PERFORMANCE OF PROMISING GENOTYPES IN GLADIOLUS FOR CORM AND CORMEL PRODUCTION UNDER AGRO-CLIMATIC CONDITION OF DAILEKH

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ABSTRACT

Seven promising genotypes of gladiolus viz., 'HRSDG-01', 'HRSDG-02', 'HRSDG-03', 'HRSDG-04', 'HRSDG-05', 'HRSDG-06'and 'HRSDG-07' were evaluated for their performances of yield contributing characters of corm and cormel. Of these genotypes, 'HRSDG-03' and 'HRSDG-07' contributed to maximum pooled diameter of corm. Almost likewise, 'HRSDG-03' and 'HRSDG-04' were found to be promising ones for maximum pooled weight of individual corm. In respect of total pooled number of corms and total pooled corm yield/500m2, three genotypes such as 'HRSDG-04', 'HRSDG-05' and 'HRSDG-03' were proven as superior to the rest of four other genotypes. Three genotypes viz., 'HRSDG-5', 'HRSDG-07' and 'HRSDG-04' contributed to considerably high pooled diameter and weight of individual cormel. Total pooled number and yield of cormels/500m2 were noted to be remarkably maximum in three genotypes viz., 'HRSDG-3', 'HRSDG-05' and 'HRSDG-04'. Total pooled number of daughter corms/ mother corm was consequentially maximum in 'HRSDG-04' followed by 'HRSDG-07' and 'HRSDG-02'. The pooled number of cormels per mother corm was maximally high in 'HRSDG-02' followed by 'HRSDG-03' and 'HRSDG-05'. In view of overall performances, 'HRSDG-04' ,'HRSDG-03' and 'HRSDG-5' proved to be recommended for corm and cormel production under cultivation of gladiolus.

Key Words: Corm, cormel, genotypes, gladiolus, cultivation.

INTRODUCTION

Gladiolus (Gladiolus grandiflorus) a member of family iridaceae is one of the most important bulbous ornamental and the leading cut flowers. It has occupied eighth position in international cut flower trade. It is universally acclaimed prestigious cut flower (Ram et al. 2005).Gladiolus is very much liked for majestic spike with attractive, elegant and delicate florets. These florets open in a sequence over long duration and hence can have a good keeping quality of cut spike (Abdul et al. 2013). Gladiolus bulbs, in botanical terminology, are referred to as corms, the main propagating material in gladiolus. A corm is a shortened and thickened section of the stem that appears at the base of the plant. The shortened stem with buds systematically arranged under a paper-thin protective layer and scale usually one bud sprouts near the top of the corm when planted (Bhujbal et al. 2014).The corm formation starts with the initiation of the spike and completes when the spikes attain full bloom. After flowering photosynthates are directed downwards corms and cormels, then, they continue to increase in size (Hartmann et al. 1981).The ability to produce corms and cormels per plant determines its rate of multiplication and these characters would be very effective in breeding program. There is a dearth of good varieties of gladiolus which are good multiplier with respect to corm and cormel production under varying environments (Abdul et al. 2013).Daughter corm continues to enlarge after flowering but it does not flower in the same season (Hudson et al. 1981). The infrequent production of corms and cormels is a great hurdle in mass propagation and eminence cut flower spikes of gladiolus. One mother corm generally produces one daughter corm of standard size on the top and few cormels or cormlets on the base of respective old/ mother corm. These cormels or cormlets are auxiliary buds on the corm (Singh and Dohare 1991; Remotti and Loffler 1995). Corms and cormels are the chief means of gladiolus propagation. Cormels are usually graded in three sizes: larger than 1.0 cm diameter, medium 0.5 cm to

