

全国中文核心期刊
中国科技核心期刊
中国农业核心期刊
RCCSE中国核心学术期刊
中国科学引文数据库(CSCD)期刊
CAB International 收录期刊
美国《生物学文摘》收录期刊
美国《化学文摘》(CA)收录期刊

首页 (/) 期刊介绍 编委会 投稿须知 期刊订阅 广告合作 联系我们 返回主站
(/Corp/10.aspx) (/Corp/3600.aspx) (/Corp/5006.aspx) (/Corp/50.aspx) (http://www.haasep.cn/)

«上一篇 (DArticle.aspx? type=view&id=201505013)
下一篇 (DArticle.aspx? type=view&id=201505015)



PDF下载 (pdfdown.aspx? Sid=201505014)

+分享 (http://www.jiathis.com/share? uid=1541069)



微信公众号: 大豆科学

[1] 邓俊才, 雷婷, 钟蕾, 等. 大豆主要农艺性状与收获期籽粒田间霉变抗性的相关及通径分析[J]. 大豆科学, 2015, 34(05): 837-842. [doi:10.11861/j.issn.1000-9841.2015.05.0837]
DENG Jun-cai, LEI Ting, ZHONG Lei, et al. The Correlation and Path Analysis Between the Main Agronomic Traits and the Resistance of Soybean to Seed Mildew in Field During Harvest Season[J]. Soybean Science, 2015, 34(05): 837-842. [doi:10.11861/j.issn.1000-9841.2015.05.0837]

点击复制

大豆主要农艺性状与收获期籽粒田间霉变抗性的相关及通径分析

《大豆科学》 [ISSN:1000-9841 /CN:23-1227/S] 卷: 第34卷 期数: 2015年05期 页码: 837-842 栏目: 出版日期: 2015-10-25

Title: The Correlation and Path Analysis Between the Main Agronomic Traits and the Resistance of Soybean to Seed Mildew in Field During Harvest Season

作者: 邓俊才¹ (KeySearch.aspx?type=Name&Sel=邓俊才); 雷婷¹ (KeySearch.aspx?type=Name&Sel=雷婷); 钟蕾¹ (KeySearch.aspx?type=Name&Sel=钟蕾); 吴海军¹ (KeySearch.aspx?type=Name&Sel=吴海军); 杨峰¹ (KeySearch.aspx?type=Name&Sel=杨峰); 刘卫国¹ (KeySearch.aspx?type=Name&Sel=刘卫国); 刘江¹ (KeySearch.aspx?type=Name&Sel=刘江); 杨文钰¹ (KeySearch.aspx?type=Name&Sel=杨文钰)

- 1. 四川农业大学 农学院/农业部西南作物生理生态与耕作重点实验室, 四川 成都 611130;
- 2. 四川省自贡市富顺县农牧业局, 四川 自贡 643200

Author(s): DENG Jun-cai¹ (KeySearch.aspx?type=Name&Sel=DENG Jun-cai); LEI Ting¹ (KeySearch.aspx?type=Name&Sel=LEI Ting); ZHONG Lei¹ (KeySearch.aspx?type=Name&Sel=ZHONG Lei); WU Hai-jun¹ (KeySearch.aspx?type=Name&Sel=WU Hai-jun); YANG Feng¹ (KeySearch.aspx?type=Name&Sel=YANG Feng); LIU Wei-guo¹ (KeySearch.aspx?type=Name&Sel=LIU Wei-guo); LIU Jiang¹ (KeySearch.aspx?type=Name&Sel=LIU Jiang); YANG Wen-yu¹ (KeySearch.aspx?type=Name&Sel=YANG Wen-yu)

- 1. Agronomy College of Sichuan Agricultural University/Key Laboratory of Crop Ecophysiology and Farming System in Southwest China, Chengdu 611130, China;
- 2. The Farming and Animal Husbandry Bureau of Fushun County, Zigong 643200, China

关键词: 大豆 (KeySearch.aspx?type=Keyword&Sel=大豆); 田间霉变 (KeySearch.aspx?type=Keyword&Sel=田间霉变); 农艺性状 (KeySearch.aspx?type=Keyword&Sel=农艺性状); 品质性状 (KeySearch.aspx?type=Keyword&Sel=品质性状); 相关分析 (KeySearch.aspx?type=Keyword&Sel=相关分析); 通径分析 (KeySearch.aspx?type=Keyword&Sel=通径分析)

