

研究论文

玉米胚乳突变基因与互作对籽粒成份的影响研究 IV. 籽粒各成分之间的关系及其对品质改良的意义

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摘要 本文在分析su1, sh2, bt2, o2, wx玉米胚乳突变基因与互作对籽粒成分影响的基础上, 探讨了胚乳突变基因影响下籽粒各成分之间的关系并讨论了这些关系对玉米品质改良的意义。研究表明, 玉米胚乳突变基因及其互作可以不同程度地增加籽粒蛋白质、赖氨酸、可溶性糖、蔗糖、还原糖、清蛋白、球蛋白及谷蛋白含量, 降低淀粉和醇溶蛋白含量, 但突变体百粒重多明显降低。在籽粒各成分的关系中, 百粒重、淀粉和醇溶蛋白含量三性状呈正相关关系, 三性状和基它性状间呈负相关关系, 其它性状间均呈正相关关系。分析表明淀粉和醇溶蛋白含量是影响籽粒品质的主要因素, 胚乳突变基因主要通过降低淀粉和醇溶蛋白含量来增加其它成份的含量, 进而提高籽粒的营养品质, 但淀粉和醇溶蛋白含量的降低会导致粒重下降。所以, 利用胚乳突变基因互作效应改良玉米品质应该综合考虑产量和品质二方面的问题。

关键词 [玉米,胚乳突变体,基因互作,籽粒成份](#)

分类号

The Effects of Maize Endosperm Mutant Genes and Gene Interactions on Kernel Components

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Abstract The effects of 5 endosperm mutant genes of maize, su1, sh2, bt2, o2 and wx, on the kernel components were analysed to elucidate the interrelationships among the several kernel components under the influences of these endosperm mutant genes. The results indicated that all these mutant genes, as well as the interactions among them, could increase the contents of protein, lysine, soluble sugar, sucrose, reducing sugar, albumin, globulin and glutelin, but reduce the contents of starch and zein. 100-kernal weight, starch content and zein content were positively correlated to each other, but all of them were negatively correlated to the other characters. Correlation studies revealed that the contents of starch and zein were the major factors affecting the kernel quality, and the better quality of mutant corn was obtained at the cost of reducing the contents of starch and zein and the 100-kernal weight, leading finally to lower yield. Based on these analyses, the practical value of these mutant genes and gene interactions to corn quality improvement was discussed.

Key words [Corn](#) [Endosperm mutant](#) [Gene interaction](#) [Kernel component](#).

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