中国工程科技知识中心
CKCEST China Knowledge Centre for Engineering Sciences and Technology

《智慧农业发展战略研究》专题快报

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【动态资讯】

1．农业农村部：将编制《“十四五”数字农业农村建设规划》

【农业农村部】中新经纬客户端9月3日电 3日，农业农村部网站公布对十三届全国人大四次会议第1245号建议答复的摘要。农业农村部表示，下一步，将编制《“十四五”全国农业农村信息化发展规划》《“十四五”数字农业农村建设规划》。对于代表提出的关于大力推进数字农业加快发展的建议，做好数字农业顶层设计方面，农业农村部在答复称，2016年，农业农村部印发《“十三五”全国农业农村信息化发展规划》，明确了“十三五”时期推进农业农村信息化建设的总体思路、发展目标、重点任务，提出要推动信息技术与农业生产、经营、管理、服务全面深度融合，全面提高农业农村信息化水平。2019年，中办、国办印发《数字乡村发展战略纲要》，明确要加强数字乡村建设顶层设计和整体规划，进一步解放和发展数字化生产力，挖掘信息化在乡村振兴中的巨大潜力，整体带动和提升农业农村现代化发展。同年，农业农村部会同中央网信办印发《数字农业农村发展规划(2019—2025年)》，明确了下一阶段推进数字农业农村建设的总体思路、发展目标、重点任务，提出要加快数字农业技术推广应用，大力提升数字化生产力，推动农业高质量发展和乡村全面振兴。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0mRaAaS_aAAg8ofjaKJ0781.pdf

【文献速递】

1．Effect of steam on coke deposition during the tar reforming from corn straw pyrolysis over biochar

文献源：ScienceDirect,2021-09-05

摘要：Coke deposition is a critical issue for catalysts in tar reforming. Steam is conducive to tar removal and hydrogen production in biomass pyrolysis, while its effect on coke

formation is not well known. Thus, a two-stage fluidized bed/fixed bed reactor was used to study the effect of steam addition on coke deposition. The primary conclusions are as follows: combining steam and biochar, the tar removal efficiency is more than 90% within 20 min of time on stream (TOS). After the TOS reaches 30 min, the biochar surface is saturated with coke deposition and the specific surface area of the biochar stops decreasing. The addition of steam leads to a reduction in the combustion reactivity of the biochar. Besides, the aromatization of the biochar increase and the number of O-containing structures decreases. For the tar, the addition of steam reduces the aliphatics content and increases the O-containing aromatics content. For the gas composition, the addition of steam results in the decrease of CH4 yield while the H2 yield increases to 0.12 L/g. The H/C atomic ratio of the gas composition decreases while the O/C atomic ratio increases. The active coke is consumed and decomposed after the introduction of steam. The remaining coke is dominated by inert coke. This contributes to the relatively developed pore structure but a weakened combustion reactivity of biochar.

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0oLWAWYAsABhasVYn0SM754.pdf

2. Do soil cadmium concentrations decline after phosphate fertiliser application is stopped: A comparison of long-term pasture trials in New Zealand?

文献源：ScienceDirect,2021-09-04

摘要： Decreasing soil cadmium (Cd) is one method of removing Cd from the food chain. Phosphorus (P) fertilisers are a major source of Cd inputs into soil. Stopping P fertiliser should theoretically decrease Cd inputs and soil Cd accumulation, but there are few field data to show if this occurs. We examined three long-term grazed pasture trials in New Zealand (Ballantrae, Winchmore and Whatawhata) where P fertiliser had been applied (from 10 to 100 kg P ha−1 yr−1) for up to six years and then stopped for 10 to 26 years. Stopping P fertiliser applications reduced soil Cd concentrations at Winchmore and Whatawhata where P had been applied at ≥34 kg P ha−1 yr−1. No reductions occurred below this rate nor at Ballantrae where only 10 years post P-application data were available. Decreases were ascribed to moderate rainfall (1630 mm at Whatawhata and 740 mm rainfall plus 770 mm irrigation at Winchmore) that enhanced Cd leaching and may have been aided at Winchmore by a decrease in soil pH over time (0.4 units). However, because stopping P fertiliser inputs may quickly impair pasture production, additional strategies may

be required to decrease soil Cd quickly.

