

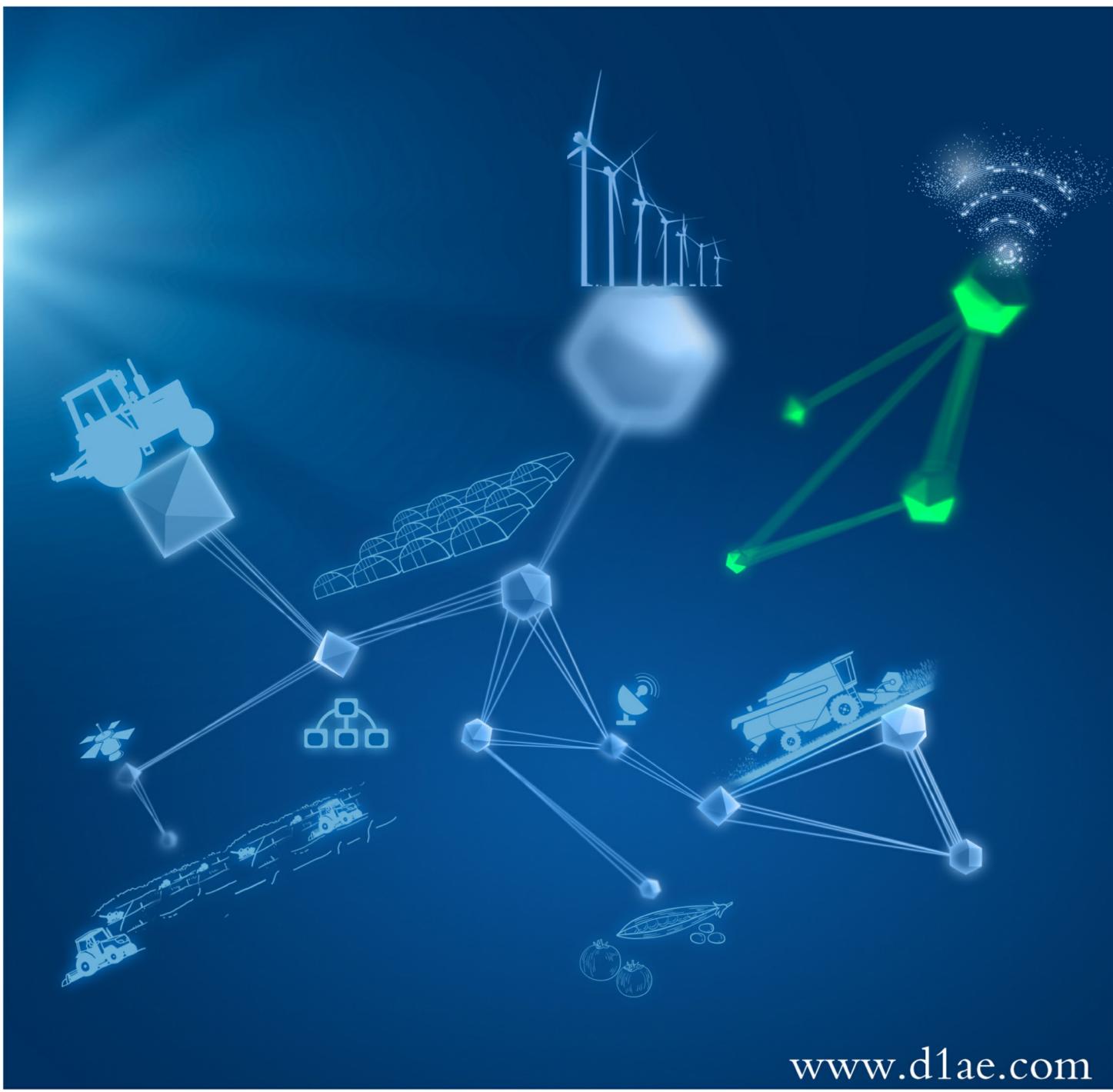
农业工程

AGRICULTURAL ENGINEERING

9

2021

第11卷 Vol.11



www.d1ae.com

ISSN 2095-1795



9 772095 179213



农业工程杂志社

NONGYE GONGCHENG

中国农业机械化科学研究院主管 北京卓众出版有限公司主办

农业工程

AGRICULTURAL ENGINEERING

2021年 第11卷 第9期 (总第95期)

目 次

装备与机械化

- 我国植保机械发展现状 庄玲红 李国权 秦维彩 (9)
TRIZ理论在我国农业装备领域的应用现状及展望 李明曦 罗辉 戴健华 (14)
玉米智能施肥中耕机设计与试验 王飞 李建东 杨薇 石绍滨 郝超 (20)
山西省药茶加工关键设备改进 苏安晋 杜婵 (23)

