第三十三卷

《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. **13** 第 33卷 VOL. 33









ISSN 1002-6819

CN 11-2047/S CODEN NGOXEO

TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL ENGINEERING

NONGYE GONGCHENG XUEBAO







中国农业工程学会 主办

农业工程学报

2017年7月第13期 总第316期(第33卷)

目 次

・综合研究・关键技术・

中国居民口粮消费特征变化及安全耕地数量 辛良杰,李鹏辉(1) 国外生物液体燃料发展和示范工程综述及其启示
・农业装备工程与机械化・
2BZ-2 型谷子精少量播种机的研制······ 侯华铭,崔清亮,张燕青,胡席忠,畅治兵(16)
内充气吹式玉米排种器工作性能 EDEM-CFD 模拟与试验
·····································
玉米收获机割台振动特性及其主要影响因素分析 姚艳春,宋正河,杜岳峰,赵雪彦,毛恩荣,刘 帆(40)
收获期马铃薯块茎碰撞恢复系数测定与影响因素分析
直播方式对水稻生理性状和产量的影响及其成本分析
机插方式对杂交粳稻碳氮调节与颖花形成及产量的影响
董明辉,赵步洪,陈培峰,顾俊荣,乔中英,王文青(65)
剥皮机挤压揉搓机构中曲沟球轴承的试制及其承载能力 史 诺, 郭康权, 王明杰, 范宇杰, 刘宝选(74)
DX-180型玻璃钢扇贝拖网渔船优化改造与试验 李明智,赵学伟,于功志,张 媛,张锦程,侯景元 (82)
生物柴油常温常压下燃烧碳烟微粒的理化及团聚特性 李 川, 吴 波, 刘天霞, 刘一鸣, 胡献国(90) 贯流式水轮机飞逸过渡过程瞬态特性 CFX 二次开发模拟 罗兴锜, 李文锋, 冯建军, 朱国俊(97)
发性时变模型预测控制器提高农业车辆导航路径自动跟踪精度
张万枝, 白文静, 吕钊钦, 刘正铎, 黄 琛 (104)
・农业航空工程・
基于无人机可见光影像的农田作物分类方法比较
・农业水土工程・
基于 SWAT 模型的延河流域径流侵蚀能量空间分布
超声波土壤含水量检测装置的模型建立与验证 李君,徐岩,姜锐,杨洲,陆华忠(127)
基于 CT 技术的原状黄土细观结构动态演化特征

坡面不同截-排水沟布置方式下土壤微团聚体流失特征	51)
延河流域极端暴雨下侵蚀产沙特征野外观测分析	
	59)
近地层沙尘水平通量与集沙效率野外观测分析	
	58)
控释复合肥配施保水剂的盆栽月季节水保肥效果	
赵晨浩,张 民,刘之广,张 强,郑文魁,杨修一,马金昭(17	15)
・农业信息与电气技术・	
基于遥感和 AquaCrop 作物模型的多同化算法比较那会敏,李振海,徐新刚,冯海宽,杨贵军,陈召霞(18	33)
基于超低功耗单片机和光电传感器的蜜蜂计数监测系统设计	
) 3)
基于深度图像和 BP 神经网络的肉鸡体质量估测模型	\
王 琳,孙传恒,李文勇,吉增涛,张 翔,王以忠,雷 鹏,杨信廷(19	} 9)
・农业生物环境与能源工程・	
蓄能型太阳能热泵用复合相变材料热性能分析)6)
溶液热回收型太阳能集热/再生器的再生性能分析彭冬根,李霜玲,程小松,黄 红(21	13)
半阶梯式笼养蛋种鸡舍冬季日间空气污染物排放特征	20)
鱼稻共生条件下陶粒载体水稻浮床提高细菌活性及多样性	
	27)
凤眼莲生态修复工程改善滇池水质及湖体氮磷收支平衡	
张志勇,徐寸发,严少华,闻学政,秦红杰,王 岩,刘海琴(23	35)
超高温预处理装置及其促进鸡粪稻秸好氧堆肥腐熟效果	
·····························曹 云,黄红英,钱玉婷,王 琳,徐跃定,靳红梅,孙金金,常志州(24	1 3)
磷酸盐和碳酸盐对秸秆类生物质光发酵产氢的影响	=1 \
	,0,
・土地整理工程・	
基于遥感评价城市扩张对耕地质量等级结构及产能的影响	54)
土壤侵蚀因素对紫色丘陵区坡耕地耕层质量影响 史东梅, 蒋光毅, 蒋 平, 娄义宝, 丁文斌, 金慧芳(27	70)
・农产品加工工程・	
通风改善发芽糙米微波连续干燥均匀性 郑先哲,朱广浩,卢淑雯,徐 浩,刘成海,秦庆雨,孙井坤(28	30)
油菜籽流化床恒速干燥传热传质特性及模型研究	37)
辣椒热泵干燥特性及工艺参数优化 ············ 姬长英,蒋思杰,张 波,郭 俊,Muhammad Sohail Memon(29) 6)
不同虫态谷蠹侵害对小麦淀粉组分及微观形态结构的影响)3)
频率及电压对高压脉冲电场提高陈年棉种活力的影响	
	(01

