

《中国农业发展战略研究》专题快报

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【动态资讯】

1. When yesterday's agriculture feeds today's water pollution

【EurekAlert!】 A study led by researchers at Université de Montréal quantifies for the first time the maximum amount of nutrients - specifically, phosphorus - that can accumulate in a watershed before additional pollution is discharged into downriver ecosystems. That average threshold amount is 2.1 tonnes per square kilometre of land, the researchers estimate in their study published today in Nature Geoscience. "Beyond this, further phosphorus inputs to watersheds cause a significant acceleration of (phosphorus) loss in runoff." This amount is shockingly low, the researchers say; given current nutrient application rates in most agricultural watersheds around the world, tipping points in some cases could be reached in less than a decade. Phosphorus, an element in fertilizer, is essential to the growth of plant food. But the mineral is also harmful when overused. When it gets into surface water, it can lead to excessive plant growth in lakes and rivers and proliferation of toxic algae, harmful to human and animal health.

链接:

https://www.eurekalert.org/pub_releases/2018-10/uom-wya100518.php

2. 中央农办主任、农业农村部部长韩长赋谈中国农村土地制度改革

【中华人民共和国农业农村部】当前，农村土地制度改革站在新的历史起点上，任务艰巨而繁重。有的改革已全面推开，制度绩效初步显现，需要上升为国家法律法规；有的改革仍在试点，需要进行总结完善，形成可复制可推广的模式和经验；有的改革尚未破题，需要加强研究、探索试验，找到可行的改革路径和方案。下一步，要贯彻落实习近平总书记关于农村土地制度改革的重要论述，坚守底线，推进改革扩面、提速、集成，

加强制度创新和制度供给，让农村资源要素活化起来，激发广大农民积极性和创造性，为乡村振兴提供强大动力。需要认真研究八个问题。(一)稳定农村土地承包关系。(二)落实承包地“三权分置”制度。(三)处理好规模经营与小农户发展关系。(四)推进土地经营权抵押贷款。(五)强化耕地保护制度。(六)改革农村土地征收制度。(七)建立农村集体经营性建设用地入市制度。(八)稳慎推进宅基地制度改革。

链接:

http://www.moa.gov.cn/xw/zwdt/201812/t20181229_6165797.htm

3. 农村人居环境整治催生乡村蝶变

【中华人民共和国农业农村部】农村人居环境整治工作是实施乡村振兴战略的第一场硬仗。今年以来，各地各部门贯彻落实党中央、国务院决策部署，大力推进农村人居环境整治。中央农办、农业农村部牵头抓总，多部门合力推动，各地迅速行动，主动作为，广大农民群众积极参与，农村“厕所革命”、农业农村污染治理、畜禽粪污治理和资源化利用、非正规垃圾堆放点排查整治等一系列工作卓有成效，实现了农村人居环境整治良好开局。如何以强有力的保障，确保农村人居环境整治行动取得胜利？一些地方给出了有力的回答。广东省级财政平均给每个贫困村安排1500万元，广西制定了《乡村清洁条例》，明确农村环境整治职责义务，安徽39县市区采用市场化运作和PPP模式建设乡镇污水处理厂，开展农村生活垃圾和污水治理后期管护……;越来越多的地方正在行动，一幅生态宜居的美丽乡村画卷正在广袤田野上徐徐铺展开来。

链接:

http://www.moa.gov.cn/xw/zwdt/201812/t20181227_6165736.htm

4. China's most stringent soil pollution prevention law to become effective from January 1, 2019

【AgroNews】As of January 1, 2019, the Soil Pollution Prevention Law of the People's Republic of China will come into effect. The law is referred to as the most stringent soil protection law in history and will adopt the most rigorous system for protecting the environment and punishing illegal acts. After the law comes into force, the following agricultural actions will be subject to penalties: 1. Irregular treatment of agricultural waste: During agricultural production, the waste packaging of fertilizers and agricultural membranes must be forwarded to dedicated institutions for pollution-free treatment. In case of violation by individual farmers, a fine of Yuan200 to 2,000 shall be levied. In case of violation by business entities, a fine of Yuan10,000 to 100,000 shall be levied. 2. Discharge

of toxic and hazardous substances on farmland: Discharging heavy metals or other materials containing excessive amounts of hazardous substances, such as sewage, sludge and slags, which will cause damage to soil, will incur a fine of over Yuan100,000 for less serious cases, and responsible persons shall be detained for serious cases. For violations that cause serious consequences, a fine up to Yuan2 million shall be levied. 3. Using polluted land for reclamation: Land reclamation can benefit sustainable agricultural production, but land polluted by heavy metals, prohibited pesticides and domestic waste must not be used for reclamation. In case of any violation, a fine over Yuan100,000 shall be levied.

