

# 江苏农业科学

第 51 卷 第 20 期 2023 年 10 月 20 日

## 目 次

### ● 专论与综述

- 植物三萜皂苷调控昆虫抗性及其生物合成调控的研究进展 ..... 潘 磊,黄 蕊,闫乐乐,等(1)
- 水稻根系与氮肥高效吸收利用关系研究进展 ..... 吴 昊,顾汉柱,王 琛,等(9)
- 二化螟抗药性研究进展 ..... 杨 眉,褚 晋,田春晖,等(15)
- 江苏省主要经济作物种业现状分析与发展对策 ..... 沙 琴,陈 新,薛晨晨,等(20)

### ● 生物技术

- 黄荆坪竹根椒叶绿体基因组密码子使用偏好性及影响因素分析 ..... 龚意辉,唐诗怡,周桂花,等(28)
- 烟草 *DUF538* 基因家族鉴定及根结线虫胁迫下表达分析 ..... 张路阳,张有建,饶聪颖,等(34)
- 洋葱黄色条纹突变体叶绿体基因组测序及嵌合体验证 ..... 惠林冲,陈 微,张仕林,等(43)
- 类水滑石纳米载体负载 DNA 质粒构建及植物基因递送研究 ..... 孙仲旭,张汉超,陈 龙,等(49)

### ● 遗传育种与耕作栽培

- 不同稻、鸭、鱼共生模式对土壤质量及水稻生长发育的影响 ..... 张 琴,孟祥杰,陈 灿,等(58)
- 54 份蚕豆种质资源主要农艺性状的综合鉴定与评价 ..... 石 晗,陈子义,陈 珏,等(67)
- 硅对镉胁迫下玉米生长和抗氧化防御系统的影响 ..... 卢 园,李瑞娟,赵 娜,等(77)
- 11 个小麦品种对于旱胁迫的响应及抗旱性评价 ..... 毕红园,赵智勇,曹梦琳,等(85)
- 一个氮高效粳交直立穗粳稻品种的鉴定 ..... 许作鹏,黄本西,孙铭琰,等(93)
- 低磷胁迫下不同大豆基因型磷效率的鉴定 ..... 张彦丽,邱 甜,张鹤林,等(101)
- 等氮水平下不同磷钾比例对雪茄烟叶碳氮代谢及产质量的影响 ..... 朴晟源,管庆林,袁华恩,等(107)

### ● 植物保护

- 条锈菌冬繁区南阳盆地小麦品种(系)抗条锈病状况与抗病育种对策 ..... 简俊涛,杨 辉,王清华,等(115)

禾谷镰刀菌拮抗菌 21-1 的发酵条件及稳定性分析 ..... 张 强,张艳茹,霍云凤,等(122)

酿酒葡萄对霜霉病的田间抗性评价及防治药剂筛选 ..... 马文礼,杨 锋,杨 波,等(128)

杜鹃冠网蝽越冬卵空间分布型及抽样技术 ..... 李胜华,路广亮,高 磊(133)

●园艺与林学

不同林龄华山松针叶氮磷生态化学计量及再吸收特征 ..... 何 斌,李 青,李望军,等(137)

配方施肥对福建柏种子园产量及叶片光合特性的影响 ..... 余 蓉,李秉钧,刘世祥,等(144)

采前喷施氯化钙对苹果叶片光合功能和果实品质的影响 ..... 袁嘉玮,王 璐,张茜茹,等(152)

环剥、几丁聚糖对灰枣叶片性状及坐果的影响 ..... 董科阳,丁紫薇,张 驰,等(161)

水肥耦合对日光温室番茄产量和品质的影响 ..... 王雪科,吴春燕,韩潇怡,等(167)

氨基酸替代和氮钾比对樱桃番茄产量、品质和土壤养分残留的影响  
..... 高萌萌,宋梦圆,李佳璠,等(172)

新引酿酒葡萄品种在宁夏贺兰山东麓产区的表现及评价 ..... 杨文忠,徐国前(179)

●农业工程与信息技术

简单三维注意力机制水稻病害识别模型 ..... 王忠培,董 伟,朱静波,等(186)

基于多原型指导的小样本水稻害虫识别与分类 ..... 李 军,李志伟,李艳红(193)

基于高光谱植被指数的春小麦 LAI 和 SPAD 值及产量反演模型研究  
..... 李靖言,颜 安,宁松瑞,等(201)

CNN 与 BiLSTM 相结合的水稻病害识别新方法 ..... 路 阳,刘婉婷,林立媛,等(211)

●资源与环境

不同施肥对幼龄柑橘园土壤养分及酶活性变化的影响 ..... 余 高,陈 芬,卢 心,等(218)

生物炭与有机肥配施对白菜生长品质、土壤养分及酶活性的影响 ..... 文慧宝,杜双江,程贵庆,等(224)

贵阳市典型茶园种植土壤和茶叶的重金属含量特征 ..... 王兴富,张珍明,黄凯文,等(230)

烟草抗病嫁接对根际土壤微生物多样性的影响 ..... 黄昆鹏,董昆乐,李芳芳,等(239)

●“乡村振兴”专栏

生态文明法制建设对农业面源污染的影响——基于省级生态文明立法的准自然试验  
..... 徐 静,吴依含,张星民(248)

乡村振兴背景下农产品品牌营销策略——以无锡阳山水蜜桃为例 ..... 陶 雅,陶应虎(259)

