

# 节水灌溉



2019.11

中国国家灌溉排水委员会 中国灌溉排水发展中心  
武汉大学 国家节水灌溉北京工程技术研究中心

主办

WATER SAVING IRRIGATION

天业节水 TIANYE DRIP IRRIGATION

股票名称：天业节水 股票代码：00840.HK  
中国节水灌溉行业标准制定者

绿色高效 为农服务

(王梓林摄影)

ISSN 1007-4929



9 771007 492082



企业信息



节水农业网



新疆天业节水灌溉股份有限公司  
XINJIANG TIANYE WATER SAVING IRRIGATION SYSTEM CO.,LTD.

地址：新疆石河子市经济技术开发区北三东路36号  
电话：0993-2623165 2623175  
传真：0993-2623180  
网址：www.tianyejieshui.com.cn  
邮箱：tyjs@xjtymail.com

## 目 次

### □试验研究□

- 基于数值模拟的地下水位变化下灌水频次方案研究 ..... 林鹏飞 王水献 蒋梦瑶 等(1)  
翼柱型量水槽应用于梯形渠道性能试验研究 ..... 刘鸿涛 赵瑞娟 宋一梦 等(6)  
不同硝酸钾滴灌追肥施用量对烤烟产质量的影响 ..... 薛如君 高 天 蒋彬虎 等(10)  
微喷带灌溉对燕麦和箭筈豌豆混播土壤水分和温度的影响 ..... 马利利 李正鹏 汪文成 等(15)  
基于电容式湿度传感器的砂土水分含量测定 ..... 田汇文 翟亚明 唐 瑞 等(22)  
液施肥不同畦灌方式对土壤水氮分布及夏玉米生长性状影响 ..... 刘 洋 李金山 孙秀路 等(27)  
坡地滴灌顺逆坡双向布置毛管出水规律研究 ..... 刘少东 汪 春 衣淑娟(33)  
磁化水灌水量对滴灌棉花生长发育及灌溉水利用效率的影响 ..... 黄光伟 翟云龙 万素梅 等(41)  
冻结作用下潜水蒸发的室内试验研究 ..... 高旭光 陈军锋 郑秀清 等(47)  
标准U形渠道多孔板式测流的数值模拟研究 ..... 周义仁 刘小靖(52)  
硬水灌溉陶瓷灌水器堵塞特性研究 ..... 聂一品 郝志豪 高子涵 等(56)

### □工程管理□

- 基于物联网(IOT)的规划预测算法在农业灌溉中的应用 ..... 龚瑞昆 田 野 石馨诚(62)  
基于图像处理技术的微灌砂颗粒形状参数分析 ..... 刘清霞 李国强 李景海 等(66)  
黄淮井灌区冬小麦-夏玉米连作喷灌模式综合评价与优选研究 ..... 刘 见 张寄阳 宁东峰 等(71)  
江苏省大型渠灌区尾部节水改造技术方案研究 ..... 龚懿婧 徐烈辉 周 碜 等(77)  
基于灰色关联度模型的温室茶树腾发量影响因素研究 ..... 孙红严 马德新(81)

### □工程技术□

- 基于多孔吸滤材料的自动灌排垂直绿化装置的结构设计和参数确定 ..... 刘旭飞 同炫玥 周 伟 等(85)  
基于响应曲面分析的卷盘式喷灌机行星齿轮减速箱壳体结构优化 ..... 侯新月 张晨骏 汤玲迪 等(91)  
南疆冬小麦精确灌溉决策系统的研究 ..... 李 旭 花元涛 吕喜风 等(96)  
基于MBus的水肥一体化施肥机传感器监测系统研制 ..... 高菊玲 孙昌权 黄 锋(100)  
烤烟水肥专家决策管理系统开发与应用 ..... 陈丹艳 刘 钰 沈珊珊 等(104)  
基于增氧加压功能的盐碱地滴灌装置设计 ..... 左永梅 刘雅辉 孙建平 等(111)