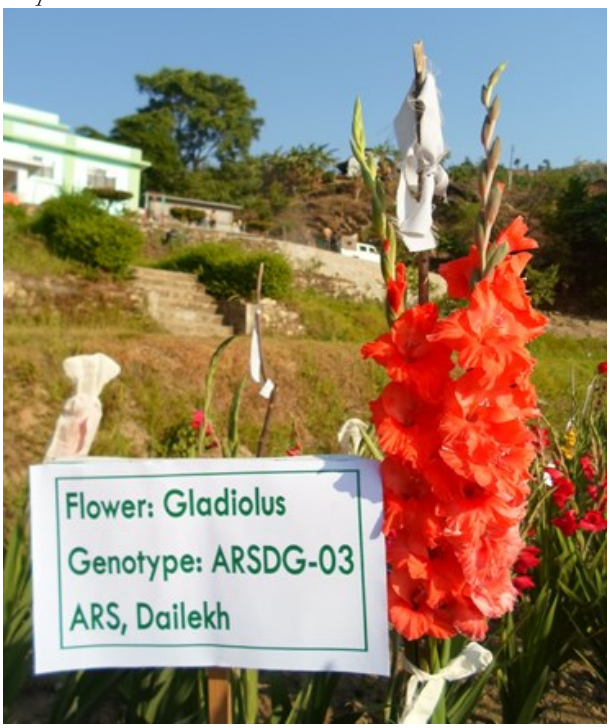
less than 1.0 cm and small less than 0.5 cm (Laskar et al. 1994). The objective of the research work was to investigate the inherent capability of promising gladiolus genotypes for corm and cormels production.

METHODOLOGY

The experimental material used for the study consisted of seven promising gladiolus genotypes viz., 'HRSDG-01', 'HRSDG-02', 'HRSDG-03', 'HRSDG-04', 'HRSDG-05', 'HRSDG-06', and 'HRSDG-07': they were evaluated in the field of Horticulture Research Station (HRS), Dailekh under the experiment in RCBD design replicated three times. In each replication, thirty five corms of each genotype were planted in the spacing of 47 cm between the rows and 30 cm within the row each year. In the second fortnight of February, corms were planted in each plot size of 7.852 m as per experimental design over two consecutive years (2013 and 2014). The recommended FYM 20 t/ha and fertilizer 60kg N, 80 kg P2O5 and 60 kg K2O were incorporated into soil during the operation of land preparatory tillage. Remaining 60 kg Nitrogen was applied into two split doses: 30 kg Nitrogen/ha at 3-5 leaf stage and 30 kg Nitrogen/ha at 7-9 leaf stage. Uniform cultural operations like intercultural weeding, plant protection measures, and remaining all practices were adopted to grow successful crop. Ten plants/genotype/ replication were labeled and used for recording various parameters of corms and cormels characters. Corm and cormels were allowed to maturity and harvested only in 45 days later than spike harvest day when leaves turned yellowing and withering coupled with turning of 25% cormel into brown color. Data were collected for the performances of ten characters of corm and cormels such as corm diameter, individual corm weight, total number of corms, corms yield, cormel diameter, individual cormel weight, total number of cormel, cormels yield, number of daughter corms per mother corm and number of cormels per mother corm that keep significant values from the view point of crop improvement were recorded in both years (2013 and 2014).The mean values of all the characters were pooled and subjected to the statistical analysis of variance.

ARSDG-01 (American Beauty)

ARSDG-02 (Interpid)



ARSDG-03 (Ginger Red)

ARSDG-04 (Unidentified genotype)

ARSDG-05 (Summer Sun Shine)

ARSDG-06 (White Prosperity)

ARSDG-07 (Pscittacinus Hybrid

RESULTS AND DISCUSSION

Results in tables 1, 2, 3, 4 and 5 illustrates the pooled values of the characters over two years in which the corm diameter, individual corm weight, total number of corms, total yield of corms, cormel diameter, cormel weight, total number of cormels, total cormel yield, number of daughter corms/mother corm and number of cormels/ mother corm parameters of gladiolus plants were significantly varied due to the effect of different promising genotypes.

Corm diameter (cm)

Maximum pooled diameter (5.67 cm) of corm was in 'HRSDG-03' whereas minimum pooled diameter (4.61 cm) of corm was exhibited by 'HRSDG-05'; however, its diameter was at par with those of four genotypes viz.,'HRSDG-01' (4.66 cm), 'HRSDG-04' (4.68 cm), 'HRSDG-02'(4.74 cm) and 'HRSDG-06'(4.76 cm). As for 'check/HRSDG-01', its pooled corm diameter was noted to be statistically similar to that of 'HRSDG-07' (4.83 cm) even so it produced considerably smaller pooled diameter (4.66 cm) than 'HRSDG-03' (5.67 cm) in (Table 1). Corm diameter needs to be more than 2.00 cm for commercial propagation as well as flower production as corm with less than 2.00 cm gave rise to thin spikes coupled with more prone to lodging(Abdul et al. 2013). Corm diameters of all seven genotypes were still far larger than 2.00 cm in the present context of study.

