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Genetic Variability of Gladiolus (*Gladiolus grandiflorus*) Cultivar under Prayagraj Agro-Climatic Conditions in Uttar Pradesh, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

An experiment to Study on genetic variability of Gladiolus (*Gladiolus grandiflorus*) cultivars under prayagraj agro-climatic conditions was carried out at Departmental research field of Horticulture, Naini Agriculture Institute during the Rabi season of 2021-2022 with Eight Cultivars in randomized block design with three replications. The viz. White prosperity, Mohini, Hunting song, Creamy green, Suchitra, Samara, Nova, Peterpears. Evaluated were out of twenty-five cultivars means estimated Genetic variability, heritability, phenotypic coefficient of variation (PCV) was higher than the genotypic coefficient of variation (GCV) and genotypic correlation. The characters, Plant height at (30, 60, 90 DAS), Number of leaves per plant at (30,60,90 DAS), No. of shoot per plant, Days taken for corm sprouting, Rachis length, Days taken to spike emergence, days taken colour break stage, No. of floret per spike, No. of spike per plant, No. of days taken for first floret open, No. of days taken for last floret open, spike length, floret diameter, vase life, Weight of daughter corm, Weight of mother corm, corm diameter, corm weight, No. of corm per hectare, No. of cormels per hectare and Corm yield/plant observed for all characters. Highest GCV and PCV were recorded for Weight of daughter corm (g) (33.6786 and 47.569), No. of cormels per hectare (37.743 and 37.97), No. of corm per hectare (27.961 and 32.13), No. of days taken for first floret open (30.0614 and 30.0889), Corm yield/plant (23.667 and 29.334), Weight of mother corm (25.6022 and 28.1499),Corm weight

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(21.75 and 25.49), Days taken for corm sprouting (23.7566 and 23.7566) and lowest GCV and PCV were recorded for No. of floret per spike (2.7578 and 3.3549). The genotypes Creamy green and White prosperity were found to produce the highest spike yields per plot and the highest numbers of corm per hectare, respectively. These genotypes may be sown for higher yields and showed a good response to selection due to their high heritability, variability, and genetic advance, which showed additive gene effect. These genotypes can be utilised to selectively increase yield and component attributes.

Keywords: Gladiolus; phenotypic coefficients of variation (PCV); genotypic coefficients of variation (GCV); heritability; genetic advance as percentage of mean (GAM).

1. INTRODUCTION

Trading in floriculture has become increasingly significant on a global scale, which generates significant cash that brings joy and happiness. Other than this bulbous decorative, which occupies 50,000 hectares of global soil and gladiolus, which occupies 9,500 hectares, Furthermore, gladiolus is the most widely grown bulbous ornamental in India, accounting for more than 1200 ha and producing 707 million spikes annually (NHB, 2013), followed by tuberose (800 hectare). Due to the gladiolus or sword lily's (*Gladiolus grandiflorus* L) popularity as the most widely planted ornamental bulbous plant in our nation and its exceptional spikes' wide range of colours.

Due to its shape and leaves, the word "gladiolus" signifies "sword." This word's origins are in the Latin word gladiolus. Since Gladiolus illyricus grows wild as a weed in corn fields, it is commonly known as "corn flag" in Europe [1-3]. Additionally, because it was discovered growing close to the Victoria Falls in the tropical woods of Africa, it is also known as "water fall gladiolus." The Gladiolus plant was first grown in the late 16th century.