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0oCaAPfEhABJya7KN5G4124.pdf

3．Leveraging Google Earth Engine platform to characterize and map small seasonal wetlands in the semi-arid environments of South Africa

文献源：ScienceDirect,2021-09-04

摘要：Although significant scientific research strides have been made in mapping the spatial extents and ecohydrological dynamics of wetlands in semi-arid environments, the focus on small wetlands remains a challenge. This is due to the sensing characteristics of remote sensing platforms and lack of robust data processing techniques. Advancements in data analytic tools, such as the introduction of Google Earth Engine (GEE) platform provides unique opportunities for improved assessment of small and scattered wetlands. This study thus assessed the capabilities of GEE cloud-computing platform in characterizing small seasonal flooded wetlands, using the new generation Sentinel 2 data from 2016 to 2020. Specifically, the study assessed the spectral separability of different land cover classes for two different wetlands detected, using Sentinel-2 multi-year composite water and vegetation indices and to identify the most suitable GEE machine learning algorithm for accurately detecting and mapping semi-arid seasonal wetlands. This was achieved using the object based Random Forest (RF), Support Vector Machine (SVM), Classification and Regression Tree (CART) and Naïve Bayes (NB) advanced algorithms in GEE. The results demonstrated the capabilities of using the GEE platform to characterize wetlands with acceptable accuracy. All algorithms showed superiority, in mapping the two wetlands except for the NB method, which had lowest overall classification accuracy. These findings underscore the relevance of the GEE platform, Sentinel-2 data and advanced algorithms in characterizing small and seasonal semi-arid wetlands.

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0n6eACsEtACaYGGsfdBQ118.pdf

4．Recent advances in atmosphere water harvesting: Design principle, materials, devices, and applications

文献源：ScienceDirect,2021-09-03

摘要：Atmosphere water harvest offers a creative and straightforward way to tackle the

global-range freshwater shortage, especially in remote areas and arid deserts. Inspired by the natural species, significant progress has been made to developing water harvesting materials and devices through the rational design of the structure and composition. In this review, we address mainly three questions. What is the design principle of a water harvesting material? How to improve the water collection efficiency of a material in an arid region? How to transform the materials into high-efficient water harvesting systems/devices? With these questions, we present a systematic interpretation of in-air water harvesting, from the materials to the devices, aiming to help find ever-advanced water harvesting systems. We summarize the important achievements towards their applications in the sustainable water supply at water-deficient regions, and for the agricultural irrigation system. The challenges and barriers that retard their applications and future research orientations in this field are also discussed.

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0nq2AeYnGARNXRaL6Mjs429.pdf

5．基于SRTM的地形因子提取方法研究

文献源：农业机械学报,2021-09-03

摘要：地形是影响土壤侵蚀的重要因子，在侵蚀估算模型中常用坡度和坡长（LS）来衡量，在大区域上常基于数字高程模型（DEM）提取。SRTM作为大区域尺度上质量高、易获取的高程数据，在全球土壤侵蚀评价中得到广泛应用。但现有地形因子提取算法要求高程和栅格单元的单位（通常为米）一致，使得需对SRTM进行坐标变换才能使用。针对大区域上SRTM坐标转换时间开销大的问题，本文提出了一种直接基于SRTM提取地形因子的算法（LSA-SRTM）。该算法利用地理坐标系下的经纬度信息计算栅格单元长度及单元坡长，结合最陡坡降策略获得坡度及流向，进而提取汇水面积，根据坡度设置坡度截断点，根据汇水面积阈值设置沟道截断点，经正反遍历后获得累积坡长，采用CSLE的分段公式计算LS因子。以Himmelblau-Orlandini数学曲面、5个中国典型样区的1"SRTM作为数据源，将LSA-SRTM 、投影坐标系下的LS算法（LSA-DEM）与手工测量的结果进行对比。LSA-SRTM方法与测量值在数学曲面和典型样区，坡长的R2分别为0.8552、0.7788、0.7269、0.7024、0.6909、0.7255，LS因子的R2分别为0.8907、0.8209、0.8213、0.7142、0.7145、0.8212。在运行时间方面，LSA-SRTM方法具有较高的效率。结果表明，LSA-SRTM算法计算精度、效率更高，可为大区域地形因子提取的研究提供支撑。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0kU6AP8boAA9VkJU49nM351.pdf

