

《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

2018. **11**
第34卷 VOL. 34



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



ISSN 1002-6819



中国农业工程学会 主办

农 业 工 程 学 报

2018 年 6 月第 11 期 总第 338 期 (第 34 卷)

目 次

• 综合研究 •

考虑碳排放的粮食主产区耕地利用效率区域差异与变化 匡 兵, 卢新海, 韩 璟, 张 祚 (1)

• 农业装备工程与机械化 •

播量无级调节水稻精量排种装置设计与试验 王在满, 黄逸春, 王宝龙, 张明华, 马曰鑫, 可欣荣, 罗锡文 (9)

自动定向大蒜播种机的设计与试验 耿爱军, 栗晓宇, 侯加林, 张智龙, 张 姬, 崇 峻 (17)

4UGS2 型双行甘薯收获机的研制

..... 李 涛, 周 进, 徐文艺, 李青龙, 张 华, 秦喜田, 李 娜, 李维华, 郭大勇 (26)

基于时序的水田平地机俯仰角预测建模与试验

..... 赵润茂, 胡 炼, 罗锡文, 唐灵茂, 周 浩, 杜 攀, 贺 静 (34)

液压激振源自激振动深松机深松单体设计与试验 王云霞, 张东兴, 杨 丽, 崔 涛, 李玉环, 刘彦伟 (40)

稻草切碎全量还田抛秧栽培双季稻立苗和生长的影响因素

..... 王苏影, 吴建富, 潘晓华, 黄 山, 曾勇军, 谭雪明, 石庆华 (49)

多功能集成式播种开沟器的设计与试验 赵淑红, 谭贺文, 王加一, 杨 超, 杨悦乾 (58)

苗间除草部件入土深度 PID 自动控制系统设计与台架试验 韩 豹, 杨亚楠, 王宏伟, 范 伟 (68)

• 农业航空工程 •

基于无人机遥感植被指数优选的田块尺度冬小麦估产 朱婉雪, 李仕冀, 张旭博, 李 洋, 孙志刚 (78)

• 农业水土工程 •

牧区水-土-草-畜平衡调控模型建立与应用 鹿海员, 李和平, 王军, 高占义 (87)

南疆沙区成龄红枣水肥一体化滴灌的水肥适宜用量 王振华, 扁青永, 李文昊, 李朝阳 (96)

冬灌对冻融期干旱区荒漠绿洲农田土壤水热状况的影响

..... 李 晶, 何志斌, 杜 军, 陈龙飞, 蔺鹏飞, 朱 喜, 房 舒, 赵敏敏, 田全彦 (105)

地膜覆盖时间对新疆棉田水热及棉花耗水和产量的影响

..... 祖米来提·吐尔干, 林 涛, 严昌荣, 迪丽拜尔·迪力买买提, 邓方宁, 吴凤全, 孔 松, 汤秋香 (113)

再生水水质对斥水和亲水土壤水分特征曲线的影响

..... 陈俊英, 柴红阳, Leonid Gillerman, 刘 畅, 蔡耀辉, 张 林 (121)

水体-结构-地基耦联的泵站出水塔地震响应分析 张建伟, 付 杰, 赵 瑜, 王 涛, 王立彬 (128)

不同降雨强度下黄土区冻土坡面产流产沙过程及水沙关系

..... 张 洋, 张 辉, 李占斌, 李 鹏, 肖 列, 柯造成, 陈怡婷 (136)

• 农业信息与电气技术 •

- 农业园区全景 GIS 数字化系统设计与应用 王元胜, 李瑜玲, 吴华瑞, 郭 威, 陈 诚, 孟淑春 (143)
- 基于 MODIS-EVI 及物候差异免阈值提取黄淮海平原冬小麦面积 张 莎, 张佳华, 白 云, 姚凤梅 (150)
- 空洞卷积结合全局池化的卷积神经网络识别作物幼苗与杂草
..... 孙 俊, 何小飞, 谭文军, 武小红, 沈继锋, 陆 虎 (159)
- 基于立体视觉的玉米雄穗三维信息提取
..... 韩 东, 杨贵军, 杨 浩, 邱春霞, 陈明杰, 温维亮, 牛庆林, 杨文攀 (166)
- TTC 染色指数配合 Logistic 方程鉴定山葡萄种质抗寒性
..... 赵 滢, 艾 军, 杨义明, 王振兴, 刘迎雪, 何 伟, 刘海双 (174)