Several nations, including the USA, Holland, Italy, France, Poland, Bulgaria, Brazil, Australia, and Israel, produce cut gladiolus flowers. In contrast, Gladiolus has only lately been introduced in India, but it has been popular in Europe for almost a century. In terms of area and production of cut flowers grown in India, gladiolus is now recognised as a modern cut flower and is rated second [4,5]. According to Firminger's Manual of Gardening in India, which was published in 1863, several gladioli from corms and seeds were cultivated at Charles Grey's garden, which is located in Coonoor, as evidence of the cultivation of gladiolus in India during the 19th century. Furthermore, India's favourable agro-climate makes it the finest place to cultivate gladiolus. Additionally, states like Jammu and Kashmir, Uttar Pradesh, Himachal Pradesh, Haryana, Delhi, Karnataka, Punjab, West Bengal, Assam, Sikkim, and Meghalaya have shown to have good conditions (NHB, 2015). It is grown on an area larger than 14 hectares (NHB, 2015). Gladiolus cultivation has the ability to alter the economic situation of farmers, particularly in the Northern Indian plains (which includes all of Uttar Pradesh), Tamil Nadu's coastal regions, and Pondicherry. This helps create jobs and boost the economy, especially in rural areas [6,7]. One of the best bulbous flowers in India is the gladiolus, which is anticipated in the development of the floriculture sector by forward-thinking farmers and entrepreneurs.

2. MATERIALS AND METHODS

The experiment was laid out in Randomized Block Design with Eight treatments, each replicated three times in the Experimental block of Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj - 211007 (UTTAR PRADESH) India. The treatments were allocated randomly to a unit plot in each replication. Eight different varieties viz. White Prosperity, Mohini, Hunting Song, Creamy green, Suchitra, Samara, Nova, Peterpears were used for the study. The entire experimental land was divided into subplots measuring 1.0m×1.0m and there were totally 24 plots. Five plants were selected at random (non —destruction sampling) and tagged in each treatment combination and replication for the purpose of recording observation on vegetative, flowering and corm characters were recorded from five randomly tagged plants in each treatment.

The Observations were recorded on quantitative characters selected for genetic variability studies such as Number of days taken for corm sprouting, Number of sprouting per corm, Plant height (cm), Number of leaves per plant, Day to

spike emergence, Days taken for colour break stage, First floret opening (Days), Spike length (cm) Size of floret (cm), Vase life of spike (Size of floret (cm), Vase life of spike (at ambient room temperature) (days), Spike per plant at ambient room temperature) (days), Spike per plant Weight of mother corm,Weight of daughter corm(g) Corm diameter, No. of corm per hectare, No. of cormels per hectare, Corm yield/plant.

2.1 Estimation of Component of Variance

The mean square for error was subtracted from the mean square value to genotype and the difference was divided by replication for obtaining the genotype variance, which was calculated according to the method suggested by Burton (1952). The genotype variance was calculated following the procedure given by Burton and Devance (1953).

Genotypic and phenotypic variance for individual environments was obtained with the help of following formula:

$$\text{Genotypic variance } (\sigma 2g) = \frac{\text{Genotypic MSS} - \text{Error MSS}}{\text{Number of replications}}$$

Phenotypic variance (σ2p) = (σ2g + σ2e)

Where,

σ2e = Error M.S.S.
σ2g = Genotypic variance
σ2p = Phenotypic variance

3. RESULTS AND DISCUSSION

The mean values, range, grand mean, coefficient of variation, and critical difference of 8 gladiolus genotypes for all the 25 growth, flowering and corm yield characters.

3.1 Plant Height (cm) 30 DAS

The character plant height (cm) at 30 DAS exhibited a wide range of variation from 31.81 to 43.18 with a grand mean of 36.49. The highest plant height (cm) at 30 DAS of genotype Creamy green (43.18) followed by Peterpears (39.14) and White prosperity (37.86). While lowest plant height (cm) at 30 DAS was observed for Mohini (31.81) and Hunting Song (31.81).

3.2 Plant Height (cm) 60 DAS

The character plant height (cm) at 60 DAS exhibited a wide range of variation from 54.04 to 67.69 with a grand mean of The highest plant height (cm) at 60 DAS of genotype white prosperity (67.69) followed by Mohini (65.38) and Nova (64.91). While lowest plant height (cm) at 60 DAS was observed for Hunting Song (54.04).

