

《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. 防治土地荒漠化 推动绿色发展——专访国家林业和草原局副局长刘东生

【新华社】6月17日是世界防治荒漠化和干旱日。今年我国确定主题为“防治土地荒漠化 推动绿色发展”，倡导广大人民群众践行绿色发展理念，营造全国动员、全民动手、全社会参与防治荒漠化的浓厚氛围，共同建设美丽地球家园。正值新中国成立70周年。70年来，我国荒漠化、沙化土地发生了怎样的变化？在荒漠化防治实践中，又展现了怎样的“中国力量”和“中国智慧”？今后一个时期，还将如何深入开展荒漠化治理？记者采访了国家林业和草原局副局长刘东生。生态优先，荒漠化和沙化面积“双缩减”刘东生介绍说，我国荒漠化土地面积从20世纪末年均扩展1.04万平方公里转变为目前的年均缩减2424平方公里，沙化土地面积由20世纪末年均扩展3436平方公里转变为目前的年均缩减1980平方公里，初步遏制了荒漠化扩展，呈现出荒漠化和沙化面积“双缩减”、荒漠化和沙化程度“双减轻”、沙区植被状况和固碳能力“双提高”、区域风蚀状况和风沙天气“双下降”的重要变化，提前实现了联合国提出的到2030年实现全球退化土地零增长目标。在这一过程中，我国进一步加大了沙区生态保护和治理力度，筑起北方绿色生态屏障。

链接:

http://www.farmer.com.cn/xwpd/jjsn/201906/t20190616_1443922.htm

2. 卢旺达总统发布报告称非洲实现可持续发展目标面临四大问题

【新华社】卢旺达总统卡加梅14日在首都基加利发布的一份报告说，非洲实现联合国2030年可持续发展目标面临数据缺失、经济和社会包容性发展趋缓、执行和问责机制不够完善以及资金不足四个重要问题。

链接:

http://www.xinhuanet.com//photo/2019-06/16/c_1124628460.htm

3. 农业农村部部署农业生态环境监测工作

【中华人民共和国农业农村部】近日,农业农村部印发《关于做好农业生态环境监测工作的通知》,全面部署农业生态环境监测工作。《通知》指出,农业生态环境监测是一项长期性、基础性工作。开展农业生态环境监测,对于准确判断我国当前农业生态环境形势,精准实施农业农村污染治理攻坚战行动计划,不断改善农业生态环境质量,保障农产品质量安全具有重要意义。《通知》要求,各级农业农村部门要重点抓好四项工作。一是做好农产品产地土壤环境监测。根据农产品产地土壤环境状况、土壤背景值等情况,开展土壤和农产品协同监测,及时掌握全国范围及重点区域农产品产地土壤环境总体状况、潜在风险及变化趋势。二是做好农田氮磷流失监测。依据农田氮、磷污染的发生规律和地形、气候等情况,开展农田氮磷流失监测,分析不同种植模式下区域主推耕作方式和施肥措施等对农田氮磷流失的影响。三是做好农田地膜残留监测。综合考虑覆膜作物、覆膜年限、回收方式等情况,开展地膜残留监测,摸清农田地膜残留量和回收情况。四是做好农业生物物种资源调查和外来生物入侵监测。开展国家重点保护农业野生植物调查,加大农业野生植物原生境保护力度,加强入侵物种调查和监测,开展预警与应急灭除。

链接:

