

# 南方农业学报

Nanfang Nongye Xuebao

第51卷 第1期 2020年1月

## 目次

### 优秀青年学者论坛

- 1 广西涠洲岛珊瑚礁海域鱼类物种组成的调查分析 ..... 邹琦, 吴志强, 黄亮亮, 丁洋, 黄欣  
11 一株从原蚕分离的微孢子虫的生物学特性及其系统发育分析  
..... 黄旭华, 何强, 汤庆坤, 蒋满贵, 李田, 龙江琼, 潘国庆, 郑宁, 鲁成, 潘志新

### 作物遗传育种·种质资源·分子生物学

- 19 木薯 *ETRI* 基因克隆及表达分析 ..... 陈志晟, 颜彦, 赵思涵, 田丽波, 商桑, 胡伟  
27 基于 SRAP 分子标记的贵州省棕榈种质资源遗传多样性分析 ..... 毛跃雄, 陆跃堂, 胡志姣, 赵杨  
36 5 个新选水稻三系不育系主要农艺性状配合力分析  
..... 潘清洁, 赵福胜, 罗洪发, 张治海, 杨旭东, 查仁明  
42  $^{60}\text{Co-}\gamma$  射线辐射对中国水仙的诱变效应 ..... 胡瑶, 周毅吉, 张跃龙, 李宏告, 张勇, 雷星宇, 李丽辉

### 生理生化·土壤肥料·农业生态环境

- 48 水稻茎秆形态特征与抗倒伏能力对外源植物生长调节剂的响应差异  
..... 文廷刚, 王伟中, 杨文飞, 杜小凤, 王泽港, 贾艳艳, 钱新民, 孙爱侠, 施洪泉, 顾大路  
56 早稻茬秋芝麻单株产量相关性状的灰色关联分析及综合评价  
..... 孙建, 周红英, 应国勇, 颜小文, 彭炼波, 颜廷献, 饶月亮, 乐美旺  
65 抽穗期干旱复水对机插水稻抗氧化酶活性及根系活力的影响  
..... 刘芬, 屈成, 王悦, 陈光辉  
72 菌株 *Trametes hirsuta* zlh237 发酵液对污染土壤中多环芳烃的降解及群落结构分析  
..... 甄静, 李冠杰, 杜志敏, 王继雯, 杨文玲, 巩涛, 赵俊杰  
80 花青素介导植物抗重金属胁迫机理的研究进展  
..... 耿安静, 王旭, 李秋剑, 杨慧, 陈岩, 刘雯雯, 陈永坚, 王富华

### 植物保护·农业气象

- 91 云瑞甘蔗种质资源梢腐病田间抗性评价及农艺性状分析  
..... 田春艳, 桃联安, 周清明, 俞华先, 孙有芳, 董立华,  
安汝东, 边芯, 郎荣斌, 张钰, 吴才文, 经艳芬  
101 沃柑黄龙病亚洲种 Nested-PCR 检测与调查分析  
..... 刘福平, 王茜, 陈东奎, 陈香玲, 廖惠红, 汪妮娜, 黄宏明, 黄其椿  
108 黄瓜花叶病毒贵州辣椒分离物外壳蛋白基因序列分析 ..... 付尚松, 王莉爽, 杨学辉, 蒋选利

- 115 云南省不同森林土壤中三七促生拮抗细菌的分离筛选  
 ..... 邓琳梅,杨 蕾,张俊星,字变仙,龚加寿,梅馨月,刘屹湘,朱书生,杨 敏
- 123 刺盘孢菌真菌病毒研究进展 ..... 李春霞,李 敏,高兆银,弓德强,洪小雨,姜 瑛,常圣鑫,胡美姣