Keywords: Soybean (KeySearch.aspx?type=Keyword&Sel=Soybean); Field mildew (KeySearch.aspx?type=Keyword&Sel=Field mildew); Agronomic traits (KeySearch.aspx?type=Keyword&Sel=Agronomic traits); Quality traits (KeySearch.aspx?type=Keyword&Sel=Quality traits); Correlation analysis (KeySearch.aspx?type=Keyword&Sel=Correlation analysis); Path coefficient (KeySearch.aspx?type=Keyword&Sel=Path coefficient)

DOI: 10.11861/j.issn.1000-9841.2015.05.0837 (http://dx.doi.org/10.11861/j.issn.1000-9841.2015.05.0837)

文献标志码: A

摘要: 以18个西南大豆种质为研究材料, 通过人工降雨室模拟复播大豆收获期的连阴雨天气, 在R8期处理大豆材料以诱发籽粒田间霉变, 对大豆收获期籽粒田间霉变抗性与大豆主要农艺、品质性状进行相关及通径分析。结果表明: 大豆收获期籽粒田间霉变抗性与种皮颜色、种脐颜色及结荚习性显著相关; 与株高和主茎节数呈极显著正相关, 与单株荚数和单株粒数呈显著正相关, 与百粒重和脂肪相对含量呈显著负相关。通径分析结果表明: 对霉变抗性影响较大的3个性状为单株荚数、主茎节数和单株粒数, 株高、百粒重和脂肪相对含量亦间接通过单株荚数和主茎节数对霉变抗性产生显著影响。主茎节数多、株高较高、单株荚数多的深色小籽粒无限结荚大豆种质对收获期籽粒田间霉变的抗性较好; 种皮种脐颜色、结荚习性、脂肪相对含量可作为筛选抗籽粒田间霉变大豆种质的重要参考指标。

Abstract: The soybean seed mildew happened during the harvest season could lead great yield loss and quality deterioration. To investigate the correlation and path coefficient between the resistance of soybean to seed mildew and the main agronomic traits, as well as the quality traits, 18 soybean germplasms were induced to mildew in the artificial rainfall chamber which could simulate the continuous rainfall weather during the harvest season of soybean. The results showed that the resistance was significantly correlated with the seed color, hilum color and podding habits, and had positive correlation with the plant height, stem nod number, pod number and seed number per plant, while had negative correlation with the 100-seed weight and fat content. The path coefficient analysis showed that the pod number, stem nod number and seed number per plant had the most important impacts on the resistance, in addition, the plant height, 100-seed weight and fat content also effected the mildew resistance indirectly through the pod number and stem nod number per plant. Hence, from this study we could draw the conclusion that the soybean germplasms with more stem nodes, higher plant height, more pods, smaller seed, deeper color of seed coat or hilum and indeterminate podding habit had stronger resistance to seed mildew, the color of seed coat and hilum, the podding habits and the fat content could be used as important traits to screen soybean germplasms with good resistance to seed mildew.

参考文献/References:

