Additional potassium nitrate application improved flowering, flower quality and corm yield of Gladiolus grandiflorus

In the east Mediterranean region of Turkey an experiment was carried out to determine the combined effect of GA_3 with additional KNO_3 fertilisation on flowering and some quality characteristics of

Gladiolus grandiflorus

'Eurovision' under plastic greenhouse conditions in late autumn planting. Corms were soaked in solutions of GA_3 at 0 (control), 50 and 100 mg/kg for one hour and were dried in shade for 5 days before planting. The soil had a sandy-loam texture and sulphur was applied to decrease the soil pH to 7,0. As a basal dressing 30 g/m^2 ammonium sulphate and 45 g/m^2 triple superphosphate were applied before planting. All experimental plots received KNO_3 at 25 g/m^2 at the three-four leaf stage (K1). Half of the plots (K2) received additional KNO_3 applications at weekly interval continued until two weeks before the corms were harvested.

The treatment with 100 ppm GA_3 and additional KNO_3 fertilisation had a significant shortening effect on the time from planting to harvest of approximately 10 days compared to the controls (Table 1). The flowering percentage of plants which were additionally fertilised with KNO_3 was higher than that of the plants fertilised only once with KNO_3at three-four leaf stage. The same increase with additional potassium nitrate was found for the flower stem length, spike length and the stem diameter. The results indicated that additional potassium nitrate applications (K2) significantly increased the final weight of the corms compared to K1. Fertilising plants with 25 g/m^2 KNO_3 5 or 6 times in a weekly interval after three-four leaf stage was found to be effective to improve flowering, flower quality and corm yield.

Table 1. The effects of GA_3 and additional KNO_3 fertilisation on flowering and quality characteristics of Gladiolus grandiflorus 'Eurovision'. K1 treatment received only once KNO_3 and K2 treatment received additional KNO_3.

Treatment		Time to harvest	Flowering percentage	Flower stem length	Stem diameter	Corm weight
KNO_3	GA_3	days	%	cm	mm	g/corm
K1	Control	145 a	82 d	129 b	11,7 b	55 b
	50 ppm	143 ab	87 bc	129 b	12,0 b	59 b
	100 ppm	142 bc	90 ab	131 b	11,9 b	58 b
K2	Control	143 ab	85 c	135 a	12,7 a	68 a
	50 ppm	140 c	88 b	138 a	12,7 a	72 a
	100 ppm	135 d	92 a	139 a	12,9 a	71 a