# JIANGSU AGRICULTURAL SCIENCES

Vol. 51 No. 20 October 20 2023

## CONTENTS

### Monograph and Review

- Research progress on plant triterpenoid saponins regulating insect resistance and their biosynthesis ..... *Pan Lei, et al*(1)
- Research progress on relationship between roots of rice and efficient absorption and utilization of nitrogen fertilizer  
..... *Wu Hao, et al*(9)
- Research progress on resistance of *Chilo suppressalis* to insecticides ..... *Yang Mei, et al*(15)
- Current situation analysis and development countermeasures of main industrial crop seed industry in Jiangsu Province  
..... *Sha Qin, et al*(20)

### Bio-technology

- Codon usage bias of *Capsicum annuum* L. cv. Huangjingping chloroplast genome and its influence factors  
..... *Gong Yihui, et al*(28)
- Identification and expression analysis of *DUF538* gene family in tobacco under root – knot nematode stress  
..... *Zhang Luyang, et al*(34)
- Sequencing and chimera verification of chloroplast genome of onion yellow stripe mutants ..... *Hui Linchong, et al*(43)
- Construction of DNA plasmid loaded on hydrotalc – like nanocarriers and plant gene delivery ..... *Sun Zhongxu, et al*(49)

### Genetics and Breeding • Tillage and Cultivation

- Effects of different symbiotic models of rice, duck, and fish on soil quality and rice growth ..... *Zhang Qin, et al*(58)
- Comprehensive identification and evaluation of main agronomic traits of 54 *Vicia faba* germplasm resources  
..... *Shi Han, et al*(67)
- Impacts of silicon on growth and antioxidant defense system of maize under cadmium stress ..... *Lu Yuan, et al*(77)
- Response to drought stress and drought resistance evaluation of 11 wheat cultivars ..... *Bi Hongyuan, et al*(85)
- Identification of indica – japonica hybrid japonica cultivar with erect panicle and high nitrogen use efficiency  
..... *Xu Zuopeng, et al*(93)
- Identification of phosphorus efficiency of different soybean genotypes under low phosphorus stress ..... *Zhang Yanli, et al*(101)
- Effects of different phosphorus and potassium ratio on carbon and nitrogen metabolism, yield and quality of cigar tobacco  
leaves at equivalent nitrogen levels ..... *Piao Shengyuan, et al*(107)

### Plant Protection

- Resistance of wheat varieties (lines) to stripe rust in Nanyang Basin of winter breeding area and breeding strategies for disease  
resistance ..... *Jian Juntao, et al*(115)

Fermentation conditions and stability of antagonistic actinomycete 21 – 1 against *Fusarium graminearum* ..... Zhang Qiang ,et al( 122)

Evaluation of field resistance of wine grape to downy mildew and screening of control agents ..... Ma Wenli ,et al( 128)

Spatial distribution pattern and sampling technique for overwinter eggs of *Stephanitis pyriodes* ..... Li Shenghua ,et al( 133)

**Horticulture and Forestry**

Ecological stoichiometry and reabsorption characteristics of nitrogen and phosphorus in needle leaves of *Pinus armandii* with different ages ..... He Bin ,et al( 137)

Effects of formula fertilization on yield and leaf photosynthetic characteristics of *Fokienia hodginsii* seed orchard ..... Yu Rong ,et al( 144)

Influences of calcium chloride applied as foliage fertilizer before harvesting on leaf photosynthetic function and fruit quality of apple ..... Yuan Jiawei ,et al( 152)

Effects of ring peeling and chltosan on leaf traits and fruit set of grey dates ..... Dong Keyang ,et al( 161)

Impacts of water – fertilizer coupling on yield and quality of tomato in solar greenhouse ..... Wang Xueke ,et al( 167)

Effects of amino acid substitution and nitrogen – potassium ratio on yield ,quality and soil nutrient residue of cherry tomato ..... Gao Mengmeng ,et al( 172)

Performance and evaluation of newly introduced wine grape varieties in eastern foothills of Helan Mountains in Ningxia area ..... Yang Wenzhong ,et al( 179)

**Agricultural Engineering and Information Technology**

Simple 3D attention mechanism model for rice disease identification ..... Wang Zhongpei ,et al( 186)

Recognition and classification of rice pests in small samples based on multi – prototype guidance ..... Li Jun ,et al( 193)

Inversion model of LAI and SPAD values and yield of spring wheat based on hyperspectral vegetation index ..... Li Jingyan ,et al( 201)

A new method for rice disease identification by combining CNN and BiLSTM ..... Lu Yang ,et al( 211)

**Resources and Environment**

Effects of different fertilization on soil nutrients and enzyme activities in young citrus orchards ..... Yu Gao ,et al( 218)

Influences of combined application of biochar and organic fertilizer on growth quality ,soil nutrients and enzyme activities of Chinese cabbage ..... Wen Huibao ,et al( 224)

Characteristics of heavy metal content in soil and tea of typical tea garden in Guiyang City ..... Wang Xingfu ,et al( 230)

Impacts of disease – resistant grafting on microbial diversity in rhizosphere soil of tobacco ..... Huang Kunpeng ,et al( 239)

**Rural Revitalization**

Influence of ecological civilization legal system construction on agricultural non – point source pollution—A quasi – natural experiment based on provincial ecological civilization legislation ..... Xu Jing ,et al( 248)

Brand marketing strategy of agricultural products under background of rural revitalization—Taking Yangshan peaches in Wuxi City as an example ..... Tao Ya ,et al( 259)