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“EFFECT OF BIOSTIMULANTS AND BIOFERTILIZERS ON
GROWTH, FLOWER YIELD AND QUALITY OF TUBEROSE
(Polianthes tuberosa L.) CV. PRAJWAL”

ABSTRACT

Key words: Biostimulants, Biofertilizers, Tuberose, Prajwal.

The present experiment entitled “Effect of biostimulants and biofertilizers on growth, flower yield, and quality of tuberose (Polianthes tuberosa L.) cv. Prajwal” was carried out at Lal Baugh Farm, Department of Horticulture, College of Agriculture, Junagadh Agricultural University, Junagadh, during March 2016 to February 2018. The experiment was laid out in Randomized Block Design with Factorial concept (FRBD) consisting two factors with three replications. The treatment comprised with five biostimulants viz., Without spray of biostimulants, Banana pseudostem sap @ 1 %, Seaweed extract @ 1 %, Panchgavya @ 3 %, Humic acid @ 0.2 % and three treatments of biofertilizers i.e. Without biofertilizers, Azotobacter @ 2 ml/m² + PSB @ 2 ml/m² + KSB @ 2 ml/m² and Azotobacter @ 3 ml/m² + PSB @ 3 ml/m² + KSB @ 3 ml/m².

The results of the study indicated that foliar application of humic acid @ 0.2 % significantly improved the plant height (78.58 cm) at full bloom stage, number of leaves per clump (35.85), leaf area (124.42 cm²), plant spread from North to South direction (37.95 cm), plant spread from East to West direction (38.38 cm), length of spike (116.22 cm), length of rachis (38.79 cm), In-situ longevity of spike (15.05 days), vase life (6.75 days), fresh weight of whole spike (192.96 g), total number of spikes per plant (3.22), number of spikes per net plot (38.60), number of spikes per hectare (3.57 lakh no.), number of bulbs (3.65) and bulblets (12.03) per plant, number of bulbs (43.76) and bulblets (144.40) per net plot, number of bulbs (4.05 lakh no.) and bulblets (13.37 lakh no.) per hectare, weight of bulbs and bulblets per plant (204.53 g), nitrogen content in leaf (0.74 %), phosphorus content in leaf (0.82 %) and potash content in leaf (0.80 %). While, minimum days required for emergence of first spike (87.03 days), opening of first floret after rachis emergence (7.68 days), diameter of floret (4.45 cm) and maximum number of florets per spike (37.87) was obtained in
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the treatment of panchgavya @ 3.0 %. However, soil EC, soil pH, available soil nitrogen, phosphorus and potash were found non-significant due to biostimulants.

In case of biofertilizers, the variation was also found significant. The maximum plant height at full bloom stage (79.47 cm), number of leaves per plant (36.74), leaf area (125.83 cm²), plant spread from North to South direction (37.41 cm), plant spread from East to West direction (37.87 cm), minimum days required for emergence of first spike (86.87 days) and opening of first floret (7.73 days), maximum length of spike (117.11 cm), length of rachis (39.10 cm), diameter of floret (4.45 cm), In-situ longevity of spike (14.99 days), vase life (6.88 days), fresh weight of whole spike (194.59 g), total number of spikes per plant (3.36), number of florets per spike (38.22), number of spikes per net plot (40.31), number of spikes per hectare (3.73 lakh No.), number of bulbs (3.53) and bulblets (12.28) per plant, number of bulbs (44.64) and bulblets (147.36) per net plot, number of bulbs (4.13 lakh no.) and bulblets (13.64 lakh no.) per hectare, weight of bulbs and bulblets per plant (208.31 g), nitrogen content in leaf (0.73 %), phosphorus content in leaf (0.81 %) and potash content in leaf (0.79 %), available soil nitrogen (144.82 kg ha⁻¹), phosphorus (25.77 kg ha⁻¹) and potash (261.53 kg ha⁻¹) in soil was observed in the treatment Azotobacter @ 3 ml/m² + PSB @ 3 ml/m² + KSB @ 3 ml/m². However, the effect of biofertilizers on soil EC and pH was found non-significant.

The interaction effect of biostimulants and biofertilizers also significantly influenced the growth, flowering yield and quality of tuberose. Significantly maximum plant height at full bloom stage (81.23 cm), number of leaves per clump (38.50), leaf area (128.62 cm²), length of flower spike (118.87 cm), length of rachis (39.71 cm), In-situ longevity of spike (16.26 days), vase life of spike (7.17 days), fresh weight of whole spike (197.83 g), number of spikes per plant (3.81), number of spikes per net plot (45.75), number of spikes per hectare (3.24 lakh No.), number of bulbs (4.19) and bulblets (13.82) per plant, number of bulbs (50.25) and bulblets (165.82) per net plot, number of bulbs (4.65 lakh no.) and bulblets (15.35 lakh no.) per hectare and weight of bulbs and bulblets per plant (234.40 g) was recorded in combined application of humic acid @ 0.2 % with Azotobacter @ 3 ml/m² + PSB @ 3 ml/m² + KSB @ 3 ml/m² during the both year. While, maximum number of florets per spike (38.81) was observed in treatment combination of panchgavya @ 3.0 % with Azotobacter @ 3 ml/m² + PSB @ 3 ml/m² + KSB @ 3 ml/m² during the both year.

As far as the economics point of view the maximum net realization (₹ 7,85,100 ha⁻¹) along with cost benefit ratio (4.60) was obtained in treatment combination of humic acid @ 0.2 % with Azotobacter @ 3 ml/m² + PSB @ 3 ml/m² + KSB @ 3 ml/m².