链接:

<http://news.agropages.com/News/NewsDetail---28827.htm>

5. A Review of Indonesia's Agriculture Development in Recent Years 2014 – 2018

【AgroNews】 The challenge of Indonesian agricultural development is how to achieve the fulfillment of the needs of the leading commodities of food crops, horticulture, livestock, plantations and the increase in exports of agricultural products. For that future agricultural development, planning must be based on the optimization of resources that are integrated. The 2015-2019 period, the agricultural sector is still faced with various obstacles, including (1) poor quality of human resources and lack of farmers' extension; (2) damage to infrastructure / irrigation networks; (3) the reduced and expensive wages of agricultural labor, and (4) fertilizer and seed requirements that have not been met according to site-specific recommendations. The subject of Indonesia's economic mission is a sovereign and prosperous Indonesian population. To achieve the country's dream, Indonesia still faces many obstacles and challenges. To that end, President Joko Widodo has established the Nawacita program which contains the mission and vision of the administration of the 2014-2019 Working Cabinet.

链接:

<http://news.agropages.com/News/NewsDetail---28821.htm>

6. 全国农业资源环境与农村能源生态工作会议召开

【中华人民共和国农业农村部】 本网讯 近日，全国农业资源环境与农村能源生态工作会议在广州召开。会议强调，要深入贯彻落实中央建设生态文明、实施乡村振兴战略的决策部署，坚持问题导向思考工作，转变观念推动工作，提高工作站位，进一步加强农业生态环境保护，促进乡村生态振兴。会议要求，要以习近平新时代中国特色社会主义思想

思想为指导，突出绿色生态导向，以农业污染防治、耕地重金属修复治理、农村可再生能源利用、生物资源保护为重点，打好农业农村污染治理攻坚战，补齐农业生态环境短板。要抓好基础性工作，加强人才队伍建设，开展农业资源环境监测评价，推进政策创设和技术模式创新。要加强行业管理，开展行业信息统计，做好安全管理，强化应急处置。会议部署了2019年重点工作。一是深入推进污染源普查，进一步加强农业污染源普查数据平台建设，形成农业源产排污系数，按时保质保量完成污染源普查工作。二是实施好秸秆农膜行动，扩大秸秆综合利用试点范围，抓好西北地区的农膜回收示范县建设。三是切实加强耕地土壤环境保护，加强耕地环境调查监测，推进耕地分类管理，建设受污染耕地安全利用与严格管控综合示范区。四是加强农村能源生态建设，推进畜禽养殖废弃物沼气化利用，推动出台《加快推进生物天然气发展实施意见》，组织开展生态循环农业示范创建。五是推进农业物种资源保护，加强外来入侵物种拦截监控，推进农业野生植物资源调查与抢救性收集，探索农业物种资源保护与开发并举的新机制。

链接:

http://www.moa.gov.cn/xw/zwdt/201812/t20181224_6165442.htm

7. Satellite and drone technologies are changing the face of agronomic research

【AgroNews】Forget boots on the ground — the future of crop monitoring could well be the eye in the sky. One of the discussions at last month’s Joint Conference of the Canadian Wheat Symposium and the Canadian Workshop on Fusarium Head Blight explored how remote sensing is opening up possibilities for monitoring soil conditions and crop health. Heather McNairn, a research scientist with Agriculture and Agri-Food Canada’s Ottawa Research and Development Centre, looked at the role satellites have begun to play in agricultural research. McNairn pointed out the difficulties in the “boots on the ground” approach to monitoring of the growth cycle of plants and how it is cumbersome and inefficient. She made the point that at 158.7 million acres of total farmland in Canada (93.4 million in crops), boots on the ground can’t reach every acre. But satellites, orbiting at 800 km above the Earth and travelling at more than 25,000 km/h can cover much more ground, much more quickly. McNairn explained that the satellites collect measurements of the amount of energy emitted, reflected or scattered. The intensity of energy depends on the type and condition of soils and crops. For instance, in the visible light spectrum, the amount and wavelength of light reflected can provide information on plant pigmentation, internal leaf structure and moisture. Whereas, in the microwave spectrum (which is unaffected by cloud cover) a deeper penetration can be attained than would be possible in the visible

spectrum. Microwave sensors are sensitive to moisture in the soil and in the canopy, and can also reveal information about the canopy structure and can be used to estimate biomass.

