

Studies on the Effect of Plant Growth Regulators on Growth, Development, Flowering, Corm and Cormlet Production of *Gladiolus* (*Gladiolus Grandiflorus* L.)

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Abstract—An experiment was conducted following randomized block design at the instructional field of the Department of Floriculture, Medicinal and Aromatic Plants, Faculty of Horticulture, UBKV, W.B. in 2013-2014 to study the effect of plant growth regulators on growth, development, flowering, corm and cormlet production of *Gladiolus* (*Gladiolus grandiflorus*) cv. American Beauty. Three different plant growth regulators viz., Gibberellic acid (GA3), N-6 Benzyladenine (BA) and Triacantanol each at 3 different levels (25 ppm, 50 ppm and 100 ppm) were applied on *Gladiolus* and the effect was compared with control (distilled water) plants. Each treatment was replicated thrice.

In the present experiment, application of GA3 @ 25 ppm increased the initial leaf length (10.05 cm), leaf chlorophyll content (62.30 SPAD value), anthocyanin content of florets (0.43 A525 value) and induced earliness in flowering (66.96 days). Application of GA3 @ 50 ppm increased the phenol content of leaves (1.84 mg/ g of fresh wt.), spike length (77.02 cm), production of floret per spikes (13.00), non-reducing sugar content of corms (0.665 mg/ g of fresh wt.) and corm protein content (6.02 mg/g of fresh wt.) whereas, GA3 @ 100 ppm increased the leaf protein content (2.49 mg/ g of fresh wt.), canopy temperature (25.38 ° C) and number of cormlets per plant (25.22). Exogenous application of BA @ 25 ppm improved the reducing sugar content of leaves (4.230 mg/g of fresh wt.), floret-floret distance (3.84 cm) and number of corms per plant (1.45) of *gladiolus*. A slight higher level of BA @ 50ppm when applied to *gladiolus* induced early sprouting in corms (10.14 days) and increased height of cormlets (19.08 mm), whereas, BA @ 100 ppm induced earliness in flower bud development (7.74 days), increased leaf enzymatic activity (1.27 Δ 490nm/min/g fresh wt.) and improved post-harvest life of cuts spikes (16.33 days). Application of Triacantanol @ 25 ppm improved the anthocyanin content of florets (0.43 A525 Value), whereas, Triacantanol @ 50 ppm improved initial plant height (14.49 cm), initial leaf production (3.08), initial and final leaf width (1.68 cm and 2.63 cm respectively), diameter of rachis (5.16 mm), diameter of floret bud (2.00 cm), diameter of corms (52.74 mm), weight of corms (46.24 g), height of corms (26.06 mm), phenol content of corms (1.07 mg/g of fresh wt.), leaf enzyme content (1.27 Δ 490nm/min/g fresh wt.) and final leaf length (57.96 cm). Triacantanol @ 100 improved the leaf production (11.61), final plant height (75.67 cm), reducing sugar content of corms (4.089 mg/ g of fresh wt.), enzyme activity of corms (2.73 Δ 490nm/min/g fresh wt.), weight of cormlets (5.53 g) and diameter of cormlets (26.47 mm).