6．基于Google Earth Engine的黄土高原覆膜农田遥感识别研究

文献源：农业机械学报,2021-09-03

摘要：为了建立覆膜农田遥感识别技术体系，本研究选取甘肃省定西市安定区团结镇作为黄土高原地膜覆盖旱作农业代表性区域，基于Google Earth Engine云平台和Landsat-8反射率数据，采用特征重要性分析优选纹理特征，利用参数优化后的随机森林算法提取覆膜农田区域并选出最佳特征组合方案，最后通过对比随机森林、支持向量机、决策树和最小距离分类4种算法的分类结果来评价不同分类算法的性能。结果表明：优化关键参数后的随机森林算法能够显著提高遥感影像的分类精度；单一特征方案中，基于光谱特征的分类精度最高，且加入指数和纹理特征可提高总体识别精度；利用随机森林特征重要性分析选取的优选纹理特征分类性能优于全部纹理特征，基于“光谱+指数+优选纹理”特征方案的识别结果最佳，总体精度和Kappa系数达95.05%和0.94；与支持向量机、决策树和最小距离分类相比，随机森林优势明显，总体精度分别高3.10、7.74、50.78个百分点。本研究实现了对地形复杂地区覆膜农田空间分布较为精准的识别，可为进一步研究地膜覆盖栽培技术的空间差异和可持续性提供理论依据和技术支持。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0kOmARhd5ABjNGFsCSU8166.pdf

7．基于自适应升温模拟退火算法的农业机器人全区域覆盖策略

文献源：华南农业大学学报,2021-09-03

摘要：提出一种复杂农田环境下农业机器人全区域覆盖策略，以便合理规划农业机器人的工作遍历路径。根据农田实际生产环境定义农业机器人复杂工作环境模型，并在此基础上建立一级分区与二级分区的概念。引入遗传算法变异操作的思想，建立基于贪婪机制的模拟退火算法优质可行解生成方法；建立解集多样性的概念，设计基于自适应升温的模拟退火算法改进方法，以此求解分区间的最佳遍历顺序问题。通过A*算法与八邻域搜索法相结合进行农业机器人跨区域衔接路径规划，依此，实现机器人覆盖全区域。仿真结果表明，改进的模拟退火算法所规划的路径长度分别比传统遗传算法与模拟退火算法减少14.7%与10.1%，收敛时的迭代次数分别减少9.8%与59.1%；农业机器人全区域覆盖仿真试验中遍历路径重复率为14.86%。高地隙喷药机器人现场遍历试验中，路径重复率为15.83%。研究结果可为农业机器人在复杂农田环境中全遍历覆盖提供研究思路。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0kDGACLhfAA3B7F7yipQ426.pdf

8．基于PSO-RF的GNSS-IR土壤湿度反演方法研究

文献源：无线电工程,2021-09-03

摘要：基于全球卫星导航系统干涉测量（Global Navigation Satellite System Interferometry and Reflectometry，GNSS-IR）的土壤湿度监测弥补了传统测量方法的不足，是近年来遥感领域研究的热点。针对以往研究多采用全球定位系统（Global Positioning System，GPS）的观测量数据来估计土壤湿度，且反演精度不高的问题，研究了利用北斗卫星导航系统B1、B2频段的信噪比数据进行土壤湿度的反演。提出了一种利用随机森林（Random Forest，RF）方法对B1、B2频段的观测量进行融合反演的方法，并利用粒子群优化（Particle Swarm Optimization，PSO）算法对RF的参数进行自动寻优。构建了PSO-RF土壤湿度反演模型，给出了信号处理的一般流程，并搭建陆基接收平台进行了验证实验。验证结果表明，PSO-RF模型反演结果较传统回归方法在相关系数R和均方根误差RMSE方面均有明显改善，证明了该方法可以实现对固定区域土壤湿度的长期连续观测。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0j7mAPnw8AB2klG6WsvU423.pdf

9．基于改进蚁群算法的柑橘采摘最优路径

文献源：安徽大学学报(自然科学版),2021-09-02

摘要：为了提高柑橘采摘效率,对柑橘采摘的最优路径进行研究.将柑橘采摘的路径规划抽象为旅行商问题的解集,建立柑橘果实点3维模型.在蚁群算法的基础上,引入随时间改变的自适应信息素浓度更新机制,提出改进的蚁群算法.仿真实验结果表明:改进蚁群算法的路径长度比蚁群算法的路径长度短;改进算法采用蚁周模型进行路径规划时有较高的效率。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0knOAAXwyABEGeQuzS0E212.pdf

