

《智慧农业发展战略研究》专题快报

2019年第4期（总第4期）

中国工程科技知识中心农业分中心

中国农业科学院农业信息研究所

2019年8月5日

【政策法规】

1. 农业农村部办公厅关于全面推进信息进村入户工程的通知

发布源：农业农村部

发布时间：2019-07-17

摘要：为深入贯彻落实《中共中央 国务院关于坚持农业农村优先发展做好“三农”工作的若干意见》《数字乡村发展战略纲要》关于全面推进信息进村入户的部署要求，我部将深入实施信息进村入户工程，加大整省推进支持力度，督导各省份做好益农信息社建设运营工作。

链接：

http://www.moa.gov.cn/govpublic/SCYJXXS/201907/t20190717_6321083.htm

【动态资讯】

1. Apply for 2019 Climate Smart Agriculture funding - CDFA is now accepting applications for 2019 CSA Technical Assistance funding

【morningagclips】 SACRAMENTO — The California Department of Food and Agriculture is now accepting applications for 2019 Climate Smart Agriculture (CSA) Technical Assistance Funding. Funds awarded through this competitive grant process will be distributed to Resource Conservation Districts, the University of California Cooperative Extension, and nonprofit organizations with demonstrated technical expertise in designing and implementing agricultural management practices to support CDFA's 2019 CSA incentive programs. Eligible organizations may request up to \$120,000 to provide technical assistance to applicants and awardees of the 2019 Alternative Manure Management Program and the 2019 Healthy Soils Program. A description of the technical assistance program and links to

the application materials can be found at <https://www.cdfa.ca.gov/oefi/technical/index.html>. Applications are due August 30, 2019 at 5 p.m. PT. Late applications will not be accepted. “Our technical assistance partners have proven so valuable to the success of the Climate Smart Agriculture Programs,” said CDFA Secretary Karen Ross, “I’m pleased we can expand their roles, continue to use their expertise and provide ongoing technical assistance for three years to farmers and ranchers in California”. California Department of Food and Agriculture

链接:

<https://www.morningagclips.com/apply-for-2019-climate-smart-agriculture-funding/>

2. 福州晋安区“5G网络”覆盖农业园区

【农民日报】日前，笔者从福建省福州市晋新店镇政府了解到，工信部上月发放5G商用牌照后，该镇埔垵村的“中国——以色列示范农业园区”近期实现5G移动通信网络全覆盖，成为全省首家5G农业示范园区。据了解，5G系统采用全新的网络架构，关键能力指标均有增强，能提供至少10倍于4G的峰值速率、毫秒级的传输延时和千亿级的连接能力。农业生产有了5G系统，4K高清视频的传输、高清作物生长图片的采集、海量农场数据的获取，便不在话下。5G网络覆盖后，利用自身搭载的多光谱摄像机、无人机可以毫无遗漏地记录下百亩果树的长势、病虫害感染等情况。而后，高清影像通过5G网络实时传输至中控室，借助精准算法分析，生产管理者便能第一时间获悉作物健康现状。同时，身上搭载高精度摄像头，兼有二氧化碳、光合辐射、风速风力、温湿度传感器的农业巡检机器人“小睿”，成为该农场里“5G+农业”的代表作。不仅能自动转弯、返航、充电、避让障碍物，还能实时采集大棚的环境数据，以及作物的高清图片，并通过5G网络与农场主建立连接，帮助农场主实时了解生产现状，并及时做出科学决策。

链接:

http://szb.farmer.com.cn/2019/20190730/20190730_008/20190730_008_4.htm

3. 生态畜牧业大数据实验室落户青海

【农民日报】近日，“生态畜牧业大数据工程联合实验室”在青海大学成立并举行揭牌仪式，标志着青海大学和中国空间技术研究院在空间技术农牧业应用研究领域的合作迈出了实质性的一步。中国空间技术研究院是我国主要的空间技术及卫星研制基地，是中国空间事业最具实力的骨干力量，为国民经济建设、国防现代化和人民生活水平的提高做出了重要贡献。青海大学与中国空间技术研究院此次合作，本着“需求引导、追求实效、优势互补、合作共赢、协调发展”的原则，成立“生态畜牧业大数据工程联合实验室”，

