

园艺园林科学

澳洲坚果种质资源形态性状的遗传多样性分析

贺熙勇, 倪书邦, 陈国云, 魏丽萍, 肖晓明, 陶丽

云南省热带作物科学研究所, 云南景洪666100

摘要:

为了解引入澳洲坚果种质的遗传背景, 以64份澳洲坚果种质为试材, 采用41个形态性状对其进行了遗传多样性分析。41个形态性状的差异性和R型聚类分析结果表明: 各性状间差异达到极显著水平; 在欧氏距离(D)≈11.72处, 41个性状聚为两组, 组内各性状的欧氏距离较远, 绝大多数性状间相对独立, 对澳洲坚果种质的演化各具独立的意义, 在澳洲坚果的分类中有较好的分辨能力。Q型聚类分析结果表明: 64份种质的欧氏距离在3.15~12.39之间, 具有较高的遗传多样性。在D≈12处可将64份种质划分为二个类群: 第一类群仅包含T2 1份种质, 为澳洲坚果栽培种的近缘种; 第二类群包含剩下的63份种质, 为澳洲坚果的栽培种。第二类群在D≈10处, 可细分成3个亚类: 第I亚类包括7份种质(即695、Tet.-2、900、D4、HY、Tet.-1和广9), 属于粗壳种与光壳种的杂交种; 第II亚类包括A4和A16两个品种, 属于粗壳种与光壳种的杂交种, 但更偏重于光壳种; 第III亚类包括其他54份种质, 都是光壳种的后代。获得的聚类结果与现有的分类体系一致; 同时, 获得了64份种质的形态性状聚类的亲缘关系图, 其在生产种植中的品种搭配、育种中的杂交亲本选择和引种方面都具有指导意义。

关键词: 澳洲坚果 种质资源 遗传多样性 形态性状

Morphological Characteristics Analysis on Genetic Diversity of Macadamia (Macadamia spp.) Germplasm Resources

Abstract:

In order to know genetic background of macadamia germplasms introduced, a genetic diversity analysis involving 64 accessions of Macadamia was performed using 41 morphological characteristics. Statistic analysis and R-style cluster analysis were used to examine the 41 morphological characteristics (including 19 quantitative traits and 22 qualitative traits) of macadamia based on the software DPSv7.05. The result showed: there were striking dissimilarity among characteristics; at the Euclidean distance approximately 11.72, the 41 characteristics were divided into two groups. There were significant differences among characteristics within their group. Most characteristics were independent one another and had important meaning in macadamia's taxonomy. The result, based on Q-style cluster analysis, showed: Euclidean distance of 64 germplasm ranging from 3.15 to 12.39, indicated high level of genetic diversity in these germplasm. And the 64 germplasm were divided into two groups at the Euclidean distance approximately 12. Group one included only T2, which belonged to related species of macadamia cultivation. Group two included the rest, which could be further divided into three sub-groups at the Euclidean distance approximately 10. The first sub-group included seven accessions: 695, 900, D4, HY, Guang9, Tet.-1, and Tet.-2, which belonged to hybrids of M.integrifolia and M. tetraphylla. The second sub-group included two accessions: A4 and A16, which also belongs to hybrids of M.integrifolia and M. tetraphylla, but were more similar to M. integrifolia. The third sub-group included the other 54 accessions that were all offsprings of M integrifolia. The cluster result, based on morphological characteristics analysis, was consistent with the existing system of taxonomy. Meanwhile, the blood relationship figure of 64 accessions was also obtained, and could be applied to combinations of cultivars, selection of hybrid parent and introduction from abroad.

Keywords: Macadamia spp. germplasm resource genetic diversity morphological characteristic

收稿日期 2009-10-09 修回日期 2009-11-01 网络版发布日期 2010-02-05

DOI:

基金项目:

澳洲坚果良种筛选及配套栽培技术试验示范;澳洲坚果种质资源的收集、保存与利用研究

扩展功能

本文信息

- Supporting info
- PDF(1429KB)
- [HTML全文]
- 参考文献[PDF]
- 参考文献

服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

本文关键词相关文章

- 澳洲坚果
- 种质资源
- 遗传多样性
- 形态性状

本文作者相关文章

- 贺熙勇
- 倪书邦
- 陈国云
- 魏丽萍
- 肖晓明
- 陶丽

PubMed

- Article by He,X.Y
- Article by Nie,S.B
- Article by Chen,G.Y
- Article by Wei,L.P
- Article by Xiao,X.M
- Article by Dao,I

通讯作者: 贺熙勇

作者简介:

作者Email: heda0691@163.com

---

参考文献:

本刊中的类似文章

1. 李梅云, 段风云, 赵国明, 李采兴, 李永平. 烤烟种质资源的鉴定[J]. 中国农学通报, 2008,24(07): 107-112
2. 曾碧玉, 朱根发, 刘海涛. 兰花选育种研究进展[J]. 中国农学通报, 2005,21(12): 272-272
3. 刘学诗, 刘建秀. 中国东部假俭草种质资源多样性初步研究(1) ——物候期变异及其规律 [J]. 中国农学通报, 2004,20(5): 180-180
4. 李良俊, 张晓冬, 谢科, 孙磊, 顾丽, 曹磊生. 江苏省水生蔬菜优良种质资源的保护及开发利用现状与建议 [J]. 中国农学通报, 2005,21(2): 305-305
5. 潘青华, 鲁韧强, 张开春. 扶芳藤遗传多样性RAPD鉴定及类型划分研究[J]. 中国农学通报, 2005,21(7): 53-53
6. 李天红. 桃遗传资源核心种质的研究[J]. 中国农学通报, 2005,21(8): 296-296
7. 常胜合, 舒海燕, 秦广雍, 黄群策, 陈彦惠. 诱变育种在改良热带亚热带玉米种质资源中的应用及前景展望 [J]. 中国农学通报, 2005,21(5): 174-174
8. 赵云生, 李占林, 田洪岭, 毛福英, 张丽萍, 穆彦珍. 党参种质资源生态多样性研究[J]. 中国农学通报, 2007,23(11): 361-361
9. 钟凤林, 潘东明, 郭志雄, 林琳, 李开拓. 龙眼种质资源的RAPD分析[J]. 中国农学通报, 2007,23(7): 558-558
10. 徐启江, 崔成日, 贾铁金. 洋葱种质资源遗传多样性的ISSR分析[J]. 中国农学通报, 2007,23(6): 126-126
11. 张忠林, 谭亚玲, 黄大军, 谭学林. 杂草稻种质资源的鉴定及利用探索[J]. 中国农学通报, 2003,19(6): 61-61
12. 段民孝, 王元东, 郭景伦, 邢锦丰, 滕海涛, 赵久然. 近红外分析技术在玉米种质资源品质分析中应用[J]. 中国农学通报, 2004,20(1): 86-86
13. 洪雨顺, 杨德. 辣椒种质资源遗传多样性保护和利用研究进展[J]. 中国农学通报, 2006,22(2): 358-358
14. 刘崇怀, 孔庆山, 郭景南, 潘兴. 葡萄品种资源果实重要经济性状分析[J]. 中国农学通报, 2003,19(2): 74-74
15. 孙会忠, 宋月芹. 河南唇形科药用植物种质资源及其区系分析[J]. 中国农学通报, 2006,22(10): 414-414

---

Copyright by 中国农学通报