10．基于知识元描述的模型参数化设计交互式创建系统

文献源：农业机械学报,2021-09-02

摘要：针对农机模型参数化设计过程中涉及参数传递困难、关联性差，对设计人员的专业素质要求高等问题，构建了一套模型参数化设计交互式创建系统。该系统运用知识元设计的理念，通过人机交互式的方法创建设计知识，实现模型的个性化设计与参数化建模。采用Visual Studio平台下的VB.NET为开发语言，结合SolidWorks的二次开发技术与MySQL数据库管理实现模型参数化设计的资源化封装，以弱化专业背景知识的限制。以谷物收获机械的切割装置为测试对象，分析零件之间的参数关系，明确参数设计规则，

通过模型预处理标记设计参数，循环遍历模型数据集提取参数基本信息，建立人机交互操作界面，按照参数分类的要求完成设计参数定量、定性的知识信息表达。实例分析证明了该系统的可行性与有效性，并且易于理解和应用，可为农机装备的设计重用技术提供技术支持。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0kcCAM5ttABulsh6iXVk375.pdf

11．基于YOLOV3优化模型的复杂场景下茶树嫩芽识别

文献源：浙江农业学报,2021-09-01

摘要：茶叶智能采摘的关键技术之一是待采摘嫩芽的识别,而嫩芽大小、环境光照、拍摄角度等因素都会给嫩芽的精准识别带来困难。针对复杂场景下传统茶树嫩芽识别方法准确率低的问题,本文提出一种基于YOLOV3深度卷积模型的识别方法,并通过增加SPP模块优化模型,提高模型对茶树嫩芽的识别能力。实验结果表明,YOLOV3模型和YOLOV3优化模型均能在复杂场景下实现茶树嫩芽识别,且YOLOV3优化模型的平均精度均值mAP比YOLOV3模型提高3.5百分点,达到91%,说明YOLOV3优化模型能够更好地应用于自然场景下的茶树嫩芽识别。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0lK2AOi9IAB9SckgxbRk751.pdf

12．基于K-means聚类和分区寻优的秸秆覆盖率检测算法设计

文献源：农业机械学报,2021-09-01

摘要：针对农田秸秆形态多样、细碎秸秆难以准确识别的难题，基于机器视觉技术，提出了一种基于K-means聚类和分区寻优结合的秸秆覆盖率检测算法。该方法首先利用K-means聚类算法对玉米秸秆图像进行分割，使秸秆从背景图像中分离；然后将秸秆图像分隔为16区，利用统计学方法分别计算各区秸秆中位数和众数灰度平均值，16区平均后分别获得秸秆中心灰度和土壤背景中心灰度，将其作为新的分类中心，重新采用K-means聚类方法对玉米秸秆图像进行分割，当秸秆中心灰度不再发生变化时停止迭代，计算秸秆像素点数量；最后计算获得玉米秸秆覆盖率。2021年4月，该算法在吉林长春玉米地100个采样点进行了实际验证，与人工拉绳法和人工图像标记法的相关系数分别为0.7161和0.9068，补贴档次误判率7%，分别与OTSU阈值化方法和经典K-means聚类方法的平均误差降低了45.6%和29.2%。试验结果表明，所提方法能够实现对不同天气、种植模式、不同土块条件下的秸秆覆盖率准确检测，该研究结果可为秸秆覆盖率在线检测提供一种新的检测方法。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0lEqAVmytAAt2kANx_-0976.pdf

13．基于宽度卷积神经网络的异常农情数据检测方法

文献源：华南农业大学学报,2021-09-01

摘要：为准确有效地检测农业物联网的感知数据异常，提出了基于宽度卷积神经网络的异常农情数据检测方法，为实现农业物联网数据高质量感知提供参考。首先将标准化后的农情数据编码为极坐标表示，通过滑动窗口机制划分子集，接着将每个子集数据重构为矩阵，最后设计并训练宽度卷积神经网络模型用于异常检测。采用养殖场环境监测数据进行试验，结果表明，构建的滑动窗口机制可提升异常数据检测能力和缩短检测时间；所设计的宽度卷积神经网络对空气温湿度、土壤温湿度等数据中所存在的异常检测准确率和F1值分别达到97.5%和0.985以上，平均优于SVM、RF和CNN模型1.69%、2.76%、3.05%和0.0093、0.0149、0.0163，且在处理波动性较强的空气、土壤温湿度数据时性能优势更为明显，准确率和F1值分别提高了3.61%～5.98%和0.0188～0.0310。此外，该方法模型检测耗时较短，仅为传统CNN模型的1/6～1/7，并且比SVM和RF模型使用更少的超参数。所建立数据编码、子集划分和重构方法与宽度卷积神经网络模型对异常农情数据有较好的检测效果。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0k8mALrb3AA3f5D1HW-I841.pdf

