《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









ISSN 1002-6819 CN 11-2047/S CODEN NGOXEO www.tcsae.org



NONGYE GONGCHENG XUEBAO

TRANSACTIONS OF THE CHINESE SOCIETY OF AGRICULTURAL ENGINEERING

2020年 18 <sup>第36卷VOL.36</sup>



# 农业工程学报

## 2020 年 9 月第 18 期 总第 394 期 (第 36 卷)

## 目 次

#### •农业装备工程与机械化•

梳齿起膜气力脱膜式耕层残膜回收机研制 郭文松,贺小伟,王 龙,赵鹏飞,胡 灿,侯书林,王旭峰(1)
谷子茎秆叶鞘叶片及其结合部位的拉伸力学性能
·····································
·····································
莫嘉嗣,闫国琦,夏俊杰,金莫辉,魏德仙(26) 阀门调节式比例施肥泵性能分析与试验
李 红, 张乾坤, 汤 攀, 孙彩珍 (34) SF2104 拖拉机自主行驶与作业控制方法
海南热区香蕉地预破土凿式深松机设计与试验
整秆式甘蔗收割机剥叶过程仿真分析与试验
柑橘育苗钵装填转运机设计与试验 
砧木上苗定位机构吸附块仿真设计与性能试验 姜 凯,张 骞,陈立平,郭文忠,牟艳秋(73)
不同激励下宽频磁浮俘能器俘能试验 孙玉华,李守太,谢守勇,李云伍,高鸣源(81)
•农业水土工程•
典型荒漠植被根系对黏性岸坡侵蚀过程的影响
·····································
·····································
雷金银,雷晓婷,周丽娜,何进勤,贾爱平,余建军,张 慧,路 芳 (127) 施肥措施对复垦土壤团聚体碳氮含量和作物产量的影响
曹寒冰,谢钧宇,强久次仁,郭 璐,洪坚平,荆耀栋,孟会生(135)
聚丙烯酰胺/蒙脱土渗灌材料制备及其导水性能野外试验 

#### •农业信息与电气技术 •

水盐交互作用对河套灌区土壤光谱特征的影响											
基于 GF-6 卫星影像多特征优选的酿酒葡萄精准识别	<b>舀,杜瑞麒,</b>	杨	帅,	杨	宁,	魏广	飞,	姚志	华,	邱元氣	案(153)
·····································											
				·倪建	功,	李	娟,	邓立	苗,	韩仲為	き(181)
•农业生物环境与能源工程 •											
基于近红外光谱的沼液挥发性脂肪酸含量快速检测	訓入昭	郭和	b +k	亜	ዾ	建筑	为方	本子:	折	<b></b> 企 之 之	t (100)
牛粪再生垫料生产过程中物料特性及致病菌变化		·									
部金融											
针叶木木质素单体模型化合物热解研究进展	徐禄江,	史际	'晨,	何子	·健,	刘	洋,	吴晟	红,	方 」	车(213)
<ul><li>土地保障与生态安全。</li></ul>	141 14-1	<i>&gt;</i>	,,,,,,	, , ,	<i>(</i> ~)	~ <b>1</b>	.,,	) CMQ.	,	~•	(213)
基于土地利用功能测度的"三生"空间识别与优化调						.,					
多维贫困视角下喀斯特区贫困乡村空间分异与地域类	型划分										
• 农产品加工工程 •			•••••			·赵	榕,	熊康'	宁,	陈起作	韦(232)
预冻对苹果片真空冷冻干燥特性及品质的影响	····马有川,	毕金	€峰,	易建	勇,	杜茜	茜,	冯舒;	涵,	李所札	杉(241)
考虑收缩的爆炒热/质传递过程模拟与验证 谢 я	- 18 h	本丰	<b>4</b> 丽有	鱼雨	悠	闫	甭	<b>ア</b>	宁	<b>艾塘</b> 』	공 ( <b>2</b> 51 )
玉米浆发酵产生物丁醇的氨基酸代谢动力学模拟											
基于组成特性的肉骨粉种属鉴别标志性变量挖掘		赵亲	<b>斤河</b> ,	贺壮	:壮,	赵王	.斌,	马成.	业,	任晓氵	吉(263)
茶生物质填充高分子复合材料的研究进展	高 冰,	王梦	*妍,	姚玉	.梅,	高	菲,	韩鲁	佳,	刘!	蚤(275)
	····龚新怀,	李明	月春,	辛梅	华,	赵瑶	蛋云,	赵晓,	杰,	吕相	枚(283)
• 专题论坛 •											
基于文献计量学分析的全球生物质炭研究进展 ········基于 InVEST 模型和莫兰指数的甘肃省生境质量与退金						- 肖 脚	鸟飞,	安日	路,	吴德东	朱(292)
		…赵昉	尧冏,	王	建,	苏军	至德,	孙	巍,	晋王弘	虽(301)
• 研究速报 •											
基于软 X 射线成像的储粮害虫米象生长阶段检测											
	邵小尤	. 杨	晓静	. 徐:	水红	. 李	慧	. Titer	ndra	Paliw	al (309)

