Biofertilizers – Great use in gardening.

Its critical role lies in providing microorganisms that directly or indirectly support plants in achieving good yields and production. All plants require nutrients for their survival, classified into macro and micro nutrients. Macro nutrients, such as nitrogen, phosphorus, and potassium, play a crucial role in vital plant growth, while micro nutrients are needed in smaller quantities, impacting factors like yield and resistance to pests and diseases. Bio-fertilizers play a significant role in helping plants absorb these essential macro and micro nutrients. Maintaining the right soil pH is essential, as low pH can reduce the availability of macro nutrients, while high pH can affect micro nutrient availability. A diverse microorganism population in the soil indicates good or nutrient-rich soil.

Types of bio-fertilizers

Various types of bio-fertilizers offer substantial benefits to plants:

1. Azospirillum bacterial inoculant is a vital fertilizer that fixes nitrogen and absorbs 1-10 kg of nitrogen per hectare from the air. It supplies nitrogen to plants in the form of ammonia. This plant growth-promoting bacteria colonizes the roots of many plant species, promoting growth through the production of metabolites like auxins. These hormones increase the number of lateral roots and enlarge root hairs, facilitating greater nutrient and water absorption. Additionally, it confers resistance to salinity, drought, and acidic conditions.
2. Phospho bacterial inoculant, also known as phosphorus-solubilizing bacteria, converts insoluble phosphorus

into an easily available form for plants. Normally, 95-99% of soil phosphorus is insoluble, but this bio-fertilizer can solubilize 25-50% of insoluble phosphate, aiding plants in absorbing this essential nutrient. When used in combination with nitrogen-fixing bacteria, it promotes plant growth and increases yield by approximately 30%.

3. Potassium-solubilizing bacteria convert insoluble potassium minerals into a soluble form that plants can easily absorb.
4. Vesicular arbuscular mycorrhiza is a type of fungus with the ability to dissolve abundant phosphates in the soil. It provides plants with the necessary strength to resist diseases, pests, and unfavorable weather conditions.

A combination of these four bio-fertilizers creates an excellent blend suitable for any type of plant, providing numerous benefits to support their growth and development.