http://www.moa.gov.cn/xw/zwdt/201905/t20190530_6315899.htm

4. 2019年农业农村绿色发展工作要点

【农业农村部】为贯彻落实中办国办《关于创新体制机制推进农业绿色发展的意见》和2019年中央一号文件精神,按照中央农村工作会议、全国农业农村厅局长会议部署要求,努力提升农业农村绿色发展水平,充分发挥绿色发展对乡村振兴的引领作用,制定2019年农业农村绿色发展工作要点。一、推进农业绿色生产 (一)优化种养业结构。(二)推行标准化生产。(三)发展生态健康养殖。(四)增强绿色优质农产品供给。二、加强农业污染防治 (五)持续推进化肥减量增效。(六)持续推进农药减量增效。(七)推进畜禽粪污资源化利用。(八)全面实施秸秆综合利用行动。(九)深入实施农膜回收行动。(十)强化耕地土壤污染管控与修复。三、保护与节约利用农业资源 (十一)扩大耕地轮作休耕制度试点。(十二)加快发展节水农业。(十三)加强农业生物多样性保护。(十四)着力强化渔业资源养护修复。四、切实改善农村人居环境 (十五)强化典型示范。(十六)实施农村人居环境改善专项行动。(十七)积极发展乡村休闲旅游。五、强化统筹推进和试验示范 (十八)统筹推动长江经济带绿色发展。(十九)开展第二批国家农业绿色发展先行区评估确定。(二十)加强农业绿色发展基础性工作。

(二十一) 强化工作落实和调度。

链接:

http://www.moa.gov.cn/ztl/2019gzzd/sjgzyd/201904/t20190416_6179510.htm

【文献速递】

1 . Estimating Maize-Leaf Coverage in Field Conditions by Applying a Machine Learning Algorithm to UAV Remote Sensing Images

文献源: Applied Sciences,2019

摘要: Leaf coverage is an indicator of plant growth rate and predicted yield, and thus it is crucial to plant-breeding research. Robust image segmentation of leaf coverage from remote-sensing images acquired by unmanned aerial vehicles (UAVs) in varying environments can be directly used for large-scale coverage estimation, and is a key component of high-throughput field phenotyping. We thus propose an image-segmentation method based on machine learning to extract relatively accurate coverage information from the orthophoto generated after preprocessing. The image analysis pipeline, including dataset augmenting, removing background, classifier training and noise reduction, generates a set of binary masks to obtain leaf coverage from the image. We compare the proposed method with three conventional methods (Hue-Saturation-Value, edge-detection-based algorithm, random forest) and a frontier deep-learning method called DeepLabv3+. The proposed method improves indicators such as Qseg, Sr, Es and mIOU by 15% to 30%. The experimental results show that this approach is less limited by radiation conditions, and that the protocol can easily be implemented for extensive sampling at low cost. As a result, with the proposed method, we recommend using red-green-blue (RGB)-based technology in addition to conventional equipment for acquiring the leaf coverage of agricultural crops

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HZpOAJnwpADFRLjWti90460.pdf>

2 . Land-use changes driven by 'Grain for Green' program reduced carbon loss induced by soil erosion on the Loess Plateau of China

文献源: Global and Planetary Change,2019

摘要: Vegetation restoration on degraded lands has been encouraged worldwide due to its ecological services and function of controlling soil erosion and improving carbon (C) stocks

in terrestrial ecosystems. Although the processes of runoff and sediment detachment and transport are well recognized, the effects of vegetation restoration on organic C loss through soil erosion are not fully understood within a given landscape. This study conducted a synthesis from 66 sites to evaluate the effects of vegetation restoration on annual C loss induced by soil erosion across the key areas of the 'Grain for Green' Program (GGP) in the Loess Plateau, China. The results showed that vegetation restoration has significantly reduced the annual C loss in sediment and from runoff. Since 2000, a total of 8.6×10^6 ha degraded land has been converted to forests, shrubs and grasslands under the GGP, which has reduced runoff by 1.5×10^9 m³ and is associated with 7.3×10^3 Mg C; furthermore, lost sediment has been reduced by 348.7 Tg, which is associated with 1.8 Tg C per year, across the Loess Plateau. In the zone with a mean annual precipitation (MAP) < 550 mm, the degraded lands that have been converted to grasslands and shrubs have reduced more soil and water losses than have the lands that have been converted to forests; additionally, in the zone with a MAP > 550 mm, the degraded lands that have been converted to forests have less soil erosion than do the lands that have been converted to grasslands and shrubs. Moreover, C loss induced by soil erosion was mainly affected by plant cover, soil porosity, slope, land-use change, and rainfall intensity on the Loess Plateau. This study suggests that optimal vegetation restoration measures should be adopted based on local conditions to reduce C loss induced by soil erosion.

