

Developmental Analysis of Genetic Behavior of Brown Rice Width in indica-japonica Hybrids [PDF]

ZHANG Xiao-ming^{1, 2} SHI Chun-hai² YE Shen-hai¹ QI Yong-bin¹

(1 Institute of Crop and Nuclear Technology Utilization, Zhejiang Academy of Agricultural Sciences, Hangzhou 310021, China; 2 College of Agriculture and Biotechnology, Zhejiang University, Hangzhou 310029, China)

摘要: The developmental genetic behaviors of brown rice width (BRW) have been studied in indica-japonica hybrid rice (*Oryza sativa* L.), in which seven indica male sterile lines and five japonica restorer lines were applied, by using the developmental genetic models and corresponding statistical approaches for quantitative traits of triploid in cereal crops. The BRW of indica-japonica hybrid rice was co-determined by gene expression of triploid endosperm, cytoplasm, diploid maternal plant and their genotype × environmental interaction effects.

Unconditional analysis showed that the endosperm additive and maternal additive effects were predominant for the development of BRW from early- to late-stage of the grain development, but the endosperm dominant effect together with maternal effect and cytoplasmic effect became the major factor determining the BRW at the ripening stage.

Moreover, conditional analysis found that there were new onset and offset of gene expression at different developmental stages of BRW in indica-japonica hybrid rice. Maternal and cytoplasm general heritabilities and their interaction heritabilities were more important compared to other components of heritability for BRW at all the five developmental stages.

关键词: indica-japonica hybrid rice; developmental genetics; brown rice width; genetic variance; conditional
Rice Science. 2006, 13(2): 99-105

.....
.....