• 农业生物环境与能源工程 •

- 基于 Hammerstein-Wiener 模型的地理管换热器出水温度预测 张长兴, 王煜升, 刘玉峰, 孔祥强, 王 清 (181)
- 聚光集热苦咸水蒸馏装置中含吸光颗粒水体的光吸收特性 常泽辉, 刘 洋, 侯 静, 李文龙, 郑宏飞 (187)
- 燃煤锅炉掺烧生物质气运行效率及污染物排放模拟 张小桃, 李柯颖, 赵 伟, 黄 勇 (194)
- 原位合成纳米金/石墨烯修饰玻碳电极检测水和土壤中痕量铅
..... 李杜娟, 徐 枫, 樊 凯, 厉力华, 苏 畅, 刘红英, 姚 睿, 曹佳斐, 魏凯华, 李小平, 赵新颜 (203)
- 石灰组配土壤改良剂抑制污染农田水稻镉吸收
..... 史 磊, 郭朝晖, 彭 驰, 肖细元, 薛清华, 冉洪珍, 封文利 (209)

• 土地整理工程 •

- 黑龙江垦区农村居民点与田块间适宜耕作半径及影响因素
..... 张 慧, 隋虹均, 苏 航, 史晓磊, 马鑫鹏, 孙 彤, 刘浩然 (217)
- 东北老工业城市建设占用耕地驱动力分析 孟祥凤, 王冬艳, 李 红 (225)
- 近 40 年克里雅绿洲人口时空变化对土地利用/覆盖变化的影响 卢龙辉, 瓦哈甫·哈力克, 黄 玲 (234)
- 基于“三生”空间优化的城乡交错区土地整治功能单元划定 沈 悦, 严金明, 陈 昊 (243)
- 基于推理条件和规则的废弃露天矿坑再利用方式选择 高文文, 白中科 (253)
- 国土综合整治背景下上海土地整治工程建设标准编制解析 孙彦伟, 龙 腾, 顾守柏 (261)

• 农产品加工工程 •

- 基于改进关联方法的河北省农产品加工主导产业选择 严春晓, 刘景芝, 李含悦, 熊晓轶, 宋 辉, 张润清 (268)
- 调质温度及模孔长径比对颗粒饲料加工质量的影响 段海涛, 李军国, 秦玉昌, 李 俊, 杨 洁, 董颖超 (278)
- 冻结-高压湿热解冻对多种淀粉中支链淀粉断裂的影响 王丹丽, 蒋荣霞, 刘梦婕, 连喜军 (284)
- 基于颜色传感器和遗传算法的牛肉系水力快速检测 王笑丹, 武瑞琨, 徐丽萍, 王 莹 (293)
- 罗氏海盘车性腺脂质的微波提取及其成分分析 楼乔明, 徐 华, 王云鹏, 张进杰, 杨文鸽, 徐大伦 (300)

Transactions
of the Chinese Society of Agricultural Engineering
Vol.34 No.11 Jun. 2018
CONTENTS

• Comprehensive Research •

Regional differences and dynamic evolution of cultivated land use efficiency in major grain producing areas in low carbon perspective..... *Kuang Bing, Lu Xinhai, Han Jing, Zhang Zuo* (1)

• Agricultural Equipment Engineering and Mechanization •

Design and experiment of rice precision metering device with sowing amountstepless adjusting
..... *Wang Zaiman, Huang Yichun, Wang Baolong, Zhang Minghua, Ma Yuexin, Ke Xinrong, Luo Xiwen* (9)

Design and experiment of automatic directing garlic planter
..... *Geng Aijun, Li Xiaoyu, Hou Jialin, Zhang Zhilong, Zhang Ji, Chong Jun* (17)