链接:

http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0Hg_KALPVYAFM9SunrUfa020.pdf

3. 基于数据中心的农业物联网系统的设计

文献源: 计算机技术与发展, 2019

摘要: 随着农业物联网技术的迅速发展,物联网技术被广泛应用于农业的各个领域,通过应用各种类型的传感器和控制器设备对作物的生长进行监控。如今的农业物联网系统大都相对独立,位置处于偏远的欠发达地区,农业数据采用单台PC机进行数据存储,数据不流通,没有进行数据的集中存储和管理。由于农业物联网系统想要获取的有价值的数是一个长期、漫长的过程,所以需要保证农业数据的安全、稳定和可靠。根据上述存在问题,本文结合大数据的发展方向,根据高校现状,设计了一种基于数据中心的农业物联网系统。本系统通过远端监控设备对实验大田进行数据采集,数据中心将数据进行统一的集中存储管理,为后续的农业大数据分析提供了极大的便利,具有一定的实用价值。

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HepOAKn2yAApFr4w4ppU431.pdf>

4 . Farmers' perceptions of agricultural land use changes in Nepal and their major drivers

文献源: Journal of Environmental Management,2019

摘要: Historical trends show that the total area of agricultural land in Nepal has changed markedly over time, but few studies have addressed the causative drivers underlying this change. Evaluating the perceptions of farmers is an effective tool for addressing this issue because it reflects the full range of drivers associated with changes in land use. This study utilizes historical agricultural area, population, and climate data for 1910-2010, combined with a series of applied household surveys and focus group discussions to assess farmers' perceptions of these changes and identify the major drivers. The paired t-test was employed to measure differences between various groups of drivers. The total area of agricultural land in Nepal has expanded rapidly since 1910, more intensively in the southern (Tarai) and central (Hill) ecological regions of the country, and has decreased slightly near large cities in recent decades. Farmers' perceptions show that socioeconomic variables were considered to be the crucial drivers of changes in agricultural land use. The three other major drivers were grouped as: neighborhood, climate topography, and policy drivers. In particular, farmers pointed to the high level of population growth (93.96%) as the main factor underlying the changes, and the majority of drivers are associated with this variable. Access to roads (77.36%), urbanization (33.77%), government policies (23.58%), and remittance impact (16.79%) are other notable triggering variables. The paired t-test results equating variables from different groups of drivers and ecological regions indicate varied significance (p-values range from 0.004 to 0.983). Our analysis confirms that the synergy between social and natural observations can be integrated to obtain research findings that identify scientific and social issues. The interplay between the drivers should be emphasized in developing plans for sustainable agricultural land use management.

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HhHSAIxsVABa3ouBz2XQ238.pdf>

5 . 基于RS与GIS技术的西藏多龙矿集区生态环境监测研究

文献源: 地质学报, 2019

摘要: 西藏多龙矿集区铜多金属矿产资源丰富,铜储量约2500万吨,排名中国第一。矿集

区矿产资源的开发能带来巨大的社会效益,但青藏高原地区生态环境承载力有限,矿山开发容易造成生态环境的不可逆破坏。本文基于高分二号、Landsat8等遥感影像数据,采用人机交互解译方法提取多龙矿集区有关人类活动、水文、荒漠化、金属氧化物污染及草地覆盖等信息,进而分析研究区生态环境现状。分析结果表明:研究区生态环境整体仍处于较原始状态,未遭受过大型工业活动及人为活动破坏;区内主要植被类型为高原草原和高原草甸,高草地覆盖区面积较小且分布较集中;研究区荒漠化形势较为严峻,主要荒漠化类型包括沙漠化、石漠化及盐碱化等;矿区地表出现大面积褐铁矿化及孔雀石化,周边土壤及水系金属及重金属矿物含量超标;区内砂金矿盗采、超载放牧及地质勘探等人类活动均对当地生态环境造成一定影响。利用RS与GIS技术开展多龙矿集区生态环境调查研究,可为矿山的绿色选址及绿色矿山开发建设提供建议及技术支持。