## 园艺·园林·林业

- 133 六天一刀割制对热研7-33-97幼龄开割橡胶树产量、胶乳生理及死皮病发生的影响  
 ..... 仇 键,校现周,高宏华,杨文凤,魏 芳,吴 明,罗世巧
- 140 不同发育期小黄椰胚乳抗氧化酶活性变化规律  
 ..... 李 静,陈惠慧,吴 翼,杨耀东,范海阔,弓淑芳,刘 蕊,王仁才
- 147 根际土壤重金属和营养成分含量及植株营养生长对波叶金桂鲜花产量的影响  
 ..... 甘丽萍,唐 恒,田 辉,李 豪
- 155 植物生长调节剂种类、浓度及浸泡时间对炮仗花扦插繁殖效果的影响  
 ..... 林 茂,李进华,唐 庆,孙开道
- 162 不同育苗方式对丹参种苗形态、农艺性状及生理生化指标的影响  
 ..... 王 凯,巢建国,谷 巍,盛业龙,宿树兰,夏 蕴,王玉卓,惠西珂,王圆圆

## 加工·贮藏·质量安全

- 169 响应面法优化玉米耳原生质体制备条件 ..... 苏文英,杨和川,谭一罗,周振玲,秦裕营,李 晓
- 176 不同来源鲑科鱼肌肉营养组成比较  
 ..... 岑剑伟,郝淑贤,魏 涯,李来好,杨贤庆,赵永强,黄 卉,邓建朝
- 183 反应温度对以香荚兰为原料的美拉德产物分布及卷烟加香的影响  
 ..... 刘绍华,曲利利,白家峰,马扩彦,胡亚杰,许春平

## 畜牧·兽医·水产·蚕桑

- 194 大刺鳅生长激素基因克隆与表达分析 ..... 钟东明,黄小琪,何佩莹,周惠强,张明清,舒 琥
- 202 滇陆猪*Nramp1*基因多态性对其在组织中表达的影响  
 ..... 张 斌,韩 敏,相德才,刘韶娜,沙 茜,张桂生,赵智勇,赵彦光
- 209 Activin A诱导大鼠胰腺导管干细胞分化形成胰岛β细胞  
 ..... 赵 一,吴 江,康 恺,栗 焯,李光辉,刘 斌,郎贯存,安立龙,效 梅
- 217 不同光周期条件对罗非鱼生长及性腺发育的影响  
 ..... 唐瞻杨,张 旭,罗永巨,肖 俊,周 毅,郭忠宝,钟 欢,梁军能,周 磊
- 224 新疆地区3种雅罗鱼的繁殖力比较 ..... 王业宁,李胜忠,张 瑞,刘长龙

## 农业信息技术·农业经济

- 230 基于高光谱遥感数据的水稻叶温反演 ..... 梁金晨,江晓东,杨沈斌,孙 浩,梁文毅,妙丹书
- 237 基于双目视觉与深度学习的番茄本体特征检测系统 ..... 李 颀,强 华

本期执行编辑:邓慧灵

期刊基本参数:CN 45-1381/S\*1940\*m\*A4\*244\*zh\*P\* ¥ 45.00\*1000\*31\*2020-01

# Journal of Southern Agriculture

Vol.51 No.1, 2020

## Contents

### Outstanding Young Scholars Forum

- 1 Coral reef fish species composition in Weizhou Island, Guangxi  
..... ZOU Qi, WU Zhi-qiang, HUANG Liang-liang, DING Yang, HUANG Xin
- 11 Biological characters and phylogenetic analysis of a microsporidian isolated from parent silkworm  
..... HUANG Xu-hua, HE Qiang, TANG Qing-kun, JIANG Man-gui, LI Tian, LONG Jiang-qiong,  
PAN Guo-qing, ZHENG Ning, LU Cheng, PAN Zhi-xin

### Crop genetics & breeding · germplasm resources · biotechnology

- 19 Cloning and expression analysis of *MeETR1* gene in cassava  
..... CHEN Zhi-sheng, YAN Yan, ZHAO Si-han, TIAN Li-bo, SHANG Sang, HU Wei
- 27 Genetic diversity of *Trachycarpus fortunei* (Hook.) H. Wendl germplasm resources in Guizhou by SRAP molecular markers analysis  
..... MAO Yue-xiong, LU Yue-tang, HU Zhi-jiao, ZHAO Yang
- 36 Analysis of combining ability of main agronomic traits of five three-line sterile lines of rice bred newly  
..... PAN Qing-jie, ZHAO Fu-sheng, LUO Hong-fa, ZHANG Zhi-hai, YANG Xu-dong, ZHA Ren-ming
- 42 Effects of <sup>60</sup>Co-γ ray radiation on *Narcissus tazetta* L. var. *chinensis*  
..... HU Yao, ZHOU Yi-ji, ZHANG Yue-long, LI Hong-gao, ZHANG Yong, LEI Xing-yu, LI Li-hui

