

《农业水土资源监控研究》专题快报

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中国工程科技知识中心农业分中心

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【动态资讯】

1 . Food Grains Production target for FY 2020-21 Fixed at 298.0 Million Tonnes

【AgroNews】 Amid the countrywide lockdown, the Union Minister of Agriculture and Farmers' Welfare, Narendra Singh Tomar has said that all States should aim to achieve the Kharif target and doubling of farmers' income should be taken up in mission mode. Addressing the National Conference on Kharif crops 2020 through video conference, he assured the States that the Government of India will remove any obstacles that the States are facing. The main aim of the National Kharif Conference was to discuss various issues and list out steps in consultation with the States about preparedness for Kharif cultivation in view of the lockdown situation.

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ew70AfqHJADBKcTF8tZc938.pdf>

2 . 以大数据、人工智能等数字技术为支撑 新产业新业态增长可期

【人民日报】17日召开的中共中央政治局会议指出，在常态化疫情防控中经济社会运行逐步趋于正常，生产生活秩序加快恢复。我国经济展现出巨大韧性，复工复产正在逐步接近或达到正常水平，应对疫情催生并推动了许多新产业新业态快速发展。当前，我国比较好地控制住了疫情，也不得不付出一些短暂的经济代价。但以大数据、人工智能等数字技术为支撑的新产业新业态迅速“补位”，云端互动、数据拼单、借网络直播带货、靠工业互联网转产等抓住产业数字化、数字产业化赋予的机遇，形成发展新动能。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ewqCAdcLtAAw2vuplvzI376.pdf>

3 . 山东农民利用农情监测系统采集信息

【山西经济日报】近日，在山东青岛市即墨区，农民利用农情监测系统采集各类信息。随着气温回暖，该区农民将植保无人机、自走式高杆喷雾机等设备和技术应用于农业生产，提高春耕管理和作物种植现代化、智慧化作业程度。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ewYiAN8Y2ABWsEWN6Tu8754.pdf>

4 . 平安科技AI赋能助春耕 运用智慧遥感技术助湖北冬小麦生长

【大众科技报】2020年以来,受新冠肺炎疫情的影响,为许多地区的农业生产带来了巨大挑战。尤其在湖北疫区,长期交通封锁、人员限制出行等防疫办法的实施,让农产品销售受阻,也让当季生长期内的农产品尤其是关系粮食安全的冬小麦,因缺乏田间管理和受大风降温天气影响面临风险。近期,作为平安援鄂抗疫惠农系列举措的其中一项工作,平安产险、平安科技携手,根据当期冬小麦春耕管理面临的问题和需求,将平安智慧遥感知平台遥感AI线上监察服务应用到了湖北襄阳宜城市冬小麦长势智能监测分析上。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ewCmAPgWzABR2suld0Ck953.pdf>

5 . 农财两部联合部署2020年农业生产发展等项目实施工作

【农业农村部新闻办公室】近日，农业农村部、财政部联合印发《关于做好2020年农业生产发展等项目实施工作的通知》，全面部署2020年中央财政农业生产发展、农业资源及生态保护、动物防疫等项目实施工作。

链接:

http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ev6iAIY_1AATNYzovMCI647.pdf

6 . 中国农业展望报告发布：未来十年主粮保供能力大幅提升

【央视网】农业农村部市场预警专家委员会发布《中国农业展望报告（2020—2029）》，这是我国连续第7年向全世界公布，未来10年中国主要农产品市场供需形势的预测和展望。未来十年主粮保供能力大幅提升。报告认为，尽管我国今年一季度遭受了突如其来的新冠肺炎疫情冲击，但粮食生产能力今年依然稳定增长。未来十年，我国主粮保供能力仍将大幅提升。报告分析，2020年，我国农业种植结构将继续优化，水稻、小麦不断调优品种结构，优势产区玉米产能将得到巩固提升。水稻、小麦、玉米三种主粮的播种面积近14.2亿亩。预计2020年主要粮食品种供给充裕，生产量能达到一个较高的水平。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6evESASymGAC1iOYNLOBQ491.pdf>