Individual corm weight (g)

The pooled weight (g) of individual corm was significantly variable between 29.78 g and 47.39 g in seven genotypes under the experiment. 'HRSDG-03' recorded remarkably the maximum pooled weight (47.39 g) followed by 'HRSDG-04' (35.31 g) and 'HRSDG-02' (34.91g). In contrast, 'HRSDG-05' recorded minimally the lowest pooled weight (29.78 g) inconsequentially followed by'HRSDG-06' (32.05 g) and 'HRSDG-1' (33.12 g).'Check/HRSDG-01' produced significantly lower pooled weight (33.12 g) than 'HRSDG-03' (47.39 g). According to the suggestion of North Gladiolus Council (Wilfret,1980),firstly the individual corm diameter (5.67 cm) of 'HRSDG-03' came under Jumbo category as Jumbo category involved more than 5.1 cm corm diameter. Secondly the corm diameters of remaining six genotypes were in large category/No 1 grade (3.9 cm to 5.0 cm).Two treatments: removal of leaves and spike and retention of leaves and spike in 'Peter Pears' imparted the maximum weight of single corm 70.14g and 68.58g respectively, then the same two treatments in 'Trader horn' with single corm 69.69g and 62.41g and finally 'White Friendship' with single corm 58.37 g and 51.60g were recorded (Memon et al.2014). All of the weights of single corm of not only removal of leaves and spike but also of retention of leaves and spikes were recorded relatively more than those weights of individual corms in any of evaluated genotypes in the present study. Since characters of corm and cormel were recorded from the field of flower production without following the technique needed for corm and cormel production in our present study the results of individual corms were not as superior as those of the studies made by aforementioned authors. Their studies were based on exploration of increasing multiplication rates of corms and cormels, and involved the removal of leaves and flower spike to conserve the plant's energy metabolites that enhanced the multiplication of corms and cormels.

Table 1: Performance of seven promising genotypes of gladiolus for corm diameter and individual corm weight during two consecutive years 2012/013 and 2013/014 at HRS, Dailekh.

Genotypes	Corm diameter (cm)			Individual corm weight (g)		
	2012/013	2013/014	Two years ' Pooled value	2012/013	2013/014	Two years ' Pooled value
Check/ HRSDG-01	4.49	4.82	4.66	30.00	36.23	33.12
HRSDG-02	4.84	4.63	4.74	35.67	34.14	34.91
HRSDG-03	5.50	5.84	5.67	41.00	53.77	47.39
HRSDG-04	4.40	4.95	4.68	30.67	39.94	35.31
HRSDG-05	4.53	4.69	4.61	26.67	32.89	29.78
HRSDG-06	4.83	4.68	4.76	30.67	33.43	32.05
HRSDG-07	4.70	4.96	4.83	31.00	38.71	34.86
GM	4.79	4.94	4.86	32.24	38.44	35.34
F-test	NS	**	*	*	**	**
LSD (0.01)	-	0.35	0.172	3.412	8.02	5.716
CV%	8.87	4.01	6.44	18.140	11.72	14.93

NS Non-significant * Significant **highly significant

Total number of corms/500m2'

The pooled number of corms produced in seven genotypes considerably varied from 2133.01 to 6834.57 with the mean value of 3837.14. 'HRSDG-04' recorded remarkably the highest pooled number of corms (6834.57) Differences in this regard was quite significant from those of the remaining six genotypes. On the contrary, the pooled number of corms was minimally low in four genotypes viz., 'HRSDG-02'(2133.10),HRSDG-06'(2524.79),HRSDG-07'(2644.52) and HRSDG-01'(3299.87).As comparing against 'Check/ HRSDG-01' in this regard, three genotypes such as 'HRSDG-04'(6834.57) , 'HRSDG-05' (4937.16) and 'HRSDG-03'(4483.76) were found better ones (Table 2). Chaudhary et al. (2011) evaluated twelve varieties of gladiolus under sub-humid condition of Rajasthan: Their findings revealed that the number of corms/ 500 m2 of five varieties viz., 'Peter Pears' as well as 'Sancerre'(5963),'Spic-n-Span'(4301), 'Dhanvantri' (4203.5) and'TS-14' (3812.5) were nearly in tune with those of only three genotypes viz.,'HRSDG-04'(6843.57),'HRSDG-05'(4937.16) and 'HRSDG-03'(4483.76) in recent study, but the number of corms/500m2 in remaining seven varieties of their study revealed relatively higher which ranged from 6940.5 ('Urmil') to 8993.0 ('Priscilla').

