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# Response of chemical and biofertilizer on growth and yield of African marigold (*Tagetes erecta* L.) cv. PUSA NARANGI GAINDA

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## ABSTRACT

A study was conducted to know the effect of chemical and biofertilizers on growth and yield in African Marigold (*Tagetes erecta* L.) cv. PUSA NARANGI GAINDA during the winter season of 2003-04. Among the different treatments, the application of chemical fertilizer (200 kg N, 80 kg P, 80 kg K) and biofertilizer (VAM 10kg/ha) recorded the maximum value of growth characters *viz*., plant height, diameter of main stem, spread of plant along the row, spread of plant across the row, number of primary branches per plant, length of the longest primary branch, number of leaves on the longest primary branch, fresh weight of plant canopy, dry matter content of main stem (%), dry matter content of primary branches (%), number of primary branches per plant at commencement of blooming, plant height at first blooming, number of flower heads per plant, weight of flower heads per plant, yield of flower head (q/ha), size of the flower head in first picking, size of the largest flower head in last picking, duration required for the visibility of first flower head and duration required for the first blooming were considered as superior treatment.

**Key words :** Chemical fertilizers, Biofertilizers, VAM, African marigold.

African marigold (*Tagetes erecta* L.) belongs to family Asteraceae or compositae and is a popular flower crop grown in India on commercial scale. Therefore, there is a strong need to boost the production of this flower crop. It has been established that nutrients *i.e*. chemical and biofertilizers play an important role in improvement of growth, yield and flower quality in flower crops. Balance supply of nutrients combined with appropriate cultural practices are important for obtaining higher yield of quality flowers in marigold. Therefore, attempt was made to study the effect of chemical and biofertilizers on growth and yield of African marigold (*Tagetes erecta* L.) cv. PUSA NARANGI GAINDA.

## MATERIALS AND METHODS

The field experiment was conducted at RBS College Agricultural Farm, Bichpuri (Agra) during the winter season of 2003-04. The experimental site is situated at 27.2$^0$N latitude, 78.50$^0$E longitude and at the height of 168 m above the mean sea level. The soil of the experimental field is genetic-alluvial and sandy loam in texture with a calcareous layer at the depth of about 1.50 – 2.00 meters and is well drained, with pH 7.5. The treatments consist of four combination of chemical fertilizer *i.e*. $F_0$ (no fertilizer), $F_1$ (200 kg N, 80 kg P, 80 kg K ha$^{-1}$), $F_2$ (150 kg N, 60 kg P, 80 kg K ha$^{-1}$), $F_3$ (100 kg N, 40 kg P, 80 kg K ha$^{-1}$); three combinations of biofertilizers *i.e*. $B_0$ (No fertilizers), $B_1$ (10 kg VAM ha$^{-1}$), $B_2$ (21 kg phosphobacterine) comprising 12 treatments combination of chemical and biofertilizers laid out in a randomized block design with three replication in variety Pusa Narangi Gainda. The observations on different growth and flowering characters were recorded time to time.

## RESULTS AND DISCUSSION

### *Effect of chemical fertilizers (NPK) :*

Different levels of chemical fertilizer significantly influenced the plant growth characters (Table 1). The chemical fertilizer affected all parameters significantly and their maximum values were recorded when chemical fertilizer NPK @ 200 : 80 : 80 kg ha$^{-1}$ was applied at transplanting followed by 150 : 60 : 80 kg ha$^{-1}$ which was *at par* for most of the characters. Raghava and Saxena (2001) suggested application of nitrogen 200 kg phosphorus 80 kg and potash 80 kg per ha for getting good vegetative growth and flower production of African marigold. Raghava (1998) recommended 120 kg Nitrogen, 80 kg phosphorus and 80 kg potash per ha with 40 x 40 cm$^2$ plant spacing for successful commercial cultivation of African marigold variety Pusa Narangi Gainda.

### *Effect of biofertilizers :*

Twenty one morphological characters of African marigold var. Pusa Narangi Gainda are shown in Table 1.