3.3 Plant Height (cm) 90 DAS

The character plant height (cm) at 60 DAS exhibited a wide range of variation from 76.18 to 116.57 with a grand mean of 98.72. The highest plant height (cm) at 90 DAS of genotype Creamy green (116.57) followed by White prosperity (108.57) and Nova (105.31). While lowest plant height (cm) at 90 DAS was observed for Samara (93.24).

3.4 Number of Leaves per Plant 30 DAS

The character number of leaves per plant at 30 DAS exhibited a wide range of variation from 3 to 4 with a grand mean of 3.63. The highest number of leaves per plant at 30 DAS of genotype White prosperity (4) followed by Samara (4) and Mohini (4). While lowest number of leaves per plant at 30 DAS was observed for Peterpears (3.33).

3.5 Number of Leaves per Plant 60 DAS

The character number of leaves per plant at 60 DAS exhibited a wide range of variation from 6.66 to 8 with a grand mean of 7.24. The highest number of leaves per plant at 60 DAS of genotype Creamy green (8) followed by Samara (7.66) and Hunting song (7.66). While lowest number of leaves per plant at 60 DAS was observed for Mohini (6.66).

3.6 Number of Leaves per Plant 90 DAS

The character number of leaves per plant at 60 DAS exhibited a wide range of variation from 8 to 10 with a grand mean of 8.25. The highest number of leaves per plant at 90 DAS of genotype Suchitra (9.67) followed by Creamy green (8.33) and Samara (8). While lowest number of leaves per plant at 60 DAS was observed for Mohini (8).

3.7 Growth Parameters

3.7.1 Number of shoot/plant

The character Number of shoot/plant exhibited a wide range of variation from 1.05 to 1.55 with a grand mean of 1.2. The highest Number of

shoot/plant of genotype Nova (1.55) followed by Suchitra (1.38) and Creamy green (1.16). While lowest Number of shoot/plant was observed for Mohini (1.05).

3.7.2 Number of days taken for corm sprouting

The character Number of days taken for corm sprouting exhibited a wide range of variation from 3 to 6 with a grand mean of 4.42. The highest Number of days taken for corm sprouting of genotype Hunting song (6) followed by Mohini (6) and Suchitra (5). While lowest Number of days taken for corm sprouting was observed for Samara (3).

3.8 Flower Parameter

3.8.1 Days taken for emergence of flower spike

The character Days taken for emergence of flower spike exhibited a wide range of variation from 61 to 87 with a grand mean of 75.33. The highest Days taken for emergence of flower spike of genotype Mohini (87) followed by White prosperity (82) and Suchitra (82). While lowest Days taken for emergence of flower spike was observed in Peterpears (61).

3.8.2 Days taken for colour break stage

The character Days taken for colour break stage exhibited a wide range of variation from 66 to 94 with a grand mean of 81.29. The highest Days taken to show colour of basal floret was observed in genotype Mohini (94) followed by white prosperity (87) and Hunting song (87). While lowest Days taken to show colour of basal floret was observed in Samara (76).

3.8.3 Number of florets per spike

The character Number of florets per spike exhibited a wide range of variation from 10.66 to 12 with a grand mean of 11.15. The highest Number of florets per spike of genotype was observed in Mohini with (11.77) followed by Hunting song (11.50) and Suchitra (11.16). While lowest Number of florets per spike was observed for Nova (10.77).

3.8.4 Number of spikes per plant

The character Number of spikes per plant exhibited a wide range of variation from 1 to 1.33 with a grand mean of 1.07 The highest number of spikes per plant of genotype Suchitra (1.33) followed by Hunting song (1.11) and Samara (1.10). While lowest Number of spikes per plant was observed for Mohini (1).

