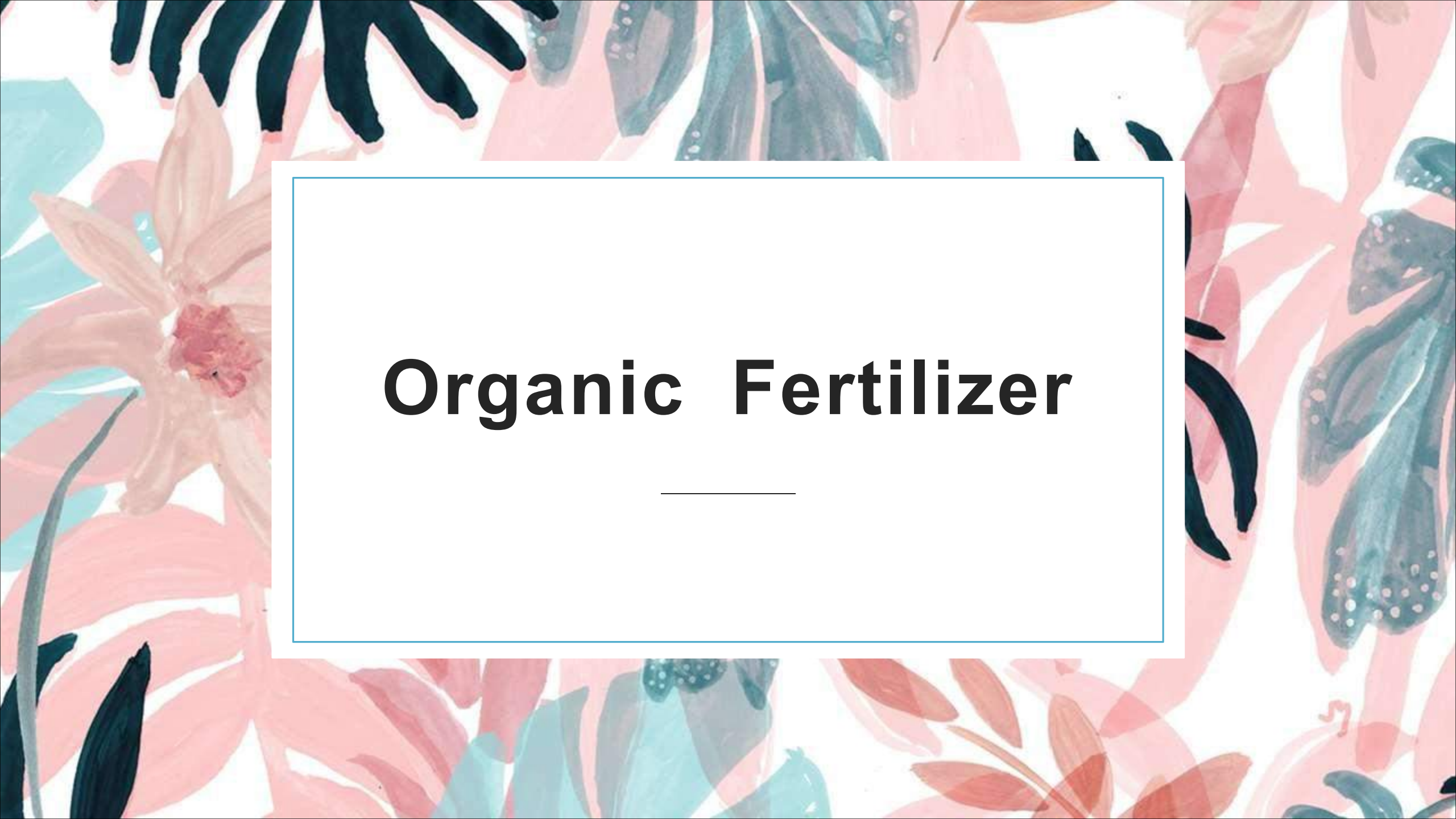


The background of the slide is a watercolor-style illustration of various plants. It features large, soft pink and peach-colored flowers, some with darker red centers. There are also green leaves and stems, some in shades of teal and dark green. The overall style is artistic and naturalistic.