链接:

<http://news.agropages.com/News/NewsDetail---28792.htm>

8. 让秸秆重归农业良性循环链

【中国农业新闻网】编者按：我国每年产生蔬菜秸秆约2.3亿吨。多年来，蔬菜秸秆大都废弃不用，既浪费资源，又污染环境。而另一方面，许多地方设施大棚土壤由于利用过度，酸化、板结、退化现象严重。前不久，记者随山东泰昌生物集团科技人员走访了山东寿光、青州和青岛等地的一些蔬菜种植大户及大田经济作物种植户。采访中记者看到，该集团利用秸秆生产的生物菌肥，不仅改善了土壤理化性状，而且提高了作物产量和品质。2015年底，山东泰昌生物集团沃泰公司在国内首先尝试用大棚蔬菜秸秆为原料，生产复合微生物菌肥，来调解土壤酸碱度，增加土壤中有机质和有益菌，从根本上修复土壤。“农村是城市的一部分，秸秆量巨大，面源污染程度和风险也远大于城市。秸秆处理可以参考城市污水治理的一些方法，将其纳入到地方财政上来，集中收集、集中处理，用工厂化、标准化、规模化的科学处理方式，实现秸秆的资源化、肥料化利用，同时也要避免加工中的二次污染。”丁立功说，“秸秆从土壤中来，最后再回归到土壤中去，这才是真正意义上的农业生态循环。寿光是我国大棚蔬菜的主产区之一，先进的种植经验和科学的管理方式一直影响着其他地区菜农。蔬菜秸秆不应该成为被丢弃的垃圾，它的回收利用也应该有统一的政策支持。秸秆处理和土壤修复是全社会的事，关系农村和城市的千家万户，只靠农业企业和农民确实有点难，需要国家和各级政府的全力扶持。”

链接:

http://www.farmer.com.cn/jjpd/nz/nzdt/201812/t20181221_1423961.htm

9. 卫星+无人机+地面传感器 “天空地”遥感技术解锁黑龙江省精准数字农业

【中国科技网】中国科技网·科技日报讯（通讯员 王红蕾 记者 李丽云）传统农业田间管理要看天看地看作物，而随着科技的进步，农民也要成为看手机的低头族。记者从9月26日在黑龙江现代农业示范区召开的天空地数字农业技术集成示范现场会上看到，从高空的卫星、低空的无人机到地面的各种现代农业数据传感器，越来越智能的技术正在逐渐应用到传统农业中。数据，正在重新定义着“农耕技艺”的内涵。2018年，依托“天空地数字农业技术集成示范”项目，中国农科院农业资源与农业区划研究所和黑龙江省农科院遥感技术中心在黑龙江现代农业示范区联合共建了“东北大田规模化种植数字农

业试验示范区”，重点开展了遥感网、物联网、大数据、云计算、人工智能等数字农业技术的基础设施、硬件装备、软件系统和公共平台建设，打造了集科研、中试、转化、培训和展示功能于一体的“天地空”现代数字农业示范基地。

链接:

http://www.stdaily.com/02/hlj/2018-12/19/content_740601.shtml

10. Micro to macro mapping -- Observing past landscapes via remote-sensing

【EurekAlert!】 Remotely detecting changes in landforms has long relied upon the interpretation of aerial and satellite images. Effective interpretation of these images, however, can be hindered by the environmental conditions at the time the photo was taken, the quality of the image and the lack of topographical information. More recently, data produced by photogrammetry and Light Detection and Ranging (LiDAR) models have become commonplace for those involved in geographical analysis - engineers, hydrologists, landscape architects and archaeologists. In general, these techniques were designed to highlight small-scale 'micro-topographies' such as the expansive Mayan settlement network recently revealed in the dense jungles of Guatemala. But, how to connect the dots on a larger scale? In new research published this week in the journal Earth Surface Processes and Landforms, Cambridge archaeologists present a new algorithm, Multi-Scale Relief Model (MSRM), which is able to extract micro-topographic information at a variety of scales employing micro-, meso- and large-scale digital surface (DSM) and digital terrain (DTM) models.

链接:

https://www.eurekalert.org/pub_releases/2018-02/uoc-mtm020818.php

【文献速递】

1. Climate change impacts on China's agriculture: The responses from market and trade

作者: Wei Xie; Jikun Huang; Jinxia Wang, et al.

文献源: China Economic Review, 2019

摘要: China's food security has been facing several challenges, which are likely to be worsened due to climate change. The purpose of this paper is to provide an evidence on the impacts of climate change on China's agriculture, with particular attention to the market and trade responses. Using projected crop yield changes for China and its' main trading partners under changing climate, we employ an agricultural partial equilibrium model

(CAPSiM) and a linked national and global equilibrium model (CAPSiM-GTAP) to assess the impacts on food production, price, trade and self-sufficiency of China. Our results show that climate change will have significant effects on crop production though with large differences among crops. Under the worst climate change scenario RCP 8.5, wheat yield in China is projected to decline by 9.4% by 2050, which is the biggest yield reduction among the crops. However, the market can also respond to the climate change, as farmers can change inputs in response to reduced yields and rising prices. As a result, production losses for most crops are dampened. For example, wheat production loss under RCP8.5 reduces to only 4.3% due to market response. The adverse impacts on crop production will be further reduced after accounting for the trade response as farmers adjust production to much higher prices in the more severely affected countries. The paper concludes that we need to learn more from farmers who optimize their production decisions in response to the market and trade signals during climate change. A major policy implication is that policymakers need to mainstream the market and trade responses into national plans for climate adaptation.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvGQOASf3sAAcd9P0rLWs576.pdf>

