

RESEARCH NOTES

INHERITANCE OF PHENOL REACTION IN RICE

Glumes of certain varieties of rice are stained dark when soaked for several hours in a 1.5 per cent phenol solution. According to Nagai (1959) certain varieties of *indica* type have the power of oxidising phenolic compounds causing darkening. Oka (1953) recorded the 'continental' forms (*indica*) as phenol positive and the 'insular' forms (*japonica*) as phenol negative.

While investigating intervarietal cross of rice (*Oryza saliva L.*) between Vellayani 1 (*indica*) and Tainan 3 (*japonica*) an attempt was made to observe the inheritance of the phenol reaction.

Seed samples from F<sub>1</sub>, F<sub>2</sub> and parents were drawn at maturity at the rate of ten seeds per plant and soaked in 1.6 per cent aqueous phenol solution for six hours, drained, air dried and the staining of the hull noted.

Among the parental varieties, Tainan 3 was phenol negative and Vellayani 1 phenol positive. The F<sub>1</sub> hybrids of the cross were phenol positive suggesting that the phenol positive reaction of the *indica* variety was dominant over phenol negative reaction of the *japonica* variety. Jennings (1966) had made a similar observation earlier.

In the F<sub>2</sub> generation, the test was conducted in a family comprising of 270 plants. The results have shown a segregation of phenol positive and phenol negative in the ratio 3:1. The chi-square test of significance was done to ascertain the agreement of the observed frequency with the expected (see Table 1).

Table I

Chi-square test of goodness of fit for phenol reaction in rice

Glass	Observed frequency	Expected frequency	$\chi^2$	Probability
Phenol positive (stained)	208	202.5	0.13	80-70
Phenol negative (unstained)	62	67.5	0.40	70-50
Total	270	270	0.53	50-30

The results show that phenol positive is monogenic dominant over phenol negative.

### References

- Jennings, P, R. 1966. Evaluation of partial sterility in *indica japonica* rice hybrids. *Internat. Rice Res. Instt. Tech. Bull.* Losbanos, Phillipines
- Nagai, I 1959. *Japonica rice: Its breeding and culture.* Yokendo Ltd., Tokyo
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