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0Hc-KANzToAYsqc67qVwo887.pdf>

6 . Herder stocking rate and household income under the Grassland Ecological Protection

Award Policy in northern China

文献源: Land Use Policy,2019

摘要: The Grassland Ecological Protection Award Policy (GEPAP) is the largest payment for ecosystem services (PES) program targeting grasslands in China. It subsidizes households to reduce livestock numbers or ban the grazing of livestock to restrict the large-scale degradation of grasslands. While the GEPAP has drawn attention to these issues, questions regarding the performance of the GEPAP have still not been clearly answered. This research used a balanced dataset of 726 surveyed households from 5 regions of Inner Mongolia to assess the impacts of the policy on stocking rate and household income. Results indicated that contrary to the aim of the GEPAP, the overall stocking rate marginally significantly increased. Net household income extremely significantly decreased even though total income increased. Income from animals still formed the major proportion of household income, and off-farm income only played a complementary role in household income even though there was an increase in the amount and its proportion in total household income. Regression results indicated that the households with a lower subsidy level tended to have higher stocking rates and incomes. Stocking rate was unrelated to the policy or market price for livestock, while the household income was positively affected by livestock price. Results from this research have implications for the design, implementation and enforcement of conservation programs of grasslands in China and other developing countries.

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0Hd5WAQhrkAAqXPVqcDSk601.pdf>

7. 农业遥感卫星发展现状及我国监测需求分析

文献源: 智慧农业, 2019

摘要: 中国现代农业的发展以及乡村振兴战略的实施需要大量及时有效的农业环境、生产条件、状态及过程的信息。基于农业内在的特点, 卫星遥感是农业信息快速准确获取的关键技术手段之一。发达国家可用于农业应用的遥感卫星已经形成星座或体系进行联合观测, 具有较高的观测时间分辨率, 卫星遥感器载荷设计较为充分地考虑了农业应用的需求, 观测手段不断创新、观测性能不断提高。目前, 我国农业遥感卫星应用还存在很多问题, 例如传感器多光谱遥感为主、观测要素缺乏, 受遥感传感器性能、遥感卫星地面应用系统能力不足制约, 存在缺少光学、微波等多手段同时相协同观测能力、遥感数据保障率和质量有待提高等问题, 遥感监测手段与国外先进水平存在一定的差距。从国内农业生产常规监测、国外农业生产常规监测、重大农业政策执行情况监测和绘制重要农业资源图四个方面全面分析了我国当前遥感卫星业务需求, 并考虑未来发展深入分析了农业对遥感卫星应用装备的需求。建议构建编队顺序飞行的, 具备多光谱、高光谱、红外以及微波等多种手段的农业卫星星座系统, 有效提高多源数据融合精度, 综合提供不同波段、不同极化、主动被动、光学微波相互融合的多尺度卫星遥感数据及产品, 促进农业遥感技术的快速发展, 推动“天空地”数字农业的一体化发展。最后, 提出了立足于用户需求, 建立我国民用遥感领域农业综合观测卫星系统采用“分步走”战略。

链接:

http://agri.ckcest.cn/file1/M00/06/7F/Csgk0F0HX_aAbftIAAjtZau01qA830.pdf

8. 基于PS-DR-DP理论模型的区域资源环境承载力综合评价

文献源: 地理学报, 2019

摘要: 资源环境承载力状态评价研究成果众多, 研究视角多侧重于“压力—状态—响应”模型的传统途径。本文构建了区域资源环境承载力综合评价框架体系, 通过建立“PS-DR-DP”正六边形相互作用力理论模型, 将资源环境承载力分解为“压力—支撑力”“破坏力—恢复力”“退化力—提升力”三对相互作用力, 分别对应资源支撑能力、环境容量和风险灾害抵御能力, 根据不同作用力大小变化所引起的六边形的形状和面积的变化综合测度区域资源环境承载力状态的变化。基于上述理论模型, 采用分类排列多边形图示法, 研究了北京市2010-2015年资源环境承载力状态的变化。结果表明, 2010-2015年北京市资源环境承载力趋于理想承载状态。2010年正向因子综合承载作用力与负向因子综合承载

