

INHERITANCE OF RESISTANCE TO BLAST IN SOME RICE VARIETIES

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ABSTRACT

RAJESWARY SRILINGAM, Post graduate Institute of Agriculture,
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of Resistance to Blast in some rice varieties.

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The genetics of resistance to six rice blast isolates PO₃-82-51 (IA-45), PO₃-82-41 (IB-45), PO 6-6 (IB-47), PO₃-82-17 (ID-18), IK81-3 (IA-61), and 43 (IH-1) was investigated in the rice varieties Carreón, Dawn, Moroberekan, Pai-kan-tao, Ram Tulasi, Ta-poo-cho-z, 5173, and IR50. Crosses were made using susceptible x susceptible, susceptible x resistant and resistant x resistant parents. IR50 was used as the susceptible parent for the isolates PO₃-82-51, PO₃-82-41, PO 6-6, and PO₃-82-17 and Suweon 290 was used as the susceptible parent for the isolates IK81-3 and 43.

The parents, F₁ and F₂ progenies of crosses between resistant x susceptible and susceptible x susceptible were inoculated by the injection method. Inoculation was done when the plants were about 35-42 days old using a spore concentration of 10⁵ spores/ml. F₁ and F₂ population of hybrids between resistant x resistant parents were inoculated by spray method. Individual tillers were inoculated with different blast isolates. Individual plants were scored for resistance or susceptibility based on type of lesions.

The study indicated dominance of resistance over susceptibility. Pai-kan-tao has one dominant gene to all the six isolates studied.

Carreon and Moroberekan have one dominant gene to isolates PO_3 -82-51 and 43 and two dominant genes to isolates PO_3 -82-41, PO 6-6, PO_3 -82-17, and IK81-3. Dawn and Ta-poo-cho-z have two dominant genes to all the six isolates. 5173 has one dominant gene to isolates PO_3 -82-51 and two dominant genes to isolates PO_3 -82-41, PO 6-6, PO_3 -82-17, IK81-3, and 43. IR50 possess one dominant and one recessive gene to the isolate IK81-3. Ram Tulasi possess three dominant genes to the isolates PO_3 -82-41, PO 6-6 and one dominant and one recessive gene to the isolate PO_3 -82-51.

Carreon, Dawn, Ta-poo-cho-z, and 5173 have allelic genes to isolates PO_3 -82-51, Pai-kan-tao is allelic to one of the dominant genes found in Dawn. Carreon, Dawn, Ta-poo-cho-z, and 5173 have at least one dominant gene which is allelic to isolate PO_3 -82-41. One of the dominant genes in Dawn and Moroberekan are also allelic. Carreon, Dawn, Ta-poo-cho-z, and 5173 have at least one dominant gene which is allelic to isolate PO 6-6. Dawn, Moroberekan and Ta-poo-cho-z have one allelic gene to isolate PO_3 -82-17. Carreon, Dawn, Ta-poo-cho-z, and 5173 possess at least one common or allelic gene to isolates IK81-3. Carreon, Moroberekan, Dawn and Pai-kan-tao possess one common or allelic gene to isolate 43.

Tests of independence indicate that resistance to isolates PO_3 -82-41 and PO_3 -82-17 in Carreon and Moroberekan are linked. The resistance gene in Dawn to isolates PO_3 -82-51, PO_3 -82-41, and PO_3 -82-17 are linked with each other and the genes conferring resistance to PO_3 -82-41 is linked with the genes conferring

resistance to isolates PO 6-6 and PO₃-82-17 in 5173. The genes for resistance in Ta-poo-cho-z to PO₃-82-51 and PO 6-6 are also linked.

This study indicates that resistance to different races in the same variety is controlled by different genes.

