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RESEARCH NEWS

DEVELOPMENT OF NEW RICE LINES FROM TRADITIONAL RICE CULTIVAR "*SUDURU SAMBA*" THROUGH MUTATION

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Suduru samba is a traditional rice (*Oryza sativa*) cultivar grown in Sri Lanka historically. This cultivar has many advantages where it produces short round (*samba*) seeds, with a seed length of 0.5 cm and seed width of 0.2 cm. Cooked rice has a good taste and aroma. The average yield is about 2.5-3.5 mt/ha and it has fetched a higher price compared to other varieties in local market. However, susceptibility to lodging and neck blast, and the photosensitivity are major disadvantages o this variety. Susceptibility to lodging is mainly due to the tall plant habit (130 cm), thin culm and long panicle (31 cm). Mutation is considered a suitable technique to create variations. A study was hence conducted to reduce the plant height of *Suduru samba* through mutation and selection of new rice lines.

Experiment was carried out at the Rice Research and Development Institute (RRDI), Batalagoda, Ibbagamuwa, Sri Lanka. Gamma rays were used as mutation agent. Five hundred grams of *Suduru samba* seeds were subjected to gamma irradiation, which was done at Horticultural Crops Research and Development Institute, Gannoruwa, Peradeniya, Sri Lanka. Irradiated seeds were germinated and planted at the research field at RRDI. Selections were carried out based on the plant height, panicle length, seeds per panicle, seed size and seed shape. Selected plants of M1, M2, M3 and M4 generations were planted as bulk populations at the research field of RRDI for further selection and evaluation. Plants of M5, M6, M7 and M8 generations were planted as three raw progenies for the same purpose.

All mutated seeds germinated and most of the plants produced panicles. About 10 % of panicles produced completely empty seeds and another 10 % panicles contained a large number of empty seeds. This may be due to the chromosomal abbreviations. Selection was carried out according to the standard selection criteria. More than 400 panicles were selected to develop M1 plants. The M2, M3 and M4 generations were advanced using the same selection criteria. One hundred and eight individual plants were selected to develop three raw progenies of M5 generation. Finally five advance lines were selected after M8 Generations

These selected advance lines showed intermediate plant height and shorted panicle length compared to the cultivar *Suduru samba*. The seed size

and shape, and number of seeds per panicle were different to that of *Suduru samba* (Table 1).

Table 1. Comparison of plant and seed characters of advanced lines with cultivar *Suduru samba*

Cultivar name/Line no	*Plant height cm*	*Panicle length cm*	*Seed length cm*	*Seed width cm*	*Seeds panicle*
Suduru samba	130	31	0.5	0.2	210
SSR 8	90	28	0.8	0.3	195
SSR 26	95	27	0.6	0.3	260
SSR23	75	29	1.1	0.3	160
SSR 25	85	19	0.5	0.3	290
SSR 17	95	28	0.6	0.3	170

These advanced lines were not photoperiod sensitive, resistant to lodging and produced a comparatively better yield to that of *Suduru samba*. These results suggested that mutation techniques could be used for improving traditional cultivars.