# Transactions of the Chinese Society of Agricultural Engineering Vol.36 No.18 Sep. 2020 CONTENTS

#### • Agricultural Equipment Engineering and Mechanization •

Development of a comb tooth loosening and pneumatic stripping plough layer residual film recovery machine	
Guo Wensong, He Xiaowei, Wang Long, Zhao Pengfei, Hu Can, Hou Shulin, Wang Xufeng	1)
Tensile properties of foxtail millet leaf sheath, leaf and leaf collar	
······Li Hongbo, Xue Jinxia, Wang Bingxuan, Zhang Yanqing, Wu Xinhui, Li Xiaobin, Cui Qingliang, Yang Zuomei (1	1)
Optimization of the structural parameters of pollination pipe for pneumatic hybrid rice breeding pollination machines	
······Yao Fuqiang, Wang Yongwei, Hao Yifeng, Wei Zhenbo, Yu Jiayuan, Chen Mengyuan, Huang Xinyao , Wang Jun (18	8)
Design and test of electrolytic water oxygen increasing device for small transport box of living aquatic products	
	6)
Performance analysis and test of valve-regulated proportional fertilization pumps	
Li Hong, Zhang Qiankun, Tang Pan, Sun Caizhen (34	4)
Autonomous driving and operation control method for SF2104 tractors	
	2)
Design and experiment of pre-soil-breaking chisel-type subsoilers for banana field in hot areas of Hainan Province, China	
Zhang Xirui, Zhang Rui, Ru Shaofeng, Zhang Xiumei, Li Yue, Liang Dong (49	9)
Simulation analysis and experiments of leaf stripping process for whole-stalk sugarcane harvesters	
Xie Luxin, Wang Jun, Cheng Shaoming, Zeng Bosheng, Yang Zizeng, Chen Baoshan, Huang Youzong (50	6)
Design and test of seedling pot filling and transporting machine for citrus	
Xu Qinchao, Li Shanjun, Zhang Yanlin, Meng Liang, Lu Hong'an, Xie Lin (60	6)
Simulation design and performance experiment of adsorption block in feeding and positioning mechanism for rootstock	
······································	3)

