

ISSN 1000-2650  
CN 51-1281/S

# 四川农业大学学报

JOURNAL OF SICHUAN AGRICULTURAL UNIVERSITY

《中文核心期刊要目总览》核心期刊 ■

《中国科学期刊引文数据库(CSCD)》来源期刊 ■

全国优秀高校自然科学学报 ■



4/2023  
Vol.41 No.4

# 目 次

## --植物·生态--

- 硫化氢通过介导抗氧化系统提高谷子抗旱性 ..... 郝雪峰, 亢春霞, 景秀清, 张笑, 丁玉勤 (573)  
苦荞黄烷酮3-羟化酶基因 *FtF3H* 及其启动子的克隆与功能分析 .....  
..... 曹鑫娴, 石佳琪, 王霜, 吴琦, 赵海霞, 吴花拉, 李成磊 (582)  
青花椒抗性基因 *ZaMBF1* 家族的生物信息学分析和逆境响应研究 .....  
..... 王寒萼, 张雨, 李豪, 郑皓, 田源成, 朱舜棱, 许博洋, 王景燕, 龚伟, 惠文凯 (592)  
不同铵硝配比供应下的辣椒根系形态、伤流组分和养分积累 .....  
..... 王岩, 王永平, 曾庆稳, 吴康云, 肖玖军 (602)  
不同轮作模式下减施农药化肥对小麦生产的影响 .....  
..... 黄杰, 康晓慧, 蒋欣东, 张兴宗, 邱阿各, 汤万强, 刘太国, 陈万权, 夏崇靖 (609)  
基于ISSR分子标记的红豆草资源遗传多样性分析 .....  
..... 马彪, 魏少萍, 苗佳敏, 南丽丽, 梁鹏飞, 李景峰 (619)  
半干旱区玉米不同生育期土壤细菌群落结构动态变化 ..... 于森, 郭玲玲, 池景良 (626)  
猕猴桃根腐病发生对其植株根际土壤真菌群落结构影响 .....  
..... 陈海生, 江景勇, 潘仙鹏, 刘守平, 蔡林生 (631)  
石菖蒲抑菌物质的提取工艺及协同抑菌活性研究 ..... 贺富胤, 石浩, 李凤华, 王仁才 (640)

## --林学·环境--

- 黄金凤内生细菌的分离及其促生活性 .....  
..... 王梦雨, 贾颜, 李茜, 李新艺, 李文祥, 黄海泉, 黄美娟 (650)  
SMF2和T39代谢产物对国槐根茎腐烂病致病镰刀菌的抑菌活性 ..... 赵晓彤, 王桂清 (658)  
林分密度对云顶山柏木人工林林下物种多样性和生物量的影响 .....  
..... 陈波兰, 吴雨茹, 钟欣艺, 许银, 陈辉琴, 唐岚, 白一术, 郝建锋 (665)  
4种缓释肥用量对白枪杆幼苗生物量分配与异速生长的影响 ..... 郑绍傑, 段华超, 董琼 (673)  
嘉陵江流域紫色土区土壤磁化率和粒度对重金属污染的响应特征 .....  
..... 周如玉, 王迪, 文敏, 文星跃 (683)  
负载FeOOH刺梨渣生物质炭对水中氟的吸附效果 ..... 曾维, 朱健, 郭兴强, 尹辉 (690)

## --动物科学--

- 葛根多糖对腹泻犊牛炎性因子含量、抗氧化能力、免疫功能、DAO活性及肠道菌群的影响 .....  
..... 吴海涛, 莘余, 吕尚揆, 何玉华, 唐骏麒, 樊磊, 傅宏庆, 沈留红 (698)  
小麦型日粮中添加木聚糖酶对藏羊屠宰性能、养分消化率和血清生化指标的影响 .....  
..... 张峰硕, 周力, 马博妍, 高占红, 王志有, 侯生珍, 桂林生 (707)  
家兔肌肉组织中保守miRNA的鉴定及进化分析 .....  
..... 张翔宇, 张翠霞, 张凯, 袁定胜, 李钰莹, 邝良德, 李丛艳,  
..... 郑洁, 任永军, 郭志强, 唐丽, 季杨, 杨锐, 雷岷, 黄邓萍, 谢晓红, 杨超 (713)  
饲粮中添加不同形式氧化锌对肉兔肠道形态、食糜消化酶活性和盲肠发酵的影响 .....  
..... 蔡景义, 吴霜, 张叶, 况应谷, 刘光芒, 赵华, 贾刚, 田刚 (719)  
地衣芽孢杆菌SCAU1602饲喂对鸡粪可培养细菌遗传多样性影响及有益细菌筛选 .....  
..... 王祖昱, 余金阳, 余秀梅, 吴郡颖, 蔡金桥, 林春雪, 陈强 (727)