Development of 4UGS2 type double-row sweet potato harvester
..... *Li Tao, Zhou Jin, Xu Wenyi, Li Qinglong, Zhang Hua, Qin Xitian, Li Na, Li Weihua, Guo Dayong* (26)

Modelling and verification for pitch angle of leveler machine in paddy fields based on time series analysis
..... *Zhao Runmao, Hu Lian, Luo Xiwen, Tang Lingmao, Zhou Hao, Du Pan, He Jing* (34)

Design and experiment of hydraulically self-excited vibration subsoiler
..... *Wang Yunxia, Zhang Dongxing, Yang Li, Cui Tao, Li Yuhuan, Liu Yanwei* (40)

Influencing factors of seedling standing and growth of scattered planting in double cropping rice with total straw chopped incorporation
..... *Wang Suying, Wu Jianfu, Pan Xiaohua, Huang Shan, Zeng Yongjun, Tan Xueming, Shi Qinghua* (49)

Design and experiment of multifunctional integrated seeding opener
..... *Zhao Shuhong, Tan Hewen, Wang Jiayi, Yang Chao, Yang Yueqian* (58)

Design of PID automatic control system for depth into earth of intra-row weeding components and its bench experiment

..... *Han Bao, Yang Ya'nan, Wang Hongwei, Fan Wei* (68)

• Agricultural Aviation Engineering •

Estimation of winter wheat yield using optimal vegetation indices from unmanned aerial vehicle remote sensing

..... *Zhu Wanxue, Li Shiji, Zhang Xubo, Li Yang, Sun Zhigang* (78)

• Soil and Water Engineering •

Regulation model and application for water-land-forage-livestock balance in pastoral areas

..... *Lu Haiyuan, Li Heping, Wang Jun, Gao Zhanyi* (87)

Suitable water and fertilizer amount for mature jujube with drip-irrigation under fertigation in southern Xinjiang sandy area..... *Wang Zhenhua, Bian Qingyong, Li Wenhao, Li Zhaoyang* (96)

Effects of winter irrigation on soil hydro-thermal features in desert oasis farmland in arid area during freezing and thawing period

..... *Li Jing, He Zhibin, Du Jun, Chen Longfei, Lin Pengfei, Zhu Xi, Fang Shu, Zhao Minmin, Tian Quanyan* (105)

Effect of plastic film mulching duration on soil temperature and moisture in field and cotton water consumption and yield in Xinjiang

..... *Zumilaiti Tuergan, Lin Tao, Yan Changrong, Dilibaier Dilimaimaiti, Deng Fangning, Wu Fengquan, Kong Song, Tang Qiuxiang* (113)

Impact of treated waste water quality on repellent and wettable soil water characteristic curve

..... *Chen Junying, Chai Hongyang, Leonid Gillerman, Liu Chang, Cai Yaohui, Zhang Lin* (121)

Seismic response analysis of outlet tower based on water-structure-foundation coupling system

..... *Zhang Jianwei, Fu Jie, Zhao Yu, Wang Tao, Wang Libin* (128)

Process of runoff and sediment yield and relationship between water and sand of frozen soil slope in loess area under different rainfall intensities

..... *Zhang Yang, Zhang Hui, Li Zhanbin, Li Peng, Xiao Lie, Ke Haocheng, Chen Yiting* (136)

• Agricultural Information and Electrical Technologies •

Design and application of digital system for agricultural park based on panorama GIS

.....*Wang Yuansheng, Li Yuling, Wu Huarui, Guo Wei, Chen Cheng, Meng Shuchun* (143)

Extracting winter wheat area in Huanghuaihai Plain using MODIS-EVI data and phenology difference avoiding threshold

Zhang Sha, Zhang Jiahua, Bai Yun, Yao Fengmei (150)

Recognition of crop seedling and weed recognition based on dilated convolution and global pooling in CNN

.....*Sun Jun, He Xiaofei, Tan Wenjun, Wu Xiaohong, Shen Jifeng, Lu Hu* (159)

