



ISSN 0496-3490
CN 11-1809/S

作物学报

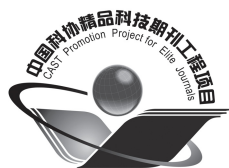
ACTA AGRONOMICA SINICA

第45卷 第6期 Vol. 45 No. 6



中国作物学会 中国农业科学院作物科学研究所 主办
Sponsored by Crop Science Society of China and
Institute of Crop Sciences, CAAS
科学出版社 出版
Published by Science Press

6
2019



作物学报

(ZUOWU XUEBAO)

第 45 卷 第 6 期 2019 年 6 月

目 次

作物遗传育种·种质资源·分子遗传学

- 807 小麦芒长抑制基因 *B2* 的精细定位与候选基因分析 金 迪 王冬至 王焕雪 李润枝 陈树林 阳文龙
张爱民 刘冬成 詹克慧
- 818 甘蓝型油菜茎高 QTL 定位及株高相关位点整合 魏丽娟 刘瑞影 张 莉 陈志友 杨 鸿 霍 强
李加纳
- 829 控制高粱分蘖与主茎株高一一致性的基因定位 王 瑞 凌 亮 詹鹏杰 于纪珍 楚建强 平俊爱
张福耀
- 839 利用 CRISPR/Cas9 技术创制大豆高油酸突变系 侯智红 吴 艳 程 群 董利东 芦思佳 南海洋
甘卓然 刘宝辉
- 848 一个 CRISPR/Cas9-VQR 基因编辑系统的构建 陈 凯 孙国梁 宋高原 李爱丽 谢传晓 毛 龙
耿帅锋
- 856 8 种水旱环境下 2 个玉米群体穗部性状 QTL 间的 赵小强 任 斌 彭云玲 徐明霞 方 鹏 庄泽龙
上位性及环境互作效应分析 张金文 曾文静 高巧红 丁永福 陈奋奇
- 872 基于高通量测序开发玉米高效 KASP 分子标记 陆海燕 周 玲 林 峰 王 蕊 王凤格 赵 涵

耕作栽培·生理生化

- 879 微喷补灌对麦田土壤物理性状及冬小麦耗水和产 何昕楠 林 祥 谷淑波 王 东
量的影响
- 893 周年秸秆还田对农田土壤固碳及冬小麦-夏玉米 李昊昱 孟兆良 庞党伟 陈 金 侯永坤 崔海兴
产量的影响 金 敏 王振林 李 勇
- 904 棉花对初蕾期物理伤害的调节补偿效应 卢合全 祁 杰 代建龙 张艳军 孔祥强 李振怀
李维江 徐士振 唐 薇 张冬梅 罗 振 辛承松
孙学振 董合忠
- 912 磷对花生氮素吸收和利用的影响 于天一 李晓亮 路 亚 孙学武 郑永美 吴正锋
沈 浦 王才斌
- 922 辽河流域玉米籽粒脱水特点及适宜收获期分析 黄兆福 明 博 王克如 谢瑞芝 杨 飞 王志刚
肖春华 李少昆
- 932 基于生命周期法的中国 2004—2015 年油菜生产 陈中督 徐春春 纪 龙 方福平
氮足迹分析

研究简报

- 941 氮钾配施对油菜产量及氮素利用的影响 李 静 闫金焱 胡文诗 李小坤 丛日环 任 涛
鲁剑巍
- 949 大气 CO₂ 倍增条件下冬小麦气体交换对高温干旱 郭丽丽 张茜茜 郝立华 乔雅君 陈文娜 卢云泽
及复水过程的响应 李 菲 曹 旭 王清涛 郑云普
- 957 限水减氮对豫北冬小麦产量和植株不同层次器官 姜丽娜 马静丽 方保停 马建辉 李春喜 王志敏
干物质运转的影响 蒿宝珍