Total corm yield (kg)/ 500m2

Pooled corm yield was found considerably high in two genotypes viz.,'HRSDG-04' (203.55 kg) and 'HRSDG-03' (174.14 kg) whereas the lowest in 'HRSDG-02' (65.80 kg). Even so corm yield differences in five genotypes such as 'HRSDG-05' (116.64 kg),'HRSDG-01'(92.07 kg), 'HRSDG-07'(81.13 kg)'HRSDG-02' (65.80 kg) and 'HRSDG-06'(64.99 kg) were at par. Check/'HRSDG-01'produced considerably lower pooled corm yield than those of two genotypes viz.,'HRSDG-04'(203.55 kg) and 'HRSDG-03' (174.14 kg), but 'check/HRSDG-01' was at par with those in four genotypes such as 'HRSDG-05', 'HRSDG-07', 'HRSDG-02'and 'HRSDG-06 (Table 2). Sarkar et al. (2014) recorded corm yields ranging from 610.00kg to 874.50 kg/ 500 m2 which was much higher

than the range of 65.00 to 203.55 kg/500m2 in the present study. In the context of situation for the objective of flower production, the energy required for flower production may be less diverted towards corm and cormel development by removing the spike (Mukhopadhay and Das 1978; Misra et al. 2003). It was presumably the reason for low corm yield in the present study.

Table 2: Performance of seven promising genotypes of gladiolus for total number of corms and total corm weight during two consecutive years 2012/013 and 2013/014 at HRS, Dailekh.

Genotypes	Total number of corms / Ropni(500 m^2)			Total corm yield in kg/Ropni (500 m^2))		
	2012/013	2013/014	Two years ' Pooled value	2012/013	2013/014	Two years ' Pooled value
Check/ HRSDG-01	2268.52	4331.21	3299.87	69.49	114.65	92.07
HRSDG-02	2291.67	1974.52	2133.10	82.55	49.04	65.80
HRSDG-03	2515.28	6452.23	4483.76	101.14	247.13	174.14
HRSDG-04	6388.89	7280.25	6834.57	195.00	212.10	203.55
HRSDG-05	3441.20	6433.12	4937.16	98.24	135.03	116.64
HRSDG-06	2098.61	2950.96	2524.79	63.10	66.88	64.99
HRSDG-07	2083.30	3205.73	2644.52	63.52	98.73	81.13
GM	3012.49	4661.79	3837.14	96.15	129.94	113.05
F-test	**	**	**	**	**	**
LSD (0.01)	679.680	2537.579	1608.629	57.08	82.165	69.623
CV%	49.57	30.60	40.085	46.98	35.75	41.365

*** Significant **highly significant**

Cormel diameter (mm)

Pooled diameter of cormel varied from 5.84 mm to 7.62 mm in seven genotypes of gladiolus. Although 'Check/ HRSDG-01'revealed the maximally high pooled cormel diameter (7.62 mm) it's pooled value did not vary consequentially from those of three other genotype viz.,'HRSDG-07' (7.57 mm), 'HRSDG-05' (7.55 mm) and 'HRSDG-04' (7.25 mm). On the contrary, cormel diameter was consequentially low in three genotypes viz.'HRSDG-06' (5.84 mm), 'HRSDG-02' as well as 'HRSDG-03' (6.80 mm) in Table 3. Ahmad et al.(2002) noted variably cormel diameter (mm) of ten gladiolus cultivars , out of them ,' Red Beauty' (18.00 mm) 'Wine and Roges' (11.10 mm) and ' Oscar' (10.00mm) produced larger cormel size than other cultivars. The diameter of cormels in the present study pertained to small size (5.8 cm -7.6 mm) which seemed being significantly smaller than those pertaining to medium size (10.0-15.0 mm) and big size cormel (15.0 mm- 20.0 mm) accordingly as reported by Amin et al.(2013).