- [1] 张海波. 浅析大豆的营养价值及其加工利用 [J]. 山西农业科学, 2009, 37(5):73-75. (Zhang H B. Preliminary review on the nutritional value of soybean and its processing and utilization [J] Journal of Shanxi Agricultural Science, 2009, 37(5):73-75.)
- [2] 王佳, 邵立红. 大豆的储藏应用技术 [J]. 大豆通报, 2004(5):21-22. (Wang J, Shao L H. The application technology of soybean storage [J]. Soybean Bulletin, 2004(5): 21-22.)
- [3] 刘玉兰, 汪学德, 武莉, 等. 霉变大豆对毛油质量及精炼效果的影响 [J]. 中国粮油学报, 2005, 20(4): 82-88. (Liu Y L, Wang X D, Wu L, et al. The influence of mildew soybean on crude oil quality and oil refining effect [J]. Journal of Chinese Cereals and Oil Association, 2005, 20(4): 82-88.)
- [4] 刘玉兰, 李燕, 汪学德. 霉变大豆对豆粕质量的影响 [J]. 中国油脂, 2006, 31(12):17-20. (Liu Y L, Li Y, Wang X D. Influence of mildew soybean on the quality of soybean meal [J]. China Oil and Fats, 2006, 31(12):17-20.)
- [5] Wrather J A, Shannon J G, Stevens W E, et al. Soybean cultivar and fungicide effects on Phomopsis sp. seed infection [J]. Plant Disease, 2004, 88: 721-723
- [6] 张明荣, 吴海英, 吴迅, 等. 四川大豆主产区产业现状、存在的问题及发展对策 [J]. 大豆科技, 2009(5): 6-8. (Zhang M R, Wu H Y, Wu X, et al. The present situation, existing problems and development strategies of soybean industry in Sichuan major soybean producing area [J]. Soybean Science & Technology, 2009(5): 6-8.)
- [7] 邓俊才, 刘江, 雷婷, 等. 收获期籽粒田间霉变对大豆产量和品质的影响 [J]. 中国油料作物学报, 2015, 37(1):77-82. (Deng J C, Jiu J, Lei T, et al. Effect of seed mildew in field on yield and quality of soybean during harvest season [J]. Chinese Journal of Oil Crop Science, 2015, 37(1):77-82.)
- [8] Fehr W R, Caviness C E, Burmood D T, et al. Stage of development descriptions for soybean, Glycine max (L) Merrill [J]. Crop Science, 1971, 11(6):929-931.
- [9] 李海燕, 刘杨若, 甄鸿杰. 灰斑病所致大豆品质与产量损失的研究 [J]. 中国油料作物学报, 2005, 27(3): 66-69. (Li H Y, Liu T R, Zhen H J. Studies on quality and yield loss caused by Cercospora sojina Hara in soybean [J]. Chinese Journal of Oil Crop Science, 2005, 27(3): 66-69.)
- [10] 张英利, 许安民, 尚浩博, 等. AA3型连续流动分析仪测定土壤和植物全氮的方法研究 [J]. 西北农林科技大学学报 (自然科学版), 2006, 34(10): 128-132. (Zhang Y L, Xu A M, Shang H B, et al. Determination study of total nitrogen in soil and plant by continuous flow analytical system [J]. Journal of Northwest Science. Technology University of Agriculture and Forest (Natural Science Edition), 2006, 34(10): 128-132.)
- [11] 王学奎. 植物生理生化实验原理和技术 [M]. 2版. 北京: 高等教育出版社, 2006: 241-242. (Wang X K. Principle and technology of plant physiology and biochemical experiments [M]. 2nd ed. Beijing: Higher Education Press, 2006: 241-242.)
- [12] 熊庆娥. 植物生理学实验教程 [M]. 四川: 四川科学技术出版社, 2003: 81-83. (Xiong Q E. Plant physiology experiment [M]. Sichuan: Sichuan Science and Technology Press, 2003: 81-83.)
- [13] 宋健, 郭勇, 于丽杰, 等. 大豆种皮色相关基因研究进展 [J]. 遗传, 2012, 34(6): 687-694. (Song J, Guo Y, Yu L J, et al. Progress in genes related to seed-coat color in soybean [J]. Hereditas, 2012, 34(6): 687-694.)
- [14] Anand S C. Soybean plant introductions with resistance to race 4 or race 5 of soybean cyst nematode [J]. Crop Science, 1988, 29:1181-1184
- [15] 王梓贞, 韩英鹏, 滕卫丽, 等. 大豆胞囊线虫非小种特异性抗性品种的抗性评价与农艺性状相关分析 [J]. 大豆科学, 2009, 28(4): 647-650. (Wang Z Z, Han Y P, Teng W L, et al. Multiple SCN races resistance in soybean related to several agronomic traits [J]. Soybean Science, 2009, 28(4): 647-650.)
- [16] 徐金瑞, 张名位, 刘兴华, 等. 黑大豆种质抗氧化能力及其与总酚和花色苷含量的关系 [J]. 中国农业科学, 2006, 39(8): 1545-1552. (Xu J R, Zhang M W, Liu X H, et al. Correlation between antioxidation, and content of total phenolics and anthocyanin in black soybean accessions [J]. Scientia Agricultura Sinica, 2006, 39(8): 1545-1552.)
- [17] 徐冉, 李伟, 张礼凤, 等. 大豆抗烟粉虱 (Bemisia tabaci Gennadius) 与农艺品质性状的关系 [J]. 中国农业科学, 2009, 42(4): 1252-1257. (Xu R, Li W, Zhang F L, et al. Relationship between resistance to whitefly (Bemisia tabaci Gennadius) and agronomic and quality traits of soybean [J]. Scientia Agricultura Sinica, 2009, 42(4): 1252-1257.)
- [18] 胡国玉, 李杰坤, 黄志平, 等. 不同结荚习性夏大豆种质的农艺表现及其与产量的相关分析 [J]. 植物遗传资源学报, 2014, 15(2): 417-422. (Hu G Y, Li J K, Huang Z P, et al. Agronomic characters and their correlations with yield in summer soybean varieties of different growth habit [J]. Journal of Plant Genetic Resources, 2014, 15(2): 417-422.)
- [19] 杜志强. 不同结荚习性抗线大豆农艺性状与产量相关研究 [J]. 黑龙江农业科学, 2014(4): 4-7. (Du Z Q. correlations analysis between agronomic trait and yield of resistant varieties for soybean cyst nematode with different podding habits [J]. Heilongjiang Agricultural Science, 2014(4): 4-7.)
- [20] 李晨阳, 张振山, 刘玉兰. ⁶⁰Co-γ辐照对霉变大豆中粗脂肪特性影响的研究 [J]. 食品工业, 2014, 35(6): 15-19. (Li C Y, Zhang Z S, Liu Y L. effect of ⁶⁰Co-γ irradiation on the oil properties of mildew soybean [J]. The Food Industry, 2014, 35(6): 15-19.)
- [21] 田清震, 盖钧镱. 大豆起源与进化研究进展 [J]. 大豆科学, 2001, 20(1): 54-59. (Tian Q Z, Gai J Y. A review on the research of soybean origination and evolution [J]. Soybean Science, 2001, 20(1): 54-59.)

