

An article on Mixed Fertilizers

Aashish Barfa

M.Sc. Scholar, Department of Agronomy, Choudhary Charan Singh Haryana Agricultural University, Hisar, Haryana

ARTICLE ID: 03

Introduction

Mixed fertilizers, also known as compound fertilizers, are a blend of two or more primary nutrients that are essential for plant growth and development. They are widely used in modern agriculture and horticulture to improve soil fertility and increase crop yield. Mixed fertilizers are composed of varying proportions of nitrogen (N), phosphorus (P), and potassium (K), as well as other secondary and micronutrients. There are several types of mixed fertilizers, including NPK fertilizers, which contain a balanced combination of nitrogen, phosphorus, and potassium. Other mixed fertilizers may include secondary nutrients such as calcium, magnesium, sulfur, and some are contain micronutrients such as iron, boron, zinc, etc. which are essential for plant growth but required in smaller quantities. Some mixed fertilizers are also formulated with slow-release nutrients, which are gradually released over time to provide a sustained nutrient supply to plants.

Types of mixed fertilizers

Open formula mixed fertilizer

In this case, the manufacturing firms disclose the names and quantities of the straight fertilizers that are constituents of the mixed fertilizer.

Close formula mixture

In this case, the manufacturing firms do not disclose the names and quantities of the straight fertilizers that are constituents of the mixed fertilizer.

Materials used to make mixed fertilizers

- Straight fertilizers are the primary materials used for making the mixed fertilizer. They supply the fertilizer element required in the proper amount to the soil.
- Some low grade organic materials are added to the mixed fertilizer in order to prevent caking, and to maintain them in a good physical condition. These organic materials (peat, paddy husk etc.) are called conditioners.



- Some basic material like Dolomite is added to neutralize acidity if the fertilizer mixture produces acids.
- Some materials like finely ground ash, soil etc. are added to make up the difference between the weight of the fertilizer necessary to supply the plant nutrients and the desired quantity of fertilizer mixture as filler.

Important principles must be taken into consideration while preparing mixed fertilizers

- All fertilizers containing ammonia are not mixed directly with the basic fertilizers (e.g. RP, limestone, basic slag, CaCN_2) as reaction will take place resulting in the loss of gaseous NH_3 .
- The water-soluble phosphates are not mixed with those materials which contain free lime (e.g. lime stone, CaCN_2) as there will be reaction towards the reversing of water – soluble phosphate to water – insoluble phosphates.
- Hygroscopic fertilizers are not included as they will facilitate caking up.
- The acidic fertilizers are likely to produce some free acids which may damage the container or packing materials

Advantages of mixed fertilizers

One of the main advantages of mixed fertilizers is that they provide a balanced nutrient supply to plants. Different crops have different nutrient requirements at different stages of their growth cycle. For example, during the vegetative stage, plants require more nitrogen for leaf and stem growth, while during the reproductive stage, they need more phosphorus and potassium for flower and fruit development. Mixed fertilizers can be tailored to meet the specific needs of different crops, based on their growth stages and soil conditions.

- Two or more fertilizer elements are added together to make a mixed fertilizer to be applied to the field. Less labour is therefore required for the application of a mixed fertilizer.
- Mixed fertilizers can be easily drilled in the field because they are in a good physical condition.
- Mixed fertilizers are also cost-effective, as they can be produced and distributed more efficiently than single-nutrient fertilizers.
- By combining multiple nutrients in a single product, farmers and growers can save time and money on fertilization practices.

Disadvantages of mixed fertilizers

However, the use of mixed fertilizers has some disadvantages as well. The exact nutrient composition of mixed fertilizers can vary widely between brands and manufacturers, which can make it difficult for farmers and growers to determine the correct application rate for their crops. Overuse of mixed fertilizers can also lead to soil nutrient imbalances and environmental pollution, as excess nutrients can leach into waterways or create soil acidity.

- The use of mixed fertilizer does not permit application of individual fertilizer elements, which may be required by the crop at specific times.
- The illiterate farmer cannot effectively control the quantity of plant food present in the mixture. He has to rely entirely on the grade advertised by the firms.

Conclusion

Mixed fertilizers are an important tool for modern agriculture and horticulture. They provide a balanced nutrient supply to plants, are cost-effective, and can help to reduce soil nutrient imbalances. However, farmers and growers should take care to select the appropriate mixed fertilizer for their crops and use it in accordance with recommended application rates to avoid negative environmental impacts.