作用力的比值为1.0143,比值大于1,区域承载状态较好;而2015年该比值为1.1411。与2010年相比,2015年北京市资源环境承载状态相对更佳。2015年相比较于2010年,负向因子作用力均减弱,正向因子综合作用力增强。2015年人口规模为2171万,承载贡献均值为0.7025,进入最佳承载门槛,且仍具有进一步承载的空间。研究结论对北京市2020年人口规模控制在2300万以内提供了理论支撑。

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HaU6AAWqjABzE8FW6jic682.pdf>

9 . 国际荒漠化协会联合主席,水土保持专家王飞先生论基于土盐-水盐双分离的旱区盐碱地水土资源管理模式

文献源: 水土保持通报,2019

摘要: [目的] 从区域资源综合利用与水土资源管理角度探讨干旱地区土壤盐碱地治理问题,旨在寻求旱区盐碱地治理与开发利用新模式,以创新旱区盐碱地治理观念与技术,为旱区农业可持续发展、生态保护和环境治理提供支撑。[方法] 根据在陕西、宁夏和新疆等省区的野外调查和研究经验,结合有关水土资源高效利用研究成果,通过综合分析目前国内外盐碱地治理方法中存在的主要问题,提出了一种旱区盐碱地水土资源高效利用的管理新模式。[结果] 旱区盐碱地水土资源管理新模式是通过高效水调控促进土盐-水盐分离(简称:旱区盐碱地双分离治理模式),可以综合概括为"减少区域水损失,低耗水充分洗盐,集约化水盐分离,水土资源高效利用"。其中"减少区域水损失"是旱区水资源管理与生态保障的前提,"低耗水充分洗盐"是节省洗盐的时间成本和水资源成本的基础,"集约化水盐分离"是实现水盐分离和水盐分别再利用的核心技术,"水土资源高效利用"是旱区农业发展用水的核心经济原则。[结论] 旱区盐碱地双分离治理模式通过集约化水土资源管理,可以提高水盐分离效率,提升土地和水资源利用效率,其资源、环境和生态风险小,治理效益持续时间长,有助于维持和提升盐碱地治理的区域经济功能和生态系统服务价值。

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HaLWAFgHIAAcUGaBQJqA582.pdf>

10 . Evolution of Internet of Things (IoT) and its significant impact in the field of Precision Agriculture

文献源: Computers and Electronics in Agriculture,2019

摘要: During recent years, one of the most familiar name scaling new heights and creating a benchmark is Internet of Things (IoT). It is indeed the future of communication that has

transformed Things (Objects) of the real world into smarter devices. The functional aspect of IoT is to unite every object of the world in such a manner that humans have the ability to control them via Internet. Furthermore, these objects also provide regular as well as timely updates on their current status to its end user. Although IoT concepts were proposed a couple of years ago, it may not be incorrect to quote that this term has become a benchmark for establishing communication among objects. In context to the present standings of IoT, identification of the most prominent applications in the field of IoT have been highlighted and a comprehensive review has been done specifically in the field of Precision Agriculture. This article evaluates contributions made by various researchers and academicians over the past few years. Furthermore, existing challenges faced while performing agricultural activities have been highlighted along with future research directions to equip novel researchers of this domain to assess the current standings of IoT and to further improve upon them with more inspiring and innovative ideas.

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HhQCAGjWGAB9-FWWmdag433.pdf>

11 . Near real-time agriculture monitoring at national scale at parcel resolution:

Performance assessment of the Sen2-Agri automated system in various cropping systems around the world

