



ISSN 0496-3490

CN 11-1809/S

作物学报

ACTA AGRONOMICA SINICA

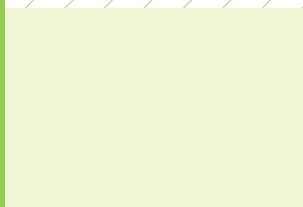
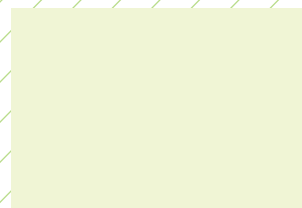
第47卷 第5期 Vol.47 No.5

作物学报

第四十七卷

第五期

二〇二一年五月



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

5
2021

作物学报

(ZUOWU XUEBAO)

第 47 卷 第 5 期 2021 年 5 月

目 次

作物遗传育种·种质资源·分子遗传学

- 789 新型抗广谱性除草剂草甘膦转基因油菜的创制及其鉴定 李杰华 端 群 史明涛 吴潞梅 柳 寒 林拥军
吴高兵 范楚川 周永明
- 799 ACC 处理对不同基因型玉米幼苗响应氮素供给的调控效应 吴冰卉 王桂萍 王玉斌 李召虎 张明才
- 807 氮响应转录因子 ZmNLP5 影响玉米根系生长的功能研究 葛 敏 王元琮 宁丽华 胡梦梅 石 习 赵 涵
- 814 棉花 *GhMADS7* 基因正调控棉花花瓣发育 马欢欢 方启迪 丁元昊 池华斌 张献龙 闵 玲
- 827 水稻单倍体诱导基因 *OsMATL* 突变体的创制与分析 文 钦 贾思思 王加峰 黄翠红 王 慧 陈志强
郭 涛
- 837 谷子穗发育期转录组与叶酸代谢谱联合分析 马贵芳 满夏夏 张益娟 高 豪 孙朝霞 李红英
韩渊怀 侯思宇
- 847 大豆根部水压胁迫耐逆指数遗传体系解析 王吴彬 童 飞 KHAN Mueen Alam 张雅轩
贺建波 郝晓帅 邢光南 赵团结 盖钧镒
- 860 绿豆雄性不育突变体 *msm2015-1* 的遗传学与细胞学分析 吴然然 林 云 陈景斌 薛晨晨 袁星星 闫 强
高 营 李灵慧 张勤雪 陈 新
- 869 宁麦 9 号/扬麦 158 重组自交系群体产量性状的遗传解析 姜 朋 张 旭 吴 磊 何 漪 张平平 马鸿翔
孔令让
- 882 甘蔗 β -胡萝卜素异构酶基因家族的鉴定、定位和表达分析 黄 宁 惠乾龙 方振名 李姗姗 凌 辉 阙友雄
袁照年

耕作栽培·生理生化

- 894 水稻内源油菜素甾醇对施氮量的响应及其对颖花退化的调控作用 姚佳瑜 于吉祥 王志琴 刘立军 周 娟 张伟杨
杨建昌
- 904 长江中下游地区常规中熟粳稻产量、品质及氮素吸收性状的相互关系分析 刘秋员 周 磊 田晋钰 程 爽 陶 钰 邢志鹏
刘国栋 魏海燕 张洪程
- 915 不同耐低氮性玉米品种的花后碳氮积累与转运特征 吴雅薇 蒲 玮 赵 波 魏 桂 孔凡磊 袁继超
- 929 间作小麦光合性能对地上地下互作强度的响应 王一帆 殷 文 胡发龙 范 虹 樊志龙 赵 财
于爱忠 柴 强
- 942 水稻机械精量有序抛秧栽培的产量形成和生长发育特征研究 王慰亲 唐启源 陈元伟 贾 巍 罗友谊 王小卉
郑华斌 熊娇军
- 952 江苏太湖地区不同生育类型粳稻品种产量对不同播期气候因子的响应 董明辉 陈培峰 江 贻 曹鹏辉 宋云生 顾俊荣
谢裕林 乔中英 张文地 黄丽芬

研究简报

- 964 减氮对辽粳 5 号/秋田小町 RIL 群体茎秆维管束、穗部和产量性状的影响及其相互关系 程艳双 胡美艳 杜志敏 闫秉春 李 丽 王玮玮
鞠晓堂 孙丽丽 徐 海
- 974 小麦矮秆突变体的鉴定及其突变性状的关联分析 贺军与 尹顺琼 陈云琼 熊静蕾 王卫斌 周鸿斌
陈 梅 王梦玥 陈升位
- 983 甘蓝型油菜温敏细胞核雄性不育系 160S 花药败育的形态学特征和细胞学研究 唐 鑫 李圆圆 陆俊杏 张 涛

