

Effect of Phosphatic Biofertilizers on Growth of Millets

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Introduction

The millets are Group of small-seeded grasses widely grown around the world as cereal crops. Millets are important crops in the semi-arid tropics of Asia and have short growing season. The similarities of millets are that they are all grown under extreme environmental conditions, especially those of inadequate moisture and poor soil fertility which are poorly suited to the major crops of the world. Millets are recently re-emerging as a vital dietary food crop, owing to increased public awareness due to its high nutritional value, high fibre with proteins, minerals and essential amino acids in general and in particular to micronutrients availability.

Health Benefits of Millets

Millets are rich in several beneficial nutrients, such as phosphorus, magnesium, copper, and manganese. Incorporate them into your diet to gain the following benefits.

1. Millets Aids Weight Loss
2. Millets Keeps Your Blood Sugar Levels Low
3. Millets Boost Your Immunity
4. Millets Reduces Cardiovascular Risks
5. Millets Prevents Asthma
6. Millets Helps Your Digestion
7. Millets Acts as an Antioxidant

Biofertilizers

Biofertilizer is a substance which contains selective strains of microorganisms which can contribute nutrients to plants through microbial activity. Use of phosphatic biofertilizers to solubilize insoluble phosphate compounds as an alternate strategy to phosphatic fertilizers.

Use of microorganisms as bio-fertilizers, on the other hand, has gained much interest in recent era due to their promising effect on growth and yield of plant as well as soil fertility. Bio-fertilizers are also environment friendly and cost effective. Phosphate solubilising bacteria (PSB) secrete organic acids that dissolve unavailable P (PO_4^{3-}) to plant available forms such as HPO_4^{2-} and H_2PO_4^- during acidification process, the pH may decrease from 7.0 to as low as 2.0. Among acids, gluconic acid is the most frequent organic acid produced by PSB. Gluconic acid is mainly produced in bacteria by an enzyme glucose dehydrogenase in direct oxidation pathway of glucose. Mycorrhizae fungi which constitute a group of important soil micro organisms are ubiquitous throughout the world are known to improve the plant growth through better uptake of nutrients.

Methods of application of biofertilizers

1. Seed treatment
2. Seedling root dipping
3. Mainfield application

Benefits of biofertilizers

- ✚ It improves the soil chemical and physical properties.
- ✚ Replace chemical fertilizers by 20-25%.
- ✚ Increase crop yield by 20-30%.
- ✚ B:C ratio derived from bio-fertilizers is always higher.
- ✚ Bio-fertilizers are eco-friendly.
- ✚ Cheap and have easy application methods.
- ✚ Stimulate plant growth.
- ✚ Reduce the pressure on non-renewable nutrient sources/fertilizer
- ✚ Biofertilizers can act as a renewable supplement to chemical fertilizers and organic manures.
- ✚ Restore natural soil fertility.
- ✚ Increase germination percentage.

Conclusion

- Promotes plant growth by production of growth promoting substances and enhanced the activity of phytohormones like cytokinin and indole acetic acid in plants and there by enhanced the availability of phosphorus and other nutrients in the soil.



- Increase nutrient availability and nutrient uptake by solubilization and mobilization of nutrients in soil solution.

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