作为双方开展技术合作的载体。生态畜牧业大数据工程联合实验室以面向长远、协同研究、注重应用、共谋发展为联合建设原则，开展面向青海草原畜牧业卫星技术服务，并转化形成产品的研究与应用创新，促成一批科研平台、成果、人才和团队在青海扎根落户，并在国家科技发展中相互支持，共同发展。据该联合实验室常务副主任裴青生介绍，实验室围绕“将空间技术与生态畜牧业技术融合发展”目标，重点围绕多源空间信息数据融合技术、遥感技术、卫星运控调度监测技术、地理信息技术、智慧畜牧业技术等方面，进行技术研究、应用创新、模式创新、产品开发、特色畜产品追溯体系构建，为青海省生态畜牧业建设提供技术支撑、数据资源和大数据服务。据了解，青海省以北斗卫星技术为基础，对百万亩草场和数十万头（只）牲畜实施动态监控，还发起涉及210万头（只）牦牛与藏羊的原产地可追溯工程。此外，青海还成立了牦牛产业联盟，打造“三江源智慧生态畜牧业平台”，启动青藏高原现代牧场技术研发示范项目，构建青藏高原现代牧场模式等。青海大学相关负责人介绍，青海大学与中国空间技术研究院共建的“生态畜牧业大数据工程联合实验室”，是著名航天研究机构与地方高校战略性互动合作的尝试。空间技术与生态畜牧业技术融合发展，将重点围绕生态畜牧业多源空间信息数据融合技术、遥感技术、卫星运控调度监测技术、地理信息技术、气象信息技术、牧业生产技术、智慧畜牧业技术、电子商务技术及多源融合技术综合利用等方面进行技术研究、应用创新、模式创新、产品开发、特色畜产品追溯体系构建，为青海省生态畜牧业建设提供技术支撑、数据资源和大数据服务。

链接:

http://szb.farmer.com.cn/2019/20190727/20190727_006/20190727_006_5.htm

4 . Microbial Manufacturing Accelerates Precision Agriculture

【technologynetworks】 New research of MIT's Research Enterprise in Singapore's IRG, DiSTAP, which focuses on precision agriculture, revolutionises the creation of genetic material, enabling drastically accelerated development of key microbial factories for urban farming in Sin. Researchers at SMART, MIT's research enterprise in Singapore, and National University of Singapore (NUS) have developed a technology that greatly accelerates the genetic engineering of microbes that can be used to manufacture chemicals used for urban farming. The new technology will result in a faster, cheaper, more accurate, and near-scarless plasmid construction, using standard and reusable parts, that is compatible with most popular DNA assembly methods. Explained in a paper titled "A standard for near-scarless plasmid construction using reusable DNA parts", which will be published this month in the prestigious academic journal, Nature Communications, the project is part of

the SMART Interdisciplinary Research Group (IRG) Disruptive & Sustainable Technologies for Agricultural Precision (DiSTAP). The IRG develops new technologies to enable Singapore, a city-state which is dependent upon imported food and produce, to improve their agriculture yield to reduce external dependencies.

链接:

<https://www.technologynetworks.com/immunology/news/microbial-manufacturing-accelerates-precision-agriculture-322162>

5 . 农产品电商进入数字化发展新阶段

【农民日报】近年来，农产品电商正通过对传统生产方式、流通渠道、消费形态等层面的影响，成为农业产业发展和转型过程中的重要推动力，为实现农产品上行、中小农户对接大市场、标准化品牌化等农业产业的现代化演变提供信息化的路径。7月15日，2019年中国农产品电商半年分析会暨中国农业展览协会农产品电商工作委员会成立大会在北京工商大学举办。参加此次分析会的有来自农业农村部、商务部等有关政府部门代表、业界专家学者、知名电商企业代表，以及来自全国各地的农产品生产销售企业的负责人。参会者围绕2019年上半年农产品电商发展趋势进行了深入的讨论。

