

Evaluation of amaranthus hybrids

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Accepted : October, 2008

ABSTRACT

Six genotypes of Amaranthus were crossed in a diallel fashion and the hybrids were evaluated at 35 days after sowing. The parent P_4 and P_6 indicated their superiority for yield and many yield components based on their mean performances. The results indicated that the parents involved in the present study differed in their genetic architecture apart from difference in their pedigree, geographical origin and morphological difference. This facilitates an appropriate choice of parents based on the need for improvement of specific traits. $P_2 \times P_1$ appears to be promising for higher yield. Other hybrids $P_2 \times P_6$, $P_2 \times P_5$, $P_6 \times P_1$ and $P_2 \times P_4$ appeared promising for higher yield of greens based on *per se* performance. For improvement of other component characters the hybrids *viz.*, $P_1 \times P_3$, $P_1 \times P_5$, $P_2 \times P_5$, $P_3 \times P_5$, $P_4 \times P_2$ and $P_5 \times P_6$ were found promising based on *per se* performance. The hybrid $P_2 \times P_1$ was outstanding for yield of greens and weight of leaves. The hybrids $P_4 \times P_6$ was found to be superior for number of leaves per plant and days for 50 per cent flowering. The hybrid $P_2 \times P_6$ was found to be good for weight of leaves and weight of stem. The crosses can be best utilized for further crop improvement programmes

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Key words : Amaranthus, Evaluation, Parents, Hybrids, Yield.

Green leafy vegetables occupy an important place among the food crops as these provide adequate amounts of many vitamins and minerals for humans. They are the rich source of carotene, ascorbic acid, riboflavin, folic acid and minerals like calcium, iron and phosphorous. Among the leafy vegetables, Amaranth (*Amaranthus tricolor*) is an important leafy vegetable grown throughout India. The nutritional value of this crop is excellent, because of its high content of dry matter, carotene, iron, calcium, vitamin C and protein. So evaluation of parents and hybrids is essential to identify the superior parents and hybrids which can be used for further breeding programme. The mean performance is considered as the prime criterion in evaluating the parents by several breeders. Selection of parents for improvement of yield is a crucial step in breeding programmes. Parents with good *per se* performance will yield better hybrids in most accessories. In the choice of parents, high mean value is the main criterion among the breeders for a long time, the *per se* performance of the parents will help in enabling the selection of promising parents.

Similarly the promising hybrids with best performances can also be evaluated based on *per se* performance.

MATERIALS AND METHODS

The experiment were carried out at College Orchard, Tamil Nadu Agricultural University, Coimbatore. The experimental material included six genotypes of vegetable amaranthus which were used as parents, and were

designated as P_1 , P_2 , P_3 , P_4 , P_5 and P_6 . There were raised in a randomized block design with three replications and crossed in a full diallel design. Crosses were made in all possible combinations inclusive of reciprocals and selfs for production of F1's.

The recommended cultural practices as applicable to a leafy vegetable crop (Annon, 1974) were applied. Observations were recorded 35 days after sowing. A total of five plants were evaluated for each cross and parents for recording quantitative characters. Observations were recorded on plant height at maturity, days for 50% flowering, weight of leaves, weight of stem, number of leaves, Leaf area, 1000 seed weight and yield of greens. Evaluation of parents and hybrids were done based on the *per se* performance.

RESULTS AND DISCUSSION

A good association between the performance of the parents leads to the conclusion that choosing of parents for crop improvement programme may be based on their own performance. The evaluation of parents and hybrids was accomplished based on their *per se* performance also. The mean performance of the parents and hybrids in amaranthus are presented in Table 1.

In case of yield of greens, among the parents, the yield of greens ranged from 27.44 in P_3 to 76.65 in P_6 . The parent P_6 was outstanding in mean performance for yield of greens (76.65 g) followed by P_2 (70.89g) and P_1 (67.81g). The yield of greens varied from 32.19g in $P_5 \times P_4$ to 96.57g in $P_2 \times P_1$. The yield of greens was also more in the hybrids $P_2 \times P_6$ (92.97g), $P_2 \times P_5$ (91.34g),