



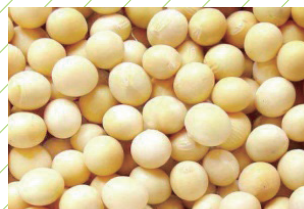
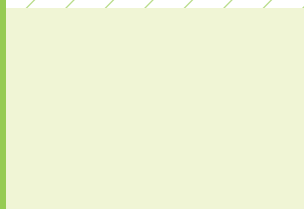
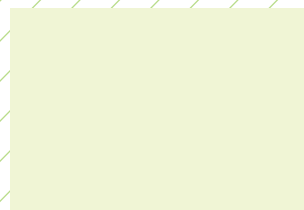
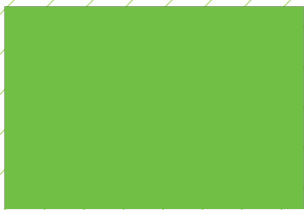
ISSN 0496-3490

CN 11-1809/S

作物学报

ACTA AGRONOMICA SINICA

第47卷 第4期 Vol.47 No. 4



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

4
2021

作物学报

(ZUOWU XUEBAO)

第 47 卷 第 4 期 2021 年 4 月

目次

作物遗传育种·种质资源·分子遗传学

- 577 甘蔗抗黄锈病 G1 标记的分子检测及候选抗病基因 *WAK* 的分析 王恒波 陈姝琦 郭晋隆 阙友雄
- 587 GBS 高密度遗传连锁图谱定位甘蓝型油菜粉色花性状 周新桐 郭青青 陈雪 李加纳 王瑞
- 599 DNA 甲基化参与调控马铃薯响应干旱胁迫的关键基因挖掘 李鹏程 毕真真 孙超 秦天元 梁文君 王一好
许德蓉 刘玉汇 张俊莲 白江平
- 613 花生荚果发育过程中的 microRNA 鉴定与表达分析 胡冬秀 刘浩 洪彦彬 梁炫强 陈小平
- 626 甘蓝型油菜早熟性状 QTL 定位及候选基因筛选 李书宇 黄杨 熊洁 丁戈 陈伦林 宋来强
- 638 谷子 *SiPRR37* 基因对光温、非生物胁迫的响应特点及其有利等位变异鉴定 贾小平 李剑峰 张博 全建章 王永芳 赵渊
张小梅 王振山 桑璐曼 董志平
- 650 甘蓝型油菜千粒重全基因组关联分析 张春 赵小珍 庞承珂 彭门路 王晓东 陈锋
张维 陈松 彭琦 易斌 孙程明 张洁夫
傅廷栋
- 660 基于 GYT 双标图对西北内陆棉区国审棉花品种的分类评价 许乃银 赵素琴 张芳 付小琼 杨晓妮 乔银桃
孙世贤
- 672 马铃薯热激转录因子 *HsfA3* 基因的克隆及其耐热性功能分析 唐锐敏 贾小云 朱文娇 印敬明 杨清
- 684 水稻氮高效、耐冷基因 *OsGRF4* 功能标记的开发及其利用 孙平勇 张武汉 张莉 舒服 何强 彭志荣
邓华凤

耕作栽培·生理生化

- 691 控释尿素对环洞庭湖区双季稻吸氮特征和产量的影响 田昌 靳拓 周旋 黄思怡 王英姿 徐泽
彭建伟 荣湘民 谢桂先
- 701 再生稻次适宜区迟播栽对不同杂交籼稻淀粉 RVA 谱的影响 杨帆 钟晓媛 李秋萍 李书先 李武 周涛
李博 袁玉洁 邓飞 陈勇 任万军
- 714 山西省小麦苗期根系性状及抗旱特性分析 赵佳佳 乔玲 武棒棒 葛川 乔麟轶 张树伟
闫素仙 郑兴卫 郑军
- 728 苗期重金属胁迫下蓖麻生长、生理和重金属积累效应 吕冬梅 朱广龙 王玥 施雨 卢发光 任桢
刘昱茜 顾立峰 卢海潼 Irshad Ahmad 焦秀荣
孟天瑶 周桂生
- 738 种植密度对贵州春玉米茎秆抗倒伏性能及籽粒产量的影响 郑迎霞 陈杜 魏鹏程 卢平 杨锦越 罗上轲
叶开梅 宋碧
- 752 外源喷施植物生长调节剂对套作大豆碳氮代谢和花荚脱落的影响 罗凯 谢琛 汪锦 王甜 何舜 雍太文
杨文钰