### Physiology & biochemistry · soil & fertilizer · agroecology environmet

- 48 Morphological characteristics and lodging resistance of rice stems and its response to exogenous plant growth regulators  
..... WEN Ting-gang, WANG Wei-zhong, YANG Wen-fei, DU Xiao-feng, WANG Ze-gang,  
JIA Yan-yan, QIAN Xin-min, SUN Ai-xia, SHI Hong-quan, GU Da-lu
- 56 Grey correlation analysis on traits related to yield per plant and comprehensive evaluation on autumn sesame after early rice  
..... SUN Jian, ZHOU Hong-ying, YING Guo-yong, YAN Xiao-wen,  
PENG Lian-bo, YAN Ting-xian, RAO Yue-liang, LE Mei-wang
- 65 Effects of drought rewatering at heading stage on antioxidant enzyme activity and root activity of machine-transplanted rice  
..... LIU Fen, QU Cheng, WANG Yue, CHEN Guang-hui
- 72 Biodegradation and community structure analysis of polycyclic aromatic hydrocarbon (PAH) in contaminated soil by *Trametes hirsuta* zlh237 fermentation liquid  
..... ZHEN Jing, LI Guan-jie, DU Zhi-min, WANG Ji-wen, YANG Wen-ling, GONG Tao, ZHAO Jun-jie
- 80 Mechanism of anthocyanins-mediated resistance to heavy metals stresses in plants: A review  
..... GENG An-jing, WANG Xu, LI Qiu-jian, YANG Hui, CHEN Yan, LIU Wen-wen, CHEN Yong-jian, WANG Fu-hua

### Plant protection · agrometeorology

- 91 Resistance evaluation for pokkah boeng disease in field and agronomic traits analysis of Yunrui sugarcane germplasms  
..... TIAN Chun-yan, TAO Lian-an, ZHOU Qing-ming, YU Hua-xian, SUN You-fang, DONG Li-hua,  
AN Ru-dong, BIAN Xin, LANG Rong-bin, ZHANG Yu, WU Cai-wen, JING Yan-fen
- 101 Nested-PCR detection and investigation for *Candidatus Liberibacter asiaticus* of Orah  
..... LIU Fu-ping, WANG Xi, CHEN Dong-kui, CHEN Xiang-ling, LIAO Hui-hong,  
WANG Ni-na, HUANG Hong-ming, HUANG Qi-chun
- 108 Sequence analysis of the coat protein gene of *Cucumber mosaic virus* isolated from Guizhou pepper  
..... FU Shang-song, WANG Li-shuang, YANG Xue-hui, JIANG Xuan-li

- 115 Isolation and selection of *Panax notoginseng* (Burk.) F. H. Chen growth-promoting antagonistic bacterial from different forest soils in Yunnan ..... DENG Lin-mei, YANG Lei, ZHANG Jun-xing, ZI Bian-xian, GONG Jia-shou, MEI Xin-yue, LIU Yi-xiang, ZHU Shu-sheng, YANG Min

- 123 Mycoviruses of *Colletotrichum* spp. : A review ..... LI Chun-xia, LI Min, GAO Zhao-yin, GONG De-qiang, HONG Xiao-yu, JIANG Ying, CHANG Sheng-xin, HU Mei-jiao

## Horticulture · landscape architecture · forestry

- 133 Effects of tapping per six days system on the yield, latex physiology and tapping panel dryness of young tapped *Hevea brasiliensis* var. Reyan 7-33-97 ..... QIU Jian, XIAO Xian-zhou, GAO Hong-hua, YANG Wen-feng, WEI Fang, WU Ming, LUO Shi-qiao

