

## Effect of organic and inorganic sources of nitrogen and biofertilizers on growth and yield of cabbage (*Brassica oleracea* var. capitata)

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### ABSTRACT

A field experiment was conducted to find out the effect of organic and inorganic sources of nitrogen and biofertilizers on growth and yield of cabbage Cv. Golden Acre. Twenty treatment combinations comprised of four levels of sources of nitrogen and five levels of biofertilizers were laid out in factorial randomized block design with two replications. The fertilizer combination 75% RDN through inorganic fertilizer + 25 % N through FYM along with biofertilizer combination *Azotobacter* + PSB + VAM were found superior than other treatments for growth characters (height of plant, number of leaves, diameter of stem, plant spread) and yield of cabbage.

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**Key words :** Biofertilizers, Organic nitrogen sources, Cabbage growth, Yield

### INTRODUCTION

Vegetables are protective food, providing vitamins, minerals, proteins, carbohydrates and fibre in the diet besides having medicinal value. Being second largest country in vegetable production. India is still unable to meet the per capita requirement of vegetables. Plant nutrients are essential for the production of crop and healthy food for expanding population. Consistent and indiscriminate use of organic fertilizers have caused serious damage to the soil and ecology and the population of beneficial micro-organisms present in the soil reduced due to excessive use of chemical fertilizers. Many researchers showed that organic manures in combination with inorganic form of nitrogen increased the quality of fruits and vegetables. Currently use of microbial inoculants in supplements with nitrogen, potassium, phosphorus and other micronutrients has attained immense importance. Hence, keeping in view these facts, the present investigation was undertaken to assess the effect of organic and inorganic nitrogen sources and biofertilizers on growth and yield of cabbage.

### MATERIALS AND METHODS

The field experiment was conducted at the experimental farm of Department of Horticulture, Marathwada Agricultural University, Parbhani with cabbage cv. GOLDEN ACRE. The soil of the experimental field was black cotton soil with pH 8.17. The experiment was laid out in factorial randomized block design replicated twice. Treatments consisted of four levels of sources of

nitrogen, viz., F<sub>1</sub>, (100 % RDN through inorganic fertilizer), F<sub>2</sub> (100 % RDN through FYM), F<sub>3</sub> (75 % RDN through inorganic fertilizer + 25 % N through FYM) and F<sub>4</sub> (50 % RDN through inorganic fertilizer + 50 % N through FYM) and five levels of biofertilizers i.e. B<sub>0</sub> (No biofertilizers), B<sub>1</sub> (*Azotobacter*), B<sub>2</sub> (*Azotobacter* + PSB), B<sub>3</sub> (*Azotobacter* + PSB + VAM) and B<sub>4</sub> (*Azotobacter* + PSB + VAM + EM). Seeds were sown on raised beds in a row at 10 cm apart on 25<sup>th</sup> September, 2009. Spraying of insecticide, weeding and watering were done on raised beds. Also ploughing, harrowing and manuring were done on experimental field. FYM was applied before 8 days of transplanting to only FYM treatments plots. The inorganic fertilizers was applied in two split doses, first dose (1/2 N and full P, K) was applied at the time of transplanting and remaining N was applied 30 days after transplanting. Ridges and furrow were opened at spacing of 45 cm. For biofertilizer treatments seedlings were dipped in slurry of biofertilizers for 10-15 minutes before transplanting. The observations on growth and yield parameters were recorded on five randomly selected plants from each plot.

### RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been presented under following heads :

#### Effect on growth:

The data on growth characters as influenced by various sources of nitrogen adopted are presented in Table