

Effect of biofertilizers on growth, flowering and yield of gladiolus

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ABSTRACT

An experiment entitled, "Effect of biofertilizers on growth, flowering and yield of gladiolus," was carried out at the field of Floriculture Nursery, Parks and Garden Unit, C.R.S., Dr.PDKV, Akola (M.S.) with 13 treatments and three replications. The treatments were comprised of *Azotobacter* and *Azospirillum* with reduced doses of nitrogen. Results obtained in the present experiment suggest that, use of biofertilizers with reduced doses of nitrogen significantly influenced the growth, flowering and yield of gladiolus. The growth parameters like number of leaves, plant height, flowering parameters like days required for emergence of spikes, days required for opening of first pair of florets, days required for 50% flowering, yield contributing characters like number of florets per spike, number of spikes per plant, number of spikes per plot and per hectare, corms and cormels per plant and per hectare were positively influenced by the application of both the biofertilizers in combination with nitrogen and it was maximum under 75% N + 100% PK (375:200:200kg NPK ha⁻¹) + *Azotobacter* + *Azospirillum* and at par with the treatment 100% NPK(500:200:200kg ha⁻¹ + *Azotobacter* + *Azospirillum*). Thus there was 25% saving of nitrogenous fertilizer which was replaced by the biofertilizers.

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Gladiolus (*Gladiolus* spp.) is one of the most important cut flower crop grown for its magnificent spike and useful both as cut flower and garden display. However, gladiolus is a heavy feeder crop and the use of chemical fertilizers has caused serious damage to the soil rendering them, oftentimes, saline and less suitable for cultivation. On the other hand, biofertilizers offer an economically attractive and ecologically sound means of reducing external inputs and improving the quality and quantity of internal sources. Biofertilizers like, *Azotobacter* and *Azospirillum* are group of free-living, aerobic, non-symbiotic nitrogen fixing bacteria, which can save addition of chemical fertilizers by 10-20%. In view of above, the study was undertaken at the field of Floriculture Nursery, Parks and Garden Unit, C.R.S., Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

MATERIALS AND METHODS

The present study entitled "Effect of biofertilizers on growth, flowering and yield of gladiolus cv. DABONAIR" was carried out at the farm of Floriculture Nursery Unit, Central Research Station, Dr. Panjabrao Deshmukh Krishi Vidyapeeth Akola during the year 2005-2006 to record the yield parameters of gladiolus like corms and cormels per plant and per hectare.

The soil of experimental plot was rich in potash with good water holding capacity, fairly good drainage and reasonably suitable for cultivation of gladiolus. The experimental plot was laid out in three replications in

randomized block design with 13 treatments [T₁ -500 kg N ha⁻¹ + *Azotobacter*, T₂ - 500 kg N ha⁻¹ + *Azospirillum*, T₃ -500 kg N ha⁻¹ + *Azotobacter* + *Azospirillum*, T₄ - 375 kg N ha⁻¹ + *Azotobacter*, T₅ -375 kg N ha⁻¹ + *Azospirillum*, T₆ -375 kg N ha⁻¹ + *Azotobacter* + *Azospirillum*, T₇ -250 kg N ha⁻¹ + *Azotobacter*, T₈ -250 kg N ha⁻¹ + *Azospirillum*, T₉ -250 kg N ha⁻¹ + *Azotobacter* + *Azospirillum*, T₁₀ -0 kg N ha⁻¹ + *Azotobacter*, T₁₁ -0 kg N ha⁻¹ + *Azospirillum*, T₁₂ -0 kg N ha⁻¹ + *Azotobacter* + *Azospirillum* and T₁₃ -Control (without chemical and biofertilizers)]. Common dose of P and K (200:200 kg ha⁻¹) was applied to all the treatments except control. At the time of field preparation FYM @ 10 tones per hectare was applied to the experimental plot and it was mixed thoroughly in the soil. The experimental area was laid out in 39 flat beds of 2.10 m x 2.10 m size each. The chemical fertilizers were applied as per the treatment combinations to each plot. The selected corms were sown by soaking them in the slurry of *Azotobacter* and *Azospirillum* (250gm l.⁻¹ water) as per the treatment combinations at the spacing of 30 x 30 cm in each plot on 5th October 2005.

Five plants were selected randomly from each net plot and were labelled for recording observations throughout the study. Observations were grouped under four sub headings viz., Growth studies, Flowering and Yield contributing characters. At the end of experiment the corms and cormels were taken out from the plot and the observations in respect of corms and cormels per plant