

《中文核心期刊要目总览》收录
Ei Compendex(核心版)收录
百种中国杰出学术期刊
RCCSE中国权威学术期刊

2017. 12
第33卷 VOL. 33



ISSN 1002-6819
CN 11-2047/S
CODEN NGOXEO

农业工程学报

TRANSACTIONS OF THE CHINESE SOCIETY
OF AGRICULTURAL ENGINEERING

NONGYE
GONGCHENG
XUEBAO

农业工程学报

二〇一七年六月

第三十三卷

第十二期

中国农业工程学会



ISSN 1002-6819



9 771002 681177



中国农业工程学会 主办

农业工程学报

2017年6月第12期 总第315期(第33卷)

目次

· 综合研究 · 关键技术 ·

美国花生收获机械化技术衍变历程及对中国的启示..... 高连兴, 陈中玉, Charles Chen, C. L. Butts (1)

中国畜牧业碳排放量变化的影响因素分解及空间分异..... 姚成胜, 钱双双, 毛跃华, 李政通 (10)

· 农业装备工程与机械化 ·

谷子精少量流体排种装置的设计与试验..... 张燕青, 崔清亮, 王 丰, 侯华铭, 胡席忠 (20)

微型谷物联合收割机割台最小振幅点分析及挂接点优化..... 姬江涛, 徐龙姣, 庞 靖, 耿令新, 王升升 (28)

用于番茄果秧分离的多组非圆行星轮系振动发生器设计..... 王丽红, 张 娜, 坎 杂, 李成松, 朱兴亮 (34)

马铃薯组培苗气力引导式移植手设计与试验..... 初 麒, 辜 松, 杨 意, 黎 波, 吕亚军, 胡俊生, 杨艳丽 (40)

脱出物喂入量对多风道清选装置内部气流场的影响..... 李 洋, 徐立章, 周 鑫, 司增永, 李耀明 (48)

锥形轮体结构的覆土镇压器设计与试验..... 郭 慧, 陈 志, 贾洪雷, 郑铁志, 王 刚, 王 奇 (56)

带阶梯型谐振腔的 Hartmann 低频超声雾化喷嘴设计及试验..... 高建民, 马俊龙 (66)

双定子摆动液压马达泄漏与容积效率分析及密封改进..... 闻德生, 商旭东, 顾 攀, 潘为圆, 石滋洲, 郑 伟 (74)

超声空化对软性磨粒流切削效率和质量的影响..... 计时鸣, 陈 凯, 谭大鹏, 郑晨亮 (82)

车辆自动变速器与启停系统匹配的控制策略..... 石 刚, 刘 洋, 韩 笑, 吴 潇, 郭 伟, 徐向阳 (91)

基于行驶车速的车辆防撞时间预警算法..... 刘庆华, 邱修林, 谢礼猛, 王骏骅, 方守恩 (99)

· 农业航空工程 ·

植保无人机药箱液量监测装置的设计与试验..... 姜 锐, 周志艳, 徐 岩, 兰玉彬, 罗锡文 (107)

· 农业水土工程 ·

滴灌毛管首部射流脉冲三通水力特性试验研究..... 王新坤, 肖思强, 樊二东, 徐胜荣 (116)

江苏沿海滩涂农田高降渍保证率暗管排水系统布局..... 陈 诚, 罗 纨, 贾忠华, 李 山, 孙少江 (122)

基于系统动力学的稻田塘堰系统水转化模拟及验证..... 胡能杰, 邵东国, 陈 述, 乐志华, 农翁智 (130)

基于水土资源耦合的水资源短缺风险评价及优化..... 姜秋香, 周智美, 王子龙, 付 强, 王 天, 赵岫竹 (136)

不同灌溉制度下河套灌区玉米膜下滴灌水热盐运移规律..... 孙贯芳, 屈忠义, 杜 斌, 任中生, 刘安琪 (144)

