

## **INFLUENCE OF INTEGRATED NUTRIENT MANAGEMENT ON VEGETATIVE GROWTH PARAMETERS OF MARIGOLD (*Tagetes erecta* L.)**

PRAVINA T. GOTMARE, M. M. DAMKE, V. S. GONGE AND SNEHAL DESHMUKH

See end of article for authors' affiliations

Correspondence to :  
**PRAVINA T. GOTMARE**  
Department of Horticulture,  
College of Agriculture,  
NAGPUR (M.S.) INDIA

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### **ABSTRACT**

Different chemical and biofertilizers were tried at different levels to study the effect of integrated nutrient management on vegetative growth of marigold. Regarding the growth parameters viz. height of the plant, number and length of primary branches and stem diameter increased subsequently at all the growth stages of the crop and at 90 DAT, significantly maximum height of the plant (119.60 cm), number of primary branches per plant (13.26), length of the primary branches (36.50cm) and stem diameter (2.47cm) were recorded in the treatment receiving 70% RDF + *Azospirillum* 5 kg ha<sup>-1</sup> + PSB 5 kg ha<sup>-1</sup>. Also this treatment showed maximum fresh weight of shoots (232.66 g) and roots (94.33 g) and total dry matter weight (100.35 g). However, the standard with recommended dose of fertilizers was found to be the second best treatment.

**Key words:** *Tagetes erecta*, Integrated Nutrient Management, Growth.

**I**n modern agriculture, the use of chemical fertilizers is an essential ingredients for keeping sustainability of yield, but it poses problems to soil health in long span of time. Therefore, it is necessary to restrict the use of chemical fertilizers to certain limit. The current trend is to explore the possibility of supplementing chemical fertilizers with organic fertilizers especially with biofertilizers of microbial origin alone or in combination with limited use of chemical fertilizers. Biofertilizers like *Azospirillum* help to substitute about 20 kg N ha<sup>-1</sup> (Chandra and Chauhan, 2004). Phosphate solubilizing microorganisms include different groups of micro-organism like bacteria and fungi which convert insoluble inorganic phosphate compounds into soluble form. Inorganic manures like vermicompost maintain and enhances the quality of environments and it conserves natural resources like soil fauna and soil fertility which are important for sustainable agriculture (Lal *et al.*, 2003). Presently, there is no information available on reduced doses of chemical fertilizers in combination with biofertilizers. Hence keeping this in mind, an experiment was undertaken to study the influence of integrated nutrient management on growth of Marigold.

### **MATERIALS AND METHODS**

The experiment was laid out in Randomized Block Design (RBD) with ten treatments and three replications at Horticulture section, College of Agriculture, Nagpur during *Kharif* season of 2005-06. Seed of Marigold

variety African Double Orange was made available from Pocha Seeds Company, Pune. These seeds were sown on raised bed on dated 7<sup>th</sup> June, 2005. The uniform sized and healthy seedlings were selected for the transplanting and transplanting was done on dated 7<sup>th</sup> July, 2005 in the experimental plots which were prepared earlier. Biofertilizers i.e. *Azospirillum* and phosphate solubilizing bacteria were applied in the soil at the time of transplanting. Soil mixture each of *Azospirillum* and PSB was prepared separately. For the preparation of dose of *Azospirillum* the ratio was maintained as 5 kg *Azospirillum* + 150 kg soil which was sufficient for one hectare area. For each plot of 8.64 m<sup>2</sup> the mixture was thoroughly mixed in the soil according to the treatment.

For the preparation of dose of phosphate solubilizing bacteria (PSB) the ratio was maintained as 5 kg PSB + 150 kg soil which was sufficient for one hectare area. And thoroughly mixed mixture was prepared for 8.64 m<sup>2</sup> for treatmentwise application. According to treatments, the dose of vermicompost was calculated and it was mixed in the soil of the experimental plots. Fermented dung slurry was prepared in the ratio of 40 kg cow dung + 3 litres of urine + 200 g Jaggary + 125 litres of water. It was kept for fermentation for 8 days. This was applied to the experimental plots according to the treatments in four split doses after transplanting at an interval of twenty days.

For recording the observations, the technique of random sampling was adopted and five plants per net plot were randomly selected in each treatment from all the replications for recording the observations on growth characters like plant height, per plant primary branches, length of primary branches and diameter of stem. These