链接:

http://szb.farmer.com.cn/2019/20190724/20190724_008/20190724_008_2.htm

6 . 我国将逐步在农村地区部署5G

【农民日报】国务院新闻办公室举行新闻发布会，工业和信息化部相关负责人介绍了2019年上半年工业通信业发展情况，并就大家关心的5G建设问题回答记者提问，该负责人表示今年主要在一些关键地方部署5G，特别在一些热点地区、大城市，随着下一步工作的展开，我国也将像4G网络建设一样，逐步在农村地区部署5G。4G改变生活，5G改变社会。据介绍，5G和4G有相同之处，除了4G的大带宽使用以外，5G技术在设计之初，从需求角度除了考虑连接人与人的通信以外，还有物联网的应用和工业控制，其发展将对今后社会发展意义重大。同时，5G的安全实际上和4G、3G、2G以及固网的安全有很多相同之处。工业和信息化部相关负责人表示，农村地区的网络建设一直是发展重点。目前，我国通过普遍服务补偿机制，农村和城市同网同速的目标基本实现，全国所有行政村几乎都通光纤，平均网速能够达到60多兆。在5G还没有到来之前，我国已经开始在农村大规模部署4G网络，初步估算到今年年底，全国55万个行政村中98%以上都会有4G网络覆盖。随着下一步工作的展开，农村也将是5G部署的重点地区。4G改变生活，5G改变社会。据介绍，5G和4G有相同之处，除了4G的大带宽使用以外，5G

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链接:

http://szb.farmer.com.cn/2019/20190724/20190724_001/20190724_001_4.htm

7 . 阿里巴巴携手北大荒探索“数字+产业+商品”合作模式

【农民日报】日前，黑龙江北大荒农垦集团总公司与阿里巴巴集团在哈尔滨签署战略合作协议，围绕阿里巴巴“亩产一千美金”计划，北大荒农垦集团与阿里集团将在数字农业、大数据、电子商务、云计算等领域开展深入合作，探索“数字+产业+商品”合作模式。阿里巴巴“亩产一千美金”计划将从货品、营销、服务、人才、科技等多个方面为北大荒农垦集团“上云”支招。作为北大荒发展战略转型的重要支撑，双方未来将就数字化经济推动北大荒全面提升产业竞争力、增强农业产业可持续发展能力做深入探讨，共同打造中国农业发展新模式。据了解，阿里集团将与黑龙江政府、北大荒农垦集团共建“淘乡甜数字农业标准示范基地”，同时引入粮食分级和产业联盟标准，从产、供、销等多个环节推动农产品全链路数字化升级和数字化溯源能力。

链接:

http://szb.farmer.com.cn/2019/20190723/20190723_001/20190723_001_4.htm

8 . Next generation farming: How drones are changing the face of British agriculture

【DW.COM】 Agricultural drones could help farmers take care of their crops and even cut down on pesticides. While there's certainly some buzz, laws and price tags may hinder the industry from taking off. Jack Wrangham and Colin Rayner believe these flying farmhands are the future of British farming. So too do the professional services firm, PricewaterhouseCoopers, who estimate that commercial drones will add £42 billion (48 billion euros; \$53 billion) to the British GDP by 2030 — and agriculture will be one of the main beneficiaries. But they're also expensive. Breitmeyer says the fact that an unmanned aerial vehicle and the software system can cost thousands of pounds prevents them from

becoming more popular. "There's an innate distrust in whether the technology is worth it at the moment," he said. Getting a drone and a license can cost thousands of pounds, so "for many farmers... there is a cost bearer at the moment." Although he could afford one, he's not convinced that technology is good enough. So, whether it's down to laws, attitudes or costs — it's clear that in Britain at least, farming drones haven't quite managed to take off.