DRAINMOD-N II 模拟冬季长期覆盖黑麦对地下排水及 NO_3^- -N 流失的影响
..... 杜 璇, 冯 浩, Matthew J. Helmers, 齐志明 (153)

| | |
|-------------------------------------|--|
| 秸秆覆盖和滴灌制度对冬小麦光合特性和产量的影响..... | 张彦群, 王建东, 龚时宏, 许迪, 孙继文 (162) |
| 水分胁迫对设施甜椒结果期叶面积扩展及果实发育的影响..... | 杨再强, 侯梦媛, 张曼义 (170) |
| • 农业信息与电气技术 • | |
| 北斗定位田间信息采集平台运动控制器设计与试验 | 丁幼春, 詹鹏, 周雅文, 杨军强, 张闻宇, 朱凯 (178) |
| 基于开花期氮素营养指标的冬小麦籽粒蛋白质含量遥感预测 | 屈莎, 李振海, 邱春霞, 杨贵军, 宋晓宇, 陈召霞, 刘畅 (186) |
| 基于遥感的新疆人工绿洲扩张中植被净初级生产力动态变化 | 张芳, 熊黑钢, 冯娟, 许仲林 (194) |
| 基于逻辑回归算法的复杂背景棉田冠层图像自适应阈值分割 | 刘立波, 程晓龙, 戴建国, 赖军臣 (201) |
| • 农业生物环境与能源工程 • | |
| 典型种养结合奶牛场粪养分管理模式 | 贾伟, 朱志平, 陈永杏, 董红敏, 陶秀萍 (209) |
| 杂色云芝生物滤塔净化甲苯废气效果 | 骆翼梦, 李顺义, 马宏业, 王岩 (218) |
| 热解油水相酸洗-烘焙二级预处理改善玉米秸秆热解特性 | 胡志超, 梅艳阳, 杨晴, 王贤华, 杨海平, 邵敬爱, 陈汉平 (224) |
| • 土地整理工程 • | |
| 高标准基本农田建设区域土壤重金属含量的高光谱反演 | 张秋霞, 张合兵, 刘文锴, 赵素霞 (230) |
| 工矿废弃地复垦土地跟踪监测方案制定方法与实证研究 | 周妍, 罗明, 周旭, 黄元仿, 张世文 (240) |
| 不同农业耕作措施下坡耕地填注量特征与变化 | 赵龙山, 侯瑞, 吴发启, 戴全厚 (249) |
| 农用地分等中最高单产和最高产量-成本指数确定方法 | 王令超, 宋艳华, 宋富强, 王磊, 杨喜会 (255) |
| 安徽省城镇化与耕地利用集约化的动态响应关系 | 吴红, 张晓玲 (262) |
| 基于减量化目标的农村宅基地整理分区及模式优选 | 郑红玉, 卓跃飞, 吴次芳, 张晓滨, 罗文斌 (270) |
| 农村居民点用地的多功能性划分及其农户利用差异性评价 | 张列, 王成, 杜相佐, 王钟书, 邓春, 李颖颖 (278) |
| • 农产品加工工程 • | |
| 双矢量定姿算法提高海参捕捞装置捷联惯导系统粗对准精度 | 包建华, 乔曦, 李道亮 (286) |
| 热风干燥条件对马铃薯全粉糊化品质的影响 | 尹慧敏, 吴文福, 窦建鹏, 成荣敏, 陈俊轶 (293) |
| 分段喷淋冷却降低宰后猪胴体预冷损耗保持色泽 | 张楠, 卢中山, 陈玉仑, 孙晨阳, 李春保, 周光宏 (301) |
| 基于生猪外形特征图像的瘦肉率估测方法 | 张萌, 钟南, 刘莹莹 (308) |

Transactions
of the Chinese Society of Agricultural Engineering
Vol.33 No.12 Jun. 2017
CONTENTS

• Comprehensive Research • Key Technology •

Development course of peanut harvest mechanization technology of the United States and enlightenment to China
..... *Gao Lianxing, Chen Zhongyu, Charles Chen, C. L. Butts* (1)

Decomposition of impacting factors of animal husbandry carbon emissions change and its spatial differences in China
..... *Yao Chengsheng, Qian Shuangshuang, Mao Yuehua, Li Zhengtong* (10)

• Agricultural Equipment Engineering and Mechanization •

Design and test of fluid and small-amount seed metering device for foxtail millet
..... *Zhang Yanqing, Cui Qingliang, Wang Feng, Hou Huaming, Hu Xizhong* (20)