3.8.5 Number of days taken for first floret open

The character Number of days taken for first floret open exhibited a wide range of variation from 45 to 97 with a grand mean of 67.67. The highest Number of days taken for first floret open of genotype was observed in Mohini with (94.67) followed by Hunting song (90.33) and white prosperity (90). While lowest Number of days taken for first floret open was observed for Peterpears (46.33).

3.8.6 Number of days taken for last floret open

The character Number of days taken for last floret open exhibited a wide range of variation from 10 to 13 with a grand mean of 12.46. The highest Number of days taken for last floret open of genotype Creamy green (13) followed by Hunting song (13) and Nova (13). While lowest Number of days taken for last floret open was observed for Suchitra (10.67).

3.8.7 Floret diameter (cm)

The character Floret diameter (cm) exhibited a wide range of variation from 10.20 to 14.50 with a grand mean of 11.74. The highest Floret diameter (cm) of genotype Mohini (14.30) followed by Creamy green (11.57) and Samara (11.37). While lowest Floret diameter (cm) was observed for Nova (10.80).

3.8.8 Spike length (cm)

The character Spike length (cm) exhibited a wide range of variation from 71.73 to 117.76 with a grand mean of 98.44. The highest Spike length (cm) of genotype Mohini (113.28) followed by Suchitra (109.29) and White prosperity (106.78). While lowest Spike length (cm) was observed for Peterpears (80.76).

3.8.9 Rachis length (cm)

The character Rachis length (cm) exhibited a wide range of variation from 39.95 to 63.01 with a grand mean of 50.34. The highest Rachis length (cm) was observed in genotype white

prosperity with (58.02) followed by Nova (54.99) and Creamy green (53.27). While lowest Rachis length (cm) was observed for Hunting song (42.72).

3.9 Corm Parameters

3.9.1 Corm weight (g)

The character Corm weight (g) exhibited a wide range of variation from 350 to 814 with a grand mean of 614.375. The highest Corm weight (g) of genotype Suchitra (813.3333) followed by Hunting song (710) and Creamy green (680). While lowest Corm weight (g) was observed for Mohini (350).

3.9.2 Weight of mother corm (g)

The character Weight of mother corm (g) exhibited a wide range of variation from 280 to 704 with a grand mean of 520.75. The highest Weight of single corm (g) of genotype was observed in Suchitra (703.3333) followed by Creamy green (606.6667) and Hunting song (593.3333). While lowest Weight of mother corm (g) was observed for Advance red (280).

3.9.3 Weight of daughter corm (g)

The character number weight of daughter corm exhibited a wide range of variation from 55 to 66 with a grand mean of 110.625. The highest Number weight of daughter corm (g) of genotype was observed in Mohini (200) followed by Hunting song (170) and white prosperity (125). While lowest Number weight of daughter corm (g) was observed for Creamy green (55).

3.9.4 Cormel diameter (cm)

The character Cormel diameter (cm) exhibited a wide range of variation from to 1.24 with a grand mean of 1.07. The highest Cormel diameter (cm) of genotype her Creamy green (4.85) followed by Nova (4.85) and Creamy green (4.78). While lowest Cormel diameter (cm) was observed for Mohini (3.59).

3.9.5 Vase life (days)

The character Vase life (days) exhibited a wide range of variation 7 to 10 with a grand mean of 8.71. The highest Vase life (days) of genotype Nova (9.67) followed by Peterpears (9.33) and White prosperity (9). While lowest Vase life (days) was observed for Suchitra (7.67).

3.9.6 Number of corms per hectare

The character Number of corms per hectare exhibited a wide range of variation from 126350.00 to 297500.00 with a grand mean of 210954.50. The highest Number of corms per hectare of genotype Creamy green (297500.00) followed by white prosperity (283500.00) and Nova (261100.00). While lowest Number of corms per hectare was observed for Mohini (126350.00).