研究简报

- 761 小麦谷氨酰胺合成酶同工酶转录特点及其启动子序列分析 王小纯 王露露 张志勇 秦步坛 于美琴 韦一昊
马新明
- 770 玉米杂交种纯度鉴定 SNP 核心引物的确定及高通量检测方案的建立 王蕊 施龙建 田红丽 易红梅 杨扬 葛建镭
范亚明 任洁 王璐 陆大雷 赵久然 王凤格
- 780 马铃薯 *StIgt* 基因家族的鉴定及其对干旱胁迫的响应分析 秦天元 刘玉汇 孙超 毕真真 李安一 许德蓉
王一好 张俊莲 白江平

ACTA AGRONOMICA SINICA

Vol. 47 No. 4 April 2021

CONTENTS

CROP GENETICS & BREEDING • GERMPLASM RESOURCES • MOLECULAR GENETICS

- 577 Molecular detection of G1 marker for orange rust resistance and analysis of candidate resistance *WAK* gene in sugarcane
WANG Heng-Bo, CHEN Shu-Qi, GUO Jin-Long, and QUE You-Xiong
- 587 Construction of a high-density genetic map using genotyping by sequencing (GBS) for quantitative trait loci (QTL) analysis of pink petal trait in *Brassica napus* L.
ZHOU Xin-Tong, GUO Qing-Qing, CHEN Xue, LI Jia-Na, and WANG Rui
- 599 Key genes mining of DNA methylation involved in regulating drought stress response in potato
LI Peng-Cheng, BI Zhen-Zhen, SUN Chao, QIN Tian-Yuan, LIANG Wen-Jun, WANG Yi-Hao, XU De-Rong, LIU Yu-Hui, ZHANG Jun-Lian, and BAI Jiang-Ping
- 613 Identification and expression analysis of microRNA during peanut (*Arachis hypogaea* L.) pod development
HU Dong-Xiu, LIU Hao, HONG Yan-Bin, LIANG Xuan-Qiang, and CHEN Xiao-Ping
- 626 QTL mapping and candidate genes screening of earliness traits in *Brassica napus* L.
LI Shu-Yu, HUANG Yang, XIONG Jie, DING Ge, CHEN Lun-Lin, and SONG Lai-Qiang
- 638 Responsive features of *SiPRR37* to photoperiod and temperature, abiotic stress and identification of its favourable allelic variations in foxtail millet (*Setaria italica* L.)
JIA Xiao-Ping, LI Jian-Feng, ZHANG Bo, QUAN Jian-Zhang, WANG Yong-Fang, ZHAO Yuan, ZHANG Xiao-Mei, WANG Zhen-Shan, SANG Lu-Man, and DONG Zhi-Ping
- 650 Genome-wide association study of 1000-seed weight in rapeseed (*Brassica napus* L.)
ZHANG Chun, ZHAO Xiao-Zhen, PANG Cheng-Ke, PENG Men-Lu, WANG Xiao-Dong, CHEN Feng, ZHANG Wei, CHEN Song, PENG Qi, YI Bin, SUN Cheng-Ming, ZHANG Jie-Fu, and FU Ting-Dong
- 660 Retrospective evaluation of cotton varieties nationally registered for the Northwest Inland cotton growing regions based on GYT biplot analysis
XU Nai-Yin, ZHAO Su-Qin, ZHANG Fang, FU Xiao-Qiong, YANG Xiao-Ni, QIAO Yin-Tao, and SUN Shi-Xian
- 672 Cloning of potato heat shock transcription factor *StHsfA3* gene and its functional analysis in heat tolerance
TANG Rui-Min, JIA Xiao-Yun, ZHU Wen-Jiao, YIN Jing-Ming, and YANG Qing
- 684 Development and application of functional marker for high nitrogen use efficiency and chilling tolerance gene *OsGRF4* in rice
SUN Ping-Yong, ZHANG Wu-Han, ZHANG Li, SHU Fu, HE Qiang, PENG Zhi-Rong, and DENG Hua-Feng

