

中国花生核心种质的建立

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摘要: 以中国花生种质资源数据库中记录的 6390 份花生资源为材料, 以其基本数据、特征数据和评价数据为信息, 采用分层、层内分组聚类以及随机取样与必选资源相结合的方法, 构建了由 576 份资源组成的花生核心种质, 占基础收集品的 9.01%。对核心种质的植物学类型组成和遗传多样性指数的分析, 以及对各性状特征值、符合率和包含的主要抗病资源抗性等级及重要农艺性状资源的检测结果表明, 本研究建立的核心种质是有效的。基础收集品中各种性状的遗传变异在核心种质中均存在, 所用 15 个性状的各种特征值符合率均在 90% 以上, 其中绝大部分性状的符合率达 96% 以上。

关键词: 花生资源; 核心种质; 遗传多样性

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Establishment of Peanut Core Collection in China

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Abstract: The characterization of diversity in germplasm collection is important to plant breeders to utilize and to the genebank curators to manage the collection efficiently. The available large variability contained in germplasm accessions has not been adequately utilized in the peanut improvement programs which is mainly due to lack of information on important agronomic and economic traits, which require extensive evaluation. The development of core collection could facilitate easier access to peanut genetic resources, enhance their use in crop improvement programs, and simplify the genebank management. This paper describes the development of a core collection from 6390 accessions of peanut descriptor traits available from China genebank. The germplasm accessions were stratified by botanical types and then grouped by ecological origin within each of botanical varieties. Data on 15 morphological and seed chemical traits were used for clustering by SAS method. From each cluster, 5 percent to 10 percent accessions were either randomly or compulsorily selected to constitute a core collection consisting of 576 accessions. The accessions widely grown in production or extensively used in breeding programs must be included in the core collection. The rest of the accessions included were randomly selected. Comparisons using mean, range, standard deviation, coefficient of variation and diversity index on different descriptors indicated that the genetic variation available for these traits in the entire collection has been preserved in the core collection. This core collection provides an effective mechanism for the proper exploitation of peanut germplasm resources for the genetic improvement of this crop.

Key words: Peanut germplasm resources; Core collection; Genetic diversity

花生是重要的油料和经济作物, 中国是世界上最大的花生生产国。近 20 年来, 我国政府和科学家非常重视农作物品种资源的研究, 收集保存了花生资源 7000 多份, 对其主要植物学性状、农艺性状、抗病虫性、种子品质性状作了系统评价, 获得了大批具有各种优良性状的资源^[1]。但从总体上看, 我国花生种质资源研究还存在一些重要缺陷, 包括对保存

资源的遗传多样性程度和分布不清楚, 影响了种质的引进和发掘; 性状鉴定不够深入, 尤其是一些鉴定技术较为复杂性状(黄曲霉、干旱、油酸等)研究未有效开展, 影响了种质的利用。因此, 建立我国花生种质资源核心收集品, 利用核心资源来更有效地发掘新的基因源, 是我国花生种质资源研究和育种取得新突破的重要基础性课题。

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