3.9.7 Number of cormels/hectare

The character Number of cormels/hectare exhibited a wide range of variation from 2074100.00 to 7147000.00 with a grand mean of 4188514.00. The highest Number of cormels/hectare of genotype White prosperity (7147000.00) followed by Nova (6146350.00) and Hunting song (4472650.00). While lowest Number of cormels/hectare was observed for Mohini (2695350.00).

3.9.8 Corms yield/plant (g/plant)

The character Corms yield/plant (g/plant) exhibited a wide range of variation from 47.41 to 103.37 with a grand mean of 78.64. The highest Corms yield/plant (g) of genotype Creamy green (103.37) followed by White prosperity (101.44) and Nova (97.41). While lowest Corms yield/plant (g) was observed in Mohini (47.41).

Analysis of variance showed significant differences among the genotypyes for all the twenty quantitative parameters, indicating the sufficient genetic variability to be exploited in breeding programme (Table 1).

3.9.9 Genotypic coefficient of variation (GCV)

The genotypic coefficient variance value was categorized as low (0-10%), moderate (10-20%) and high (20% and above) given by Sivasubramanian and Madhavamenon (1973). Wide range of genotypic coefficient of variation (GCV) was observed for the characters ranging Weight of daughter corm (33.6786) to No. of floret per spike (2.7578). High magnitude of GCV were recorded for Weight of daughter corm (33.6786),No. of days taken for first floret open (30.0614), Weight of mother corm (25.6022), Days taken for corm sprouting (23.7566), Corm weight (21.757), number of corms per hectare (27.96), number of corm produced per mother corm (27.96), number of shoot/plant (24.904), corms yield/plant (g) (23.66)., While as moderate estimates were observed for No. of shoot per

plant (13.0507), Plant height at (90 DAS) (12.0103), No. of leaves per plant at 30 DAS (11.6573), Days for spike emergence (11.5301), Spike length (11.2748), Days taken for color break stage (11.0456),Corm diameter (10.4691) Whereas low estimates were observed for Rachis length (9.7862), Plant height at 30 DAS (9.3666), Floret diameter (8.7413), Plant height at 60 DAS (7.9676), No. of spike per plant (7.6236), Vase life (7.0876), No. of leaves per plant at 90 DAS (6.8082), No. of days taken for last floret open (6.583), No. of leaves per plant at 60 DAS (6.0198), No. of floret per spike (2.7578). Similar findings were also reported by Bhujbal et al., [8], Kumar et al., [9], Naresh et al., [10], Pattanaik et al., (2013).

3.9.10 Phenotypic coefficient of variation (PCV)

The phenotypic coefficient variance value was not were categorized as low (0-10%), moderate (10-20%) and high (20% and above) given by Sivasubramanian and Madhavamenon (1973). Wide range of phenotypic coefficient of variation (PCV) was observed for the characters ranging from Weight of daughter corm (47.569) to No. of floret per spike (3.3549). High magnitude of GCV were recorded for number of cormels/hectare (37.973), number of cormels/ plant (37.97), corms yield/plant (g) (29.33), Weight of daughter corm (47.569), No. of days taken for first floret open (30.0889), Weight of mother corm (28.1499), Corm weight (25.4938), Days taken for corm sprouting (23.7566), While as moderate estimates were observed for No. of shoot per plant (16.5765), No. of spike per plant (14.2576), No. of leaves per plant at 30 DAS (3.9563), Plant height at (90 DAS) (13.9332), Spike length (13.3344), Rachis length (12.2749), Plant height at 30 DAS (12.2675), Days for spike emergence (11.685), Corm diameter (11.5979), Days taken for color break stage (11.057), Floret diameter (10.8422), Plant height at 60 DAS (10.07), Whereas low estimates were observed for Vase life (8.9914), No. of leaves per plant at 60 DAS (8.243), No. of leaves per plant at 90 DAS (7.5974), No. of days taken for last floret open (7.3535), No. of floret per spike (3.3549). Similar findings were also reported by Bhujbal et al., [8], Kumar et al., [9], Naresh et al., [10], Pattanaik et al., (2013).

