

INHERITANCE OF AROMA IN RICE

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ABSTRACT

Two nonscented varieties, ADT 38 and ADT 39, were crossed with the scented variety, Badshabhog to study the inheritance of aroma in rice. Leaves were used for sensing aroma. The F₁ plants were nonaromatic. The F₂ in both crosses segregated in the ratio of 15 nonaromatic : 1 aromatic plants. The results indicate that aroma in Badshabhog is controlled by two recessive genes.

Key words: Rice, aroma, inheritance.

Aroma in scented rice has its unique value both from consumption and commercial points of view. Knowledge of inheritance pattern of aroma would help in deciding the breeding procedure to evolve scented varieties [1–4]. A preliminary study was conducted to study the gene involved in the expression of aroma.

MATERIALS AND METHODS

Badshabhog is an aromatic short duration rice variety of Bangladesh. ADT 38 and ADT 39 are two medium duration nonaromatic rice varieties. Crosses were made using these two varieties as female parents and Badshabhog as the pollen parent. The parent, F₁ and F₂ were raised in November 1992 at Tamil Nadu Rice Research Institute, Aduthurai. Aroma was evaluated 90 days after sowing. Leaf blades weighing 2 g from 15 random plants of parents and F₁ and 200 plants of F₂ from each cross were soaked in 10 ml of 1.7% KOH solution in test tubes for 10 min [5] and evaluated for scent after 10 min by smelling the contents of the test tubes.

RESULTS AND DISCUSSION

Kasturi et al. [6] reported that scent is present in all parts of the rice plant irrespective of age or growth phase. Expression of aroma in leaf blade and grains was identical in Badshabhog and hence in this study, leaf blades were used to assess the presence of aroma in grains.

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All F₁ plants were nonaromatic indicating the recessive nature of gene controlling aroma in rice. The evaluation of scent on F₂ plants indicated 15 nonaromatic : 1 aromatic segregation in both the crosses (Table 1), suggesting that two recessive genes control aroma in Badshabhog. Similar findings were reported by [7].

Table 1. Behaviour of F₁ and F₂ population of rice with regard to aroma

Cross	Generation	No. of plants			χ^2 (15:1)	P
		total	non- aromatic	aromatic		
ADT 38 x Badshabhog	F ₁	15	15	—	—	—
ADT 39 x Badshabhog	F ₁	15	15	—	—	—
ADT 38 x Badshabhog	F ₂	200	189	11	0.19	0.50–0.75
ADT 39 x Badshabhog	F ₂	200	190	10	0.53	0.25–0.50

Since the aroma in rice is controlled by two recessive genes, pedigree breeding with larger population for selection in F₂ is suggested to introduce scent in nonscented varieties.

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