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论文

云南甘蔗自育品种DNA指纹身份证构建

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摘要：

以云南27份甘蔗自育品种为材料，从国际微卫星协会提供的120对SSR引物中筛选出8对多态性丰富、品种区分率高、易统计的引物组成核心引物。8对SSR引物共产生129条带，123个为多态带，多态条带比例为95.35%，多态信息量平均为0.9445，品种相似性系数在0.269~0.767之间，其中引物SMC1047HA，MSSCIR21不仅多态性丰富，而且单个引物就可区分所有品种，是最有效的核心引物。8对核心引物两两组合的效率分析表明，MSSCIR36/MSSCIR2、MSSCIR16/MSSCIR36和MSSCIR36/SMC336BS是高效引物组合，可以完全有效区分所有品种，且品种相似性系数较低；同时使用蔗区种植面积较大的10个主栽品种验证3个高效引物组合，结果表明，MSSCIR16/MSSCIR36是最佳引物组合，不仅能有效区分所有云南自育品种，而且能将云南自育品种与10个主栽品种最有效地区分开。使用品种的国圃号、国家地区代码、育种单位英文缩写、核心引物名称和分子数据组成云南甘蔗自育品种的DNA指纹身份证，不仅包含了品种的重要信息，而且其中的分子数据可用于品种的真伪鉴定和遗传关系分析，为品种的知识产权保护提供有效的科学依据。

关键词： 云南甘蔗品种 SSR DNA 指纹 身份证

Establishment of DNA Fingerprint ID in Sugarcane Cultivars in Yunnan, China

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Abstract:

To well evaluate and use the cultivars, we should identify them scientifically and accurately by DNA molecular markers. In this paper, 27 cultivars developed by two breeding institutes in Yunnan province were analyzed with SSR marker. Eight pairs of core SSR primers selected from about 120 pairs of SSR primers offered by the International Sugarcane Microsatellite Consortium made up the core primers for DNA fingerprint. A total of 129 bands were acquired by PAGE with the core primers, 123 of which were polymorphic bands, accounting for percentage of polymorphic band (PPB) was 95.35%, and the mean value of polymorphism information content(PIC) reached 0.9445; the genetic similarity coefficient of the cultivars was 0.269–0.767. SMC1047HA and MSSCIR21 with high PIC value could be used to distinguish all cultivars, which were the most efficient single primers. The result of evaluating different primer combinations from eight core primers indicated that MSSCIR36/MSSCIR21, MSSCIR16/MSSCIR36, and MSSCIR36/SMC336BS were very efficient in identifying these Yunnan cultivars, and their similar coefficients were lower than those of other primer combinations. At the same time, three primer combinations were validated with ten main released cultivars. The result showed MSSCIR16/MSSCIR36 was the optimum primer combination, which can be used in constructing DNA fingerprint ID of cultivars. The DNA fingerprint ID was set up, including serial number of National Nursery of Sugarcane Germplasm Resources (NNSGR), country& region code, breeding institute, core primer name and SSR marker data, which not only consists of the important information of cultivars, but also helps researchers to identify cultivars efficiently. At the same time, it can provide reliable scientific evidence for the protection of intellectual property right for these cultivars.

Keywords: Yunnan sugarcane culticar SSR DNA Fingerprint ID

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