Analysis of minimum amplitude points and optimization of connection position for header of micro grain combine
..... *Ji Jiangtao, Xu Longjiao, Pang Jing, Geng Lingxin, Wang Shengsheng* (28)

Design of tomato fruit separation vibration generator with multi group non-circular planetary gear
..... *Wang Lihong, Zhang Na, Kan Za, Li Chengsong, Zhu Xingliang* (34)

Design and experiment on pneumatic guide transplanting hand for potato tissue culture seedlings
..... *Chu Qi, Gu Song, Yang Yi, Li Bo, Lv Yajun, Hu Junsheng, Yang Yanli* (40)

Effect of extractions feed-quantity on airflow field in multi-ducts cleaning device
..... *Li Yang, Xu Lizhang, Zhou Ying, Si Zengyong, Li Yaoming* (48)

Design and experiment of soil-covering and soil-compacting device with cone-shaped structure of wheel
..... *Guo Hui, Chen Zhi, Jia Honglei, Zheng Tiezhi, Wang Gang, Wang Qi* (56)

Design and test of low-frequency Hartmann atomization nozzle with stepped resonance tube... *Gao Jianmin, Ma Junlong* (66)

| | |
|--|---|
| Analysis of leakage and volumetric efficiency and seal improvement for double-stator swing hydraulic motor | |
| ..... | <i>Wen Desheng, Shang Xudong, Gu Pan, Pan Weiyuan, Shi Zizhou, Zheng Wei</i> (74) |
| Effect of ultrasonic cavitation on machining efficiency and quality of soft abrasive flow | |
| ..... | <i>Ji Shiming, Chen Kai, Tan Dapeng, Zheng Chenliang</i> (82) |
| Control strategy of vehicle automatic transmissions matching with start-stop system | |
| ..... | <i>Shi Gang, Liu Yang, Han Xiao, Wu Xiao, Guo Wei, Xu Xiangyang</i> (91) |
| Anti-collision warning time algorithm based on driving speed of vehicle | |
| ..... | <i>Liu Qinghua, Qiu Xiulin, Xie Limeng, Wang Junhua, Fang Shouen</i> (99) |

• Agricultural Aviation Engineering •

| | |
|---|---|
| Design and experiment of liquid quantity monitor for pesticide tank in spraying UAV | |
| ..... | <i>Jiang Rui, Zhou Zhiyan, Xu Yan, Lan Yubin, Luo Xiwen</i> (107) |

• Soil and Water Engineering •

| | |
|--|---|
| Hydraulic performance experiment of lateral pipe jet-pulse tee | |
| ..... | <i>Wang Xinkun, Xiao Siqiang, Fan Erdong, Xu Shengrong</i> (116) |
| Subsurface drainage system layout to meet high assurance rate of waterlogging control in coastal mud-flat farmlands in Jiangsu | |
| ..... | <i>Chen Cheng, Luo Wan, Jia Zhonghua, Li Shan, Sun Shaojiang</i> (122) |
| Simulation and verification of water transformation of rice paddy and pond system based on system dynamics | |
| ..... | <i>Hu Nengjie, Shao Dongguo, Chen Shu, Le Zihua, Nong Xizhi</i> (130) |
| Risk assessment and optimization of water resources shortage based on water and land resources coupling | |
| ..... | <i>Jiang Qiuxiang, Zhou Zhimei, Wang Zilong, Fu Qiang, Wang Tian, Zhao Youzhu</i> (136) |
| Water-heat-salt effects of mulched drip irrigation maize with different irrigation scheduling in Hetao Irrigation District | |
| ..... | <i>Sun Guanfang, Qu Zhongyi, Du Bin, Ren Zhongsheng, Liu Anqi</i> (144) |
| Simulating effects of winter rye cover on subsurface drainage and NO ₃ ⁻ -N loss based on DRAINMOD-N II | |
| ..... | <i>Du Xuan, Feng Hao, Matthew J. Helmers, Qi Zhiming</i> (153) |

Effects of straw mulching and drip irrigation scheduling on photosynthetic characteristic and yield of winter wheat
..... *Zhang Yanqun, Wang Jiandong, Gong Shihong, Xu Di, Sun Jiwen* (162)