Transactions of the Chinese Society of Agricultural Engineering Vol.33 No.13 Jul. 2017 CONTENTS

• Comprehensive Research • Key Technology •

Variation of grain consumption characteristics and safety cultivated land area in China
Xin Liangjie, Li Penghui (1
Progress of liquid biofuel development and demonstration facilities in foreign countries and its inspiration for China
Chen Lungang, Zhao Cong, Zhang Qian, Li Xi, Li Yuping, Zhang Xinghu
• Agricultural Equipment Engineering and Mechanization •
Development of 2BZ-2 type fine and small-amount seeder for foxtail millet
Hou Huaming, Cui Qingliang, Zhang Yanqing, Hu Xizhong, Chang Zhibing (16
EDEM-CFD simulation and experiment of working performance of inside-filling air-blowing seed metering device in maize
Han Dandan, Zhang Dongxing, Yang Li, Li Kehong, Zhang Tianliang, Wang Yunxia, Cui Tao (23
Simulation and test of corn seeds' dispersion and arraying transport in electromagnetic vibration hopper
Xing Jiejie, Xu Liming, Liu Xudong, Chen Junwei, Yuan Quanchun, Wang Rongyan (32
Analysis of vibration characteristics and its major influenced factors of header for corn combine harvesting machine
Determination of restitution coefficient of potato tubers collision in harvest and analysis of its influence factors
Feng Bin, Sun Wei, Shi Linrong, Sun Bugong, Zhang Tao, Wu Jianmin (50
Effect of direct-seeding methods on physiological characteristics and grain yield of rice and its cost analysis
Zhang Hao, Yu Chao, Chen Kewei, Kong Xiangsheng, Liu Hailang, Chen Jun
Gu Junfei, Liu Lijun, Wang Zhiqin, Yang Jianchang (58
Effects of machine insertion on carbon and nitrogen metabolism of hybrid japonica rice and its relationship with spikelet an
yield formation Dong Minghui, Zhao Buhong, Chen Peifeng, Gu Junrong, Qiao Zhongying, Wang Wenqing (65
Manufacture and carrying capacity of curved groove ball bearing in pressing and rubbing mechanism of barking machines
Shi Nuo, Guo Kangquan, Wang Mingjie, Fan Yujie, Liu Baoxuan (74
Optimization remould and experiment on DX-180 fiber reinforced plastic trawler for scallop
Li Mingzhi, Zhao Xuewei, Yu Gongzhi, Zhang Yuan, Zhang Jincheng, Hou Jingyuan (82

Physical-chemical and aggregation properties of biodiesel soot particles prepared at normal temperature and atmospheric
pressure
Li Chuan, Wu Bo, Liu Tianxia, Liu Yiming, Hu Xianguo (90)
Simulation of runaway transient characteristics of tubular turbine based on CFX secondary development
Luo Xingqi, Li Wenfeng, Feng Jianjun, Zhu Guojun (97)
Linear time-varying model predictive controller improving precision of navigation path automatic tracking for agricultural
vehicle · · · · · Zhang Wanzhi, Bai Wenjing, Lü Zhaoqin, Liu Zhengduo, Huang Chen (104)
• Agricultural Aviation Engineering •
Comparison of farmland crop classification methods based on visible light images of unmanned aerial vehicles
Guo Peng, Wu Fadong, Dai Jianguo, Wang Haijiang, Xu Liping, Zhang Guoshun (112)
• Soil and Water Engineering •
Spatial distribution of runoff erosion power based on SWAT Model in Yanhe River Basin
Gong Junfu, Li Zhanbin, Li Peng, Ren Zongping, Yang Yuanyuan, Han Lu, Tang Shanshan, Sun Qian (120)
Establishment and verification of model for ultrasonic soil water content detector
Li Jun, Xu Yan, Jiang Rui, Yang Zhou, Lu Huazhong (127)
Meso-structure dynamic evolution characteristic of undisturbed loess based on CT technology
Transportation regularity of colloids particle with surface runoff and fracture flow from sloping farmland in thin purple soil
Characteristic of soil micro-aggregates loss on slopes with different surface water drainage patterns
He Binghui, Liang Yanling, Huang Huan (151)
Characteristics of erosion sediment yield with extreme rainstorms in Yanhe Watershed based on field measurement
Jiao Juying, Wang Zhijie, Wei Yanhong, Su Yuan, Cao Binting, Li Yujin (159)
Analysis of horizontal flux and sand collecting efficiency of sand dust near ground surface based on field observations
Kang Yongde, Xia Kaiwei, Yang Xinghua, Huo Wen, Yang Fan, He Qing, Ali-Mamtimin (168)
Effects of saving water and fertilizer conservation for potted Chinese rose using controlled-release compound fertilizers
combined with water retention agent
Zhao Chenhao, Zhang Min, Liu Zhiguang, Zhang Qiang, Zheng Wenkui, Yang Xiuyi, Ma Jinzhao (175)
• Agricultural Information and Electrical Technologies •
Multi-assimilation methods based on AquaCrop model and remote sensing data