## --农业经济--

- 组态视角下草原生态补奖政策满意度提升路径研究——基于藏北地区的实证分析 .....  
..... 赵晓园, 高启杰, 黄圣男, 王国刚 (737)  
脱贫农户返贫治理政策能实现“稳脱贫, 促共富”吗? ——基于模糊断点回归的实证分析 .....  
..... 薛增鑫, 李博伟 (746)

## CONTENTS

### ► Plant · Ecology

- Hydrogen Sulfide Improves Drought Resistance of Millet by Mediating Antioxidant System ..... HAO Xuefeng, KANG Chunxia, JING Xiuqing, ZHANG Xiao, DING Yuqin (573)  
 Cloning and Functional Analysis of Flavanone 3-Hydroxylase Gene *FtF3H* and Its Promoter in *Fagopyrum tataricum* ..... CAO Xinxian, SHI Jiaqi, WANG Shuang, WU Qi, ZHAO Haixia, WU Huala, LI Chenglei (582)  
 Bioinformatics Analysis of the *ZaMBF1* Family and Its Expression Pattern under Different Stresses in *Zanthoxylum armatum* ..... WANG Hanting, ZHANG Yu, LI Hao, ZHENG Hao, TIAN Yuancheng, ZHU Shunling, XU Boyang, WANG Jingyan, GONG Wei, HUI Wenkai (592)  
 Root Morphology, Bleeding Components and Nutrient Accumulation of Pepper under Different NH<sub>4</sub><sup>+</sup>/NO<sub>3</sub><sup>-</sup> Ratio ..... WANG Yan, WANG Yongping, ZENG Qingweng, WU Kangyun, XIAO Jiujun (602)  
 Effects of Reduced Application of Pesticides and Fertilizers on Wheat Production under Different Rotation Patterns ..... HUANG Jie, KANG Xiaohui, JIANG Xindong, ZHANG Xingzong, QIU A'ge, TANG Wanqiang, LIU Taiguo, CHEN Wanquan, XIA Chongjing (609)  
 Genetic Diversity Analysis of Sainfoin Resources Based on ISSR Molecular Markers ..... MA Biao, WEI Shaoping, MIAO Jiamin, NAN Lili, LIANG Pengfei, LI Jingfeng (619)  
 Dynamic Changes of Soil Bacterial Community Structure at Different Growth Stages of Maize in Semi-Arid Region ..... YU Miao, GUO Lingling, CHI Jingliang (626)  
 Effects of Kiwifruit Root Rot Disease on Fungal Community Structures in Rhizosphere Soil of Kiwifruit Plants ..... CHEN Haisheng, JIANG Jingyong, PAN Xianpeng, LIU Shouping, CAI Linsheng (631)  
 Study on Extraction Technology and Synergistic Antibacterial Activity of Antifungal Substances from *Acorus tatarinowii* ..... HE Fuyin, SHI Hao, LI Fenghua, WANG Rencai (640)

### ► Forestry · Environment

- Isolation of Endophytic Bacteria from *Impatiens sicalifer* and Its Growth-Promoting Activity ..... WANG Mengyu, JIA Yan, LI Qian, LI Xinyi, LI Wenxiang, HUANG Haiquan, HUANG Meijuan (650)  
 Bacteriostatic Activity of Metabolites SMF2 and T39 against Pathogenic *Fusarium* of Root Rot Disease on *Sophora japonica* ..... ZHAO Xiaotong, WANG Guiqing (658)  
 Effects of Stand Density on Understory Plant Diversity and Biomass in a *Cupressus funebris* Plantation in Yunding Mountain ..... CHEN Bolan, WU Yuru, ZHONG Xinyi, XU Yin, CHEN Huiqin, TANG Lan, BAI Yishu, HAO Jianfeng (665)  
 Effect of Four Slow-Release Fertilizer Dosages on the Biomass Distribution and Anisotropic Growth of *Fraxinus malacophylla* Seedlings ..... ZHENG Shaojie, DUAN Huachao, DONG Qiong (673)  
 Response of Magnetic Susceptibility and Particle Size to Heavy Metal Pollution for the Purple Soil in the Jialing River Basin, China ..... ZHOU Ruyu, WANG Di, WEN Min, WEN Xingyue (683)  
 Adsorption Effect of FeOOH Loaded *Rosa roxburghii* Residue Biomass Carbon on Fluorine (F<sup>-</sup>) in Water ..... ZENG Wei, ZHU Jian, GUO Xingqiang, YIN Hui (690)

