

研究论文

高粱无融合生殖系2083自主结实特性及胚胎学研究

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收稿日期 2002-9-10 修回日期 2003-8-18 网络版发布日期 接受日期

摘要 以2083为试材, SSA-1为无融合生殖系对照, 三尺三为有性系对照, 采用去雄鉴定其自主结实率; 杂交后代测验, 鉴定其无融合生殖频率; 以及与胚胎学鉴定方法相结合, 对高粱兼性无融合生殖系2083进行了研究。结果表明, 2083在与其他品种杂交形成真杂种的同时, 也能自主结实, 具有兼性无融合生殖的性质; 其自主结实率为10.48%, 比对照系SSA-1提高58.8%; 无融合生殖频率为72.85%。其自交或杂交籽粒特征均表现为3种类型, 正常粒、中间粒和小粒, 但三种籽粒均能正常发芽。2083胚的发生机制主要为卵细胞先自行分裂, 形成球胚, 但也有卵细胞和极核同步发育的现象存在。2083的胚和胚乳的发育大部分是在开花后1.5 d开始, 有少量植株在开花前就已开始, 与开花不同步。这些表现说明2083为一高频率兼性无融合生殖系, 同时阐明了2083胚的发生机制。2083高频率兼性无融合生殖系的选育成功, 不仅为高粱无融合生殖研究提供了种质资源, 也为今后高粱杂种优势固定提供了启示, 并可为其他作物借鉴。

关键词 [高粱](#) [无融合生殖系](#) [自主结实](#)

分类号 [S514](#)

A Study on the Properties of Autonomous Seed Setting and Embryology in Sorghum Apomictic Line 2083

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Abstract A sorghum apomictic line 2083 was used to study the properties of facultative apomixis by the evaluation of the autonomous seed setting after hand emasculation, frequency characterization of apomixes with progeny test, and the identification in embryology. The research results indicated that 2083 could set seeds autonomously after emasculation and have the property of facultative apomixis, while it could produce true hybrids with other cultivars. The rate of autonomous seed setting in 2083 was 10.48%, 58.8% higher than that of the apomictic control SSA-1, and its frequency of apomixis was 72.85%. The three types of seeds, normal, median and small sizes, produced by selfing or being pollinated with pollen from other sorghum cultivars could germinate normally. The embryo genesis mechanism in 2083 was that the egg cell divided firstly, forming a globe-like embryo, but there was a phenomenon of synchronous development for egg cell and polar nuclei also. The development of embryo and endosperm in 2083 began mostly 1.5 days after flowering, but for few plants before flowering. All of those results showed that 2083 was an apomictic line with high frequency and enriched the germplasm for the research in sorghum apomixes.

Key words [Sorghum bicolor\(L.\)](#); [Apomictic line](#); [Autonomous seed set](#)

DOI:

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