Organic Fertilizer

Introduction

- **Importance of Fertilizer**
- **Type of Fertilizer**



INTRODUCTION - Importance of Fertilizer



- Plants need fertilizer as most soil does not provide the essential nutrients required for optimum growth.
- Even if the farmer start with great garden soil, the plants will absorb the nutrients to build those plant tissues and leave the soil less fertile as it grows.
- Thus, fertilizer is a must to replenish lost nutrients in the soil, provide essential nutrients for plants and ensure bumper harvest for farmer.

INTRODUCTION - Types of Fertilizer



Fertilizer can be divided into three main groups: Organic, Compound and Chemical Fertilizer.

Organic Fertilizer

- Derived from animal wastes, manure, slurry, and guano.
- Use probiotic to facilitate compost and fermentation process.

Compound Fertilizer

- Contains primary nutrients (eg. N, P, K)
- Primary nutrients are combined within each granule in consistent ratios.

Chemical Fertilizer

- Contains inorganic / synthetic material to sustain plant growth.
- eg. sulfuric acid and hydrochloric acid.



Organic Fertilizer have been selected as the best fertilizer as it can improve biodiversity.

INTRODUCTION - Organic Fertilizer



Conventional Organic Fertilizer

- For example: unprocessed chicken manure
- Animal manure contain many insect eggs and weed seeds.
- Larger C/N ratio
- If directly applied to the soil, they will decompose in the soil, and the fermentation will produce heat energy, which will affect the germination of seeds, the rooting of seedlings, and even the growth of plant roots.



Improved Organic Fertilizer

- For example: Fermentation of chicken manure
- Fermentation of animal manure will destroy insect eggs and weed seeds, and produce more organic components at the same times.
- Lower C/N ratio
- Remove the harm and improve the fertility of organic fertilizer.
- Provide desirable quantities of nutrients to plants and soils.



Organic Fertilizer

- Improve biodiversity (i.e., soil life) and long term productivity of soils and may also provide large repositories for carbon dioxide.
- Organic nutrients can increase the abundance of soil organisms by providing organic matter and micronutrients, such as, mycorrhizae (i.e., fungi that can aid plants in absorbing nutrients), and can significantly reduce the need for pesticide applications.
- Provide desirable quantities of nutrients to plants and soils.
- These needs are satisfied by **BioFert**.





B i o F e r t



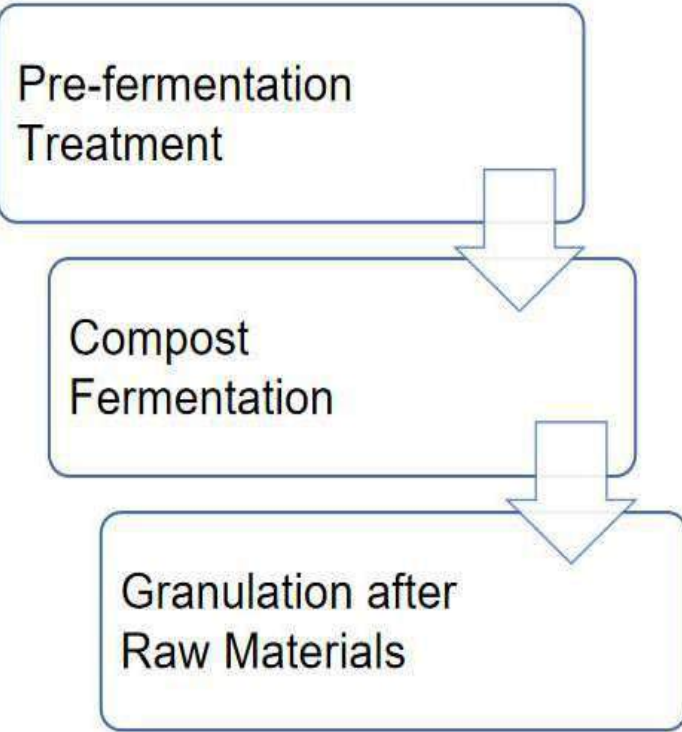
BioFert



- Win Men's patented *Bacillus* strains have strong decomposition ability, high microbial activity and proliferation rate..
- Addition of **BioFert** into chicken manure carried out anaerobic composting process.
- **BioFert** will activate high temperature composting to kill and decompose the pathogens and seeds present in the chicken manure.
- The inclusion rate is 1:200 in chicken manure for the first 12 days. Depending on the degree of dryness and wetness of chicken manure, the amount used could be increased or decreased.