Effects of soil water stress on expansion of leaf area and development of fruit in fruiting period of greenhouse sweet pepper
..... *Yang Zaiqiang, Hou Mengyuan, Zhang Manyi* (170)

• Agricultural Information and Electrical Technologies •

Design and experiment of motion controller for information collection platform in field with Beidou positioning
..... *Ding Youchun, Zhan Peng, Zhou Yawen, Yang Junqiang, Zhang Wenyu, Zhu Kai* (178)

Remote sensing prediction of winter wheat grain protein content based on nitrogen nutrition index at anthesis stage
..... *Qu Sha, Li Zhenhai, Qiu Chunxia, Yang Guijun, Song Xiaoyu, Chen Zhaoxia, Liu Chang* (186)

Dynamic change of net primary productivity during process of new artificial oasis expansion in Xinjiang based on remote sensing
..... *Zhang Fang, Xiong Heigang, Feng Juan, Xu Zhonglin* (194)

Adaptive threshold segmentation for cotton canopy image in complex background based on logistic regression algorithm
..... *Liu Libo, Cheng Xiaolong, Dai Jianguo, Lai Junchen* (201)

• Agricultural Bioenvironmental and Energy Engineering •

Manure nutrient management mode in typical mixed crop-dairy farm
..... *Jia Wei, Zhu Zhiping, Chen Yongxing, Dong Hongmin, Tao Xiuping* (209)

Purification performance of regnant strains *Trametes versicolor* to toluene in biofilter
..... *Luo Yimeng, Li Shunyi, Ma Hongye, Wang Yan* (218)

Effect of two-stage pretreatment combined acid-washing with aqueous portion of pyrolysis oil and torrefaction on pyrolysis characteristics of corn stalk
..... *Hu Zhichao, Mei Yanyang, Yang Qing, Wang Xianhua, Yang Haiping, Shao Jingai, Chen Hanping* (224)

• Land Consolidation and Rehabilitation Engineering •

Inversion of heavy metals content with hyperspectral reflectance in soil of well-facilitated capital farmland construction areas
..... *Zhang Qiuxia, Zhang Hebing, Liu Wenkai, Zhao Suxia* (230)

Making method of tracking monitoring scheme for abandoned industrial and mining land reclamation and its empirical research*Zhou Yan, Luo Ming, Zhou Xu, Huang Yuanfang, Zhang Shiwen* (240)

Characteristics and change of surface depression storage on sloping land with different tillage practices
.....*Zhao Longshan, Hou Rui, Wu Faqi, Dai Quanhou* (249)

Determination method of highest yield and highest ratio of yield to cost for agricultural land quality grade
.....*Wang Lingchao, Song Yanhua, Song Fuqiang, Wang Lei, Yang Xihui* (255)

Dynamic response relationship between urbanization and cultivated land use intensification in Anhui province
.....*Wu Hong, Zhang Xiaoling* (262)

Zoning and mode selection of rural residential land consolidation based on construction land reduction
.....*Zheng Hongyu, Zhuo Yuefei, Wu Cifang, Zhang Xiaobin, Luo Wenbin* (270)

Multifunction compartmentalization of rural settlement land use and its peasant household utilization difference evaluation
.....*Zhang Lie, Wang Cheng, Du Xiangzuo, Wang Zhongshu, Deng Chun, Li Haoying* (278)

• Agricultural Produce Processing Engineering •

Double-vector attitude determination algorithm improving coarse alignment accuracy of strapdown inertial navigation system for sea cucumber fishing device*Bao Jianhua, Qiao Xi, Li Daoliang* (286)

Influence of hot-air drying condition on dehydrated potato flour gelatinization quality
.....*Yin Huimin, Wu Wenfu, Dou Jianpeng, Cheng Rongmin, Chen Junyi* (293)

Spray chilling with different frequency period for reducing weight loss and improving surface color of pig carcass
.....*Zhang Nan, Lu Zhongshan, Chen Yulun, Sun Chenyang, Li Chumbao, Zhou Guanghong* (301)

Estimation method of pig lean meat percentage based on image of pig shape characteristics
.....*Zhang Meng, Zhong Nan, Liu Yingying* (308)