

研究论文

大豆根区逆境耐性的种质鉴定及其与根系性状的关系

刘莹, 盖钧镒, 吕慧能

南京农业大学大豆研究所, 国家大豆改良中心, 作物遗传与种质创新国家重点实验室, 江苏南京 210095

收稿日期 2004-8-30 修回日期 2004-10-29 网络版发布日期 接受日期

摘要 依根系类型从黄淮海和长江中下游地区301份代表性材料中选取62份, 以株高、叶龄、地上部干物重、地下部干物重为指标, 采用平均隶属函数值方法鉴定了苗期耐旱性、苗期耐铝毒性, 加上主茎节数、分枝数、单株荚数、单株粒数、百粒重等性状鉴定了后期耐旱性, 并通过钒钼黄比色法测定植株P含量鉴定了苗期耐低磷性。筛选出1级苗期耐旱材料4份、后期耐旱材料6份、前后期均耐旱材料2份, 苗期耐铝毒材料7份、耐低磷材料3份、同时具有铝毒和低磷耐性的材料3份。相关分析表明, 耐旱平均隶属函数值与根干重、根总长和根体积的相对值均呈极显著相关; 耐铝毒平均隶属函数值与一级侧根数、主根长、总根长、根体积、根干重的相对值均呈极显著相关; 未发现与耐低磷相关的根系性状。

关键词 [大豆](#) [耐旱](#) [耐铝毒](#) [耐低磷](#) [鉴定](#) [耐逆境相关根系性状](#)

分类号 [S565](#)

Identification of Rhizosphere Abiotic Stress Tolerance and Related Root Traits in Soybean [*Glycine max* (L) Merr.]

LIU Ying, GAI Jun-Yi, LÜ, Hui-Neng

Soybean Research Institute of Nanjing Agricultural University, National Center for Soybean Improvement / National Key Laboratory of Crop Genetics and Germplasm Enhancement, Nanjing 210095, Jiangsu

Abstract Sixty two accessions of soybean [*Glycine max* (L.) Merr.] selected from 301 representative entries from Huang-Huai-Hai and Middle-Lower Changjiang Valleys according to their root performance were used to identify their tolerance to rhizosphere-abiotic stresses, including drought, aluminum toxin and low phosphorus. Tolerance to drought at seedling and reproductive stage was evaluated with mean membership index value averaged over those of plant height, number of leaves on main stem, dry root weight, and dry stem and leaf weight at seedling stage and plant height, number of nodes on main stem, number of branches on main stem, number of pods per plant, number of seeds per plant, 100-seed weight, dry root weight, and dry stem and leaf weight at reproductive stage, respectively. Tolerance to aluminum toxin at seedling stage was evaluated with the same set of root traits as those for tolerance to drought at seedling stage. Tolerance to low phosphorus was evaluated through testing the P content in plants. Accessions with class 1 abiotic stress tolerance were screened out, including four tolerant to drought at seedling stage, six tolerant to drought at reproductive stage, and among them two tolerant to drought at both stages; seven tolerant to aluminum toxin at seedling stage, three tolerant to low phosphorus, and among them, two tolerant to both stresses at seedling stage. The mean membership index of drought tolerance was correlated with the relative values of total root length, root volume and dry root weight per plant significantly at the 0.01 probability level, respectively; the mean membership index of tolerance to aluminum toxin was correlated with the stressed to unstressed relative values of number of lateral roots, main root length, total root length, root volume and dry root weight; and there was no root trait found to be correlated with tolerance to low phosphorus.

Key words [Soybean \[*Glycine max* \(L\) Merr.\]](#); [Drought](#); [Aluminum toxin](#); [Low phosphorus](#); [Tolerance](#); [Identification](#); [Root trait related to stress tolerance](#)

DOI:

通讯作者 盖钧镒 sri@njau.edu.cn

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(618KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [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](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“大豆”的 相关文章](#)

▶ 本文作者相关文章

- [刘莹](#)
- [盖钧镒](#)
- [吕慧能](#)