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Short Communication

COMPARISON OF VARIABILITY PARAMETERS BETWEEN YELLOW vs BROWN SEEDED *BRASSICA TOURNEFORTII* GOUAN

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Different species of *Brassicas* are cultivated in different parts of India but wild turnip *(Brassica tournefortii* Gouan)- locally known as **Chitti sarson** is sporadically grown in few pockets in northern parts of Rajasthan State. Its small, rounded seed had yellow and brown colour which normally contains oil up to 40 per cent. The seed colour is a established potent factor for genetic diversity in *Brassica.* The yellow seed has high oil and protein content due to thinner seed coat as compared to brown or black seed forms (Stringam *et al.*, 1974). Therefore, an attempt has been made here in present investigation to assess seed colour influence on different variability parameters in this species.

Thirty five yellow and sixty five brown seeded genotypes of *B. tournefortii* were grown in randomized block design with three replications at Agricultural Research Station, Mandor, Jodhpur during rabi 1991-92. Each of these entries were planted in two rows of 3 m length with crop geometry of 30 × 10 cm. Observations were recorded on five competitive plants from each plot on ten attributes. The mean data were subjected to compute the coefficients of variability (Burton, 1955), heritability in broad sense and expected genetic advance (Johnson *et al.*, 1955). Analysis of variance indicated highly significant difference among the genotypes for all the ten traits studied (Table 1). Analysis also indicated significant differences between yellow and brown seeded group (except recemes/plant) revealing predominant role of seed colour in expression of the most of the traits. Sufficient variation were also obtained within group for all the characters, indicating the opportunities for manipulation and improvement within each groups.

Table 1. Anova for different characters in *B. tournefortii*

Characters	Mean sum of squares				
	Total genotypes	Yellow seeded genotypes	Brown seeded genotypes	Yellow v/s brown seeded genotypes	Error
(df)	(99)	(34)	(64)	(1)	(198)
Vegetative phase (days)	154.76**	30.22**	50.56**	11057.92**	1.24
Reproductive phase (days)	59.95**	40.06**	29.33**	2695.89**	4.58
Maturity period (days)	59.63**	26.98**	33.79**	2823.49	1.98
Plant height (cm)	366.05**	241.27**	339.16**	6329.53**	14.62
Primary branches/plant	3.63**	2.77**	4.01**	8.55**	0.58
Racemes/plant	33.59**	41.88**	29.71**	0.05	8.70
Main raceme length (cm)	107.18**	43.01**	113.76**	1867.84**	4.99
Siliquae/main raceme	25.91**	17.10**	28.81**	139.85**	3.32
Siliqua intensity x 10^{-3}	11.60**	8.93**	11.81**	176.24**	1.28
Seed yield/plant (9)	16.27	6.07**	14.75**	460.35**	1.49

** p = 0.01%

Variability parameters computed for individual group indicated that traits like vegetative phase, maturity period, plant height, primary branches per plant and siliqua intensity had recorded higher mean values for yellow seeded genotypes as compared to brown seeded genotypes (Table 2), while the magnitude fo mean values of the characters viz., reproductive phase, main receme length, siliquae per main raceme and seed yield per plant were higher for brown cultures than yellow cultures group. All most all the attributes recorded higher magnitude of genotypic coeffcient of variation (except reproductive phase and racemes per lant) for brown seed strains in comparison to yellow seed cultures. Seed yield per plant had recorded maximum value of GCV in both seed colour groups. Joshi *et al.* (1993) had also recorded the highest GCV for this trait. High value of GCV was also observed in characters recemes per plant and primary bracnhes per plant for yellow seeded genotypes; while traits like primary branches per plant, main receme length and recemes per plant were exhibited high estimates of GCV in brown seeded genotypes. Heritability estimates (in broad sense) was high for the traits plant height (87.0%), vegetative phase (83.5%), main raceme length (78.7%), moderate for maturity period (71.7%), siliquae per main raceme (69.5%), siliqua intensity (68.7%), reproductive phase (64.8%), racemes per plant (64.6%), primary branches per plant (53.2%) and it was lowest for seed yield per plant (38.7%) in yellow seeded group. In brown seeded group, heritability estimate was highest for

