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微信公众号: 大豆科学

[1]谢甫缙,Takahata Yoshihito,Ohno Yasuo.利用ISSR标记进行菜用大豆和普通大豆的分类[J].大豆科学,2008,27(05):732-739.
[doi:10.11861/j.issn.1000-9841.2008.05.0732]
XIE Fu-ti,Takahata Yoshihito,Ohno Yasuo.Phylogenetic Analysis of Vegetable-type (Edamame) and Grain-type Soybean[Glycine max(L.) Merr.].Cultivars Through ISSR Markers[J].Soybean Science,2008,27(05):732-739.
[doi:10.11861/j.issn.1000-9841.2008.05.0732]

点击复制

利用ISSR标记进行菜用大豆和普通大豆的分类

《大豆科学》 [ISSN:1000-9841 /CN:23-1227/S] 卷: 第27卷 期数: 2008年05期 页码: 732-739 栏目:
出版日期: 2008-10-25

Title: Phylogenetic Analysis of Vegetable-type (Edamame) and Grain-type Soybean[Glycine max(L.) Merr.].Cultivars Through ISSR Markers

文章编号: 1000-9841(2008)05-0732-08

作者: 谢甫缙¹ (KeySearch.aspx?type=Name&Sel=谢甫缙); Takahata Yoshihito² (KeySearch.aspx?type=Name&Sel=Takahata Yoshihito); Ohno Yasuo³ (KeySearch.aspx?type=Name&Sel=Ohno Yasuo)

1沈阳农业大学农学院, 辽宁 沈阳 110161;

2Faculty of Agriculture, Iwate University, 020-8550, Japan;

3Sato Masayuki Seed Co., Yahaba-cho -02-0891, Japan

Author(s): XIE Fu-ti 1 (KeySearch.aspx?type=Name&Sel=XIE Fu-ti 1); Takahata Yoshihito2 (KeySearch.aspx?type=Name&Sel=Takahata Yoshihito2); Ohno Yasuo3 (KeySearch.aspx?type=Name&Sel=Ohno Yasuo3)

1College of Agriculture, Shenyang Agricultural University, Shenyang 110161, Liaoning, China;

2Faculty of Agriculture, Iwate University, 020-8550, Japan; 3Sato Masayuki Seed Co., Yahaba-cho 02-0891, Japan

关键词: 大豆 (KeySearch.aspx?type=KeyWord&Sel=大豆); ISSR标记 (KeySearch.aspx?type=KeyWord&Sel=ISSR标记); 多样性 (KeySearch.aspx?type=KeyWord&Sel=多样性)

Keywords: Soybean (KeySearch.aspx?type=KeyWord&Sel=Soybean); ISSR Marker (KeySearch.aspx?type=KeyWord&Sel=ISSR Marker); Diversity (KeySearch.aspx?type=KeyWord&Sel=Diversity)

分类号: S565.1

DOI: 10.11861/j.issn.1000-9841.2008.05.0732 (<http://dx.doi.org/10.11861/j.issn.1000-9841.2008.05.0732>)

文献标志码: A

摘要: ISSR标记技术因具有很高的多态性而被广泛应用于遗传多样性研究。进行菜用大豆品种多样性研究将有助于育种家进行杂交亲本的合理选配。采用ISSR标记技术对37个菜用大豆品种(系)和13个普通大豆品种(系)进行了分类研究。结果表明:50个ISSR引物中有11个引物没有多态性,其他39个引物共产生132条谱带,其中81条多态性谱带,占61.4%。引物扩增的谱带数在1~7条之间,大小为830~3530 bp。每个引物平均扩增的谱带数和多态性谱带数分别为3.3和2.1。聚类分析结果表明,可将供试的50个品种划分为3个类群,扁茎大豆Taikadaizu单独一组,7个普通大豆(多数为中国选育)划归为B组,C组由日本菜用大豆和4个普通大豆组成。C组还可以划分成若干亚组,同一亚组的品种具有相似的性状,比如有一亚组的品种均是褐脐、茶色种皮、白花、不易炸荚。系选的品种和原始品种在分类图中也显示出其密切的亲缘关系。基于ISSR标记的分类可以反映菜用大豆的遗传关系,菜用大豆和普通大豆之间存在遗传多样性,合理保存菜用大豆种质将有助于未来大豆品质改良计划。

Abstract: ISSR markers are reported to be highly polymorphic and to useful in studies on genetic diversity. Analysis of the diversity in edamame cultivars would aid breeders by making a cross choice of parents. Thirty-seven edamame cultivars/lines and 13 grain-type ones were used in ISSR analysis. Of a total of 50 ISSR primers used 11 primers showed no amplified fragments. Another 39 primers produced 132 bands, of which 81 were polymorphic, accounting for 61.4%. The number of amplified bands varied from 1 to 7, with a size range from 830 to 3530 bp. The average numbers of bands per primer and polymorphic ones were 3.3 and 2.1, respectively. A dendrogram based on UPGMA analysis grouped 50 cultivars/lines into 3 main clusters. Taikadaizu, fasciated-type soybean, appeared to be distinct from all others. Group B comprised 7 grain-type cultivars, most of them developed in China. Group C comprised all Japanese edamame cultivars/lines and 4 grain-type ones. Genotypes grouped in the group C were divided into several subgroups. Among the subgroups, cultivars grouped in the same subgroups had identical characters, for example a subgroup comprised all cultivars with brown hilum and seed coat, white flower and the pod which was not easy to open. Selected cultivars and their original cultivars showed closely relationships in the dendrogram. These results indicated that the dendrogram based on ISSR reflected the genetic relationships of edamame cultivars, and the genetic diversity existed between edamame and grain-type soybeans. The preservation of edamame germplasm would be useful for the better soybean project in the future.

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备注/Memo Corresponding author: XIE Fu-ti, Ph.D. E-mail: snssoybean@yahoo.com.cn.

更新日期/Last Update: 2014-10-06

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