链接:

<https://www.dw.com/en/next-generation-farming-how-drones-are-changing-the-face-of-british-agriculture/a-49243454>

9 . Smart Farming Market Is Growing Due to the Increasing Automation & Digitization in the Agriculture Industry

【ssuchronicle】 The global smart farming market is dominated by Europe; it is projected to grow at a significant rate from 2019 to 2025, followed by the North American and Asia Pacific regions. Northbrook, IL — (SBWIRE) — 07/18/2019 — The growth in the trends of mechanization in the agriculture industry, focus on livestock monitoring to improve the efficiency of farms, and governments' support for modern agricultural techniques stimulate the global smart farming market. The North American and European regions are projected to dominate the global smart farming market during the forecast period. These regions are the largest markets for innovative technologies used for agriculture. Considering the huge opportunities in these regions, new market players are entering this market. The increasing automation and digitization in the agriculture industry are creating new business models for this market. On the other hand, in Asia Pacific, the adoption rate of smart farming techniques is expected to grow because of the presence of emerging countries such as India, China, and countries in South East Asia, where agriculture is a vital sector.

链接:

<https://www.ssuchronicle.com/2019/07/18/smart-farming-market-is-growing-due-to-the-increasing-automation-digitization-in-the-agriculture-industry/>

【文献速递】

1 . Big data for agri-food 4.0: Application to sustainability management for by-products supply chain

文献源 : Computers in Industry,2019

摘要 :The bioconversion of lignocellulosic biomass is a promising method for the production

of bio-energy, biomolecules and biomaterials. Pretreatment of the lignocellulosic biomass is an essential step in this process. The choice of pretreatment process is a difficult one, and there are currently no clear criteria on which to base this choice. This project, with its sustainability and agri-food perspective, used environmental impacts to assess the various processes and their panels of technologies. The approach developed integrates big data, to improve sustainability management in supply chain design, with the aim of valorising agricultural waste. In five main steps, this approach combines concepts from industry 4.0, sustainability and the agri-food industry. We apply this approach to a case study in the domain of agricultural waste valorisation: the pretreatment of lignocellulosic biomass in the rice supply chain.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVliAQg5MACQnho5hGag399.pdf>

2 . A collaborative control protocol for agricultural robot routing with online adaptation

文献源 : Computers & Industrial Engineering,2019

摘要 : Stress in crops is one of the major concerns in precision agriculture because it indicates the emergence of disease and damage in plants. Detecting the stress condition of a plant early is critical. A system that can monitor the condition of plants is a desirable solution. In this work, Collaborative Control Theory is utilized to construct a new system, ARS (agricultural robotic system) which synchronizes humans, a mobile robot, and a variable set of sensors to effectively perform the monitoring and detection tasks. A key protocol for that system, which combines routing algorithm, adaptive search algorithm, and collaboration control framework has been developed and validated, and is presented in this article. By using greenhouse as a case study structure, the protocol routes a robot to visit the sampled locations by using a genetic algorithm. In addition, the search algorithm can be guided by the predictive characteristics of the crops' stress, which can spread to other plants according to sunlight, airflow direction, and other known conditions. Based on simulation experiments, the results indicate with statistical significance that (1) the routing algorithm increases the number of successful detections of existing stressed plants by 45.77% compared to monitoring without this routing algorithm. (2) The adaptive search algorithm improves the number of successful detections of stressed plants by 71.88% compared to a system without the adaptive search algorithm. (3) The new protocol developed in this research yields the highest overall robotic efficiency, compared with a

system without collaborative control framework.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVuKAfpYzACEIRZRXGIl169.pdf>