文献源: Remote Sensing of Environment,2019

摘要: The convergence of new EO data flows, new methodological developments and cloud computing infrastructure calls for a paradigm shift in operational agriculture monitoring. The Copernicus Sentinel-2 mission providing a systematic 5-day revisit cycle and free data access opens a completely new avenue for near real-time crop specific monitoring at parcel level over large countries. This research investigated the feasibility to propose methods and to develop an open source system able to generate, at national scale, cloud-free composites, dynamic cropland masks, crop type maps and vegetation status indicators suitable for most cropping systems. The so-called Sen2-Agri system automatically ingests and processes Sentinel-2 and Landsat 8 time series in a seamless way to derive these four products, thanks to streamlined processes based on machine learning algorithms and quality controlled in situ data. It embeds a set of key principles proposed to address the new challenges arising from countrywide 10 m resolution agriculture monitoring. The full-scale demonstration of this system for three entire countries (Ukraine, Mali, South Africa) and five local sites

distributed across the world was a major challenge met successfully despite the availability of only one Sentinel-2 satellite in orbit. In situ data were collected for calibration and validation in a timely manner allowing the production of the four Sen2-Agri products over all the demonstration sites. The independent validation of the monthly cropland masks provided for most sites overall accuracy values higher than 90%, and already higher than 80% as early as the mid-season. The crop type maps depicting the 5 main crops for the considered study sites were also successfully validated: overall accuracy values higher than 80% and F1 Scores of the different crop type classes were most often higher than 0.65. These respective results pave the way for countrywide crop specific monitoring system at parcel level bridging the gap between parcel visits and national scale assessment. These full-scale demonstration results clearly highlight the operational agriculture monitoring capacity of the Sen2-Agri system to exploit in near real-time the observation acquired by the Sentinel-2 mission over very large areas. Scaling this open source system on cloud computing infrastructure becomes instrumental to support market transparency while building national monitoring capacity as requested by the AMIS and GEOGLAM G-20 initiatives.

链接:

<http://agri.ckcest.cn/file1/M00/06/7F/Csgk0F0HZDyANRDUAEGvV5YTzG0203.pdf>

12 . A survey on precision agriculture using effective crop monitoring with enhanced farming

文献源: International Journal of Advance Research, Ideas and Innovations in Technology,2019

摘要: In the course of recent years, there has been noteworthy enthusiasm for planning shrewd rural frameworks. The utilization of keen farming procedures can upgrade the product yield, while at the same time creating more yield from a similar measure of info. In any case, the greater part of the ranchers is ignorant of the most recent innovations and practices. Quick urbanization makes new difficulties and issues, and the shrewd horticulture idea offers chances to adapt to present circumstances, takes care of rancher issues and furnish agriculturists with a superior cultivating condition. This proposed work exhibits a thorough review of keen agribusiness. The principal issues moved in the proposed work is to discover some arrangement dependent on the issues looked by the ranchers by the utilization of most recent remote advances and IoT that could be actualized on savvy

horticulture for better cultivating just as an Intrusion recognition framework to destroy the wild creature assaults is to be done.

链接:

<http://agri.ckcest.cn/file1/M00/06/7F/Csgk0F0HY1KATUSMAAXiMwv5BXC931.pdf>

13 . Using reanalysis in crop monitoring and forecasting systems

文献源: Agricultural Systems,2019

摘要: Weather observations are essential for crop monitoring and forecasting but they are not always available and in some cases they have limited spatial representativeness. Thus, reanalyses represent an alternative source of information to be explored. In this study, we assess the feasibility of reanalysis-based crop monitoring and forecasting by using the system developed and maintained by the European Commission- Joint Research Centre, its gridded daily meteorological observations, the biased-corrected reanalysis AgMERRA and the ERA-Interim reanalysis. We focus on Europe and on two crops, wheat and maize, in the period 1980-2010 under potential and water-limited conditions. In terms of inter-annual yield correlation at the country scale, the reanalysis-driven systems show a very good performance for both wheat and maize (with correlation values higher than 0.6 in almost all EU28 countries) when compared to the observations-driven system. However, significant yield biases affect both crops. All simulations show similar correlations with respect to the FAO reported yield time series. These findings support the integration of reanalyses in current crop monitoring and forecasting systems and point to the emerging opportunities linked to the coming availability of higher-resolution reanalysis updated at near real time.