Individual cormel weight (mg)

Pooled weight of cormels in seven different genotypes was noted to be considerably variable between 226 mg and 390 mg having the mean value of 287 mg. Two genotypes: 'HRSDG-05'and 'HRDG-07' reflected consequentially high pooled weight of cormel (390 mg and 331 mg respectively).'HRSDG-06' recorded contrastingly lowest pooled weight of cormel (226 mg), but its value was found to be inconsequential with those of four other genotypes viz.,'HRSDG-02 (250 mg),'HRSDG-03'(250 mg),'HRSDG-01' (276 mg) and 'HRSDG-

04' (276 mg). Among evaluated genotypes in this regard, only one genotype 'HRSDG-05' (390 mg) proved to be superior to 'check/HRSDG-01(276 mg). Otherwise, leaving out 'HRSDG-06' (226 mg), rest of four other genotypes viz.,'HRSDG-07'(331mg),'HRSDG-04' (276 mg), 'HRSDG-02'(250 mg), 'HRSDG-03'(250 mg) were at par with 'Check/HRSDG-01'(276 mg) in Table 3. Ahmad et al. (2002) reported individual cormel weight of ten cultivars (Wines and Roges, Wing's Sensation, Red Beauty, Oscar, Praha, City Light, Green Wood Pecker, Blue Isle, Priscilla and Victor Vorge). Of them, 'Praha', 'Priscilla' and 'Victor Broge' produced maximally high cormel weight with 590 mg, 430 mg and 390 mg respectively. The individual cormel weight recorded in the recent study was not as weighty as those of three cultivars ('Praha', 'Priscilla' and 'Victor Broge'), but the individual cormel weights of remaining seven cultivars were more or less similar to those of seven genotypes under our study.

Table 3: Performance of seven promising genotypes of gladiolus for cormel diameter (mm) and individual cormel weight (g) during two consecutive years 2012/013 and 2013/014 at HRS, Dailekh.

Genotypes	Cormel diameter (mm)			individual cormel weight (mg)		
	2012/013	2013/014	Two years ' Pooled value	2012/013	2013/014	Two years ' Pooled value
Check/ HRSDG-01	7.43	7.80	7.62	270	282	276
HRSDG-02	6.60	7.00	6.80	240	260	250
HRSDG-03	6.90	6.70	6.80	250	250	250
HRSDG-04	7.20	7.30	7.25	270	285	276
HRSDG-05	7.60	7.50	7.55	380	400	390
HRSDG-06	5.77	5.90	5.84	220	235	226
HRSDG-07	7.43	7.70	7.57	320	342	331
GM	6.99	7.13	7.06	280	293	287
F-test	**	**	**	**	**	**
LSD (0.01)	1.20	1.22	1.21	100	104	102
CV%	10.22	10.425	10.32	22.83	23.89	23.36

*** Significant **highly significant**

Total number of cormels/500m2

The pooled number of cormels produced per 500 m2 by seven genotypes showed highly significant variation due to the effect of different evaluated genotypes (Table 4). The result indicates that the maximum pooled number of cormels (2, 27, 790. 50) was in genotype 'HRSDG-03', minimum pooled number of cormels (31,650.35) was in genotypes 'HRSDG-07'. The highest pooled number cormels (2, 27,790.50) was, however, at par with those of two other genotypes viz., 'HRSDG-05' (1,93.367.99) and 'HRSDG-04'(1,90,805.96).The lowest pooled number of cormels (31,650.35) in 'HRSDG-07'was, on the other hand, insignificant from two other genotypes viz.,'Check/ HRSDG-01'(58,276.13) and 'HRSDG-02'(46,256.30).'Check/ HRSDG-01' was recorded to be poorer than remaining three genotypes viz., 'HRSDG-03' (2, 27,790.50), 'HRSDG-05' (1, 93,367.99) and 'HRSDG-04' (1, 90,805.96).

Total cormel yield (kg)/ 500m2

Seven genotypes of gladiolus had influenced the pooled yield of cormels. Mean values regarding different

genotypes showed that maxium pooled cormel yield (78.94 kg) was noted in 'HRSDG-03' followed significantly by 'HRSDG-05(66.82 kg), and 'HRSDG-04' (57.47 kg). 'HRSDG-02'reorded the lowest pooled yield of cormels (12.23 kg) which was found to be significantly different from those of remaining six genotypes. Besides 'HRSDG-02', 'Check/HRSDG-01' (16.23 kg) was noted to be inferior to those of five other genotypes viz., 'HRSDG-07' (18.01 kg), 'HRSDG-06'(18.58 kg), 'HRSDG-04'(57.47 kg), 'HRSDG-05'(66.82 kg) and 'HRSDG-03'(78.94 kg) in Table 4. In the recent study, only three genotypes viz., 'HRSDG-03'(78.39 kg), 'HRSDG-05(66.82 kg) and 'HRSDG-04' (57.47 kg) have been in position to cope with standard cormels yields up to the expectation of growers because eight gladiolus varieties: 'Chipper White' (33.90 kg),Summer Sun Shine'(174.60 kg), 'Canadian Blood Red' (105.40 kg),'Apple Blossom' (88.45 kg), Summer Pearl (221.95 kg)', 'Puppy Tears'(125.45 kg), 'Pacifica White'(151.70 kg) and 'American Beauty'(141.35 kg) tested by Shiramagond and Hanamashetti (1999) were in confirmation with the cormels yields in the study.