3 . 中国植保无人机发展形势及问题分析

文献源：华南农业大学学报,2019

摘要：植保无人机作为我国农业航空产业的重要组成部分之一,近年来的迅猛发展和应用引起了人们广泛的关注。为全面、深入地了解中国植保无人机的发展形势及存在的问题,农业农村部农机化司委托华南农业大学国家精准农业航空施药技术国际联合研究中心统计和撰写了“2016年我国农用植保无人飞机发展形势分析与政策建议”的报告。在此报告的基础上,本文对我国植保无人机的类型、生产企业及保有量分布情况进行了统计和分析,比较全面地展示了中国植保无人机行业的发展状况,总结和提出了目前植保无人机行业发展中在关键施药技术研究、相关标准制订以及监督管理这3个方面存在的主要问题及建议,并对植保无人机的市场前景、关键技术和作业服务模式的发展趋势进行了预测,以期为国内科研机构 and 企业的科学研究及应用提供参考,加快我国植保无人机产业的发展进程,促进和推动我国植保无人机产业的健康快速发展。

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVwqACncLABF1JqEXMSY243.pdf>

4 . 基于消费级无人机搭载数码相机监测小麦长势状况研究

文献源：南京农业大学学报,2019

摘要：[目的]本文旨在探究消费级无人机搭载数码相机更好地用于小麦长势快速监测。[方法]于2015—2017年开展涉及2个小麦品种和4个施氮水平处理的田间小区试验,在小麦关键生育期采用大疆精灵3专业版无人机自带的数码相机获取试验区数码影像,并提取6种颜色指数,同步取样并测定叶面积指数、叶片干物质量及叶片氮积累量等小麦长势信息,在小麦抽穗前、后及全生育期分别运用指数函数和随机森林算法定量分析长势信息与颜色指数的关系。[结果]在小麦各生长阶段,指数函数模型表现较好,可见光大气阻抗指数(visible atmospherically resistant index, VARI)、超红指数(excess red index, ExR)和归一化绿减红差值指数(normalized green minus red difference index, NGRDI)与叶面积指数、叶片干物质量和叶片氮积累量的相关性均表现较好,继而分别建立了基于VARI、ExR和NGRDI的叶面积指数($R^2=0.71 \sim 0.82$)、叶片干物质量($R^2=0.42 \sim 0.71$)和叶片氮积累量($R^2=0.52 \sim 0.76$)的指数函数监测模型。独立试验数据的检验结果表明:在抽穗前及全生育期, ExR($R^2=0.45 \sim 0.70$ 和 $0.42 \sim 0.62$)监测模型估测的叶面积指数、叶片干物

质量和叶片氮积累量与实测值拟合性更好，在抽穗后期， $VARI(R \sim 2=0.68 \sim 0.72)$ 监测模型估测效果更好。[结论]结合小麦各生长阶段指数函数监测模型，利用无人机搭载数码相机可以快速无损监测小麦长势状况。

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVv6ABFwPADLWD7gvUns894.pdf>

5 . Scalable and sustainable wireless sensor networks for agricultural application of Internet of things using fuzzy c-means algorithm

文献源 : Sustainable Computing: Informatics and Systems,2019

摘要 : The integration of sensing, communication and Internet is innovatively merging into a new technology called Internet of things (IoT). Wireless sensor networks (WSNs) are the main physical monitoring infrastructure of IoT. Resource constrained sensor nodes have to be utilized in energy efficient manner so as to maximize the monitoring network's lifetime. Thus, for large scale monitoring applications of agriculture, forest and environment, it is required to have sustainable WSNs, where maximum number of sensors is alive over a large period of time. In the new era of IoT, WSN is popularly preferred and used in precision agriculture for farmland monitoring. In this proposed work, an attempt is made to design a cost effective clustering algorithm to obtain energy efficient sustainable WSN while maximizing node density and coverage area. The first objective of the proposed algorithm is to optimize energy efficiency by reducing data transmission distance of sensor nodes using fuzzy c-means (FCM) clustering algorithm. The second objective is to select a suitable cluster head node (CHN) based on perceived probability to attain network scalability. The results obtained shows that proposed algorithm is more energy efficient than other similar approaches. The comparative result statistics prove that proposed algorithm outperforms in terms of half of the nodes dead (HND) and last node dead (LND) for scalable scenarios. Thus, it can be effectually used in farm monitoring IoT systems.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVrCAH11pADVnsPJ0imQ485.pdf>