7 . 2020年世界水日权威发布《世界水发展报告》

【中国给水排水】2020年《世界水发展报告》。水安全与气候变化将是未来数十年持续而深刻的全球危机。联合国《世界水发展报告》是联合国水机制牵头国际和地区主要涉水机构撰写的年度水发展专题报告，每年聚焦一个主题，旨在反映全球共性水问题，引领全球水发展思路。2020年的《世界水发展报告》于3月22日“世界水日”当天正式发布。报告聚焦“水与气候变化”，提出水安全与气候变化将是未来数十年全球面临的持续而深刻的危机。在本报告中，撰写者力求实事求是和客观中立，广泛概述了最新的水与气候变化发展动态，明确提出了在气候变化背景下提升水治理和水管理的挑战和机遇

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6evp-AKGmAACH4s4hmvEg084.pdf>

8 . Nine measures that could help keep India's agriculture supply chain from breaking--

Unless the government pays urgent attention to the sector, starvation could follow

【AgroNews】The Covid-19 global pandemic has thrown our world into chaos. Already, the United Nations and the World Trade Organisation have warned of a “looming global food crisis” if the coronavirus is not managed properly. The prices of world's two staples: wheat and rice have risen sharply. Agrarian production is falling all over the world. In India, the government has been taking precautions to ensure that the harvest season and the farm inputs supply chain are not disrupted. But on the ground, it's clear that the agriculture system has been fractured.

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6exEaAXhrKABTD9fc4ZKE522.pdf>

9 . 智慧农业物联网技术

【今日头条】智慧农业涉及的新技术有很多，比如遥感技术、地理信息系统、GPS全球定位系统、物联网技术、5G高速无线通信、各种传感器技术，通过数据分析和数据挖掘为主的大数据技术以及机器视觉和深度学习的人工智能技术等。其中人工智能中的计算机视觉、图像识别及深度学习等人工智能技术实现对作物产量的预测、土地规划及病虫害防治；物联网技术通过传感器、摄像头等监测设备借助无线传感技术实现动植物远程监控及管理；大数据平台以天气、土壤、农作物、病虫害以及动物身体特征数据（红外）作为大数据基础对动植物生长情况进行分析、预测、预警等；运用GPS全球定位系

统及温湿度传感器等对作物进行勘测、生长、病虫害防治、水分、热量补充提高产量等。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6evzKAc2IzAEVtpGZBqUA632.pdf>

10 . 乌海市以水资源的可持续利用保障经济社会可持续发展

【乌海市人民政府办公室】乌海市气候干旱，流域面积狭小，水源涵养条件差，水资源供需矛盾长期存在，水资源利用效率与国内、国际先进水平存在较大差距。随着各行业领域的发展壮大，水资源短缺已经成为我市生态文明建设和经济社会可持续发展的瓶颈。为贯彻“节水优先，空间均衡，系统治理，两手发力”的新时期治水方针，近年来，乌海市积极落实《自治区节水行动实施方案》，持续实施最严格水资源管理制度，严格控制用水总量、用水效率、入河湖排污总量“三条红线”，完善水资源管理制度，强化生态涵养区管理及饮用水源地保护，并以规划为龙头，实施城镇供水管网改造工程，降低供水管网漏损率；实施农业灌区节水改造项目，提高农田灌溉水利用系数；实施工业节水技术改造，提高工业用水重复利用率。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6evQuAV0QGAAZXQjQWSEE312.pdf>

11 . 青岛“农情监测”微信服务上线 随时随地了解农情信息

【半岛网】农情信息是农民迫切需要掌握的信息，为使农民更及时更准确的获取农情信息，3月31日半岛记者获悉，市智慧农业发展服务中心联合市农业机械服务中心（农业技术推广中心）共同开发了“农情监测”微信服务平台，该平台的上线，使用户可以随时随地了解农情信息，方便快捷查看数据统计分析，让农民有了口袋里的农情监测工具和农情指导工具。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ewgGAFGbdAAqC78v2mWE686.pdf>

12 . 基于物联网的智慧农业，或许能成功满足人类的巨大粮食

【吾谷新闻】据相关数据，预计到2050年，全球人口将达到96亿，这对农业产业带来了很大的问题。不仅要应对极端天气条件，气候变化加剧以及农业对环境的影响等挑战，还必须满足不断增长的人口对更多食物的需求。为了满足这些不断增长的需求，农业必须转向新技术。基于物联网技术的智慧农业将使种植者和农民减少浪费并提高生产力，从优化肥料使用到提高农用车路线的效率。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6ewP2AJuMgAAfVANHn5Bw400.pdf>