Compost Process



- **1. Pre-fermentation Treatment**

Compost raw materials (chicken manure) are transported to the storage yard, then add **BioFert**, adjust the proportion and water, and allow it to compost.

- **2. Compost Fermentation**

The mixed raw materials (chicken manure) are arranged in windrow and allowed to ferment, the raw materials are turned over for about 2 days, water and nutrients are added. Initial moisture content for compost is about 40-45%. The fermentation temperature is controlled at 50 °C-65 °C, to kill the germs. During the fermentation, the raw materials are stirred if the temperature is too high by windrow turner or tank turner, and the fermentation cycle is about 10-12 days. The high temperature stage lasts for a few days, and the temperature will gradually decrease. The whole process takes around 45 to 60 days depending on the water content. At the end of composting, the moisture content must be less than 15%.

- **3. Granulation after Raw Materials (Optional)**

The finished compost products are crushed, and then they are granulated by the fertilizer granulator machine. The particles are sent to the dryer for drying.



Speciality of B i o F e r t



Specialities of BioFert

Kill germs, eggs and weed seeds from raw materials

杀死原材料中的病菌、虫卵和杂草种子

Provide plant nutrients

提供植物养分

Improve the effectiveness of soil nutrients

提高土壤养分的有效性



Balancing these fertilizer to function in soil

松弛土壤，让翻土更简单

Improve soil fertility and water retention

提高土壤的保肥和保水力

Improve soil structure

改良土壤结构



1. Kill germs, eggs and weed seeds from raw materials

杀死原材料中的病菌、虫卵和杂草种子



- Manure excreted by poultry typically contains a variety of pathogens, including *Salmonella*, Coliform, Fecal Coliform, Soil Transmitted Helminths (hookworm, Ascaris, and whipworm), *Campylobacter*, Avian Influenza and *Escherichia coli*.
- During the coposting process, **BioFert** will activate high temperature composting. By continuously heating for a short time, the growth of these organisms can be effectively controlled.
- Inactivation of pathogens and seeds is due to cell death, and cell death is largely based on the thermal inactivation of enzymes.



2. Provide plant nutrients 提供植物养分

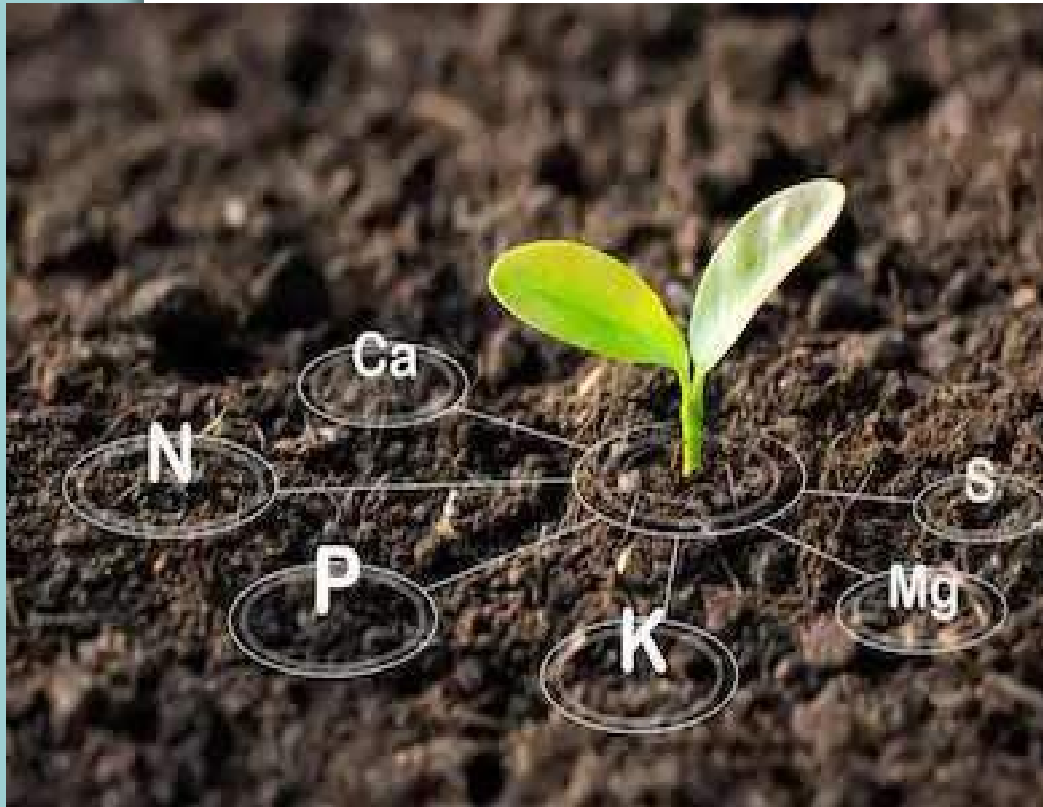
- **BioFert** aids in anaerobic compost of chicken manure.
- **BioFert** formulated with its special *Bacillus spp.* which facilitate the decomposition process during anaerobic compost.
- The fertilizer compost by **BioFert** maintain a relative balance of nutrients on plants as it provide necessary nutrients including
 - i. the necessary macronutrients - nitrogen, phosphorus, potassium, calcium, magnesium, sulfur
 - ii. Trace elements - iron, manganese, boron, zinc, molybdenum, copper, inorganic nutrients; amino acids, amides, nucleic acids, organic nutrients and active substances (vitamin B1, B6) and others.