链接:

<http://agri.ckcest.cn/file1/M00/06/7F/Csgk0F0HWEyAMymfAD9pTE8H8jQ670.pdf>

14 . 中国粮食作物种植结构调整及其水土资源利用效应

文献源: 自然资源学报,2019

摘要: 粮食种植结构调整会影响农业资源的消耗需求。20世纪90年代中后期以来,玉米在我国粮食生产中的地位明显提升。以粮食种植结构无调整为参照情景,一定产量下,1996-2015年,在国家层面,因粮食种植结构调整对水土资源消耗的节省量约占现期需求量的4%左右。在区域层面,从结构调整对种植面积的减省效应看,耕地资源相对丰富的北方地区明显高于南方地区;从对水资源消耗的减省效应看,北方贫水区也普遍高于南方地区,干旱度最高的西北地区最高。期间区域分品种粮食生产广泛受到作物种植比例变

化的影响。研究表明,要充分利用好南方水热资源,恢复水稻生产,主要取决于稻米需求及其种植效益,而北方地区则要尽可能按降水规律调整农作制度,合理控制水稻、小麦的种植面积。

链接:

http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HZ6iAK_jIACA5sPOP6PE391.pdf

15 . Mapping and Monitoring Rice Agriculture with Multisensor Temporal Mixture Models

文献源: Remote Sensing,2019

摘要: The convergence of new EO data flows, new methodological developments and cloud computing infrastructure calls for a paradigm shift in operational agriculture monitoring. The Copernicus Sentinel-2 mission providing a systematic 5-day revisit cycle and free data access opens a completely new avenue for near real-time crop specific monitoring at parcel level over large countries. This research investigated the feasibility to propose methods and to develop an open source system able to generate, at national scale, cloud-free composites, dynamic cropland masks, crop type maps and vegetation status indicators suitable for most cropping systems. The so-called Sen2-Agri system automatically ingests and processes Sentinel-2 and Landsat 8 time series in a seamless way to derive these four products, thanks to streamlined processes based on machine learning algorithms and quality controlled in situ data. It embeds a set of key principles proposed to address the new challenges arising from countrywide 10 m resolution agriculture monitoring. The full-scale demonstration of this system for three entire countries (Ukraine, Mali, South Africa) and five local sites distributed across the world was a major challenge met successfully despite the availability of only one Sentinel-2 satellite in orbit. In situ data were collected for calibration and validation in a timely manner allowing the production of the four Sen2-Agri products over all the demonstration sites. The independent validation of the monthly cropland masks provided for most sites overall accuracy values higher than 90%, and already higher than 80% as early as the mid-season. The crop type maps depicting the 5 main crops for the considered study sites were also successfully validated: overall accuracy values higher than 80% and F1 Scores of the different crop type classes were most often higher than 0.65. These respective results pave the way for countrywide crop specific monitoring system at parcel level bridging the gap between parcel visits and national scale assessment. These full-scale demonstration results clearly highlight the operational agriculture monitoring capacity of the Sen2-Agri system to exploit in near realtime the observation acquired by the

Sentinel-2 mission over very large areas. Scaling this open source system on cloud computing infrastructure becomes instrumental to support market transparency while building national monitoring capacity as requested by the AMIS and GEOGLAM G-20 initiatives.

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<http://agri.ckcest.cn/file1/M00/06/7F/Csgk0F0HZRSAXq8iAFkGsFjlcR8007.pdf>

16 . Mapping and modelling past and future land use change in Europe's cultural landscapes