14．基于地理探测器的中国农业生态效率时空分异及其影响因素

文献源：应用生态学报,2021-09-01

摘要：研究农业生态效率的时空分异及其影响因素对实现中国农业生态高质量发展具有重要意义。基于2000—2018年中国30个省/区/市的面板数据，采用超效率SBM模型测算省际农业生态效率，在时间序列、空间可视化及趋势面分析揭示农业生态效率时空演变规律的基础上，进一步利用地理探测器模型识别影响农业生态效率空间分异的主导因子及其交互作用。结果表明：2000—2018年，中国农业生态效率整体呈现稳定上升的趋势，但仍然处于较低水平，存在较大提升空间；中国农业生态效率具有显著的空间分异特征，总体上呈现出东西部地区较高、而中部地区较低的空间分布格局；中国农业生态效率的空间分异受到农业资源禀赋、社会经济、自然生态环境等多种因素的影响，不同因子对农业生态效率空间分异的影响存在明显差异且因子间交互作用会增强其空间分异。综上，要关注农业生态效率时空分异的主导因子，并注重区域间的协同合作，以实现农业的高质量发展。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0kz6AH3TLAA7_YPhKPQ0776.pdf

【会议论文】

1．Research on Application Technology of 5G Internet of Things and Big Data in Dairy Farm

发布源：IEEE

发布时间：2021-08-09

摘要： For the past few years, the 5G + Internet of Things (IoT) technology and big data mining and analysis applications have gradually entered various areas of people's lives.. The rapid expansion of 5G + IoT and automation technology is the basis for the formation and construction of the smart dairy cattle pasture production. Big data and artificial intelligence have greatly improved the management level and economic benefits of dairy farms. The practical application of Blockchain + 5G IoT and big data in the production of dairy products can ensure the quality and safety of milk, and is expected to bring greater social and ecological benefits. The smart dairy farm is proposed to effectively improve the production and economic benefits of the pasture. This article aims to propose an intelligent way of identifying individual cattle and precise feeding of dairy cows based on 5G IoT technology. Within the frame of smart pasture management, the cow image identification makes feasible the timely identification of abnormal individuals in order to take suitable treatment for a different situation. The application of 5G image processing technology could save labor and promote efficient management. The combination of this technology and intelligence can effectively improve the economic benefits and production efficiency of the cattle farm through image recognition technology.

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0oYGAOcnKAARXIlkpt38453.pdf

2． Remote Sensing Monitoring of Soil Salinization Based on SI-Brightness Feature Space and Drivers Analysis: A Case Study of Surface Mining Areas in Semi-Arid Steppe

发布源：IEEE

发布时间：2021-08-02

摘要：The real-time monitoring and driving force research of soil salinization in semi-arid grassland are of great significance for regional and local ecological environment protection, management, and sustainable development. We selected a typical

“mine-town-agriculture-pastureland-industry” interlaced ecologically fragile area as the study area. Based on the method of SI (Salinization Index)-Brightness feature space, we constructed a new spectral index named Semi-Arid Steppe Salinization Index (SASSI), which is more suitable for soil salinization remote sensing monitoring in semi-arid steppe. The geodetector method was used to analyze the driving forces of the temporal-spatial changes of soil salinization. The results indicated that: (1) SASSI presented a high correlation with soil surface salt content (R 2 = 0.7698), and made full use of multi-dimensional remote sensing information. SASSI can reflect the salinization status of surface soil. The indicator calculation was simple and easy to obtain, which was conducive to the quantitative analysis and monitoring of salinization. (2) The driving factors affecting the spatial distribution and change of soil salinization were water, surface mines, town, agriculture, industry, road network, and elevation. The salinized areas were mainly distributed around the wetlands of the Xilin River Basin, mining landscapes, and town landscapes. (3) The total area of salinized soil in the study area increased from 32.03 km 2 in 2002 to 150.46 km 2 in 2017. The area of salinized soil increased rapidly from 2005 to 2014, but the growth rate slowed down after 2014. The salinized soil was mainly located in the salt marsh wetland in 2002, however had spread to the whole study area in 2017. This study provides references for remote sensing monitoring of soil salinization and the impact of land use, topography and other natural factors on soil salinization in the semi-arid steppe.