Three dimensional information extraction from maize tassel based on stereoscopic vision

.....*Han Dong, Yang Guijun, Yang Hao, Qiu Chunxia, Chen Mingjie, Wen Weiliang, Niu Qinglin, Yang Wenpan* (166)

Identification of cold resistance in *Vitis amurensis* germplasms base on TTC staining index and Logistic equation

.....*Zhao Ying, Ai Jun, Yang Yiming, Wang Zhenxing, Liu Yingxue, He Wei, Liu Haishuang* (174)

• Agricultural Bioenvironmental and Energy Engineering •

Prediction for outlet water temperature of borehole heat exchangers based on Hammerstein-Wiener model

.....*Zhang Changxing, Wang Yusheng, Liu Yufeng, Kong Xiangqiang, Wang Qing* (181)

Light absorption properties of water body filled with light absorption particles in solar-concentrating brackish water distillation device.....

Chang Zehui, Liu Yang, Hou Jing, Li Wenlong, Zheng Hongfei (187)

Simulation on operation efficiency and pollutant emissions of coal-fired boiler with bio-gas co-firing

.....*Zhang Xiaotao, Li Keying, Zhao Wei, Huang Yong* (194)

In-suit synthesis of graphene/gold nanoparticles modified glassy carbon electrode for detection of lead in water and soil

.....*Li Dujuan, Xu Feng, Fan Kai, Li Lihua, Su Chang, Liu Hongying, Yao Rui, Cao Jiafei, Wei Kaihua,*

Li Xiaoping, Zhao Xinyan (203)

Lime based amendments inhibiting uptake of cadmium in rice planted in contaminated soils

.....*Shi Lei, Guo Zhaohui, Peng Chi, Xiao Xiyuan, Xue Qinghua, Ran Hongzhen, Feng Wenli* (209)

• Land Consolidation and Rehabilitation Engineering •

Suitable farming radius and its influencing factors in rural residential areas in Heilongjiang Province

.....*Zhang Hui, Sui Hongjun, Su Hang, Shi Xiaolei, Ma Xinpeng, Sun Tong, Liu Haoran* (217)

Analysis on driving forces of construction occupation of arable land in old industrial cities of Northeast China

.....*Meng Xiangfeng, Wang Dongyan, Li Hong* (225)

Effect of temporal and spatial changes of population on land use and cover change in Keriya Oasis in past 40 years

.....*Lu Longhui, Wahap Halik, Huang Ling* (234)

Land consolidation function unit demarcation based on optimization of production, living and ecology space in peri-urban areas.....*Shen Yue, Yan Jinming, Chen Hao* (243)

Reuse ways selection of abandoned open pits based on inference conditions and rules

.....*Gao Wenwen, Bai Zhongke* (253)

Compiling engineering construction standard for land consolidation under national land comprehensive consolidation

.....*Sun Yanwei, Long Teng, Gu Shoubai* (261)

• Agricultural Produce Processing Engineering •

Choice of leading industry of agro-product processing in Hebei Province based on improved industrial linkage analysis

.....*Yan Chunxiao, Liu Jingzhi, Li Hanyue, Xiong Xiaoyi, Song Hui, Zhang Runqing* (268)

Effects of conditioning temperature and length-diameter ratio of ring die on quality of pelleted feeds

.....*Duan Haitao, Li Junguo, Qin Yuchang, Li Jun, Yang Jie, Dong Yingchao* (278)

Effects of unfreezing by autoclaving during freeze-thaw treatment on amylopectin breaking in different gelatinized starches.....*Wang Danli, Jiang Rongxia, Liu Mengjie, Lian Xijun* (284)

Rapid detection of water-holding capacity in beef using color sensor and genetic algorithm

.....*Wang Xiaodan, Wu Ruijia, Xu Liping, Wang Ying* (293)

Microwave-assisted extraction of *Asterias rollestoni* gonad lipids and its component analysis

.....*Lou Qiaoming, Xu Hua, Wang Yunpeng, Zhang Jinjie, Yang Wenge, Xu Dalun* (300)