13 . 联合国发布报告指出：人类需改变有限水资源使用方式

【经济日报】3月22日是“世界水日”，联合国当天发布的题为《联合国世界水发展报告》指出，要减少气候变化的影响和驱动因素，需要人类改变地球有限水资源使用方式。报告认为，水安全和气候变化是全球未来几十年面临的两大危机，呼吁为缓解日益严重的水资源压力和提高农业及工业用水效率作出具体努力。一是使人们适应气候变化的影响；二是提高生计的复原力；三是减少气候变化的驱动因素。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6eve2AUPKiAAeKjO9QEQw420.pdf>

【文献速递】

1 . A review of remote sensing applications in agriculture for food security: Crop growth and yield, irrigation, and crop losses

文献源: Journal of Hydrology,2020

摘要: The global population is expected to reach 9.8 billion by 2050. There is an exponential growth of food production to meet the needs of the growing population. However, the limited land and water resources, climate change, and an increase in extreme events likely to pose a significant threat for achieving the sustainable agriculture goal. Given these challenges, food security is included in the United Nations' Sustainable Development Goals (SDGs). Since the advent of Sputnik, followed by the Explorer missions, satellite remote sensing is assisting us in collecting the data at global scales. In this work, we review how satellite remote sensing information is utilized to assess and manage agriculture, an important component of ecohydrology. Overall, three critical aspects of agriculture are considered: (a) crop growth and yield through empirical models, physics-based models, and data assimilation in crop models, (b) applications pertaining to irrigation, which include mapping irrigation areas and quantification of irrigation, and (c) crop losses due to pests, diseases, crop lodging, and weeds. The emphasis is on satellite sensors in optical, thermal, microwave, and fluorescence frequencies. We conclude the review with an outlook of challenges and recommendations. This paper is the first of a two-part review series. The second part reviews the role of satellite remote sensing in water security, wherein we discuss the aspects of water quality and quantity along with extremes (floods and droughts).

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6e1gOAEvNHABF4BelcFFU100.pdf>

2 . Modelling alternative futures of global food security: Insights from FOODSECURE

文献源： Global Food Security,2020

摘要： Global economic models have been increasingly used to project food and agricultural developments for long term-time horizons, but food security aspects have often been limited to food availability projections. In this paper, we propose a broader framework to explore the future of food and nutrition security with a focus on food availability, food access, and a reasonable proxy for food utilisation. This framework is applied to a new set of stakeholder-designed scenarios of alternative future worlds that were developed for the FOODSECURE project and are structured around the two dimensions of inequality and sustainability. The framework is tested with two global models, MAGNET-IMAGE and GLOBIOM, and illustrated through an assessment of the possible trade-offs between food and nutrition security and sustainability in each of the worlds. Our results indicate that more equal worlds improve food security over a wider range of food security indicators and neglecting the sustainability dimension might revert food security gains over time. This paper concludes that there is a need for model-based scenario analysis to assess the complex and multi-dimensional characteristics of global food security.

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6e0pOAMEBwAC-6GutLliA747.pdf>

3 . 数字农业的发展趋势与推进路径

文献源： 经济日报,2020

摘要： 数字农业是农业现代化的高级阶段,是我国由农业大国迈向农业强国的必经之路。近年来,我国数字农业发展取得了明显成效,但也面临着诸多亟待解决的问题。对此,需采取有针对性的措施,瞄准农业农村现代化的主攻方向,提供强有力的信息化支撑,为农业高质量可持续发展提供新动能,让农民群众有更多获得感、幸福感、安全感。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6e1veAEHcVAAHcyjCTo6Q492.pdf>

4 . 5G区块链大数据在智慧农业中的应用展望

文献源： 农业开发与装备,2020

摘要： 智慧农业是集物联网、大数据、云计算等技术为一体的农业现代化先行之路。而

5G作为一种新型通信技术,其区块链大数据可以提高智慧农业的发展,简述了发展智慧农业的意义、5G时代对改善智慧农业发展现状的帮助,以及探讨了5G区块链大数据在智慧农业中的应用,希望可以为农业生产提供更精准、智能的管理与决策。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6e14mAAzZeAA26xAAqSjY281.pdf>

5 . 浙江省智慧农业云平台建设及应用

文献源: 浙江农业科学,2020

摘要: 农业信息化经过多年建设, 各级农业农村部门建立了大量应用系统, 但由于缺乏统一的顶层设计、技术架构和数据标准, 导致数据分散、烟囱林立。浙江省智慧农业云平台通过建设农业物联网、生态循环、农业产业、种植业、质量安全、农村经营、农机监管、畜牧业、应急预案、农技推广等十大涉农数据库, 把各系统的业务数据、空间数据、视频数据和感知数据等进行汇集, 实现动态更新、数据共享应用, 为提升政府治理能力、部门服务效能提供数据支撑。