6 . Automated pastures and the digital divide: How agricultural technologies are shaping labour and rural communities

文献源 : Journal of Rural Studies,2019

摘要 : A “digital revolution” in agriculture is underway. Advanced technologies like sensors,

artificial intelligence, and robotics are increasingly being promoted as a means to increase food production efficiency while minimizing resource use. In the process, agricultural digitalization raises critical social questions about the implications for diverse agricultural labourers and rural spaces as digitalization evolves. In this paper, we use literature and field data to outline some key trends being observed at the nexus of agricultural production, technology, and labour in North America, with a particular focus on the Canadian context. Using the data, we highlight three key tensions observed: rising land costs and automation; the development of a high-skill/low-skilled bifurcated labour market; and issues around the control of digital data. With these tensions in mind, we use a social justice lens to consider the potential implications of digital agricultural technologies for farm labour and rural communities, which directs our attention to racial exploitation in agricultural labour specifically. In exploring these tensions, we argue that policy and research must further examine how to shift the trajectory of digitalization in ways that support food production as well as marginalized agricultural labourers, while pointing to key areas for future research—which is lacking to date. We emphasize that the current enthusiasm for digital agriculture should not blind us to the specific ways that new technologies intensify exploitation and deepen both labour and spatial marginalization.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVtSATmJtAAilfJkUq1E149.pdf>

7. 基于物联网和大数据驱动的农业病虫害监测技术研究

文献源：南京农业大学学报,2019

摘要：[目的]物联网和大数据驱动技术通过降低农业投入成本、减少损失和提高产量来提高农业生产效率。由于人工数据收集成本高和传统无线网络数据连通性解决方案有限，现代农业病虫害监测技术面临极大挑战。[方法]基于物联网和大数据驱动的现代农业技术平台，是一种用于农业端到端服务的物联网技术集成框架，它借助于最新通信技术可以从各种传感器、摄像机和无人机收集数据。该集成框架主要解决能量供应、通信限制、低空遥感滞空时间和病虫害环境致病分析。在能量供应方面，系统设计一种基于天气感知的太阳能基站，系统会根据能量获取状况实时改变数据采集率来减少能量损耗。在通信方面，系统采用Lora(Long Range)与TVWS(TV White Space)相结合的技术来满足农场远距离和高宽带数据传输的需求。在无人机设计方面，为减少无人机能源消耗，通过调整无人机四旋翼的角度以及对无人机飞行路线的优化，使无人机能够充分借助风能。[结果]采用上述方案，可以使得平台能够长时间持续稳定工作，而且即使在偏远的

大型户外农场也可保证网络连接不会中断。通过农作物生长环境分析,分析环境因素在农作物致病中的影响。[结论]通过对农作物病虫害无人机遥感结果与物联网大数据进行分析,建立一套农业病虫害监测系统,从环境因素方面分析病虫害致病机理。

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVxaASTFgAA4ZFMAR-9U560.pdf>

8 . 基于物联网的农业设施群环境监控系统

文献源:农机化研究,2019

摘要:环境是设施农业中最重要的因素,因此需要对其进行准确的监测和控制。设施农业中安装了大量的传感器,适应利用物联网对生产环节进行监控。为此,基于物联网技术,设计了一个农业设施群的环境监控系统。信息感知层监测环境数据,通过信息传输层的ZigBee无线通讯网络传输给应用管理层;应用管理层接收数据并进行分析和存储,形成控制指令驱动执行相应的操作。在温室4种蔬菜种植环境的测试中,系统能够根据设定值对温度、光照强度、土壤含水量和害虫数量进行准确的监测和控制,各环境因子都维持在蔬菜最适的生长条件范围内。

