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研究论文

低表观直链淀粉含量早籼稻的胚乳外观快速识别及其品质改良应用分析

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摘要 以浙江省新近选育的早籼新品种(系)为材料， 经高温烘干处理， 发现低表观直链淀粉含量 (AAC)的品种(系)随处理时间增加， 胚乳外观由透明状变为云雾状； 室内阴干和太阳晒干 处理， 胚乳云雾性状不表达或表达不明显， 难以有效识别低AAC品种(系)。 45℃烘干和40 ℃保湿预处理能明显促进胚乳云雾性状的显现。综合考虑处理时间和种子发芽率， 初步认 为40℃保湿4h+40℃烘16h是快速显现云雾性状的最佳处理。 以建立的识别体系处理， 发现 育种材料F2、 F3、 F4与F5群体均能显现各种类型的胚乳外观。 AAC测定表明， A A C与胚乳外观间存在密切关系。 云雾状和(白色)乳白色胚乳外观的AAC明显较低， 云雾状 的AAC与原早籼亲本相仿。 该结果表明， 在以低AAC早籼为亲本开展优质早籼育种时， 可 利用胚乳外观标记辅助剔除低AAC材料。

关键词 优质早籼 表观直链淀粉含量 胚乳外观 标记辅助选择

分类号

Rapid Identification of Early Indica Rice with Low AAC and Analysis o f Its Application in Quality Improvement

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Abstract The changes of endosperm appearances of early indica cultivars (lines), d eveloped recently in Zhejiang province, were investigated during the dry process under 40℃. The result showed that endosperm appearance of the cultivars (lines) with low AAC became from transparency to mist with the increase of treating ti me. After 40h treatment under 40℃, endo sperm appearance of low AAC cultivars al l exhibited mist trait. Treated by sunshine or the room condition, the mist trai t of endosperm appearance did not express or expressed slightly, it was difficul t to identify low AAC cultivars (lines). High er temperature (45℃) and maintaini ng moisture pretreatment could activate the expression of mist trait obviously. Conside ring treating time and seed germination rate, 40℃ 4h pretreatment+40℃ 1 6h was preliminarily regarded as the optimal trea tment. Application of the estab lished system into breeding practice could identify different types of endosperm appearanc es easily in F2, F3, F4, F5 populations. AAC analysis indicate d that AAC was closely related to endosperm appearance. AAC of mist trait and (w hite) milky white type were obviously lower, and AAC of mist trait was similar t o the original e arly season indica parent. The results above suggested that endo sperm appearance was an effective assisted-selection mark er to eliminate low AA C materials in good quality improvement.

Key words Higher quality early season indica rice Ap parent amylose content Endosperm appaearanc e Marker-assisted selection

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