

A Review :

BIOFERTILIZER MAY BE A SUBSTITUTE OF CHEMICAL FERTILIZER

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Biofertilizer are microbial inoculants which are capable of mobilizing nutritive elements from nonsoluble to soluble form through Biological process. They have attained a special significance in modern Horticulture. It is cost effective and do not required energy during their production. Biofertilizers are eco friendly and very useful for sustainable horticulture production. Biofertilizers are useful in increasing yield, quality and production of crops when they are used in combination with organic manure and organic fertilizers in a balanced production. The top soil, from which our horticultural or other crops are harvested, our animal graze is normally very much alive with a large number of bacteria, fungi, worms and other creature which in rich the humus and help to produce the nutrient take-up by the plants and later by the animals. Fertilizers enrich soil but do not support the microbial life and hence there is less humus and less released nutrients. Soil had head the gets depleted and even become prone to erosion by wind and rains. Chemical fertilizers makeup only a few mine roles to the plant where as biofertilizers all the macro and micro nutrients. Many crops show potassium deficiency because of excessive use of nitrogen based fertilizer. Excessive potassium dose decrease available nutrient in horticultural crops such as vitamins, acid and carotene. There are several examples in which less or excessive use of chemical fertilizers cased several diseases and physiological disorder in horticultural plants. Due to high cost of chemical fertilizers and poor purchasing capacity micro-organism have been used for there eco friendly and beneficial effect on environment and horticultural crops.

Biofertilizers are not alternative of

chemical fertilizers but they are useful in increasing yield, quality and production of horticultural crops when they are used with chemical fertilizers. Biofertilizers that can be used in horticulture for nitrogen fixing and phosphate solubilizing etc. Important biofertilizers which are used in horticultural crops are being listed in the Table 1.

Rhizobium :

Lenguminous horticultural crops can obtain their nitrogen from the genus Rhizobium located in swelling on the roots called nodules. It forms symbiotic association with roots of leguminous crops. They are two type

- 1) Slow growing (Brady Rhizobium sp.)
- 2) Fast growing rhizobia (Rhizobium sp.).

A list of slow growing and fast growing Rhizobium is given in Table 2.

Rhizobium can fix 50 to 300Kg nitrogen per ha. in various leguminous horticultural crops. The process of nodulation is quite well understood as leguminous crops grown through soil the released chemicals through roots of leguminous crops which attract the required rhizobium species to the roots surface and stimulate their growth .The association of roots and rhizobium forms nodule on roots surface which appears reddish in colour due to formation of leghaemoglobin. Sometimes nodulation take place but nitrogen fixation does not occur these nodules appears green in colour. It is due to not formation of leghaemoglobin. Rhizobium can be applied by:

Seed treatment:

Seeds of many leguminous horticultural crops are treated with rhizobium and gur mixture before the

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