Table 2. Comparison of variability parameters between yellow vs brown seeded *B. tournefortii*

Characters	YS* BS	Mean ± SEm	Range	Genotypic coefficient of variation (%)	Herita-bility (in broad sense) (%)	Expected genetic advance as percent of mean
Vegetative phase (days)	YS	13 ± 1.11	67.80	4.2	83.5	7.9
	BS	61 ± 0.78	54-73	6.7	94.8	13.4
Reproductive phase (Days)	YS	50 ± 2.02	43.56	6.7	64.8	11.2
	BS	56 ± 1.57	50-62	5.2	69.6	8.9
Maturity period (days)	YS	123 ± 1.45	116.128	2.3	71.7	4.0
	BS	117 ± 0.93	108-124	2.8	89.3	5.5
Plant height (cm)	YS	121.1 ± 2.76	101.7-138.7	7.2	87.0	13.8
	BS	112.4 ± 3.30	87.7-135.0	9.2	86.8	17.7
Primary branches/plant	YS	8.0 ± 0.65	5.7-9.9	10.5	53.2	16.2
	BS	7.7 ± 0.61	5.8-11.4	14.0	67.1	23.4
Racemes/plant	YS	22 ± 2.08	13-29	15.9	64.6	25.9
	BS	22 ±2.58	16-29	11.4	39.7	14.8
Main raceme length (cm)	YS	42.3 ± 1.54	34.3-47.0	8.6	78.7	15.6
	BS	47.5 ± 1.90	33.0-63.0	12.6	86.9	24.2
Siliquae/main raceme	YS	26 ± 1.21	19-29	8.6	69.5	14.6
	BS	27 ± 1.63	20-33	10.5	67.5	18.1
Siliqua intensity	YS	0.61±0.03	0.48-0.80	8.2	68.7	16.4
	BS	0.58 ± 0.03	0.42-0.72	10.2	72.9	17.4
Seed yield/plant (g)	YS	5.1 ± 1.18	2.2-8.8	22.3	38.7	29.4
	BS	7.7 ± 0.88	3.4-12.9	27.4	79.7	50.6

*YS = yellow seeded genotypes (35)

BS = brown seeded genotypes (65)

vegetative phase (94.8%) followed by maturity period (89.3%), main raceme length (86.9%), plant height (86.8%), seed yield per plant (79.7%), moderate for siliqua intensity (72.9%), reproductive phase (69.6%), siliqua per main raceme (67.5%), primary branches per plant (67.1%) and it was lowest for racemes per plant (39.7%). In general, most of the attributes in brown seeded group recorded higher estimates of heritability in comparison to yellow seeded group. Heritability estimates or seed yield per plant and racemes per plant

were influeced drastically by seed color effect. In yellow seeded group, high estimates of expected genetic advance as percentage of mean was obtained for seed yield per plant (29.4%) followed by racemes/plant (25.9%), siliqua intensity (16.4%), primary branches per plant (16.2%), main raceme length (15.6%). While the traits : seed yield per plant (50.6%), main raceme length (18.1%), plant height (17.7%) and siliqua intensity (17.4%) were recorded comparatively high estimates of expected genetic advance (Ad%) in brown seeded group. Reproductive phase and racemes per plant were only the traits recorded high magnitude of expected genetic gain in yellow seed group than the brown seed group.

As heritability in broad sense includes both additive and epistative gene effects, therefore, it will be reliable only if it accompanied by high genetic advance. As measured by this yardstick the characters, racemes per plant, siliqua intensity, main raceme length and siliqua per main raceme had moderate to high estimate of heritability as well as expected genetic advance, can be improved by direct selection of these traits, which consequently will contribute in improvement of yellow seeded genotyopes. The characters seed yield per plant, main raceme length, primary branches per plant, siliquae per main raceme and siliqua intensity were recorded moderate to high magnitude of both the above parameters in brown seeded cultures, indicating that these attributes might be have preponderance of additive gene action in their expression, therefore, selection for these characters, may be effective and fruitful in breeding programme in improvement of brown seeded genotypes of *B. tournefortii.*

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