TILLAGE & CULTIVATION • PHYSIOLOGY & BIOCHEMISTRY

- 691 Effects of controlled-release urea on nitrogen uptake characteristics and yield of double-cropping rice around Dongting Lake area
TIAN Chang, JIN Tuo, ZHOU Xuan, HUANG Si-Yi, WANG Ying-Zi, XU Ze, PENG Jian-Wei, RONG Xiang-Min, and XIE Gui-Xian
- 701 Effects of delayed sowing and planting date on starch RVA profiles of different *indica* hybrid rice in the sub-suitable region of ratoon rice
YANG Fan, ZHONG Xiao-Yuan, LI Qiu-Ping, LI Shu-Xian, LI Wu, ZHOU Tao, LI Bo, YUAN Yu-Jie, DENG Fei, CHEN Yong, and REN Wan-Jun
- 714 Seedling root characteristics and drought resistance of wheat in Shanxi province
ZHAO Jia-Jia, QIAO Ling, WU Bang-Bang, GE Chuan, QIAO Lin-Yi, ZHANG Shu-Wei, YAN Su-Xian, ZHENG Xing-Wei, and ZHENG Jun
- 728 Growth, physiological, and heavy metal accumulation traits at seedling stage under heavy metal stress in castor (*Ricinus communis* L.)
LYU Dong-Mei, ZHU Guang-Long, WANG Yue, SHI Yu, LU Fa-Guang, REN Zhen, LIU Yu-Qian, GU Li-Feng, LU Hai-Tong, Irshad Ahmad, JIAO Xiu-Rong, MENG Tian-Yao, and ZHOU Gui-Sheng

- | | | |
|-----|---|---|
| 738 | Effects of planting density on lodging resistance and grain yield of spring maize stalks in Guizhou province | ZHENG Ying-Xia, CHEN Du, WEI Peng-Cheng, LU Ping, YANG Jin-Yue, LUO Shang-Ke, YE Kai-Mei, and SONG Bi |
| 752 | Effect of exogenous plant growth regulators on carbon-nitrogen metabolism and flower-pod abscission of relay strip intercropping soybean | LUO Kai, XIE Chen, WANG Jin, WANG Tian, HE Shun, YONG Tai-Wen, and YANG Wen Yu |

RESEARCH NOTES

- | | | |
|-----|---|--|
| 761 | Transcription characteristics of wheat glutamine synthetase isoforms and the sequence analysis of their promoters | WANG Xiao-Chun, WANG Lu-Lu, ZHANG Zhi-Yong, QIN Bu-Tan, YU Mei-Qin, WEI Yi-Hao, and MA Xin-Ming |
| 770 | Identification of SNP core primer and establishment of high throughput detection scheme for purity identification in maize hybrids | ANG Rui, SHI Long-Jian, TIAN Hong-Li, YI Hong-Mei, YANG Yang, GE Jian-Rong, FAN Ya-Ming, REN Jie, WANG Lu, LU Da-Lei, ZHAO Jiu-Ran, and WANG Feng-Ge |
| 780 | Identification of <i>StIgt</i> gene family and expression profile analysis of response to drought stress in potato | QIN Tian-Yuan, LIU Yu-Hui, SUN Chao, BI Zhen-Zhen, LI An-Yi, XU De-Rong, WANG Yi-Hao, ZHANG Jun-Lian, and BAI Jiang-Ping |

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 150 specialists in the field of crop sciences. Among them, 26 are academicians of Chinese Academy of Sciences or Chinese Academy of Engineering, 22 are from the outside of China, and 2 are from Hong Kong, China.

AAS is a fully Open Access Journal through the independent website (<http://zwxb.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, Scopus, 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.