Energy-harvesting experiment of a broadband magnetic-floating energy harvester under diverse vibration excitations
Sun Yuhua, Li Shoutai, Xie Shouyong, Li Yunwu, Gao Mingyuan (81)
• Soil and Water Engineering •
Effects of typical desert vegetation roots on the erosion process of cohesive riverbank
Zong Quanli, Chen Zhikang, Cai Hangbing, Qin Peng, Liu Chunxia, Jin Kai (90)
Method for trigger identification of apple drought in northern China
Yang Jianying, Huo Zhiguo, Xu Jianwen, Wang Peijuan, Wu Dingrong, Mao Hongdan, Kong Rui (99)
Numerical simulation and experiment of wind-sand movement characteristics around high vertical nylon mesh sand barriers
Jia Guangpu, Zuo Hejun, Wang Haibing, Yan Min, Yao Yunfeng, Han Xueying, Liu Feng (109)
Influences of rainfall unsaturated infiltration on the change of heat transfer in soils
Zhang Chao, Jiang Jingshan, Wang Rubin, Jin Hua (118)
Effects of tillage measures on soil nutrients distribution and fertilizer use efficiency on gentle slope farmland
Lei Jinyin, Lei Xiaoting, Zhou Lina, He Jinqin, Jia Aiping, Yu Jianjun, Zhang Hui, Lu Fang (127)
Effects of fertilization regimes on carbon and nitrogen contents of aggregates and maize yield in reclaimed soils
Cao Hanbing, Xie Junyu, Qiangjiu Ciren, Guo Lu, Hong Jianping, Jing Yaodong, Meng Huisheng (135)
Preparation of polyacrylamide/montmorillonite infiltrating irrigation material and field test of its water conducting
performance ————————————————————————————————————
• Agricultural Information and Electrical Technologies •
Effects of water-salt interaction on soil spectral characteristics in Hetao Irrigation Areas of Inner Mongolia, China
Zhang Zhitao, Du Ruiqi, Yang Shuai, Yang Ning, Wei Guangfei, Yao Zhihua, Qiu Yuanlin (153)
Accurate recognition of wine grapes using multi-feature optimization based on GF-6 satellite images
Li Wenjie, Guo Xiaolei, Yang Lingbo, Yan Ming, Zou Chenxi, Fang Yahua, Sun Han, Huang Jingfeng (165)
Real-time semantic segmentation of farmland at night using infrared thermal imaging

Intelligent detection of appearance quality of carrot grade using knowledge distillation
• Agricultural Bioenvironmental and Energy Engineering •
Rapid determination of volatile fatty acids in biogas slurry based on near infrared spectroscopy
Liu Jinming, Guo Kunlin, Zhen Feng, Zhang Hongqiong, Li Wenzhe, Xu Yonghua (188)
Changes of material characteristics and pathogens in producing process of recycled manure solids
Du Yun, Wang Panliu, Wang Binsheng, Duan Na, Shi Zhengxiang, Zhang Yuanhui, Song Jiaxi (197)
Research status on particulate reduction technology in livestock houses
Research advances in pyrolysis of softwood lignin-based monomers
Xu Lujiang, Shi Chenchen, He Zijian, Liu Yang, Wu Shenghong, Fang Zhen (213)
• Land Security and Ecological Safety •
Identification and optimal regulation of the production-living- ecological space based on quantitative land use functions
Spatial variation and regional type division of rural poverty in typical karst areas from the perspective of multi-dimensional
poverty · · · · Zhao Rong, Xiong Kangning, Chen Qiwei (232)
• Agricultural Produce Processing Engineering •
Effects of pre-freezing on the drying characteristics and quality parameters of freeze drying apple slices
Simulation and experimental validation of heat and mass transfer during Chinese stir-frying considering shrinkage
Kinetic simulation of amino acid metabolism of butanol produced from the fermentation of corn steep liquor
Zhao Xinhe, He Zhuangzhuang, Zhao Yubin, Ma Chengye, Ren Xiaojie (263)

Markers mining for species discrimination based on component characteristics of meat and bone meal
······Gao Bing, Wang Mengyan, Yao Yumei, Gao Fei, Han Lujia, Liu Xian (275)
Research progress of polymer composites filled with tea biomass
Gong Xinhuai, Li Mingchun, Xin Meihua, Zhao Jinyun, Zhao Xiaojie, Lyu Gan (283)
• Special Forum •
Research progress of biochar in the world based on bibliometrics analysis
Xiao Pengfei, An Lu, Wu Dedong (292)
Assessment of habitat quality and degradation degree based on InVEST model and Moran index in Gansu Province, China
• Research Letters •
Detection of the growth stage of rice weevil as a stored-grain pest based on soft X-ray imaging
······Shao Xiaolong, Yang Xiaojing, Xu Shuihong, Li Hui, Jitendra Paliwal (309)