### □信 息□

- 摘要编写须知 ..... (9)  
欢迎订阅《节水灌溉》 ..... (84)  
欢迎订阅《中国农村水利水电》 ..... (95)  
万方数据

# Water Saving Irrigation

## ( Monthly )

November 2019

No.11( 2019 ), Total No.291

### Contents

Study on Irrigation Frequency Scheme Under Changing Groundwater Level Based on Numerical Simulation .....	LIN Peng-fei, WANG Shui-xian, JIANG Meng-yao, et al.(1)
Experimental Research on the Performance of Wing Pillar-shaped Measuring Flume in Trapezoidal Channel .....	LIU Hong-tao, ZHAO Rui-juan, SONG Yi-meng, et al.(6)
Effects of Different Amount of KNO <sub>3</sub> Drip-fertigation on Yield and Quality of Flue-cured Tobacco ... XUE Ru-jun, GAO Tian, JIANG Bin-hu, et al.(10)	
Effect of Micro-sprinkling Hoses Irrigation on Soil Moisture and Temperature Under Mixed Sowing of Oat and Common Vetch .....	MA Li-li, LI Zheng-peng, WANG Wen-cheng, et al.(15)
Measurement of Soil Moisture Content of Sandy Soil Based on Capacitive Humidity Sensor ..... TIAN Hui-wen, ZHAI Ya-ming, TANG Rui, et al.(22)	
Effects of Different Furrow Irrigation Methods with Liquid Fertilization on Soil Water and Nitrogen Distribution and Growth Characteristics of Summer Maize .....	LIU Yang, LI Jin-shan, SUN Xiu-lu, et al.(27)
Study on Water Outflow Rule of Capillary Pipe in Two-way Arrangement of Drip Irrigation Along and Against Slopes .....	LIU Shao-dong, WANG Chun, YI Shu-juan(33)
Effects of Different Magnetized Irrigation Amount on the Growth and Development of Cotton Under Film Drip Irrigation and the Irrigation Water Use Efficiency .....	HUANG Guang-wei, ZHAI Yun-long, WAN Su-me, et al.(41)
Indoor Experimental Study on Phreatic Evaporation Under Soil Freezing ..... GAO Xu-guang, CHEN Jun-feng, ZHENG Xiu-qing, et al.(47)	
Numerical Simulation of Multi-plate Flow Measurement in Standard U-shaped Channel ..... ZHOU Yi-ren, LIU Xiao-jing(52)	
A Study on Ceramic Emitter Clogging Characteristic with Hard Water Irrigation ..... NIE Yi-pin, HAO Zhi-hao, GAO Zi-han, et al.(56)	
Application of Planning and Prediction Algorithm Based on Internet of Things ( IOT ) in Agricultural Irrigation .....	GONG Rui-kun, TIAN Ye, SHI Xin-cheng(62)
Analysis of Shape Parameters of Sand Particles in Micro-irrigation Based on Image Processing Technology .....	LIU Qing-xia, LI Guo-qiang, LI Jing-hai, et al.(66)
Comprehensive Evaluation and Optimization of Sprinkler Irrigation Modes in a Winter Wheat-Summer Maize Cropping System in Huang-Huai Well-irrigated Area .....	LIU Jian, ZHANG Ji-yang, NING Dong-feng, et al.(71)
Study on Technical Scheme of Water-saving Reform of Tail of the Large-scale Canal Irrigation Districts in Jiangsu Province .....	GONG Yi-jing, XU Lie-hui, ZHOU Hao, et al.(77)
Study on the Factors Influencing Tea Tree Evapotranspiration in Greenhouse Based on Grey Relational Model ..... SUN Hong-yan, MA De-xin(81)	
Structural Design and Parameter Determination of Automatic Irrigation and Drainage Vertical Greening Device Based on Porous Absorbent Filter Material .....	LIU Xu-fei, TONG Xuan-yue, ZHOU Wei, et al.(85)
The Shell Structure Optimization of Planetary Gear Reducer of the Reel Sprinkler Based on the Response Surface Analysis .....	HOU Xin-yue, ZHANG Chen-jun, TANG Ling-di, et al.(91)
Study on Precision Irrigation Decision System of Winter Wheat in Southern Xinjiang ..... LI Xu, HUA Yuan-tao, LÜ Xi-feng, et al.(96)	
Development of Sensor Monitoring System for Water and Fertilizer Integrated Fertilizer Based on MBus .....	GAO Ju-ling, SUN Chang-quan, HUANG Feng(100)
Development and Application of Water and Fertilizers Decision-making Expert Management System for Flue-cured Tobacco .....	CHEN Dan-yan, LIU Yu, SHEN Shan-shan, et al.(104)
Design of Drip Irrigation Device in Saline Alkali Soil Based on Oxygen Increasing and Pressurizing Function .....	ZUO Yong-mei, LIU Ya-hui, SUN Jian-ping, et al.(111)

**Competent Authorities:** Ministry of Water Resources

**Sponsor:** Chinese National Committee on Irrigation and Drainage

China Irrigation and Drainage Development Centre

Wuhan University

National Center of Efficient Irrigation Engineering and Technology Research-Beijing

**Publisher and editor:** Editorial Department of Water Saving Irrigation

( Wuhan University, Wuhan, 430072, China )

**Editor in Chief:** Cui Yuanlai      **Distribute Scope:** Worldwide

**Domestic Subscription:** Every Post Office in China

**E-mail:** jieshuiguangai@188.com

**Homepage:** <http://www.irrigate.com.cn>

万方数据