3. Improve the effectiveness of soil nutrients

提高土壤养分的有效性



- **BioFert** acts to improve the effectiveness of soil nutrients by stabilize the manure.
- Stable manure contains large amount of microorganisms and various enzymes (protease, urease, phosphorylase), which promotes the organic nitrogen and phosphorus to become inorganic for crop absorption.
- Besides, it helps calcium, magnesium, iron, aluminum in the soil to form a stable complex, reduce the fixation of phosphorus and increase the effective phosphorus content.



4. Improve soil structure 改良土壤结构



BioFert can improve soil structure by

- decompose the organic residues to form the materials that make up humus molecules, such as polyphenols, nitrogen-containing organic compounds (amino acids, peptides, etc.)
- polyphenol oxidase secreted by microorganisms first oxidizes polyphenols to quinones. Then, quinone is condensed with amino acid or peptide to form humic monomer.
- Humic colloids promote the formation of soil aggregate structure, reduce bulk density, improve soil permeability, and coordinate water and air conflicts.
- It can also improve the buffering properties of the soil and improve the mineral poison field.



5. Improve soil fertility and water retention

提高土壤的保肥和保水力



- Stable manure after compost with **BioFert** is used as base fertilizer.
- **BioFert** nurture the soil with organic matter that reduces the dependency on chemical inputs, restore and maintain soil fertility to nurture plant growth, enhance the biological activity and biodiversity of soils.
- **BioFert** added manure improve water holding capacity of soils by increase soil aggregation, increase the total surface of pore, decrease bulk density and increase the number of small pores.
- Thus, it increase water holding capacity as greater tension is required to drain over small pores, soil holds water available for crop use, retaining it against the pull of gravity.



6. Balancing these fertilizer to function in soil

松弛土壤，让翻土更简单



- **BioFert** helps in soil nutrient management which is essential for sustainable biomass production and for maintaining soil quality.
- Organic manure increased soil pH, the soil concentrations of organic carbon, nitrogen, phosphorus, potassium, calcium, and magnesium.
- It increased soil nutrient availability due to increased soil microbial activity, the decomposition of harmful elements, soil structure improvements and root development, and increased soil water availability.
- Thus, **BioFert** can balancing these fertilizer to function well in soil compared to chemical fertilizer.



Conclusion



- With the increased desirability of environmentally friendly products, organic fertilizer products are becoming more popular.
- **BioFert** can kill germs, eggs and weed seeds from raw materials, provide plant nutrients, improve the effectiveness of soil nutrients, improve soil structure, improve soil fertility and water retention and balancing these fertilizer to function in soil.



Thank Y OU
