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Inheritance of grain physical traits in rice

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Improvement of grain quality is becoming an important aspect in rice breeding programmes. Determination of heritability and degree of dominance of grain physical traits in rice help to design a good breeding programme. Heritability and degree of dominance of grain length, width, thickness, length:width ratio and 1000-grain weight were analysed using sixteen crosses and their parents.

Degree of dominance of all five traits showed higher variation among crosses. Majority of the crosses expressed incomplete dominance while a few showed no dominance, complete dominance or over dominance. For grain length, thickness and length: width ratio decreasing alleles were dominant over the increasing alleles, whereas increasing alleles were dominant for grain width. Degree of dominance of 1000-grain weight showed extreme variation. Therefore, inheritance of these traits was found to be cross specific but not variety or trait specific.

Narrow sense heritability of all these traits is high; grain width being the highest (77.59%); grain length (56.10%); grain thickness (64.27%); grain length:width ratio (43.89%); 1000-grain weight (64.38%). All traits could be improved through selection of pure lines, since additive gene action is high in each of them.

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