3.9.11 Heritability

In the present study the heritability estimates in broad sense were classified into 3 groups such as high (>75%), moderate (60% - 75%), low (<60%). The heritability estimates were found to be high (more than 75%). The high heritability in broad sense was observed for the characters viz. Days taken for corm sprouting (100), No. of days taken for first floret open (99.8176), Days taken for colour break stage (99.7937), number of cormels/hectare (98.80), Days taken for spike emergence (97.3652), Weight of mother corm (82.7181), Corm diameter (81.482), No. of leaves at 90 DAS (80.303), No. of days taken for last floret open (80.1418) , number of corms per hectare (75.70) While as moderate estimates were observed for Plant height at 90 DAS (74.3027), Corm weight (72.833), Spike length (71.4946), No. of leaves at 30 DAS (69.7674), No. of floret per spike (67.5702), Floret diameter (65.0009), Rachis length (63.5613), Plant height at 60 DAS (62.6044), Vase life (62.1359)No. of shoot per plant (61.9844). Whereas low estimates were observed Plant height at 30 DAS (58.2978), No. of leaves at 60 DAS (53.3333), Weight of daughter corm (50.1256), No. of spike per plant (28.5906).The present findings are in accordance with the findings of Bichoo et al., [11] Balaram and Janakiram [12], Bhujbal et al., [8] Naresh et al., [10], Singh et al., [13] and Vanlalruati et al., (2013).

3.9.12 Genetic advance

In the present investigation, the genetic advance estimates were found to be high for Weight of mother corm (249.6294), Corm weight (234.9176), number of corms per hectare (98.200), number of cormels/hectare (97.500), corms yield/plant (g) (30.93) , Weight of daughter corm (47.6865), No. of days taken for first floret open (41.8654), While as moderate estimates were observed Plant height at 90 DAS (21.0558) showed low genetic advance estimate were found in Spike length (19.3327), Days taken for color break stage (18.4779), Days taken for spike emergence (17.6558), Rachis length (8.091), Plant height at 60 DAS (7.9491), Plant height at 30 DAS (5.3765), Days taken for corm sprouting (2.2022), Floret diameter (1.698), No. of days taken for last floret open (1.5125), No. of leaves per plant at 90 DAS (1.0369), Vase life (1.0022),Corm diameter (0.8644), No. of leaves at 30 DAS (0.7271), No. of leaves per plant at 60 DAS (0.6566), No. of floret per spike (0.5207), No. of shoot per plant (0.2548), No. of spike per plant (0.092). The results was also in accordance with the findings of Vanlalruati et al, (2013), Sing et al., [13], Naresh et al., [10], Bhujbal et al., [8] and Kumar et al., [9].

Table 1. Estimation of component of variance and genetic parameters for 25 character growth, flowering and corm yield of 8 genotypes in Gladiolus

