

农学一研究报告

大豆耐旱选择群体叶片持水能力QTL定位

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摘要:

大豆耐旱性是重要的农艺性状, 直接影响大豆产量, 近年来有关报道不断增多。此研究以‘红丰11’为轮回亲本、Clark为供体亲本构建回交群体进行耐旱性鉴定及叶片持水能力QTL定位。利用单向方差分析法检测到8个QTL位点分布于A1、B1、C2、E、L和N 6条连锁群, 其中Satt316、Satt457和Satt694位点贡献率较高, 可能是控制大豆耐旱性的重要位点。

关键词: QTL分析

QTL Identification of WRC to Soybean in Selection Population

Abstract:

The drought tolerance of soybean was important agronomic traits affect yield. In recent years, the report about it was increasing. A primary backcross introgression soybean population was constructed by using ‘Hongfeng 11’ as recurrent parent and Clark as donor parent. After screening by drought stress, the QTL identification was conducted by one-way ANOVA (for single marker analysis, P<0.01) with sixty super selection population. Eight QTLs of WRC were found in A1, B1, C2, E, L and N linkage groups. The QTL at Satt316, Satt457 and Satt694 have higher contributions, which may be important to drought tolerance of soybean.

Keywords: QTL identification

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## 参考文献:

- [1] 李原园, 李英能, 苏人琼, 等. 中国农业水危机及其对策[J]. 农业现代化研究, 1997,(3): 52-54. (Li Y Y, Li Y N, Su R Q, et al. Water crisis in agricultural sustainable development and its countermeasures in China [J]. Research of Agricultural Modernization, 1997,(3): 52-54.)
- [2] 山仑, 陈国良. 黄土高原旱地农业的理论与实践[M]. 北京: 科学出版社, 1993: 125-129. (Shan L, Chen G L. Theory and Practice for Droughty Region Agriculture of Loess Plateau[M]. Beijing: Science Press, 1993: 125-129)
- [3] 刘学义. 大豆抗旱性评定方法探讨[J]. 油料作物学报, 1986,(4): 23-26. (Liu X Y. Discuss on evaluating method to drought-resistance of soybean[J]. Chin J Oil Crop Sci, 1986,(4): 23-26)
- [4] Sloane R J, Patterson R P, Carter T E. Field drought tolerance of soybean plant introduction[J]. Crop Sci, 1990, 30: 118-123
- [5] Liu F L, Andersen M N, Jacobsen S E. Stomatal control and water use efficiency of soybean (*Glycine max* Merrill) during progressive soil drying[J]. Environ Exp Bot, 2004, 54: 1-8
- [6] Hudak C M, Patterson R P. Vegetative growth analysis of a drought resistant soybean plant introduction[J]. Crop Sci, 1995, 35: 464-471
- [7] Garcia A, Gonzalez M C. Morphological markers for the early selection of drought tolerant rice varieties[J]. Cultivate Trop, 1997, 18: 47 - 50
- [8] 黄培堂译, 分子克隆三[M]. 北京: 科学出版社, 2002: 363-365. (Huang P T trans. Molecular Cloning Three[M]. Beijing: Science Press, 2002: 363-365)
- [9] He C Y trans. Construction of Soybean Genetic Map by SSR and Its Application in Cloning of Disease-Resistance genes[D]. PhD Dissertations of Institute of Genetics and Developmental Biology, 2001: 35-38(in Chinese with English abstract)
- [10] 刘莹, 蔡祈明. 大豆根系形态及苗期耐旱根系性状的研究[J]. 河北大学工程学报, 2009,26(4): 59-61. (Liu Y, Cai Q M. Root morphology and root traits related to drought tolerance at vegetation stage in soybean[J]. J Hebei Univ Engineering (Nat Sci Edn), 2009, 26(4): 59-61)
- [11] 刘莹, 张孟臣. 夏大豆籽粒成熟期根叶衰老特性的研究[J]. 河北大学工程学报, 2010, 27(1): 65-69. (Liu Y, Zhang M C. Study on root trait related yield in soybean growing in summer and QTL mapping: Root morphology and root traits related to drought tolerance at vegetation stage in soybean[J]. J Hebei Univ Engineering (Nat Sci Edn), 2010, 27(1): 65-69)
- [12] Specht J E, Chase K, Macrander M, Graef G L, Chung J, Markwell J P, Germann M, Orf J H, Lark K G. Soybean response to water: A QTL analysis of drought tolerance[J]. Crop Sci, 2001, 41(2): 493-509
- [13] Mian M A R, Ashley D A, Boerma H R. An additional QTL for water use efficiency in soybean[J]. Crop Sci, 1998, 38: 390 - 393
- [14] Mian M A R, Bailey M A, Ashley D A. Molecular markers associated with water use efficiency and leaf ash in soybean[J]. Crop Sci, 1996, 36: 1252-1257
- [15] 杨剑平, 陈学珍, 王文平, 李杨, 等. 大豆实验室PEG6000模拟干旱体系的建立[J]. 中国农学通报, 2003,19(3): 65-68. (Yang J P, Chen X Z, Wang W P, Li Y, et al. The establishment of the simulated system of drought for soybean in laboratory. Chin Agric Sci Bull, 2003, 19(3): 65-68)
- [16] 李灿东, 蒋洪蔚, 张闻博, 邱鹏程, 刘春燕, 陈庆山, 胡国华, 等. 大豆荚粒性状QTL定位[J]. 分子植物育种, 2008,6(6): 1-10. (Li C D, Jiang H W, Zhang W B, Qiu P C, Liu C Y, Chen Q S, Hu G H, et al. QTL analysis of seed and pod traits in soybean[J]. Mol Plant Breed, 2008, 6(6): 1-10)
- [17] SAS Institute Inc. SAS/STAT Software: Changes and Enhancements though Release 6.12. Cary, North Carolina: SAS Institute Inc. 1997
- [18] 蒋洪蔚, 李灿东, 刘春燕, 张闻博, 邱鹏程, 陈庆山, 胡国华, 等. 大豆导入系群体芽期耐低温位点的基因型分析及QTL定位[J]. 作物学报, 2009, 35(7): 1268 - 1273. (Jiang H W, Li C D, Liu C Y, Zhang W B, Qiu P C, Chen Q S, Hu G H, et al. Genotype analysis and QTL mapping for tolerance to low temperature in germination by introgression lines in soybean[J]. Acta Agron Sin, 2009, 35(7): 1268-1273)
- [19] 郑天清, 徐建龙, 傅彬英, 高用明, 翟虎渠, 万建民, 黎志康, 等. 遗传搭车与方差分析在水稻定向选择群体的抗旱性位点分析中的初步应用[J]. 作物学报, 2007,33(5): 799-804. (Zheng T Q, Xu J L, Fu B Y, Gao Y M, Veruka S, Lafitte R, Zhai H-Q, Wan J M, Li Z K. Application of genetic hitch-hiking and ANOVA in identification of loci for drought tolerance in populations of rice from directional selection[J]. Acta Agron Sin, 2007, 33(5): 799-804)

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1. 梁永书, 张启军, 叶少平, 刘明伟, 殷得所, 李平. 水稻分蘖相关性状的QTL定位与分析[J]. 中国农学通报, 2005, 21(12): 47-47
2. 杨绍华. 植物QTL研究进展[J]. 中国农学通报, 2011, 27(第3期2月): 226-231

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