ACTA AGRONOMICA SINICA

Vol. 47 No. 5 May 2021

CONTENTS

CROP GENETICS & BREEDING • GERMPLASM RESOURCES • MOLECULAR GENETICS

- 789 **Development and identification of transgenic rapeseed with a novel gene for glyphosate resistance**
LI Jie-Hua, DUAN Qun, SHI Ming-Tao, WU Lu-Mei, LIU Han, LIN Yong-Jun, WU Gao-Bing, FAN Chu-Chuan, and ZHOU Yong-Ming
- 799 **Regulation of ACC treatment on nitrogen supply response of maize seedlings with different genotypes**
WU Bing-Hui, WANG Gui-Ping, LI Zhao-Hu, and ZHANG Ming-Cai
- 807 **Function analysis of nitrogen-responsive transcription factor ZmNLP5 affecting root growth in maize**
GE Min, WANG Yuan-Cong, NING Li-Hua, HU Meng-Mei, SHI Xi, and ZHAO Han
- 814 **GhMADS7 positively regulates petal development in cotton**
MA Huan-Huan, FANG Qi-Di, DING Yuan-Hao, CHI Hua-Bin, ZHANG Xian-Long, and MIN Ling
- 827 **Construction and identification of haploid induction gene *OsMATL* mutants in rice**
WEN Qin, JIA Si-Si, WANG Jia-Feng, HUANG Cui-Hong, WANG Hui, CHEN Zhi-Qiang, and GUO Tao
- 837 **Integrated analysis between folate metabolites profiles and transcriptome of panicle in foxtail millet**
MA Gui-Fang, MAN Xia-Xia, ZHANG Yi-Juan, GAO Hao, SUN Zhao-Xia, LI Hong-Ying, HAN Yuan-Huai, and HOU Si-Yu
- 847 **Detecting QTL system of root hydraulic stress tolerance index at seedling stage in soybean**
WANG Wu-Bin, TONG Fei, KHAN Mueen-Alam, ZHANG Ya-Xuan, HE Jian-Bo, HAO Xiao-Shuai, XING Guang-Nan, ZHAO Tuan-Jie, and GAI Jun-Yi
- 860 **Genetic and cytological analysis of male sterile mutant *msm2015-1* in mungbean**
WU Ran-Ran, LIN Yun, CHEN Jing-Bin, XUE Chen-Chen, YUAN Xing-Xing, YAN Qiang, GAO Ying, LI Ling-Hui, ZHANG Qin-Xue, and CHEN Xin
- 869 **Genetic analysis for yield related traits of wheat (*Triticum aestivum* L.) based on a recombinant inbred line population from Ningmai 9 and Yangmai 158**
JIANG Peng, ZHANG Xu, WU Lei, HE Yi, ZHANG Ping-Ping, MA Hong-Xiang, and KONG Ling-Rang
- 882 **Identification, localization and expression analysis of beta-carotene isomerase gene family in sugarcane**
HUANG Ning, HUI Qian-Long, FANG Zhen-Ming, LI Shan-Shan, LING Hui, QUE You-Xiong, and YUAN Zhao-Nian

TILLAGE & CULTIVATION • PHYSIOLOGY & BIOCHEMISTRY

- 894 **Response of endogenous brassinosteroids to nitrogen rates and its regulatory effect on spikelet degeneration in rice**
YAO Jia-Yu, YU Ji-Xiang, WANG Zhi-Qin, LIU Li-Jun, ZHOU Juan, ZHANG Wei-Yang, and YANG Jian-Chang
- 904 **Relationships among grain yield, rice quality and nitrogen uptake of inbred middle-ripe *japonica* rice in the middle and lower reaches of Yangtze River**
LIU Qiu-Yuan, ZHOU Lei, TIAN Jin-Yu, CHENG Shuang, TAO Yu, XING Zhi-Peng, LIU Guo-Dong, WEI Hai-Yan, and ZHANG Hong-Cheng
- 915 **Characteristics of post-anthesis carbon and nitrogen accumulation and translocation in maize cultivars with different low nitrogen tolerance**
WU Ya-Wei, PU Wei, ZHAO Bo, WEI Gui, KONG Fan-Lei, and YUAN Ji-Chao
- 929 **Response of photosynthetic performance of intercropped wheat to interaction intensity between above- and below-ground**
WANG Yi-Fan, YIN Wen, HU Fa-Long, FAN Hong, FAN Zhi-Long, ZHAO Cai, YU Ai-Zhong, and CHAI Qiang
- 942 **Evaluation of orderly mechanical seedling-broadcasting on yield formation and growth characteristics of rice**
WANG Wei-Qin, TANG Qi-Yuan, CHEN Yuan-Wei, JIA Wei, LUO You-Yi, WANG Xiao-Hui, ZHENG Hua-Bin, and XIONG Jiao-Jun
- 952 **Response of yield of different growth types of *japonica* rice varieties to climatic factors at different sowing dates in Taihu region of Jiangsu province**
DONG Ming-Hui, CHEN Pei-Feng, JIANG Yi, CAO Peng-Hui, SONG Yun-Sheng, GU Jun-Rong, XIE Yu-Lin, QIAO Zhong-Ying, ZHANG Wen-Di, and HUANG Li-Fen

RESEARCH NOTES

- 964 **Effects of nitrogen reduction on stem vascular bundles, panicle and yield characters of RIL populations in Liaojing 5/Akitakaomaqi and their correlation** CHENG Yan-Shuang, HU Mei-Yan, DU Zhi-Min, YAN Bing-Chun, LI Li, WANG Yi-Wei, JU Xiao-Tang, SUN Li-Li, and XU Hai
- 974 **Identification of wheat dwarf mutants and analysis on association between the mutant traits of the dwarf plants** HE Jun-Yu, YIN Shun-Qiong, CHEN Yun-Qiong, XIONG Jing-Lei, WANG Wei-Bin, ZHOU Hong-Bin, CHEN Mei, WANG Meng-Yue, and CHEN Sheng-Wei
- 983 **Morphological characteristics and cytological study of anther abortion of temperature-sensitive nuclear male sterile line 160S in *Brassica napus*** TANG Xin, LI Yuan-Yuan, LU Jun-Xing, and ZHANG Tao

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.