### ► Animal Science

- Effects of *Pueraria* Polysaccharides on Contents of Inflammatory Factors, Antioxidant Capacity, Immune Function, DAO Activity and Intestinal Microflora of Neonatal Diarrheic Calves ..... WU Haitao, SHEN Yu, LYU Shangkui, HE Yuhua, TANG Junqi, FAN Lei, FU Hongqing, SHEN LiuHong (698)  
 Effects of Xylanase Supplementation in Wheat Based Diets on Slaughter Performance, Nutrient Digestibility and Serum Biochemical Indexes of Tibetan Sheep ..... ZHANG Fengshuo, ZHOU Li, MA Boyan, GAO Zhanhong, WANG Zhiyou, HOU Shengzhen, GUI Linsheng (707)  
 Identification and Evolutionary Analysis of the Conserved miRNAs in the Muscle Tissue of Rabbits ..... ZHANG Xiangyu, ZHANG Cuixia, ZHANG Kai, YUAN Dingsheng, LI Yuying, KUANG Liangde, LI Congyan, ZHENG Jie, REN Yongjun, GUO Zhiqiang, TANG Li, JI Yang, YANG Rui, LEI Min, HUANG Dengping, XIE Xiaohong, YANG Chao (713)  
 Effects of Different Forms of Zinc Oxide Supplementation on Intestinal Morphology, Chyme Digestive Enzyme Activity and Caecal Fermentation in Meat Rabbits ..... CAI Jingyi, WU Shuang, ZHANG Ye, KUANG Yinggu, LIU Guangmang, ZHAO Hua, JIA Gang, TIAN Gang (719)  
 Effects of Feeding *Bacillus licheniformis* SCAU1602 on Genetic Diversity of Culturable Bacteria in Chicken Manure and Screening of Beneficial Bacteria ..... WANG Zuyu, YU Jinyang, YU Xiumei, WU Junying, CAI Jinqiao, LIN Chunxue, CHEN Qiang (727)

### ► Agricultural Economy

- Research on the Path of Satisfaction Improvement of Grassland Ecological Subsidy-Reward Policy from on Configuration Perspective—An Empirical Analysis Based on Northern Tibetan Region ..... ZHAO Xiaoyuan, GAO Qijie, HUANG Shengnan, WANG Guogang (737)  
 Can Return to Poverty Management Policies for out of Poverty Farmers Achieve "Stable Poverty Alleviation and Promoting Common Prosperity"? —Empirical Analysis Based on Fuzzy Regression Discontinuity ..... XUE Zengxin, LI Bowei (746)

# 《四川农业大学学报》第十二届编辑委员会

荣誉主任：荣廷昭

主任：周小秋

常务副主任：陈学伟

副主任：李明洲 曾维忠

委员（按姓氏笔画排序）：

马均(女) 马 均 王 静 王文明 王昌全 邓良基

冉瑞平 冯 琳 朱 研 任万军 刘卫国 刘书亮

刘 洋 刘益平 汤浩茹 许丽佳 李伟滔 李贤伟

杨光友 何 军 何劲松 沈 飞 沈亚欧 张新全

陈 舜 陈仕毅 罗鸿兵 周永红 钦 鹏 徐振锋

高世斌 高怀勇 唐 茜 蒋远胜 潘远智

四川农业大学学报

Sichuan Nongye Daxue Xuebao

( 双月刊，1983 年创刊，公开发行 )

第41卷 第4期 2023年8月28日出版

Journal of Sichuan

Agricultural University

(Bimonthly, Started in 1983)

Vol. 41 No. 4 Aug. 28, 2023

主管单位 四川省教育厅

Administered by Sichuan Provincial Department of Education

主办单位 四川农业大学

Sponsored by Sichuan Agricultural University

主编 李明洲

Editor-in-Chief: LI Mingzhou

副主编 曾维忠

Deputy Editor-in-Chief: ZENG Weizhong

编辑出版 四川农业大学学报编辑部

Edited and Published by Editorial Department of Sichuan

电 话 0835-2882295; 028-82696013

Agricultural University

网 址 <http://xb.sicau.edu.cn/>

Telephone: 0835-2882295; 028-82696013

印 刷 成都六桂印务有限公司

Distributed Domestically by Editorial Department of Sichuan

国内发行 四川农业大学学报编辑部

Agricultural University

(雅安, 邮政编码 625014)

( Ya'an, 625014, China )

国际标准连续出版物号：ISSN 1000-2650

ISSN 1000-2650

国内统一连续出版物号：CN 51-1281/S

国内定价：8.00元

0.8>



9 771000 265232