Table 4: Performance of seven promising genotypes of gladiolus for total number of cormels and total cormel yield during two consecutive years 2012/013 and 2013/014 at HRS, Dailekh.

Genotypes	Total number of cormels/ Ropni (500 m^2)			Total cormel yield (kg)/Ropni(500 m^2)		
	2012/013	2013/014	Two years ' Pooled value	2012/013	2013/014	Two years ' Pooled value
Check/ HRSDG-01	44259.26	72293	58276.13	12.08	20.38	16.23
HRSDG-02	50092.59	42420	46256.30	11.71	12.74	12.23
HRSDG-03	134243.98	321337	227790.49	34.95	122.93	78.94
HRSDG-04	93394.91	288217	190805.96	24.81	90.130	57.47
HRSDG-05	90493.98	296242	193367.99	25.55	108.09	66.82
HRSDG-06	68703.70	86815	77759.35	14.86	22.290	18.58
HRSDG-07	22453.70	40847	31650.35	7.36	28.660	18.011
GM	71948.88	164024	117986.44	18.76	57.960	38.36
F-test	**	**	**	NS	**	*
LSD (0.01)	9554.30	92167	50860.65	-	0.49	0.324
CV%	49.74	34.73	42.235	53.86	30.24	42.05

NS Non-significant * Significant **highly significant

Number of daughter corms/mother corm

The pooled number of daughter corms per mother corm was variable from 1.23 to 2.30 with the mean value of 1.56 under the experiment. The highest pooled daughter corms/mother corm was recorded in 'HRSDG-04' (2.30/ mother corm) followed inconsequentially by"HRSDG-07' (1.65/ mother com). 'HRSDG-02', on the contrary, produced the lowest number of daughter corms (1.23/mother corm) which was , nevertheless, at par with those of rest of five genotypes viz., 'HRSDG-07'(1.65/mother corm), 'HRSDG-03'(1.60/mother corm), 'HRSDG-05'(1.52/mother corm), 'HRSDG-06'(1.37/mother corm) and 'Check/HRSDG-01'(1.29/ mother corm). 'Check/ HRSDG-01'was proven as inferior to 'HRSDG-04' (2.30/mother corm) while 'Check/HRSDG-01'was recoded to be statistically analogous to the rest of five genotypes viz., 'HRSDG-02' (1.23/mother corm), 'HRSDG-06'(1.37/ mother corm), 'HRSDG-05'(1.52/mother corm'), 'HRSDG-03'(1.60/mother corm) and 'HRSDG-07'(1.65/ mother corm) in Table 5. Sudhakar et al. (2012) registered that the number of daughter corms/mother corm

ranged from 1.02 to 1.66 in 'White Friendship' under different treatments of growth regulators. On the other hand, the highest number of daughter corms 2.26/mother corm in 'Darshan' and lowest number of daughter corms 1.0/ mother corm in 'Meridiana' were reported by Naresh et al. (2015).As comparing to the findings of former and latter authors, the number of daughter corms/mother corm were somewhat high in the present study.