S.no.	Characters	Mean	Range		Vg	Vp	GCV	PCV	H^2 (%)	GA	GA as (% Mean)
			Max	Min							
1.	Plant height (cm) 30 DAS	36.49	43.18	31.81	11.68	2.04	9.37	12.27	58.30	5.38	14.80
2.	Plant height (cm) 60 DAS	61.205	67.69	54.04	23.78	37.99	7.96	10.07	62.60	7.94	12.98
3.	Plant height (cm) 90 DAS	98.72	116.57	76.18	140.60	189.234	2.01	13.93	74.30	21.05	21.32
4.	Number of leaves per plant at 30 DAS	3.62	4	3	0.17	0.25	11.65	13.95	69.76	0.72	20.05
5.	Number of leaves per plant at 60 DAS	7.24	8	6.66	0.19	0.35	6.01	8.24	53.33	0.65	9.05
6.	Number of leaves per plant at 90 DAS	8.25	10	8	0.31	0.39	6.80	7.59	80.30	1.03	12.56
7.	No. of shoot per plant	1.2	1.55	1.05	0.02	0.03	13.05	16.57	61.98	0.25	21.16
8.	Days taken for corm sprouting	4.41	6	3	1.27	1.32	23.75	23.75	100	2.20	48.93
9.	Rachis length	50.34	63.01	39.95	24.27	38.18	9.78	12.27	63.56	8.09	16.07
10.	Days for spike emergence	75.33	87	61	75.44	77.48	11.53	11.68	97.36	17.65	23.43
11.	Days for colour break stage	81.29	94	66	80.62	80.79	11.04	11.05	99.79	18.47	22.73
12.	No. of floret per spike	11.15	12	10.66	0.09	0.13	2.75	3.35	67.57	0.52	4.66
13.	No. of spike per plant	1.07	1.33	1	0.01	0.01	7.62	14.25	28.59	0.092	8.39
14.	No. of days taken for first floret open	67.66	97	45	413.77	414.53	30.06	30.08	99.81	41.86	61.87
15.	No. of days taken for last floret open	12.45	13	10	0.67	0.83	6.58	7.35	80.14	1.51	12.14
16.	Floret diameter	11.73	14.5	10.2	0.97	1.60	8.74	10.84	65.0009	1.69	14.51
17.	Spike length(cm)	98.44	117.76	71.73	123.16	172.27	11.27	13.33	71.49	19.33	19.63
18.	Vase life	8.70	10	7	0.38	0.61	7.08	8.99	62.13	1.002	11.50

S.no.	Characters	Mean	Range		Vg	Vp	GCV	PCV	H^2 (%)	GA	GA as (% Mean)
			Max	Min							
19.	Corm weight(g)	614.29	813.33	350	19855.35	20515.47	21.75	25.49	72.83	234.91	38.24
20.	Weight of mother corm(g)	520.75	704	280	17752.38	2140.309	25.60	28.14	82.71	249.62	47.96
21.	Weight of daughter corm(g)	97.08	66	53.33	1069.04	2132.73	33.67	47.56	50.12	47.68	49.11
22.	Corm diameter(cm)	4.44	4.85	3.59	0.21	0.26	10.46	11.59	81.48	0.86	19.46
23.	No. of corm per hectare	251578.375	153300	153300	3479139000	4585267000	27.961	32.13	75.70	98.2	50.11
24.	No. of cormel per hectare	4188514.00	714700	2074100	499133000	52973900	37.743	37.97	98.20	97.50	77.27
25.	Corm yield/ plant	78.64	1033.37	47.41	346.38	532.13	23.667	29.334	65.10	30.93	39.33

4. CONCLUSION

Based on the findings of the investigation, it was determined that the majority of traits exhibiting additive genetic influence had significant magnitudes of heritability (in a wide sense) along with high genetic gain. PCV was higher than GCV for all the traits studied highest GCV and PCV is recorded as Weight of daughter corm (g) (33.6786 and 47.569), High GCV and PCV is recorded in No. of days taken for first floret open (30.0614 and 30.0889), High GCV and PCV is recorded in Weight of mother corm (25.6022 and 28.1499), High GCV and PCV is recorded in Days taken for corm sprouting (23.7566 and 23.7566) respectively. Genotypic and phenotypic correlation coefficient analysis revealed that Corm weight/plant (g) showed positive significant association with No. of leaves per plant at 60 DAS, Weight of mother corm (g), Corm diameter (cm) while negative association with No. of leaves per plant at 30 DAS and Floret diameter. Due to their high heritability, variability, and genetic advancement exhibiting additive gene effect, the genotypes Creamy green, followed by White prosperity, Nova, Suchitra, and Hunting song produced higher spike yield per plot, indicating that these genotypes may be shown for higher yield and indicating good response to selection. These genotypes can be utilised to selectively increase yield and component attributes.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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