信息与电气化

- 我国智慧畜牧业发展概况和趋势 邹 岚 魏传祺 彭 博 张晓文 栗艳博 曹 翔 贾立松 (26)
基于单片机的大棚温室温度测控系统设计 魏晓艳 (30)

生物环境与能源

- 滇池流域 NDVI 动态变化特征及其对气候的响应 廖 悅 张刘东 陈 晨 李京东 倪匡迪 胥晓容 (34)
六水氯化钙相变墙板在温室中的蓄放热特性 张书峰 董浩远 王祥兵 李彦荣 许红军 (42)

水土工程

- 水氮耦合对菘蓝耗水和土壤水分的影响 王玉才 何秀成 王泽义 巴玉春 张昌陇 韩 祉 李福强 (47)
加筋率和含水率对木纤维红黏土边坡稳定性的影响 熊寿德 段青松 刘武江 张 川 张立芸 (55)

土地资源管理

- 基于 GLC30 数据的近 20 年海南岛土地利用动态变化研究 戴声佩 罗红霞 胡盈盈 郑 倩 李海亮 李茂芬 禹 萱 (61)

设计制造及理论研究

- 基于 CFD 的多风道风送喷雾流场数值分析与试验研究 欧鸣雄 高天宇 吴敏敏 董 祥 贾卫东 杨学军 冉小琴 (70)
拖拉机最大提升力不确定度评定 王扬光 于桂英 王庆厚 (76)
基于 SolidWorks 的滚筒式粪污处理设备建模及发酵性能影响因素试验研究 禹振军 蒋 彬 杨雅静 高 娇 宋爱敏 闫 慧 张迪婧 王 新 (79)
荞麦洁净式脱粒装置设计与仿真 王 浩 霸欣艺 郑德聪 HUSSAIN Saddam 王 贺 宋海燕 (84)
基于激光测距的手持式厚度测量仪系统设计 牟向伟 葛 鹏 梁国健 (89)

科研与教学

- 京津冀地区农业核心科研机构竞争力分析 林 巧 孔令博 聂迎利 王晶静 魏 虹 (97)
食品物理加工技术专业课实验教学与探讨 梁秋芳 任晓锋 马海乐 (103)
农产品质量安全检测技能培养体系构建 李国秀 刘颖沙 刘 伟 (107)
基于实践创新能力培养的《食品基础实验》教学改革思考与探索 李 红 陈利平 翟娅菲 冀晓龙 申瑞玲 (112)
加强农业工程专业学生思想建设方案研究
——以江苏大学为例 张 华 李洪波 金玉成 (116)

农学与生物技术

- N、P、K 元素对苹果炭疽叶枯病菌的影响 谭子祎 张 华 辛海波 (119)
冠突曲霉莽草酸形成相关基因表达量及酶活检测 陈 霞 葛永怡 张小丹 陈 磊 刘缘园 吴 娟 (124)

农业经济管理

- 区域间用水结构演变及影响因子 张志彬 丁 莹 陆明伟 杨延强 张玉芳 (132)
“双循环”格局下陕西自贸区杨凌片区农业经济高质量发展路径 陈卫峰 (138)
基于感知收益-感知风险分析框架和交易成本理论的生鲜农产品购买意愿研究 赵 婧 (143)
基于投入产出模型的陕西农业产业关联与波及效应分析 邢 娜 (148)

政策法规

- 关于促进茶产业健康发展的指导意见 (2)

AGRICULTURAL ENGINEERING

Vol. 11 No. 9 2021

Contents

Equipment and Mechanization

- Development Status of Plant Protection Machinery in China ZHUANG Linghong, LI Guoquan, QIN Weicai (9)
Application Status and Prospect of TRIZ Theory in Field of Agricultural Equipment in China LI Mingxi, LUO Hui, DAI Jianhua (14)
Design and Experiment of Corn Intelligent Fertilizing Cultivator WANG Fei, LI Jiandong, YANG Wei, SHI Shaobing, HAO Chao (20)
Improvement of Key Equipment for Processing Medicinal Tea in Shanxi Province SU Anjin, DU Chan (23)

Information and Electrification

- Development General Situation and Trend of Smart Animal Husbandry in China ZOU Lan, WEI Chuanqi, PENG Bo, ZHANG Xiaowen, LI Yanbo, CAO Xiang, JIA Lisong (26)
Design of Greenhouse Temperature Measurement and Control System Based on MCU WEI Xiaoyan (30)