ACTA AGRONOMICA SINICA

Vol. 45 No. 6 June 2019

CONTENTS

CROP GENETICS & BREEDING • GERMPLASM RESOURCES • MOLECULAR GENETICS

- 807 **Fine mapping and candidate gene analysis of awn inhibiting gene *B2* in common wheat** JIN Di, WANG Dong-Zhi, WANG Huan-Xue, LI Run-Zhi, CHEN Shu-Lin, YANG Wen-Long, ZHANG Ai-Min, LIU Dong-Cheng, and ZHAN Ke-Hui
- 818 **Detection of stem height QTL and integration of the loci for plant height-related traits in *B. napus*** WEI Li-Juan, LIU Rui-Ying, ZHANG Li, CHEN Zhi-You, YANG Hong, HUO Qiang, and LI Jia-Na
- 829 **Mapping of genes conferring same height of tiller and main stem in sorghum** WANG Rui, LING Liang, ZHAN Peng-Jie, YU Ji-Zhen, CHU Jian-Qiang, PING Jun-Ai, and ZHANG Fu-Yao
- 839 **Creation of high oleic acid soybean mutation plants by CRISPR/Cas9** HOU Zhi-Hong, WU Yan, CHENG Qun, DONG Li-Dong, LU Si-Jia, NAN Hai-Yang, GAN Zhuo-Ran, and LIU Bao-Hui
- 848 **Establishment of a CRISPR/Cas9-VQR gene editing system** CHEN Kai, SUN Guo-Liang, SONG Gao-Yuan, LI Ai-Li, XIE Chuan-Xiao, MAO Long, and GENG Shuai-Feng
- 856 **Epistatic and QTL × environment interaction effects for ear related traits in two maize (*Zea mays*) populations under eight watering environments** ZHAO Xiao-Qiang, REN Bin, PENG Yun-Ling, XU Ming-Xia, FANG Peng, ZHUANG Ze-Long, ZHANG Jin-Wen, ZENG Wen-Jing, GAO Qiao-Hong, DING Yong-Fu, and CHEN Fen-Qi
- 872 **Development of efficient KASP molecular markers based on high throughput sequencing in maize** LU Hai-Yan, ZHOU Ling, LIN Feng, WANG Rui, WANG Feng-Ge, and ZHAO Han

TILLAGE & CULTIVATION • PHYSIOLOGY & BIOCHEMISTRY

- 879 **Effects of supplemental irrigation with micro-sprinkling hoses on soil physical properties, water consumption and grain yield of winter wheat** HE Xin-Nan, LIN Xiang, GU Shu-Bo, and WANG Dong
- 893 **Effect of annual straw return model on soil carbon sequestration and crop yields in winter wheat-summer maize rotation farmland** LI Hao-Yu, MENG Zhao-Liang, PANG Dang-Wei, CHEN Jin, HOU Yong-Kun, CUI Hai-Xing, JIN Min, WANG Zhen-Lin, and LI Yong
- 904 **Adjustment and compensation of cotton to physical damage at early squaring stage** LU He-Quan, QI Jie, DAI Jian-Long, ZHANG Yan-Jun, KONG Xiang-Qiang, LI Zhen-Huai, LI Wei-Jiang, XU Shi-Zhen, TANG Wei, ZHANG Dong-Mei, LUO Zhen, XIN Cheng-Song, SUN Xue-Zhen, and DONG He-Zhong
- 912 **Effect of phosphorus (P) on nitrogen (N) uptake and utilization in peanut** YU Tian-Yi, LI Xiao-Liang, LU Ya, SUN Xue-Wu, ZHENG Yong-Mei, WU Zheng-Feng, SHEN Pu, and WANG Cai-Bin
- 922 **Characteristics of maize grain dehydration and prediction of suitable harvest period in Liao River Basin** HUANG Zhao-Fu, MING Bo, WANG Ke-Ru, XIE Rui-Zhi, YANG Fei, WANG Zhi-Gang, XIAO Chun-Hua, and LI Shao-Kun
- 932 **Assessment of the nitrogen footprint in oilseed rape production of China during 2004 to 2015 base on life cycle assessment method** CHEN Zhong-Du, XU Chun-Chun, JI Long, and FANG Fu-Ping