- 140 Changes of antioxidant enzyme activities in endosperm of small yellow coconut at different developmental stages ..... LI Jing, CHEN Hui-hui, WU Yi, YANG Yao-dong, FAN Hai-kuo, GONG Shu-fang, LIU Rui, WANG Ren-cai
- 147 Effects of heavy metals and nutrient component content in rhizosphere soil, plant growth on flower yield of *Osmanthus undulata* Boyejingui ..... GAN Li-ping, TANG Heng, TIAN Hui, LI Hao

- 155 Effects of different kinds of plant growth regulators, concentrations and soaking time on cuttage propagation of *Pyrostegia venusta* ..... LIN Mao, LI Jin-hua, TANG Qing, SUN Kai-dao

- 162 Effects of different seedling raising methods on the morphology, agronomic characters and physiological and biochemical indexes of *Salvia miltiorrhiza* Bunge seedlings ..... WANG Kai, CHAO Jian-guo, GU Wei, SHENG Ye-long, SU Shu-lan, XIA Yun, WANG Yu-zhuo, HUI Xi-ke, WANG Yuan-yuan

- 162 Effects of different seedling raising methods on the morphology, agronomic characters and physiological and biochemical indexes of *Salvia miltiorrhiza* Bunge seedlings ..... WANG Kai, CHAO Jian-guo, GU Wei, SHENG Ye-long, SU Shu-lan, XIA Yun, WANG Yu-zhuo, HUI Xi-ke, WANG Yuan-yuan

## Processing · storage · quality safety

- 169 Optimization of protoplast formation of *Auricularia cornea* by response surface methodology ..... SU Wen-ying, YANG He-chuan, TAN Yi-luo, ZHOU Zhen-ling, QIN Yu-ying, LI Xiao

- 176 Comparison of nutrition components difference of Salmonidae from different countries ..... CEN Jian-wei, HAO Shu-xian, WEI Ya, LI Lai-hao, YANG Xian-qing, ZHAO Yong-qiang, HUANG Hui, DENG Jian-chao

- 183 Effects of reaction temperature on distribution of Maillard reaction products and tobacco flavoring with vanilla as raw material ..... LIU Shao-hua, QU Li-li, BAI Jia-feng, MA Kuo-yan, HU Ya-jie, XU Chun-ping

## Animal science · veterinary science · aquiculture · sericulture

- 194 Cloning and expression analysis of growth hormone gene in *Mastacembelus armatus* ..... ZHONG Dong-ming, HUANG Xiao-qi, HE Pei-ying, ZHOU Hui-qiang, ZHANG Ming-qing, SHU Hu

- 202 Effects of *Nramp1* gene polymorphism on its expression in the tissues of Dianlu pig ..... ZHANG Bin, HAN Min, XIANG De-cai, LIU Shao-na, SHA Qian, ZHANG Gui-sheng, ZHAO Zhi-yong, ZHAO Yan-guang

- 209 Activin A induced rat pancreatic ductal stem cells *in vitro* differentiation into pancreatic islets  $\beta$  cells ..... ZHAO Yi, WU Jiang, KANG Kai, LI Ye, LI Guang-hui, LIU Bing, LANG Guan-chun, AN Li-long, XIAO Mei

- 217 Effects of different photoperiod conditions on the growth and gonad development of tilapia ..... TANG Zhan-yang, ZHANG Xu, LUO Yong-ju, XIAO Jun, ZHOU Yi, GUO Zhong-bao, ZHONG Huan, LIANG Jun-neng, ZHOU Lei

- 224 Comparing fertility of three species of *Leuciscus* in Xinjiang ..... WANG Ye-ning, LI Sheng-zhong, ZHANG Rui, LIU Chang-long

## Agricultural information technology · agriculture economics

- 230 Rice leaf temperature inversion based on hyperspectral remote sensing data ..... LIANG Jin-chen, JIANG Xiao-dong, YANG Shen-bin, SUN Hao, LIANG Wen-yi, MIAO Dan-shu

- 237 Tomato ontology feature detection system based on binocular vision and deep learning ..... LI Qi, QIANG Hua