Number of cormels / mother corm

The pooled number of cormels produced per mother corm by seven genotypes was recorded to have varied from 17.09 to 81.43 with the value of 46.01.The results indicates that maximum pooled number of cormels (81.43/ mother) was in 'HRSDG-02' which was statistically inconsequential with 'HRSDG-03' (77.70/ corm/mother corm) and 'HRSDG-05' (59.41/mother corm). 'HRSD-07', in contrast, produced the lowest pooled number of cormels (17.09/ mother corm) which was noted to have been at par with those of three genotypes viz., 'Check/ HRSDG-01' (21.19/ mother corm), 'HRSDG-04' (37.24/ mother corm) and 'HRSDG-06' (42.97/ mother corm). Two genotypes viz.,'HRSDG-02' (81.43/ mother corm) and 'HRSDG-03' (77.70/ mother corm) were superior to 'Check/HRSDG-01' (21.19/ mother corm). On the other hand, 'Check/HRSDG-01'was noted to be at par with those of 'HRSDG-04' (37.24/mother corm) and 'HRSDG-06' (42.97/ mother corm) in Table 5. Shaukat et al. (2013) recorded the number of cormels/mother corms in five Gladiolus cultivars viz., 'Amsterdam' (33.44),'Applause'(90.00),'Fidelio' (55.11), 'Peter Pears'(25.33) and 'Priscilla (10.00) which revealed to be more or less in tune with the pooled number of cormels /mother corm recorded in recent study.

Close observation of cormel characteristics showed variable response for the genotypes under study. Different cultivars responded or reacted differently with given soil and climatic condition depending upon their genetic composition. These were the reasons different results were presumably observed in context of the recent study.

Table 5: Performance of seven promising genotypes of gladiolus for Number of daughter corms / mother corm and number of cormels/mother corm during two consecutive years 2012/013 and 2013/014 at HRS, Dailekh.

Genotypes	Number of daughter corms / mother corm			Number of cormels/mother corm		
	2012/013	2013/014	Two years ' Pooled value	2012/013	2013/014	Two years ' Pooled value
Check/ HRSDG-01	1.00	1.58	1.29	16.00	26.37	21.19
HRSDG-02	1.30	1.16	1.23	88.00	74.86	81.43
HRSDG-03	1.00	2.20	1.60	46.00	109.40	77.70
HRSDG-04	2.08	2.53	2.30	18.00	56.48	37.24
HRSDG-05	1.07	1.97	1.52	28.00	90.81	59.41
HRSDG-06	1.14	1.61	1.37	38.00	47.94	42.97
HRSDG-07	1.60	1.70	1.65	12.00	22.18	17.09
GM	1.31	1.82	1.56	38.00	54.01	46.01
F-test	*	*	*	**	**	**
LSD (0.01)	0.56	0.78	0.67	23.00	32.79	27.89
CV%	20.43	24.22	22.33	24.00	34.13	29.07

*** Significant **highly significant**

Conclusion

The present study concludes that three genotypes viz. 'HRSDG-04', 'HRSDG-03' and 'HRSDG-05' are the most outstanding and suitable for the sake of production of corm and cormel (propagating materials) as well as varietal improvement work under the agro-climatic conditions of mid-hills of Dailekh and similar agro-climatic condition of mid-hills across the country. These genotypes have possessed the best in terms of most parameters of gladiolus genotypes such as corm size, corm weight, number of corms /unit area, corm yield /unit area, number of daughter corms/mother corm, cormel size, cormel weight, number of cormels/unit area, cormel yield /unit area and number of cormels /mother corm. In order to standardize conventional methods of propagation for maximization of propagules, the nature of similar verification trial has to be repeated further inclusive of the same genotypes adopting the sole techniques required for corm and cormel production.

References

Abdul, K., M.A.Khan, S.UR-Rehman and A. Afzal.2013.Different Corm Sizes Affect Performances of Gladiolus grandiflorus Cvs. Red Majesty and Early Yellow. Advances in Zoology and Botany 1(4):86-91.

Abdul, M.J., Z.Akbar, N. Kosar and Z.A. Khan.2002. Introduction and Evaluation of Exotic Gladiolus (Gladiolus grandiflorus) Cultivars. Asian Journal of Plant Sciences 1(5):560-562.

Ahmad, M.J., Z. Akbar, N. Kesar and Z.A. Khan.2002.Introduction and Evaluation of Exotic Gladiolus (Gladiolus grandiflorus L.) Cultivars. Asian Journal of Plant Sciences 1(5):560-562.

Amin, N.U., A.M. Khattak, I. Ahmad, N. Ara, A. Alan, M. Ali and I.Ali.2013. Corm and Cormel Size of Gladiolus Greatly Influenced Growth and Development of Subsequent Corm Production. Pakistan Journal of Botany 45(4):1407-1409.

Bhujbal, G.B., N.G. Chauhan and S.S. Mehtre.2014. Importance of Growth Regulators and Cold Storage Treatments for Breaking of gladiolus (Gladiolus grandiflorus L.) Corm Dormancy. The Bioscan 9(2):501-505.