RESEARCH NOTES

- 941 **Effects of combined application of nitrogen and potassium on seed yield and nitrogen utilization of winter oilseed rape (*Brassica napus* L.)** LI Jing, YAN Jin-Yao, HU Wen-Shi, LI Xiao-Kun, CONG Ri-Huan, REN Tao, and LU Jian-Wei

949 **Responses of leaf gas exchange to high temperature and drought combination as well as re-watering of winter wheat under doubling atmospheric CO₂ concentration**

GUO Li-Li, ZHANG Xi-Xi, HAO Li-Hua, QIAO Ya-Jun, CHEN Wen-Na, LU Yun-Ze, LI Fei, CAO Xu, WANG Qing-Tao, and ZHENG Yun-Pu

957 **Effect of lower water and nitrogen supply on grain yield and dry matter remobilization of organs in different layers of winter wheat plant in northern Henan province**

JIANG Li-Na, MA Jing-Li, FANG Bao-Ting, MA Jian-Hui, LI Chun-Xi, WANG Zhi-Min, and HAO Bao-Zhen

A BRIEF INTRODUCTION OF *ACTA AGRONOMICA SINICA*

Acta Agronomica Sinica (*AAS*, ISSN 0496-3490) is a monthly academic journal co-sponsored by Crop Science Society of China and Institute of Crop Sciences, Chinese Academy of Agricultural Sciences, under the leadership of China Association for Science and Technology and published by Science Press, Chinese Academy of Sciences. *AAS* was firstly published in 1962. The predecessors were *Chinese Journal of Agricultural Research* started in 1950 and *Acta Agriculturae Sinica* started in 1952. As one of the key scientific journals in China, *AAS* has been financially supported by China Association for Science and Technology since 1997 and the National Natural Science Foundation of China since 2000.

The major aims of *AAS* are to report the progresses in the disciplines of crop breeding, crop genetics, crop cultivation, crop physiology, ecology, biochemistry, germplasm resources, grain chemistry, grain storage and processing, biotechnology and biomathematics etc. mainly in China and abroad. *AAS* provides regular columns for Original papers, Reviews, and Research notes. The strict peer-review procedure guarantees the academic level and raises the reputation of the journal. The readership of *AAS* is for crop science researchers, students of agricultural colleges and universities, and persons with similar academic level.

AAS is the leading journal of crop sciences and reflects the latest achievement in all aspects of crop sciences in China. It occupies the first position on the list of Chinese core journals in "Agronomy and Crops" field. The editorial board consists of 151 specialists in the field of crop sciences. Among them, 24 are academicians of Chinese Academy of Sciences or Chinese Academy of Engineering, 26 are from the outside of China, and 3 are from Hong Kong, China.

AAS is a fully Open Access Journal through the independent website (<http://zwx.chinacrops.org/>) since 2004. Free full texts are published online two months earlier than printing version, and all articles of the journal from 1962 are available freely. Manuscript submission, tracking, and peer review process are completed online. The functions of eTOCs (Table of Contents Alerting), advanced paper search, and paper recommendation are available.

AAS are indexed in some international index systems, such as AGRIS (FAO), CAB Abstracts and Global Health of Centre for Agriculture and Bioscience International, Cambridge Scientific Abstracts, Chemical Abstracts, Food Science and Technology Abstracts, Index of Copernicus, Japan Science and Technology Agency, and VINITI Abstracts Journal (Russia). *AAS* is also referenced by many domestic databases and abstract periodicals.

The purposes of *AAS* are to enhance the development of crop science and technology in China, to promote nationwide and worldwide academic exchanges, and to accelerate the modernization of Chinese agriculture. *AAS* is distributed in China and abroad. The editorial office appreciates to establish publication exchange relationship with related institutions, agricultural colleges and universities, and international organizations in China and abroad.