2022年第32期总353期

农业与资源环境信息工程专题

本期导读

前沿资讯

1．探索区块链技术如何促进农业食品系统转型

2．全球干旱地图

学术文献

1．使用卫星遥感揭示冲突导致的农田废弃对南苏丹粮食不安全的影响

2．2015-2021年中国种植模式图

行业报告

1．2022年农产品市场现状：粮食和农业贸易地理及可持续发展的政策方法

中国农业科学院农业信息研究所
联系人：孔令博
联系电话： 010-82106786
邮箱：agri@ckcest.cn
2022年8月15日

前沿资讯

1．Exploring blockchain technology to transform agrifood systems（探索区块链技术如何促进农业食品系统转型）

简介：为了养活更多人口，同时避免加剧气候危机，我们迫切需要建设更高效、更包容、更有韧性且更可持续的农业粮食体系。实现这一宏伟目标的方法之一是利用现代创新技术的潜力。在所有已经具备的技术中，区块链拥有广阔的前景。区块链诞生于2009年，最早应用于虚拟货币比特币，本质上是一个去中心化的共享数据库。然而，与传统数据库不同，区块链使用数字账本，数据同时复制分发给计算机或服务器网络上的所有节点。新数据输入时，会进入到一个新的区块中。一旦区块充满数据，就会链接到前一个区块上，并锁定其中的数据。这种分布式账本技术有两大关键优势：记录不可改变，因为几乎不可能更改或篡改数据；网络的去中心化特征意味着数据不被任何个人或团体控制，由此减少了欺诈的可能性。这些益处远远超出虚拟货币的范畴。在生产供人类消费的食品、牲畜饲料或家用木材时，可追溯性和透明度确保我们知道此类产品来自安全来源，或材料来自可持续供应商，从而提高食品的安全性，且便于召回。区块链还可以促进贸易，并增强土地权属制度的法律确定性。可追溯性和透明度对于监测气候目标以及相关的适应和减缓行动也至关重要。例如，使用区块链技术改善碳核算有助于各国确保其温室气体排放符合自身对联合国2015年巴黎协定的承诺。

来源：FAO

发布日期:2022-08-04

全文链接:http://agri.ckcest.cn/file1/M00/10/0D/CsgkOGL0lE6AFbqGAASqLURF1es803.pdf

2．The global map of aridity（全球干旱地图）

简介：Precipitation alone does not properly characterize vegetation water stresses. Indeed, water needs of plants or crops to maintain their physiological processes the evapotranspiration depends on many meteorological and climatic variables, including solar radiation, air temperature, relative humidity and wind speed, as well as specific crop characteristics and cultivation practices. Aridity indices are therefore implemented to measure the adequacy of the precipitation to satisfy vegetation water requirements, namely as ratio of annual precipitation to evapotranspiration of reference crop, or Potential EvapoTranspiration. In a rapidly changing global environment and climate, these metrics and their derivative indices become a direct and critical measure, and predictive tool, of the trend, direction, and magnitude of climatic change and its impacts upon the terrestrial biosphere, with implications for plant growth, sustainable development, and eventually for human civilization.

来源：EurekAlert

发布日期:2022-08-04

全文链接:
http://agri.ckcest.cn/file1/M00/10/0D/CsgkOGL0ka2ASeWGACHm1E4mBQs398.pdf

学术文献

1．The impact of conflict-driven cropland abandonment on food insecurity in

South Sudan revealed using satellite remote sensing（使用卫星遥感揭示冲突导致的农田废弃对南苏丹粮食不安全的影响）

简介：Armed conflicts often hinder food security through cropland abandonment and restrict the collection of on-the-ground information required for targeted relief distribution. Satellite remote sensing provides a means for gathering information about disruptions during armed conflicts and assessing the food security status in conflict zones. Using ~7,500 multisource satellite images, we implemented a data-driven approach that showed a reduction in cultivated croplands in war-ravaged South Sudan by 16% from 2016 to 2018. Propensity score matching revealed a statistical relationship between cropland abandonment and armed conflicts that contributed to drastic decreases in food supply. Our analysis shows that the abandoned croplands could have supported at least a quarter of the population in the southern states of South Sudan and demonstrates that remote sensing can play a crucial role in the assessment of cropland abandonment in food-insecure regions, thereby improving the basis for timely aid provision.

来源：Nature Food

发布日期:2021-12-16

全文链接:http://agri.ckcest.cn/file1/M00/03/3B/CsgkOYdLRaaAVLCXACHm1E4mBQs049.pdf

2．Maps of cropping patterns in China during 2015–2021（2015-2021年中国种植模式图）

简介：Multiple cropping is a widespread approach for intensifying crop production through rotations of diverse crops. Maps of cropping intensity with crop descriptions are important for supporting sustainable agricultural management. As the most populated country, China ranked first in global cereal production and the percentages of multiple-cropped land are twice of the global average. However, there are no reliable updated national-scale maps of cropping patterns in China. Here we present the first recent annual 500-m MODIS-based national maps of multiple cropping systems in China using phenology-based mapping algorithms with pixel purity-based thresholds, which provide information on cropping intensity with descriptions of three staple crops (maize, paddy rice, and wheat). The produced cropping patterns maps achieved an overall accuracy of 89% based on ground truth data, and a good agreement with the statistical data (R2 ≥ 0.89). The China Cropping Pattern maps (ChinaCP) are available for public download online. Cropping patterns maps in China and other countries with finer resolutions can be produced based on Sentinel-2 Multispectral Instrument (MSI) images using the shared code.

来源：Scientific Data

发布日期:2022-08-05

全文链接:http://agri.ckcest.cn/file1/M00/03/3B/CsgkOYdLRrCACjHuAAK2jUWV_Hw135.pdf

行业报告

1．The State of Agricultural Commodity Markets 2022（2022年农产品市场现状：粮食和农业贸易地理及可持续发展的政策方法）

简介：The State of Agricultural Commodity Markets 2022 (SOCO 2022) discusses how trade policies,

based on both multilateral and regional approaches, can address today's challenges for sustainable development. Trade policies in food and agriculture should aim to safeguard global food security, address the trade-offs between economic and environmental objectives, and strengthen the resilience of the global agrifood system to shocks, such as conflicts, pandemics and extreme weather. The report discusses the geography of trade, analysing food and agricultural trade and its patterns across countries and regions, its drivers and the trade policy environment. Comparative advantage, trade policies and trade costs shape the patterns of trade in food and agriculture. When comparative advantage plays out in the global market, trade benefits all countries. Lowering tariff barriers and reducing trade costs can promote trade and economic growth. Both multilateral and regional trade agreements can facilitate the process of making trade an avenue for growth but the gains of trade are distributed unevenly. When global environmental impacts, such as climate change, are considered, a multilateral approach to trade can help expand the reach of mitigation measures.

来源： FAO
发布日期:2022-08-11
全文链接:http://agri.ckcest.cn/file1/M00/03/3B/CsgkOYdLRBiAAAobASS_tz6w6Rg033.pdf