Design of monitoring and counting system for bee colony based on ultralow-power consumption MCU and photoelectric
sensor · · · · · · Chai Qiuzi, Chen Dongxiao, Yu Hong, Fang Xianping, Kou Haiyuan, Li Hongliang (193)
Establishment of broiler quality estimation model based on depth image and BP neural network
Wang Lin, Sun Chuanheng, Li Wenyong, Ji Zengtao, Zhang Xiang, Wang Yizhong, Lei Peng, Yang Xinting (199)
• Agricultural Bioenvironmental and Energy Engineering •
Thermal performance analysis of composite phase change materials for energy storage solar heat pump
Wu Wei, Chen Li, Wang Xiaoyu, Gu Minfen, Dai Suzhou, Meng Zhijun (206)
Regeneration performance analysis of solar collector/regenerator with solution heat recovery
Characters of airborne contaminants emission from half stair-step cage breeding hen house during winter daytime
Li Zonggang, Li Baoming, Zheng Weichao (220)
Rice floating bed with substrated ceramsite improving bacterial activity and diversity under condition of coexistence of fish
and rice ······ Tao Ling, Zhu Jianqiang, Li Xiaoli, Song Chaofeng, Peng Liang, Dai Lili, Li Gu, Lu Guangquan (227)
Improving water quality and balance of nitrogen and phosphorus in Dianchi lake based on ecological restoration with
Eichhornia crassipes
Zhang Zhiyong, Xu Cunfa, Yan Shaohua, Wen Xuezheng, Qin Hongqie, Wang Yan, Liu Haiqin (235)
Hyperthermophilic pretreatment device and its application on improving decomposition effect for chicken manure and rice
straw aerobic composting
Cao Yun, Huang Hongying, Qian Yuting, Wang Lin, Xu Yueding, Jin Hongmei, Sun Jinjin, Chang Zhizhou (243)
Effects of phosphate and carbonate on photo-fermentative hydrogen production of biomass straw
Zhang Quanguo, Liu Huiliang, Hu Jianjun, Zhou Xuehua, Jing Yanyan, Wang Yi, Zhang Tian, Zhang Zhiping (251)
Technological optimization of enzymatic hydrolysis of dead pork and ultrasonic pretreatment
Jiao Youzhou, Li Weifeng, Li Gang, He Chao, Mei Yahe, Lan Mingming (258)
• Land Consolidation and Rehabilitation Engineering •
Impacts of urban sprawl on agricultural land quality grade structure and potential production based on remote sensing
Effects of soil erosion factors on cultivated-layer quality of slope farmland in purple hilly area
• Agricultural Produce Processing Engineering •
Ventilation improving drying uniformity of germinated brown rice under continuous microwave conditions
Zheng Xianzhe, Zhu Guanghao, Lu Shuwen, Xu Hao, Liu Chenghai, Oin Oingyu, Sun Jingkun (280)

Heat and mass transfer characteristics and model of rapeseed (Bassica rapus) fluidized-bed drying with constant drying rate
Heat pump drying properties of chili and optimization of technical parameters
Ji Changying, Jiang Sijie, Zhang Bo, Guo Jun, Muhammad Sohail Memon (296
Effects of damage of Rhyzoperthadominica in different growth stages on starch composition and microstructure of wheat
Effects of frequency and voltage of high voltage pulsed electric field on improving vigor of aged cotton seed
Yan Yinfa, Zhou Shengxiang, Song Zhanhua, Li Fade, Zhang Chunqing, Zhang Xiaohui, Song Hualu (310