相似文献/References:

- [1] 刘章雄, 李卫东, 孙石, 等. 1983~2010年北京大豆育成品种的亲本地理来源及其遗传贡献 [J]. (article.aspx?type=view&id=201301001) 大豆科学, 2013, 32(01):1. [doi:10.3969/j.issn.1000-9841.2013.01.002]
LIU Zhang-xiong, LI Wei-dong, SUN Shi, et al. Geographical Sources of Germplasm and Their Nuclear Contribution to Soybean Cultivars Released during 1983 to 2010 in Beijing [J]. Soybean Science, 2013, 32(01):1. [doi:10.3969/j.issn.1000-9841.2013.01.002]
- [2] 李彩云, 余永亮, 杨红旗, 等. 大豆脂肪转运蛋白基因GmLTP3的特征分析 [J]. (article.aspx?type=view&id=201301002) 大豆科学, 2013, 32(01):8. [doi:10.3969/j.issn.1000-9841.2013.01.003]
LI Cai-yun, YU Yong-liang, YANG Hong-qi, et al. Characteristics of a Lipid-transfer Protein Gene GmLTP3 in Glycine max [J]. Soybean Science, 2013, 32(01):8. [doi:10.3969/j.issn.1000-9841.2013.01.003]
- [3] 王明霞, 崔晓霞, 薛晨晨, 等. 大豆耐盐基因GmHAL3a的克隆及RNAi载体的构建 [J]. (article.aspx?type=view&id=201301003) 大豆科学, 2013, 32(01):12. [doi:10.3969/j.issn.1000-9841.2013.01.004]
WANG Ming-xia, CUI Xiao-xia, XUE Chen-chen, et al. Cloning of Halotolerance 3 Gene and Construction of Its RNAi Vector in Soybean (Glycine max) [J]. Soybean Science, 2013, 32(01):12. [doi:10.3969/j.issn.1000-9841.2013.01.004]
- [4] 张春宝, 李玉秋, 彭宝, 等. 线粒体ISSR与SCAR标记鉴定大豆细胞质雄性不育系与保持系 [J]. (article.aspx?type=view&id=201301005) 大豆科学, 2013, 32(01):19. [doi:10.3969/j.issn.1000-9841.2013.01.005]
ZHANG Chun-bao, LI Yu-qiu, PENG Bao, et al. Identification of Soybean Cytoplasmic Male Sterile Line and Maintainer Line with Mitochondrial ISSR and SCAR Markers [J]. Soybean Science, 2013, 32(01):19. [doi:10.3969/j.issn.1000-9841.2013.01.005]
- [5] 卢清瑶, 赵琳, 李冬梅, 等. RAV基因对拟南芥和大豆不定芽再生的影响 [J]. (article.aspx?type=view&id=201301006) 大豆科学, 2013, 32(01):23. [doi:10.3969/j.issn.1000-9841.2013.01.006]
LU Qing-yao, ZHAO Lin, LI Dong-mei, et al. Effects of RAV gene on Shoot Regeneration of Arabidopsis and Soybean [J]. Soybean Science, 2013, 32(01):23. [doi:10.3969/j.issn.1000-9841.2013.01.006]
- [6] 杜景红, 刘丽君. 大豆fad3c基因沉默载体的构建 [J]. (article.aspx?type=view&id=201301007) 大豆科学, 2013, 32(01):28. [doi:10.3969/j.issn.1000-9841.2013.01.007]
DU Jing-hong, LIU Li-jun. Construction of fad3c Gene Silencing Vector in Soybean [J]. Soybean Science, 2013, 32(01):28. [doi:10.3969/j.issn.1000-9841.2013.01.007]
- [7] 张力伟, 樊颖伦, 牛腾飞, 等. 大豆“冀黄13”突变体筛选及突变体库的建立 [J]. (article.aspx?type=view&id=201301008) 大豆科学, 2013, 32(01):33. [doi:10.3969/j.issn.1000-9841.2013.01.008]