Biological Environment and Energy

- Dynamic Variation Characteristics of NDVI in Dianchi Lake Basin and Its Response to Climate LIAO Yue, ZHANG Liudong, CHEN Chen, LI Jingdong, NI Kuangdi, XU Xiaorong (34)
Heat Storage and Release Characteristics of Calcium Chloride Hexahydrate Phase Change Wallboard in Greenhouse ZHANG Shufeng, DONG Haoyuan, WANG Xiangbing, LI Yanrong, XU Hongjun (42)

Water-soil Engineering

- Effects of Water and Nitrogen Coupling on Water Consumption and Soil Moisture of *Isatis indigotica* WANG Yucai, HE Xiucheng, WANG Zeyi, BA Yuchun, ZHANG Changlong, HAN Yi, LI Fuqiang (47)
Influence of Wood Fiber Reinforcement Ratio and Moisture Content on Stability of Red Clay Slope XIONG Shoude, DUAN Qingsong, LIU Wujiang, ZHANG Chuan, ZHANG Liyun (55)

Land Resource Management

- Dynamic Land Use Change of Hainan Island in Recent 20 Years Based on GLC30 Data DAI Shengpei, LUO Hongxia, HU Yingying, ZHENG Qian, LI Hailiang, LI Maofen, YU Xuan (61)

Design , Manufacture and Theoretical Research

- Simulation and Experimental Study of Multi-duct Air-assisted Orchard Spray System Based on CFD OU Mingxiong, GAO Tianyu, WU Minmin, DONG Xiang, JIA Weidong, YANG Xuejun, RAN Xiaoqin (70)
- Uncertainty Evaluation of Maximum Lifting Force for Tractor WANG Yangguang, YU Guiying, WANG Qinghou (76)
- Modeling of Drum Livestock Manure Treatment Equipment Based on SolidWorks and Experimental Study on Influencing Factors of Fermentation Performance YU Zhenjun, JIANG Bin, YANG Yajing, GAO Jiao, SONG Aimin, YAN Hui, ZHANG Dijing, WANG Xin (79)
- Design and Simulation of Buckwheat Clean Threshing Device WANG Hao, BA Xinyi, ZHENG Decong, HUSSAIN Saddam, WANG He, SONG Haiyan (84)
- Design of Handheld Thickness Measuring Instrument System Based on Laser Ranging MOU Xiangwei, GE Peng, LIANG Guojian (89)

Research on Teaching

- Competitiveness of Agricultural Core Scientific Research Institutions in Beijing-Tianjin-Hebei LIN Qiao, KONG Lingbo, NIE Yingli, WANG Jingjing, WEI Hong (97)
- Experimental Teaching and Discussion of Food Physics Processing Technology LIANG Qiufang, REN Xiaofeng, MA Haile (103)
- Construction of Skill Training System for Quality and Safety Inspection of Agricultural Products LI Guoxiu, LIU Yingsha, LIU Wei (107)
- Reforming Food Basic Experiment Course Based on Innovative and Practical Abilities Cultivation LI Hong, CHEN Liping, ZHAI Yafei, JI Xiaolong, SHEN Ruiling (112)
- Strengthening Ideological Construction Plan of Agricultural Engineering Students Taking Jiangsu University as an Example ZHANG Hua, LI Hongbo, JIN Yucheng (116)

Agronomy and Biotechnology

- Effects of N、P、K on Apple Anthracnose Leaf Blight TAN Ziyi, ZHANG Hua, XIN Haibo (119)
- Detection of Gene Expression and Enzyme Activity Related to Shikimic Acid Formation in *Aspergillus cristatus* CHEN Xia, GE Yongyi, ZHANG Xiaodan, CHEN Lei, LIU Yuanyuan, WU Juan (124)

Management of Agricultural Economy

- Evolution of Regional Water Use Structure and Influencing Factors ZHANG Zhibin, DING Ying, LU Mingwei, YANG Yanqiang, ZHANG Yufang (132)
- High Quality Development Path of Agricultural Economy in Yangling Area of Shaanxi Free Trade Zone under “Double Cycle” Pattern CHEN Weifeng (138)
- Purchase Intention of Fresh Agricultural Products Based on Analysis Framework of Perceived Return-Perceived Risk and Transaction Cost Theory ZHAO Jing (143)
- Analysis on Correlation and Ripple Effect of Agricultural Industry in Shaanxi Province Based on Input-output Model XING Na (148)



中国农业机械化科学研究院
Chinese Academy of Agriculture Mechanization Sciences

播种 绿色 收获 健康



新时期，中国农机院将不断加强科研创新、发展科技产业，以确保国家粮食绿色安全、保障人民生命健康、实现农业现代化为长远目标，描绘“播种绿色、收获健康”的愿景，为推动中国农业机械技术进步及产业升级而奋斗！