Chaudhary, M., S.K. Mood, A.K. Kumari and B.S. Beniwal.2011.Evaluation of Gladiolus (Gladiolus x hybridus Hort.) Varieties for Cut Flower Production under Sub-humid Conditions of Rajashan. Crop Research 41(1, 2 and 3):123-126.

Hartmann.T., W.J. Flocker, and A.M. Kofrank.1981. Ornamental Grown from Bulbs, Corms, Tubers and Rhizomes. In "Plant Science, Growth, Development and Utilization of Cultivated Plants. Pp. 429-453.

Hudson, T.H., J.F. William and M.K. Anton. 1981. Plant Sciences. Eggle Wood Cliffs. New Jersey, 07632, U.S.A. Pp.676-678.

Laskar, M.A. and B.K. Jana.1994. Effect of Planting Time and Corm Size on Plant Growth, Flowering and Corm Production of Gladiolus. Indian Agriculturst 38(2):89-92.Enhancement of corm and cormel production in gladiolus (Gladiolus spp.).New Zealand Journal of Crop and Horticultural Sciences 37(4): 319-325.

Memon, N., M. Quasim, M.J. Jaskani, R. Ahmad and I. Ahmad.2014.Enhancement of Corm and Cormel Production in Gladiolus (Gladiolus spp.). New Zealand Journal of Crop and Horticultural Science 37:319-325.

Misra, R.L. 1994.Effect of Leaf and Spike Clipping on Corm and Cormel Yield of Gladiolus.In: Floriculture – technology, trades and trends in India (Eds: Praksh, J., Bhandary, KR).Oxford & IB Publishing Company, Pp.55-58.

Misra, R.L., B. Singh and S.K. Palai.2003. Gladiolus. In: Commercial Flowers in India: (Eds): Bose, T.K.,L.P. Yadav, P. Pal, P.Das, V.A. Parthasarthy. Naya Udyog, Kolkata.660 P.

Mukhopadhay, A. and P.Das.1978. Effect of Removal of Flower and Foliage on the Yield of Gladiolus Corms and Cormels. Orissa Journal of Horticulture 6:1-5.

Naresh, S., A.V.D. Dorajee Rao, V.V. Bhaskar, K.U. Krishna and M. P. Rao.2015. Evaluation of Gladiolus (Gladiolus hybrid L.) Hybrids under Coastal Andhrapradesh Conditions. Plant Archives 15 (1):451-454.

Ram, R.B., K.S. Tomar and S.K. Datta.2005. Performances of Certain gladiolus cultivars under Sodic Conditions. Journal of Ornamental Horticulture 8:77-78.

Remotti, P.C. and H.J.M. Loffler.1995. Callus Induction and Plant Regeneration from Gladiolus. Plant Cell Tissue Organ Culture 42(2): 171-178.

Sarkar, M.A.H., M.I. Hossain, A.F.M.J. Uddin, M.A.N. Uddin and M.D. Sarkar.2014.Vegetative, Floral and Yield Attributes of Gladiolus in Response to Gibberellic Acid and Corm Size. Scientia Agricuturae 7(3): 142-146.

Shaukat, S.K., S.Z.A. Shah and S. W. Shaukat. 2013. Performance of Gladiolus (Gladiolus grandiflora L.) Cultivars under the Climatic Conditions of Bagh Azad Jammu and Kashmir, Pakistan. Journal of Central European Agriculture 14(2):636-645.

Shiramagond,M.S. and S.I.Hanamashetti.1999.Evaluation of Varieties in Gladiolus under Ghataprapha Command Areas. Karnataka Journal of Agricultural Science 12(1-4):159-163.

Singh, A. P. and S.R. Dohare. 1994. Maximization of Corm and Cormel Production in Gladiolus. In: Floriculture – Technlogy Trades and Trends: (Eds): J. Prakash and K.R. Bhandary. Oxford & IBH Pub.Co.Pvt. India, 205-208.

Sudhakar, M. and S.Ramesh Kumar.2012. Effect of Growth, Flowering and Corm Production of Gladiolus (Gladiolus grandiflorus L.) cv. White Friendship. Indian Journal of Plant Science ISSN: 3819-3824.

Wilfret, G.J. 1980. Gladiolus. In: Introduction to Floriculture (Ed.): Larson, R.A. New York, Academic Press Inc. Pp. 166-181.