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6exSCAZLk2ABAWQZ6RRoE384.pdf>

6 . The challenges posed by global broadacre crops in delivering smart agri-robotic solutions: A fundamental rethink is required

文献源: Global Food Security,2020

摘要: Threats to global food security from multiple sources, such as population growth, ageing farming populations, meat consumption trends, climate-change effects on abiotic and biotic stresses, the environmental impacts of agriculture are well publicised. In addition, with ever increasing tolerance of pest, diseases and weeds there is growing pressure on traditional crop genetic and protective chemistry technologies of the 'Green Revolution'. To ease the burden of these challenges, there has been a move to automate and robotise aspects of the farming process. This drive has focussed typically on higher value sectors, such as horticulture and viticulture, that have relied on seasonal manual labour to maintain produce supply. In developed economies, and increasingly developing nations, pressure on labour supply has become unsustainable and forced the need for greater mechanisation and higher labour productivity. This paper creates the case that for broadacre crops, such as cereals, a wholly new approach is necessary, requiring the establishment of an integrated biology & physical engineering infrastructure, which can work in harmony with current

breeding, chemistry and agronomic solutions. For broadacre crops the driving pressure is to sustainably intensify production; increase yields and/or productivity whilst reducing environmental impact. Additionally, our limited understanding of the complex interactions between the variations in pests, weeds, pathogens, soils, water, environment and crops is inhibiting growth in resource productivity and creating yield gaps. We argue that for agriculture to deliver knowledge based sustainable intensification requires a new generation of Smart Technologies, which combine sensors and robotics with localised and/or cloud-based Artificial Intelligence (AI).

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6eyXqAev88AAraJOMCpSE392.pdf>

7 . The Digitisation of Agriculture: a Survey of Research Activities on Smart Farming

文献源: Array,2020

摘要: The impulse towards a larger introduction of Information and Communication Technology (ICT) in the agricultural field is currently experiencing its momentum, as digitisation has large potentialities to provide benefits for both producers and consumers; on the other hand, pushing technological solutions into a rural context encounters several challenges. In this work, we provide a survey of the most recent research activities, in the form of both research projects and scientific literature, with the objective of showing the already achieved results, the current investigations, and the still open challenges, both technical and nontechnical. We mainly focus on the EU territory, identifying threats and concerns, and then looking at existing and upcoming solutions to overcome those barriers.

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6eylqAK3ERABoQ-o9Tet8264.pdf>

8 . Knowledge growth and development: internet of things (IoT) research, 2006–2018

文献源: Heliyon,2020

摘要: The term "Internet of Things" first appeared in publication paper since 2006, describing the paradigm of evolution concept that brought about by the presence of internet technology (Vermesan and Friess, 2015) which is very important in contemporary circumstances. This study conducted an in-depth analysis of the research material written on 26420 papers which focused on the published Internet of Things (IoT) research, starting from the firstly year IoT keyword appeared in 2006 until 2018. The selected paper is a

combination of various disciplines and publications which are all indexed by Scopus wherein the article discusses IoT. IoT articles are classified using key attributes in sequence: the methodology used, general knowledge and applied concepts, and various general exploration topics. By using the Scientometrics method, this method will group the overall terms that appear frequently from the Scopus paper database according to keywords, titles, and abstracts. The resulting data is then studied to understand and distinguish trends that occur in the time span along with the general characteristics of the paper, in the mathematics visual scheme. All various issues that are considered in the paper's methodology selection, their studied and services innovations, and continuing discoveries on the characteristics, concepts, and processes applied to IoT success. Although it only involves scopus indexed paper, this study found a remarkable increase in the number of articles on IoT in each category of the paper. This study also reveals the direction of the regular discipline of knowledge. The use of the Scientometrics method makes the analysis able to focus on the movement of characteristics and IoT themes to researcher's direction that has not found at this time, as a comprehensive guide to further research and industry strategy that is more directed on concepts that support the 4th industrial revolution.

链接:

<http://agri.ckcest.cn/file1/M00/00/EB/Csgk0V6exsaAHxUwAB5ByRGdZIU451.pdf>

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