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INFLUENCE OF CORM SIZE, DEPTH OF PLANTING AND DIVISION OF CORMS ON PROPAGULE PRODUCTION IN GLADIOLUS

A serious problem faced by the gladiolus growers and researchers is how to propagate new valuable varieties in the quickest possible way. The plants are mainly propagated by corms. The size of the conn influences the growth, development and production of quality flowers (Misra, 1980). Cormels (cormlets) also can be used for propagation. It take 3-4 seasons to produce a conn that is large enough for commercial purposes, as the spike size of gladiolus is influenced by conn size. As far as this crop is considered, **propagule** (conns and cormels) multiplication is essential for the commercial exploitation in the **floriculture** industry. With all these points in view, studies were undertaken in the Department of Pomology and Floriculture, College of Horticulture, Vellanikkara, to study the influence of conn size, planting depth and conn division on propagule (conn and cormels) multiplication in gladiolus.

Conns collected from American Beauty, a variety suitable for the Kerala conditions were used for the study during the year 1992-93. The conns were grouped into three categories based on the diameter i.e., Cl (2.1-3.0 cm), C2 (3.1-4.0 cm) and C3 (4.1-5.0 cm) and were planted at three depths (3.0, 5.0 and 7.0 cm) following a 3 x 3 factorial CRD with three replications. There were 35 corms per treatment and observations were recorded from plants raised from 15 conns. The conns were planted at a spacing of 20 cm between rows and 30 cm between plants in a row. Mulching was provided soon after planting. At the time of land preparation, dried cowdung was applied at 25 t ha '. The fertiliser doze followed was 100, 60 and 160 N, P_2O_5, K_2O per ha respectively (NESA, 1970). Of" the above doze, half the quantity of N and the entire quantity of P_2O_5 and K_2O were applied as basal dose. The flowers were harvested from the experimental plants, at their best or even a day or two before with a short stem. Care was taken to leave as many uninjured leaves on the plant as possible. When conn and cormel production is desired, flowers should not be allowed to set seeds (Gromov, 1972). The plants were left undisturbed until the leaves dried. Conns were then lifted and the cormels were collected. Observations like number and weight of conns and connels were recorded.

Another trial was also conducted to find out the effect of conn division on conn and cormel production in gladiolus. For this trial, infected conns were sorted out and forty conns of different sizes were cut in such a way that each part contained at least one dormant or waking bud. Small conns were divided into 2-3 parts, larger into 3-5 parts and very larger into 5-6 parts according to the number of buds. The cut pieces were then dipped in 0.2 per cent Bavistin for about 30 minutes before planting. The cut portions were planted in well prepared warm, moist soil as described.

The size of the conn and the depth of planting significantly influenced the conn and cormel yield of gladiolus varieties (Table 1). The small sized conns (Cl) produced significantly more number of conns (38.0), but, the corm weight (637.3 g) was more when large conns (C3) were used for planting. Of the different cormel characters, maximum cormel number and weight were observed by planting large conns (34.7 and 15.7 g respectively).

Of the different planting depths tried, irrespective of the size of conns, planting the conns at a depth of 5.0 cm was found to be the best for both the conn and cormel yield. The number of conns and weight were 53.7 and 814.7 g respectively.

Interaction effect of corm size and planting depth was also significant. Significantly more number of conns (69.0) were produced by planting small sized conns (Cl) at 5.0 cm depth. But the corm weight was maximum (986.0 g) in large conns (C3) when planted at 5.0 cm depth. The number of connels produced was also consderably more in large corms (C3) at 5.0 cm depth, but the cormel weight

Table I. Influence of depth of planting and corm size on conn and cormel production in gladiolus ev. American Beauty

Corm size dia, cm	Depth of planting, cm	No. of corms	Corm weight, g	No. of cormels	Cormel weight, g
C I (2.1 - 3.0)	3.0	26.0	265.0	13.0	5.0
	5.0	69.0	668.0	12.0	12.0
	7.0	19.0	225.0	15.0	10.0
	Mean	38.0	396.0	13.3	9.1
C II (3.1 - 4.0)	3.0	33.0	465.0	8.0	8.0
	5.0	45.0	790.0	14.0	25.0
	7.0	19.0	290.0	13.0	5.0
	Mean	32.3	518.3	8.3	12.7
C III (4.1 - 5.0)	3.0	27.0	650.0	23.0	15.0
	5.0	47.0	986.0	57.0	17.0
	7.0	17.0	275.0	24.0	15.0
	Mean	30.3	637.3	34.7	15.7
Mean (Irrespective of corm size)	3.00	28.7	460.0	14.7	6.0
	5.0	53.7	814.7	27.7	18.0
	7.0	18.3	263.3	17.3	6.7
CD (0.05) for comparing corm size		3.7	130.5	6.4	3.4
CD (0.05) for comparing depth of planting		10.2	124.3	5.7	4.7
CD (0.05) for comparing corm size x depth of planting		11.4	180.2	5.1	3.7

Table 2. Effect of corm division on corm and cormel yield in gladiolus

Character	Cut	Whole (not cut)
Number of corms	40	40
Weight, g	580	593
Parts after cutting	202	-
Number of new corms	272	106
Total weight of new corms, g	4051	2213
Average weight of a corm, g	17.1	20.9
Number of cormels	363	182
Weight of cormels, g	287	108

was maximum (25.0 g) in medium si/.ed corms (25.0) at 5.0 cm depth. Of the different characters studied, it is clearly evident that large sized corms (C3) will give maximum corm and cormel yield when planted at 5.0 cm depth. The corms and cormel production significantly decreased with planting depth. This is in line with the findings of Misra (1980).

Influence of corm division on corm and cormel production is given in Table 2.Cutting of corms considerably increased the growth of the conns and the weight of conns grown from one mother corm. The conns grown from cut portions took 2-3 weeks more than usual gladiolus and then digging was correspondingly delayed by 2-3 weeks. As a result of cutting, growth and metabolic processes pass more energetically, there takes place a kind of temporary rejuvenation which is observed in fruit trees which are propagated by

means of grafting and cutting (Gromov, 1972). Besides, when husking and cutting the corms, a better chance of sorting out the corms infected by disease is obtained. Cutting of corms is resorted to in hybridizing research work when it is necessary to have a number of plants of the same age and type originating from the same source.

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