



ISSN 0496-3490

CN 11-1809/S

作物学报

ACTA AGRONOMICA SINICA

第45卷 第10期 Vol.45 No. 10



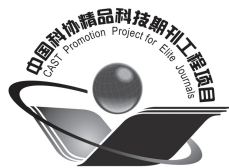
中国作物学会 中国农业科学院作物科学研究所 主办

Sponsored by Crop Science Society of China and
Institute of Crop Sciences, CAAS

科学出版社 出版

Published by Science Press

10 2019



作物学报

(ZUOWU XUEBAO)

第 45 卷 第 10 期 2019 年 10 月

目 次

作物遗传育种·种质资源·分子遗传学

- 1455 70 份国外小麦品种(系)的苗期和成株期抗叶锈病鉴定
郑慧敏 温晓蕾 郝晨阳 张培培 GEBREWAHID Takele Weldu 闫晓翠 刘大群 张学勇 李在峰
- 1468 蚂蚱麦和小小麦衍生系的遗传多样性分析
白彦明 李 龙 王绘艳 柳玉平 王景一 毛新国 昌小平 孙黛珍 景蕊莲
- 1478 甘蔗 NAD(P)H 脱氢酶复合体 O 亚基基因克隆及其与甘蔗花叶病毒 VPg 互作
翟玉山 赵 贺 张 海 邓宇晴 程光远 杨宗桃 王 彤 彭 磊 徐 倩 董 萌 徐景升
- 1488 普通小麦主要农艺性状的全基因组关联分析
翟俊鹏 李海霞 毕惠惠 周思远 罗肖艳 陈树林 程西永 许海霞
- 1503 小麦新种质 CH1357 抗白粉病遗传分析及染色体定位
陈 芳 乔麟轶 李 锐 刘 成 李 欣 郭慧娟 张树伟 常利芳 李东方 阎晓涛 任永康 张晓军 畅志坚
- 1511 新疆、甘肃黍稷资源的遗传多样性与群体遗传结构研究
薛延桃 陆 平 史梦莎 孙昊月 刘敏轩 王瑞云
- 1522 基于优化 sgRNA 系统提高海岛棉 CRISPR/Cas9 基因组编辑功效的研究
李继洋 胡 燕 姚 瑞 代培红 刘晓东

耕作栽培·生理生化

- 1535 冠菌素对玉米籽粒灌浆特性与淀粉合成的调控效应
鱼海跃 韩紫璇 张钰石 段留生 张明才 李召虎
- 1544 不同栽培管理条件下夏玉米产量与肥料利用效率的差异解析
王洪章 刘 鹏 贾绪存 李 静 任 昊 董树亭 张吉旺 赵 斌
- 1554 基于农作制分区的 1985—2015 年中国小麦生产时空变化
白 冰 杨雨豪 王小慧 贾 浩 吴 尧 史磊刚 尹小刚 陈 阜
- 1565 土壤深松下磷肥施用深度对夏玉米根系分布及磷素吸收利用效率的影响
陈晓影 刘 鹏 程 乙 董树亭 张吉旺 赵 斌 任佰朝
- 1576 北部冬麦区冬小麦越冬冻害时空变化特征
孟繁圆 冯利平 张丰瑶 张 祎 伍 露 王春雷 闫锦涛 彭明喜 莫志鸿 余卫东

研究简报

- 1586 花生 *FAD2* 基因家族表达分析及其对低温胁迫的响应
薛晓梦 李建国 白冬梅 晏立英 万丽云 康彦平 淮东欣 雷 永 廖伯寿
- 1595 DNA 甲基化参与调控马铃薯干旱胁迫响应
李鹏程 毕真真 梁文君 孙 超 张俊莲 白江平
- 1604 基于高通量 GBS-SNP 标记的栽培燕麦六倍体起源研究
周萍萍 颜红海 彭远英