ZHANG Li-wei, FAN Ying-lun, NIU Teng-fei?, et al. Screening of Mutants and Construction of Mutant Population for Soybean Cultivar "Jihuang13" [J]. Soybean Science, 2013, 32(05):33. [doi:10.3969/j.issn.1000-9841.2013.01.008]

[8] 盖江南, 张彬彬, 吴瑶, 等. 大豆不定胚悬浮培养基因型筛选及基因枪遗传转化的研究[J]. (article.aspx?type=view&id=201301009)大豆科学, 2013, 32(01):38. [doi:10.3969/j.issn.1000-9841.2013.01.009]

GAI Jiang-nan, ZHANG Bin-bin, WU Yao, et al. Screening of Soybean Genotypes Suitable for Suspension Culture with Adventitious Embryos and Genetic Transformation by Particle Bombardment[J]. Soybean Science, 2013, 32(05):38. [doi:10.3969/j.issn.1000-9841.2013.01.009]

[9] 王鹏飞, 刘丽君, 唐晓飞, 等. 适于体细胞胚发生的大豆基因型筛选[J]. (article.aspx?type=view&id=201301010)大豆科学, 2013, 32(01):43. [doi:10.3969/j.issn.1000-9841.2013.01.010]

WANG Peng-fei, LIU Li-jun, TANG Xiao-fei, et al. Screening of Soybean Genotypes Suitable for Somatic Embryogenesis [J]. Soybean Science, 2013, 32(05):43. [doi:10.3969/j.issn.1000-9841.2013.01.010]

[10] 刘德兴, 年海, 杨存义, 等. 耐酸铝大豆品种资源的筛选与鉴定[J]. (article.aspx?type=view&id=201301011)大豆科学, 2013, 32(01):46. [doi:10.3969/j.issn.1000-9841.2013.01.011]

LIU De-xing, NIAN Hai, YANG Cun-yi, et al. Screening and Identifying Soybean Germplasm Tolerant to Acid Aluminum [J]. Soybean Science, 2013, 32(05):46. [doi:10.3969/j.issn.1000-9841.2013.01.011]

备注/Memo 基金项目: 国家自然科学基金青年基金(31401329); 国家现代农业产业技术体系建设专项(CARS-04-PS19)。
第一作者简介: 邓俊才(1990-), 男, 硕士, 主要从事大豆生理及其调控技术研究。E-mail: dsldjc1990@sina.com。
通讯作者: 刘江(1986-), 男, 博士, 副教授, 主要从事植物次生代谢及品质化学研究。E-mail: jiangliu@sicau.edu.cn; 杨文钰(1958-), 男, 博士, 教授, 主要从事作物高产优质高效栽培理论与技术研究。E-mail: mssiyangwy@sicau.edu.cn。

更新日期/Last Update: 2015-11-08

版权所有 © 2012 黑龙江省农科院信息中心
黑ICP备11000329号-2