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE05_-AHNtgAJ_IdrVjdrQ544.pdf

【相关专利】

1．一种果实采摘机器人

发布源：中国专利

发布时间：2021-08-31

摘要：本发明涉及一种果实采摘机器人,其包括一车体,车体上设有剪叉机构,车体上安装有升降杆；一机械臂,机械臂安装在升降杆上,机械臂通过升降杆伸缩从而进行升降；一载货机构,载货机构包括运输轨道和载物箱,运输轨道位于剪叉机构上,运输轨道通过所述剪叉机构伸缩从而进行升降,所述载物箱置于所述运输轨道上,所述运输轨道带动所述载物箱水平位移；一控制单元,所述控制单元位于所述车体内,当所述机械臂采摘果实时,所述控制单元根据所述机械臂的位置控制所述剪叉机构进行升降,使所述机械臂与所述载物箱之间的距离保持在最短距离,确保果实采收后所述机械臂末端去放果实的时候,所述机械臂到所述载物箱的距离最短,降低采摘周期时间。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0lnqAeJpkAA02nyWjNRc729.pdf

2．一种基于学习型虫害防治设备的虫害防治方法

发布源：中国专利

发布时间：2021-08-31

摘要：本发明提供了一种基于学习型虫害防治设备的虫害防治方法,通过视觉装置捕抓环境害虫数量信息,并基于该信息判断设备的启动学习型虫害防治设备；通过基于光、声、信息素、热辐射设计的诱捕机构诱捕并通过灭活机构杀死害虫,具有良好的害虫灭活功能；通过收集箱对虫尸进行收集,回收利用虫尸,具有良好的实用性；通过热风机构对害虫尸体进行烘干,减少害虫实体重量,便于搬运；基于视觉装置获取虫尸图像信息供云端服务器进行深度学习,实施更新病虫害识别分类库,具有良好的实用性。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0laKAfWGeABxCfJVQDRQ268.pdf

3．自发电尖端UV-LED驱鸟捕虫设施

发布源：中国专利

发布时间：2021-08-10

摘要：本发明提供了一种自发电尖端UV-LED驱鸟捕虫设施,涉及农业病虫害防治及农业保护技术领域,包括电能获取模块、驱鸟模块、捕虫模块、合金框架、固定插,电能获取模块、驱鸟模块、捕虫模块自上至下依次安装在合金框架上,固定插安装在合金框架的底部；电能获取模块包括太阳能发电模块、风能发电模块、控制器,太阳能发电模块包括太阳能电池板、第一蓄电池、逆变器,风能发电模块包括风能发电机、第二蓄电池；驱鸟模块包括超声波驱鸟器；捕虫模块包括入蚊栅、诱虫光源、杀虫部件、集虫部件；控制器与超声波驱鸟器、诱虫光源、杀虫部件通过电线连接。本发明结构简单,易于组装和拆卸,利用太阳能和风能发电,提高了适用性。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0mEGAF3kbAAaqfWWv40c937.pdf

4．一种智慧园林监测管理方法及系统

发布源：中国专利

发布时间：2021-08-10

摘要：本发明提供了一种智慧园林监测管理方法及系统,通过在园林内设置的多个不同

位置的温度传感器和湿度传感器,每小时各采集一次园林内不同位置的空气的温度和土壤的湿度,计算园林中相对应的各区域的土壤的湿度的总体的关联性计算出土壤的湿度总体矩阵求出园林内的风土关系向量,进而根据风土关系向量来动态调节滴灌系统的水分输出,以此实现根据园林的空气的温度对园林的土壤的湿度的智能调控,实现数据的传输与存储的节能并且达到节水的效果。

链接:

http://agri.ckcest.cn/file1/M00/0F/C3/Csgk0GE0l0CANOBkABWgC-3BGrI548.pdf

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