文献源: Land Use Policy,2019

摘要: Cultural landscapes are valued for their landscape character and cultural heritage. Yet, these often low-intensity, multifunctional landscapes are at risk of disappearance. Understanding how cultural landscapes might change under alternative futures is important for identifying where to target actions towards persistence of cultural landscapes. This study therefore aims to identify past and future land use changes in the European Union's (EU's) cultural landscapes. To do so, we overlay past and projected plausible future land change trajectories with the spatial distribution of cultural landscapes in the EU. Our results highlight a clear co-occurrence of specific land change trajectories and cultural landscape types. Past and future urbanization and agricultural abandonment are the land use change processes most strongly affecting small-scale, low-intensity agricultural landscapes that are valued by society. De-intensification is overrepresented in landscapes with a low management intensity. Past intensification was overrepresented in small-scale landscapes with a high value to society, while future intensification might concentrate on landscapes with a low intensity. Typical cultural landscapes show a strong variation of changes under different scenario conditions in terms of future landscape change. Scenario analysis revealed that some of the threats to cultural landscapes are related to agricultural policies, nature policies and other spatial restrictions. At the same time, these policies may also alleviate these threats when properly de-signed and targeted by accounting for the impacts they may have on cultural landscapes. Considering cultural landscapes more directly in decisions to be made for the post-2020 Common Agricultural Policy period is needed, and could be achieved by a focus on landscape quality beyond the current focus on specific greening measures.

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HgMWAMqLUAFiUiLk4Em0671.pdf>

17 . A Bibliometric Analysis of Soil and Water Conservation in the Loess Tableland-Gully Region of China

文献源: Water,2019

摘要: The tableland-gully region is one of the main topographic-ecological units in the Chinese Loess Plateau (CLP), and the soil in this region suffers from serious water erosion. In recent years, much work has been conducted to control soil erosion in this area. This paper summarized the development of soil and water conservation researches in the CLP from the bibliometric perspective based on the Science Citation Index (SCI) and Chinese National Knowledge Infrastructure (CNKI) databases. The quantity of SCI literatures has increased rapidly since 2007, with an average annual growth rate of 21.4%, and the quantity of CNKI literatures in the last decade accounted for 62% of the past 30 years. The development trends showed that early SCI research was related to loess geology in the context of ecological remediation, while the CNKI literature focused on agricultural production under comprehensive management. Over time, the research themes of the two databases gradually became unified, i.e., the management of sloping farmland and the improvement of agricultural productivity. Subsequently, the themes gradually extended to the disposition of comprehensive control measures for soil erosion and the environmental effect of agro-fruit ecosystems. The highly cited papers mainly focused on soil reservoir reconstruction, soil erosion factors, and environmental effects of vegetation restoration. Two aspects need further study, including (i) the effect of soil erosion control under different ecological remediation patterns; and, (ii) the ecosystem maintenance mechanism and regulation approaches that are based on the sustainable utilization of soil and water resources in the tableland-gully region of the Loess Plateau.

链接:

http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HaruAWnosACNB_yS9neY470.pdf

18 . Use and relevance of European Union crop monitoring and yield forecasts

文献源: Agricultural Systems,2019

摘要: Since 1993, the JRC has put in operation a crop monitoring and yield forecasting system for Europe, the results of which are published in the JRC MARS Bulletin (currently every month). This paper outlines how the agro-meteorological analyses, country-specific

overviews of crop conditions, and crop yield forecasts reported in the Bulletin are used and how these respond to the diverse needs of different types of stakeholders. Stakeholders from more than 32 countries download the JRC MARS Bulletin, in peak-season up to 1500 downloads occur in the first days after publication. The readership of the Bulletin is diverse, coming from governments (e.g. Ministries of Agriculture), private companies (e.g. commodity traders, banking), media, and research and academia. On the list of stakeholders that want to be notified of the release of the Bulletin, roughly 37% originate from business, 35% from research and development, 22% from government, and 6% from the media. The primary user is the Directorate General for Agriculture and Rural Development (DG-AGRI) of the European Commission, which uses the forecasts to quantify the production estimates for crop supply balance sheets and to identify regions with exceptional (mostly weather related) challenges that might require a policy response. The information for wheat, maize and rice is shared through the Agricultural Market Information System (AMIS) thus contributing to increased global market transparency and better governance of agriculture and food policies. The largest business use is in market information, financial, and consultancy services, followed by commodity trading. Examples of use in media reports as well as online feedback to those, e.g. by farmer's organizations, are also presented. Downloads of the Bulletin peak in the month before harvest at the time when the forecasts can be of most value for stakeholder decision-making.

链接:

<http://agri.ckcest.cn/file1/M00/06/80/Csgk0F0HgqGAdCgSAAz5oYyhtak072.pdf>

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