

论文

裸燕麦品质资源AFLP标记遗传多样性分析

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摘要:

用20对AFLP引物组合对281份栽培裸燕麦(*Avena nuda*)进行遗传多样性分析, 共得到1 137条带, 其中260条为多态性带, 引物的平均多态性百分率为22.96%, 平均多样性信息指数(PIC)为0.0326。以地理来源分组, 不同来源的组群Simpson指数在1.235~1.495之间, Shannon指数范围为0.1558~0.4437, 组群内变异贡献率为83.45%, 组群间变异占16.55%。组群大小与多态性位点数、组群内变异贡献率、Simpson指数及Shannon指数显著相关。内蒙古和山西资源多样性丰富, 东北地区资源独特, 西部地区资源遗传结构单一, 东欧组群与内蒙古组群遗传关系最近。国内组群的遗传多样性水平高于国外组群。地方品种与育成品种相比, 组群内变异贡献率较高。建议在遗传多样性丰富地区进一步收集裸燕麦资源, 并加强对材料少、代表性较差的地区, 如西北和西南地区的裸燕麦地方品种的收集, 以丰富我国的裸燕麦基因源。

关键词: 裸燕麦 AFLP 遗传多样性 种质资源

Genetic Diversity in Naked Oatmeal (*Avena nuda*) Germplasm Revealed by AFLP Markers

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Abstract:

Oat (*Avena L.*) is one of the most important cereal crops in the world, ranked at the sixth top place in planting area and yield among all cereal crops, and possesses high values in food and nutrition, health protection and feeding livestock. Naked oat (*A. nuda*) is an endemic type in China. However, a few studies on naked oat germplasm at molecular level have been reported. The aim of this study was to evaluate the genetic diversity of core collection of naked oat using AFLP markers. A total of 281 accessions of naked oat were analyzed using 20 AFLP primer combinations. Selective amplification created 1 137 bands, of which 260 were polymorphic, accounting for 22.96% of the total bands. The mean polymorphism information content (PIC) was 0.0326. For different geographic groups, Simpson's index ranged from 1.235 to 1.495, and Shannon's index varied from 0.1558 to 0.4437. The majority (83.45%) of the AFLP variation resided within accessions of each group, and the rest (16.55%) existed among accessions between groups. The sample size of geographic groups was significantly associated with the number of polymorphic loci, proportion of within-group variation, Simpson's index and Shannon's index. Accessions from Inner Mongolia and Shanxi were most diverse, and those from northeastern China were most distinct. Genetic resemblance was found within accessions from western China. Germplasm from East Europe was genetically close to that from Inner Mongolia, China. The genetic diversity of Chinese accessions was significantly higher than that of exotic accessions. Compared with breeding cultivars, landraces presented a higher proportion of within-group variation. Naked oat landraces were suggested to be collected in the regions where are not well represented by the current collections, and collecting activities should be continuous in the diversity-rich areas such as northwestern and southwestern China in order to enrich naked oat gene pool in China.

Keywords: *Avena nuda* AFLP Genetic diversity Genetic Resources

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