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVvCAKV6rAAMzzu0vbuk708.pdf>

9 . 半喂入四行花生联合收获机自动限深系统研制

文献源:农业工程学报,2019

摘要:为提高4HLB-4型半喂入四行高效花生联合收获机智能化水平和作业顺畅性、降低收获时果实漏挖率和破损率,综合运用电子传感器技术、液压传动技术和微处理器控制技术设计了一套自动限深系统。该系统由限深仿形机构、挖掘深度调整机构、液压执行系统、单片机控制系统和控制软件组成。田间收获试验表明,自动限深系统工作稳定可靠,4HLB-4型半喂入四行花生联合收获机采用该装置后平均漏挖率为1.08%,平均破损率为0.94%,平均挖掘深度为123 mm。通过与人工限深收获试验结果对比发现平均漏挖率降低了2.13个百分点,平均破损率降低了1.4个百分点,平均挖掘深度偏差降低了11 mm,而且挖掘深度偏差更加稳定。该研究可为其他土下果实收获机械自动限深系统的研制提供参考。

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVySAQK4IABfOg1gty8Y104.pdf>

10 . Structure Design and Image Recognition Research of A Picking Device on the Apple

Picking Robot

文献源：IFAC-PapersOnLine,2019

摘要：Picking robot is the inevitable trend of the development of orchard harvester technology in the future. However, automatic apple picking technology is difficult to achieve because of uncertainty in distribution, inconsistent maturity, and uneven quality and other issues. It is hard to locate the position of apples accurately. Therefore, after summarizing the advantages and disadvantages of apple harvesting technology at laboratory and abroad, a picking device was designed. The device is based on the purpose of distinguishing the maturity of apples and consists of shell, cutting device, power device. It can achieve efficient and rapid fruit picking and more accurate differentiation of maturity. For other similar spherical fruit also has some applicability.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVqCAektbAAnwDfDFtCQ008.pdf>

11 . Agricultural UAVs in the U.S.: potential, policy, and hype

文献源：Remote Sensing Applications: Society and Environment,2019

摘要：New technologies often pass through a period of their promoters' exaggerations. Unrealistic expectations, or hype, produce consumer excitement and then disenchantment with the technology before its acceptance. Using the Garter Hype Cycle as a framework, this study examines expectations regarding domestic applications of the unmanned aerial vehicle (UAV) in agriculture. A content analysis of 5418 U.S. media reports from 2010 through 2014 shows hype was used in describing potential UAV applications in farming. Media reports were highly speculative and overly optimistic, and in the near term largely unrealistic. The agricultural UAV hype appears to be a response to hostility toward government domestic surveillance use of UAVs. As public hostility toward police use of UAVs increased, media reports shifted away from government deployment to the economic development created by relatively noncontroversial commercial applications. Hype has both potential benefits and costs for those seeking expansion of a technology. The hype was arguably necessary to allay negative public opinion and a hostile political environment toward domestic expansion of the UAV. The negative ramification of hype is that a period of disillusionment follows the inevitable realization that expectations for the technology were unrealistic. Market expansion is stalled or even derailed. According to the Garter Hype Cycle, there will be a period of disillusionment regarding the contributions of UAVs to agriculture

once there is the legalization of commercial applications in the U.S. However, UAV deployment on farms should increase after realistic expectations regarding near-term contributions are developed and disseminated.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1FVsKAW8xXAAskyKUwCYU603.pdf>

【行业报告】

1 . Global Smart Agriculture Market Report 2019, Competitive Landscape, Trends and Opportunities

发布源 : wiseguyreports

发布时间 : 2019-07-16

摘要 :The report mainly studies the size, recent trends and development status of the Smart Agriculture market, as well as investment opportunities, government policy, market dynamics (drivers, restraints, opportunities), supply chain and competitive landscape. Technological innovation and advancement will further optimize the performance of the product, making it more widely used in downstream applications. Moreover, Porter's Five Forces Analysis (potential entrants, suppliers, substitutes, buyers, industry competitors) provides crucial information for knowing the Smart Agriculture market.

链接:

<http://agri.ckcest.cn/file1/M00/06/8D/Csgk0F1E-O6AQZa6AADbdQwW2aY188.pdf>

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