

SEED YIELD AND QUALITY AS INFLUENCED BY GIBBERELIC ACID (GA₃) IN GLORY LILLY (*GLORIOSA SUPERBA* L.)

Gibberellic acid (GA₃) is an important synthetic plant growth substance used for growth and yield manipulation in plants (Kri-

shnamoorthy, 1981). In fruits and seeds, they promote development by supplementing the already available endogenous gibberellins. It

Table 1. Effect of gibberellic acid (GA₃) and water spray on pod/seed characters of *Gloriosa superba* L.

Parameter	GA ₃ (ppm)			Water spray	Control	CD(0.05)
	100	200	400			
Pod length, cm	9.26	8.57	7.64	7.68	7.49	0.24
Pod girth, cm	2.44	2.30	2.23	2.19	1.96	NS
Pod fresh weight, g	17.18	12.60	12.16	12.85	10.45	0.61
No. of seeds/pod	84.40	73.60	75.40	70.20	62.00	5.31
Seed fresh weight, g	11.16	9.14	8.99	8.28	7.20	NS
Seed dry weight, g	2.79	2.23	2.22	2.01	1.64	0.26
Seed moisture, %	75.00 (60.00)	75.60 (60.40)	75.30 (60.20)	75.70 (60.20)	77.20 (61.50)	0.70
100 seed dry weight, g	3.31	3.03	2.94	2.86	2.65	0.02
Seed colchicine, %	0.51 (4.09)	0.46 (3.89)	0.53 (4.17)	0.46 (3.89)	0.36 (3.44)	NS
Seed colchicine yield, mg	14.23	10.26	11.77	9.25	5.90	1.52

also promotes the synthesis of active principles in medicinal and aromatic plants (Shukla and Farooqui, 1990).

Low seed yield resulting from various factors had been reported to be one of the problems with glory lilly (*Gloriosa superba* L.) cultivation in Tamil Nadu (Paramasivam and Arumugam, 1991). Mamatha *et al.* (1992) obtained 15.2% increase in seed yield over control by spraying NAA + GA₃ + BA (1.0 + 10.0 + 0.1 ppm) as whole plant spray. The present study was undertaken to improve seed and colchicine yield by GA₃ application.

The crop was raised from tubers of 75-100 g, planted in furrows at a spacing of 1.5 x 0.6 m during July-August, 1993. When the plants

reached 50% flowering stage during September-October, five sets of 25 flowers each on the main branch were cross-pollinated and tagged. Three concentrations of GA₃, viz. 100, 200 and 300 ppm and water spray were applied to developing pods on the 7th, 14th and 21st day after pollination. Data on length, girth and fresh weight of pods, number of seeds per pod, fresh weight, dry weight and moisture content of seeds and 100 seed weight were recorded at the time of harvest. The colchicine content of seeds was estimated as per the method of Ntahomvukiye *et al.* (1984).

The effects of different treatments on the pod and seed characters are presented in Table 1. Gibberellic acid at 100 ppm was significantly

superior to the other levels, water spray and control with respect to length and fresh weight of pods, number of seeds per pod, seed dry weight and 100 seed dry weight. The number of seeds per pod increased by 36.1% as a result of 100 ppm GA₃ over the control; the increase in seed dry weight was 70.1%. When the concentration of GA₃ increased from 100 to 200 ppm, the number of seeds and seed dry weight decreased by 12.8 and 20.1% respectively. The seed colchicine content ranged from 0.36 to 0.53% and there was no significant difference between the treatments. The colchicine yield was the highest (14.23 mg) in 100 ppm GA₃ which was significantly superior to

the control, water spray and other levels of GA₃. The higher colchicine yield was due to the high dry seed yield obtained with 100 ppm GA₃ application.

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