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Short Communication

SPIKELET STERILITY IN RICE GERMPLASM

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A total of 1319 rice germplasm (254 early, 327 medium, 738 late) lines, which were collected from Orissa and adjoining areas, evaluated during wet season (June-December) of 1990 and 1991 at NBPGR Base Centre, Cuttack. Seeds of all lines were directly sown on 6.6.90 and 10.6.91 in 3 rows of 4 m. length with 20 × 15 cms. spacing. Normal fertilizer dose 40:20:20 N.P.K. was applied. At maturity, panicles from main tillers of ten randomly tagged plants from the middle row of the plots were taken. The filled and unfilled grains were separated and sterility percent was calculated.

Table 1. Spikelet Sterility in Rice Germplasm

Sterility %	Germplasm lines evaluated							
	Early		Medium		Late		Total	
	No.	%	No.	%	No.	%	No.	%
0.10 - 10.0	16	6.29	30	9.17	157	21.27	203	15.39
10.10 - 20.0	56	22.04	57	17.43	285	30.61	398	30.17
20.10 - 30.0	52	20.47	81	24.77	134	18.15	267	20.24
30.10 - 40.0	37	14.56	54	16.51	67	9.07	158	11.97
40.10 - 50.0	22	8.66	42	12.84	36	4.87	100	7.58
50.10 - 60.0	23	9.05	27	8.25	21	2.84	71	5.38
60.10 - 70.0	12	4.72	19	5.81	13	1.76	44	3.33
70.10 - 80.0	9	3.54	10	3.05	9	1.21	28	2.13
80.10 - 90.0	7	2.75	6	1.83	14	14	1.89	27
90.10 - 100.0	20	7.87	1	0.30	2	0.27	23	1.74
Total	254	19.25	327	24.80	738	55.95	1319	100.00
Av. St. %	38.26		33.28		22.26		28.07	

The germplasm lines were divided into early (< 120 days), medium (121 to 150 days) and late maturity (> 151 days) types. Variation was observed in the percentage of sterile grains even among the same maturity group. Freqeuncy distribution of lines in different maturity groups showed different trend of sterility (Table 1, and Fig. 1). Average sterility percentage was highest among the early varieties (38.26%) followed by medium (33.28%) and late maturing varieties (22.26%).

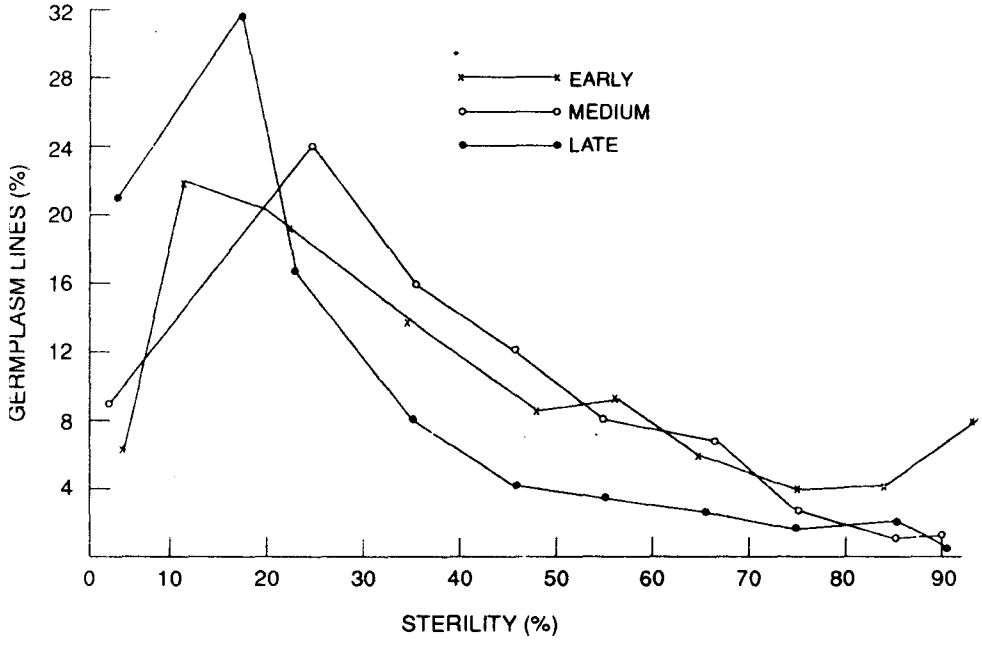

Fig. 1. Spikelet sterility in Rice Germplasm

High sterility in early germplam may be due to the variation in environmental condition at Cuttack for these lines because most of the early germplasm were collected from upland areas of Koraput, Phulbani, Bolangir, Mayurbahanj districts of Orissa and Santhal parganas of Bihar which consists of high hills and plateau areas and temperature is not very high (26-28°C) as compared to Cuttack (30-32°C) during flowering. The other factor of high sterility in early and medium duration varieties may be the high rainfall during August (308.9 mm. and 435.7 mm.) and September (209.2 mm. and 155.5 mm.) in 1990 and 1991 respectively at Cuttack which interfere in the anthesis, fertilization and grain development. The low sterility in late varieties may be due to the fact that less rains and favourable tempetrature at the time

of flowering and grain development during October and November months. Exceptionally high number of early varieties (20) showed very high sterility (90.1 to 100%) and out of these four lines viz. M-248, M-330, M-392 and D-1571 showed 100% sterility at Cuttack condition which need further research and may be due to temperature sensitive genetic male sterility (TGMS) or photosensitive genetic male sterility (PGMS) which could be utilized in two lines hybrid rice programme after confirmation.