Indian J. Genet., **60**(3): 403-405 (2000)

Short Communication

HETEROSIS IN SESAME (*SESAMUM INDICUM* L.)

Z. S. SOLANKI AND DEEPAK GUPTA

Agriculture Research Station, Rajasthan Agricultural University, Mandor

(Received: August, 1999; accepted: May, 2000)

The exploitation of hybrid vigour in sesmae depends on the magnitude of heterosis and feasibility of hybrid seed production at the commercial scale. Though, sesame is predominantly a self pollinated crop but considerable level of cross pollination also noticed. Hence an attempt was made to evaluate the extent of heterosis for seed yield and yield attributing components in 100 crosses of sesame and identification of high heterotic crosses over standard check for utilizing them in heterosis breeding programme.

Twenty lines were crossed with each of the five testers in line × tester model suggested by Kempthorne [1]. The resultant 100 hybrids along with their parents were raised in randomized block design with three replications during kharif 1997 at Agriculture Research Station, Mandor, Jodhpur. Each entries were raised in a plot consisted of single row of 2.5 m length with a spacing of 30 × 15 cm. Observations were recorded on five randomly selected plants for 8 morphological and yield contributing characters.

The magnitude of heterosis in desirable direction for different characters among the five top ranking hybrid combinations is presented in Table 1. Significant differences among the parents and the F_1 hybrids were observed for all the characters.

Frequency of significant heterotic crosses was also very high for seed yield/plant, plant height, nodes on main stem, capsules bearing nodes on main stem, capsules/plant and 1000-seed weight.

Heterosis over better parent and better check was observed for seed yield (118.7%, 101.5%) followed by capsules/plant (71.4%, 50.6%), Branches/plant (62.5%, 40.4%), capsules bearing nodes on main stem (61.0%, 63.5%), nodes on main stem (45.5%, 45.0%), 1000-seed weight (44.9%, 23.9%), plant height (36.7%, 29.9%) and days to maturity, (–4.9%, –5.06%) respectively.

Hybrid RT-201 × RT-125 recorded highest heterosis over better parent for seed yield (118.7%) and 1000-seed weight (44.9%) whereas hybrid IS-231-1 × RT-125 recorded highest heterosis for capsules/plant (71.4%). Hybrid RT-308 × RT-127 recorded highest heterosis over better check for seed yield and showed significant

Table 1. Crosses showing significant heterotic effects for eight characters

Characters	Crosses showing significant heterosis in desirable direction	
	Over better parent	Over better check
Seed yield per plant	RT-201 × RT-125, RT-308 × RT-127, RT-308 × RT-46, RT-201 × RT-46, RT-299 × RT-127	RT-308 × RRT-127, RT-299 × RT-127, RT-216 × RT-127, TKG-32 × RT-127, RT-201 × RT-125
Days to maturity	TKG-32 × RT-46	IS-231-1 × RT-127, SI-1736 × RT-103
Plant height	RT-220 × RT-103, RMT-27 × RT-103, RT-201 × RT-127, SI-1736 × 127	RT-201 × RT-217, RMT-27 × RT-103, SI-1736 × RT-127, ES-379-3-94 × RT-103
Branches per plant	RT-274 × RT-54, IS-1014 × RT-54, RT-216 × RT-54, ES-379-3-94 × RT-54, IS-637 × RT-54	IS-1014 × RT-125, IS-1014 × RT-54, IS-208 × RT-54, RT-220 × RT-125
Nodes on main stem	IS-1014 × RT-54, TKG-32 × RT-127, Gujarat Til No. 1 × RT-103, RMT-27 × RT-103	ES-379-3-94 × RT-103, TKG-32 × RT-127, RMT-27 × RT-103, RT-274 × RT-127, RMT-27 × RT-54
Capsules bearing nodes on main stem	RT-308 × RT-127, TKG-32 × RT-127, RT-220 × RT-127, RT-299 × RT-125	ES-379-3-94 × RT-103, RT-308 × RT-127, TKG-32 × RT-127, RT-299 × RT-127, RT-220 × RT-127
Capsules per plant	IS-231-1 × RT-125, ES-379-3-94 × RT-103, RT-201 × RT-46, RT-201 × RT-54, RMT-24 × RT-103	RT-299 × RT-127, TKG-32 × RT-127, RT-308 × RT-127, IS-637 × RT-127, SI-250 × RT-127
1000-seed weight	RT-201 × RT-125, RT-220 × RT-125, RMT-24 × RT-103, IS-231-1 × RT-46	RT-201 × RT-125, IS-231-1 × RT-127, RT-201 × RT-46, ES-379-3-94 × RT-127, RT-299 × RT-127

heterosis for plant height, capsules per plant and capsules bearing nodes on main stem. The findings by Sashikumar and Sardana [2] also indicated significant and positive heterosis for number of capsules per plant, number of seed per seed per capsules and seed yield per plant, whereas, Sodani and Bhatnagar [3] indicated positive heterosis for number of capsules per plant and branches per plant.

The heterosis for yield in most cases was due to simultaneous heterosis for number of capsules per plant and capsules bearing nodes on main stem either over better parent or both better parent and better check. The hybrid RT-201 × RT-125, recorded significant positive heterosis over both better parent and better check for seed yield, capsules per plant, capsules bearing nodes on main stem and 1000-seed weight.

As evident from the study that crosses like RT-201 × RT-125, IS-231-1 × RT-125 and RT-308 × RT-127 could be used to produce biparental progenies to get superior segregants, which may be handled through pedigree method of breeding. The heterosis over better parent for seed yield to the extent of 118.7% offers a good scope for heterosis breeding in this crop provided it becomes economical and practical.

REFERENCES

1. O. Kempthorne. 1957. An introduction to Genetic Statistics. John Willy and Sons., Include. New York.
2. B. Sashikumar and S. Sardana. 1990. Heterosis for yield and yield components in sesame. Indian J. Genet., **50**: 45-49.
3. S. N. Sodani and S. K. Bhatnagar. 1990. Heterosis and inbreeding depression in sesame. Indian J. Genet., **50**: 87-88.