

Improvement of Co 25 Rice.

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ABSTRACT

The popular tall *indica* long duration blast resistant rice variety Co 25 was crossed with IR 8 in 1969 to combine yield potential and plant type of IR 8 and lateness and blast resistance of Co 25. Six selections conforming to these objectives evaluated at F₃ generation were tested for their yield potential in *Kharif*, 1973. The most promising selection among them *viz.*, 5142 was advanced to trials at ryots' holdings. In another set of 10 promising selections that are under evaluation for their yield potential and suitability to Samba season (July-August to January - February) Cult. 13531 and 13493 appear promising from their desirable yield components and duration.

INTRODUCTION

The Co 25 is a photosensitive variety popularly known as *Coimbatore Samba* predominantly grown in Samba and Thaladi seasons extending from August-September and January-February in Tamil Nadu. It is tall and susceptible to lodging but resistant to blast disease and quite adaptable to the environment that prevails during the season in which it is grown. It needs 165-180 days for maturity depending upon the time of planting. The performance of all the dwarf *indica* varieties so far grown in *samba and thaladi* seasons in Tamil Nadu is not satisfactory compared to existing tall *indicas*. Therefore, with the object of improving the variety Co 25 for yield and resistance to lodging

through incorporating the plant type, breeding work was initiated in 1969 and the results are reported.

MATERIALS AND METHODS

Co 25 was crossed with IR 8 in the year 1969 at the Paddy Breeding Station, Coimbatore. The variety IR 8 is known for its yield potential and plant type. Subsequently the progenies of the cross were grown in *samba* season to select medium and long duration segregants coupled with resistance to blast, yield potential and improved plant type. In order to induce blast disease, the progenies from F₂ were heavily manured at 200 kg N/ha in addition to planting the blast susceptible variety ADT 10 as bombardment and inocula-

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ted with blast spore suspension spray. Six homozygous progenies with a duration of 145-150 days of maturity were selected from F_2 generation and grown under yield trial in randomised block replicated four times employing Co 25, IR 8 and Vijaya as well as some promising selections from All India Co-ordinated trials as the check varieties. Twenty seven days old seedlings were transplanted in a spacing of 20 x 10 cm

with 2 to 3 seedlings/hill. The evaluation of 50 segregating progenies in F_2 generation resulted in fixing up 10 promising selections with a duration of 150-170 days maturity. Data were gathered on grain yield and other ancillary characters.

RESULTS AND DISCUSSION

The performance of the six test entries and the check varieties is summarised in Table-1. The yield data attain-

TABLE 1. Performance and ancillary characteristics of the six cultures

(Kharif, 1973)

Varieties	Parentage	Grain yield kg/ha	Days to maturity	Panicle No./sq.m.	Height (gm)	1000 grain weight (cm)	No. & grain per panicle	Grain/straw ratio
5138	IR 8 x Co 25	5323	145	370	92.7	26.80	86	0.67
5142	"	5903	147	375	89.1	26.08	95	1.20
5148	"	5830	145	350	100.5	27.44	105	0.97
5154	"	5570	145	345	98.3	25.86	89	0.96
5155	"	5586	145	370	94.7	27.02	90	0.89
5161	"	5213	145	360	95.4	26.70	66	0.77
IET 1136	IR8/2xB 589 A418/2xTN1	4500	138	340	85.2	27.20	90	1.00
IET 2593	Co 29 x IR 8	4786	138	380	84.6	24.20	91	1.00
IET 2612	<i>O. perennis</i> x IR 8	4666	140	380	81.6	26.70	73	1.10
IET 2608	IR 8 x Wag wag	5890	155	465	77.8	23.16	68	0.80
CR 12-178	IR 8 x CR 1014	4000	134	410	82.2	20.00	77	0.62
Vijaya	T 90 x IR 8	4083	145	380	74.4	21.30	156	1.00
IR 8	Pete x DGWG	4333	138	365	78.2	28.60	74	1.00
Co 25	Co 4 x ADT 10	3623	178	315	148.3	21.66	108	0.57
C.D.(0.05%)		820						

TABLE 2. Yield and yield components and other agronomic traits of the 10 promising selections made at F₄ generation.

Selections	Grain yield/ sq. m. (kg)	Maturity (days)	Plant height (cm)	Panicles/ sp.m. (no)	Panicle length (cm)	Grain No/ panicle (mean)	1000 grain weight (gm)	Grain type
13522	0.5140	150	99	340	20.0	126	20.48	Round
13471	0.6420	151	104	425	19.0	114	24.40	Round
3517	0.5100	152	106	300	19.0	112	21.80	Round bold
13483	0.6260	152	104	315	19.0	114	24.20	Medium
13516	0.5000	153	99	315	20.0	121	22.70	Round bold
13531	0.7500	163	93	365	20.0	117	21.50	Round
13508	0.5800	163	100	295	19.0	110	27.20	Coarse
13492	0.5620	164	102	390	20.1	129	21.60	Round
13499	0.5000	165	103	395	19.7	109	25.50	Round
13493	0.5940	168	104	415	22.2	120	20.70	Round

ned the level of statistical significance and all the derivatives from the cross IR 8 x Co 25 and the one culture IET 2608 recorded an yield of above five tonnes/ha. Among them, culture 5142 ranked first in yield. It also possessed improved plant type coupled with desired harvest index and panicle number per unit area. The performance of this culture in two centres in ryots' holdings at Mayavaram and Chidambaram in *Kharif*, 73 was also encouraging as it recorded an average yield of 4312 kg/ha against 2810 kg/ha recorded by Ponni, a popular variety in Thanjavur district in September to February representing *thaladi* season.

The yield and yield components and other agronomic traits of another set of 10 promising homozygous cultures fixed at F₄ generation indicate that these selections are of longer duration ranging from 150-170 days maturity, with

good yield potential. The yield level of these selections ranged from 5 to 7.5 tonnes/ha with desirable yield components that would contribute high yield. About 300 to 400 panicles and 35,000 to 40,000 grains/square meter are considered optimum for high yields (Anon 1967, 1969). Varieties possessing the duration of 160-170 days maturity with improved plant type and high yield potential are desired to replace the existing popular tall indica long duration variety Co 25 in *samba* season in Tamil Nadu. This object has been achieved by fixing the two cultures *viz.*, 13531 and 13493 (Table-2).

REFERENCES

- ANONYMOUS, 1967.
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