ACTA AGRONOMICA SINICA

Vol. 45 No. 10 October 2019

CONTENTS

CROP GENETICS & BREEDING • GERMPLASM RESOURCES • MOLECULAR GENETICS

- 1455 **Seedling and slow rusting resistance to leaf rust in 70 introduced wheat lines**
ZHENG Hui-Min, WEN Xiao-Lei, HAO Chen-Yang, ZHANG Pei-Pei, GEBREWAHID Takele Weldu, YAN Xiao-Cui, LIU Da-Qun, ZHANG Xue-Yong, and LI Zai-Feng
- 1468 **Genetic diversity assessment in derivative offspring of Mazhamai and Xiaobaimai wheat**
BAI Yan-Ming, LI Long, WANG Hui-Yan, LIU Yu-Ping, WANG Jing-Yi, MAO Xin-Guo, CHANG Xiao-Ping, SUN Dai-Zhen, and JING Rui-Lian
- 1478 **Cloning of NAD(P)H complex O subunit gene and its interaction with VPg of *Sugarcane mosaic virus***
ZHAI Yu-Shan, ZHAO He, ZHANG Hai, DENG Yu-Qing, CHENG Guang-Yuan, YANG Zong-Tao, WANG Tong, PENG Lei, XU Qian, DONG Meng, and XU Jing-Sheng
- 1488 **Genome-wide association study for main agronomic traits in common wheat**
ZHAI Jun-Peng, LI Hai-Xia, BI Hui-Hui, ZHOU Si-Yuan, LUO Xiao-Yan, CHEN Shu-Lin, CHENG Xi-Yong, and XU Hai-Xia
- 1503 **Genetic analysis and chromosomal localization of powdery mildew resistance gene in wheat germplasm CH1357**
CHEN Fang, QIAO Lin-Yi, LI Rui, LIU Cheng, LI Xin, GUO Hui-Juan, ZHANG Shu-Wei, CHANG Li-Fang, LI Dong-Fang, YAN Xiao-Tao, REN Yong-Kang, ZHANG Xiao-Jun, and CHANG Zhi-Jian
- 1511 **Genetic diversity and population genetic structure of broomcorn millet accessions in Xinjiang and Gansu**
XUE Yan-Tao, LU Ping, SHI Meng-Sha, SUN Hao-Yue, LIU Min-Xuan, and WANG Rui-Yun
- 1522 **Enhancing CRISPR/Cas9 genomic editing efficiency based on optimization of sgRNA of *Gossypium barbadense* L.**
LI Ji-Yang, HU Yan, YAO Rui, DAI Pei-Hong, and LIU Xiao-Dong

TILLAGE & CULTIVATION • PHYSIOLOGY & BIOCHEMISTRY

- 1535 **Regulation of coronatine on the grain filling characteristics and starch synthesis in maize kernels**
YU Hai-Yue, HAN Zi-Xuan, ZHANG Yu-Shi, DUAN Liu-Sheng, ZHANG Ming-Cai, and LI Zhao-Hu
- 1544 **Analysis of differences in summer maize yield and fertilizer use efficiency under different cultivation managements**
WANG Hong-Zhang, LIU Peng, JIA Xu-Cun, LI Jing, REN Hao, DONG Shu-Ting, ZHANG Ji-Wang, and ZHAO Bin
- 1554 **Spatio-temporal changes of China's wheat production based on division of farming system during 1985–2015**
BAI Bing, YANG Yu-Hao, WANG Xiao-Hui, JIA Hao, WU Yao, SHI Lei-Gang, YIN Xiao-Gang, and CHEN Fu
- 1565 **Effects of phosphorus fertilizer application depths on root distribution and phosphorus uptake and utilization efficiencies of summer maize under subsoiling tillage**
CHEN Xiao-Ying, LIU Peng, CHENG Yi, DONG Shu-Ting, ZHANG Ji-Wang, ZHAO Bin, and REN Bai-Zhao
- 1576 **Temporal and spatial variations of winter wheat freezing injury in northern winter wheat region**
MENG Fan-Yuan, FENG Li-Ping, ZHANG Feng-Yao, ZHANG Yi, WU Lu, WANG Chun-Lei, YAN Jin-Tao, PENG Ming-Xi, MO Zhi-Hong, and YU Wei-Dong

RESEARCH NOTES

- | | | |
|------|--|---|
| 1586 | Expression profiles of <i>FAD2</i> genes and their responses to cold stress in peanut | XUE Xiao-Meng, LI Jian-Guo, BAI Dong-Mei, YAN Li-Ying, WAN Li-Yun, KANG Yan-Ping, HUAI Dong-Xin, LEI Yong, and LIAO Bo-Shou |
| 1595 | DNA methylation involved in regulating drought stress response of potato | LI Peng-Cheng, BI Zhen-Zhen, LIANG Wen-Jun, SUN Chao, ZHANG Jun-Lian, and BAI Jiang-Ping |
| 1604 | Hexaploid ancestor of cultivated hexaploid oats inferred from high throughput GBS-SNP markers | ZHOU Ping-Ping, YAN Hong-Hai, and PENG Yuan-Ying |

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.