2. Perspectives for Remote Sensing with Unmanned Aerial Vehicles in Precision

Agriculture

作者: Wouter H. Maes; Kathy Steppe

文献源: Trends in Plant Science,2019

摘要: Remote sensing with unmanned aerial vehicles (UAVs) is a game-changer in precision agriculture. It offers unprecedented spectral, spatial, and temporal resolution, but can also provide detailed vegetation height data and multiangular observations. In this article, we review the progress of remote sensing with UAVs in drought stress, in weed and pathogen detection, in nutrient status and growth vigor assessment, and in yield prediction. To transfer this knowledge to everyday practice of precision agriculture, future research should focus on exploiting the complementarity of hyperspectral or multispectral data with thermal data, on integrating observations into robust transfer or growth models rather than linear regression models, and on combining UAV products with other spatially explicit information.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvICqAarCgACu0n-2ojPk076.pdf>

3. Agricultural CH₄ and N₂O emissions of major economies: Consumption-vs. production-based perspectives

作者: Mengyao Han; Bo Zhang; Yuqing Zhang, et al.

文献源: Journal of Cleaner Production,2019

摘要: Agriculture is one of the most important sectors for global anthropogenic methane (CH₄) and nitrous oxide (N₂O) emissions. While much attention has been paid to production-side agricultural non-CO₂ greenhouse gas (ANGHG) emissions, less is known about the emissions from the consumption-based perspective. This paper aims to explore the characteristics of agricultural CH₄ and N₂O emissions of global major economies by using the latest emission data from the Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) and the recently available global multi-regional input-output model from the World Input-Output Database (WIOD). The results show that in 2014, the 42 major economies together accounted for 60.7% and 65.0% of global total direct and embodied ANGHG emissions, respectively. The consumption-based ANGHG emissions in the US, Japan, and the EU were much higher than their production-based emissions, while the converse was true for Brazil, Australia, and India. The global-average embodied ANGHG emissions per capita was 0.7 t CO₂-eq, but major developing countries such as China, India, Indonesia and Mexico were all below this average value. We find that the total transfer of embodied ANGHG emissions via international trade was 622.4 Mt CO₂-eq, 11.9% of the global total. China was the largest exporter of embodied ANGHG emissions, while the US was the largest importer. Most developed economies were net importers of embodied emissions. Mexico-US, China-US, China-EU, China-Japan, China-Russia, Brazil-EU, India-EU and India-US formed the main bilateral trading pairs of embodied emission flows. Examining consumption-based inventories can be useful for understanding the impacts of final demand and international trade on agricultural GHG emissions and identifying appropriate mitigation potentials along global supply chains.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvH2WAKfZGAC21ABQhnGk309.pdf>

4. The impacts of interprovincial agricultural trade on water resources in China: from perspective of grey water footprint

作者: Changyi Liao; Saige Wang; Jiake Fang, et al.

文献源: Energy Procedia,2019

摘要: As the largest water consumption sector, agriculture sector plays a significant role in water resources reallocating via economic trade. Different from previous studies focusing on the impacts of economic trade on water quantity, this paper concentrates on the impacts on the water quality. Grey water footprint (GWF) of agricultural sector is used for investigating the impacts of trade on water resources. In this paper, the regional virtual grey water of agricultural trade network was built based on the GWF and multiregional input—output analysis. The GWF for agricultural sector in each region was inventoried. Then GWF of agriculture embodied in monetary flows among regions were calculated using multiregional input—output analysis. The main results showed that Shandong, Henan, Heilongjiang, Inner Mongolia, and Hebei were the most critical regions for water resources. Besides, Zhejiang and Guangdong have saved a large amount of water by importing water resources through agricultural trade. While, Hebei, Heilongjiang, Anhui, Henan and Xinjiang are exporting a large amount of water resources. Moreover, the regions with developed economy and higher population are more dependent on agricultural imports. By identifying the critical node and pathway in virtual grey water trade, this paper aims to provide theoretical foundations for mitigating water pressure and reducing water pollution in economic trade activities.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvHQSACJu6AA2jUO52jAs467.pdf>

5. Previsual symptoms of *Xylella fastidiosa* infection revealed in spectral plant-trait alterations

作者: P. J. Zarco-Tejada; C. Camino; P. S. A. Beck, et al.

文献源: Nature Plants,2019

摘要: Plant pathogens cause significant losses to agricultural yields and increasingly threaten food security, ecosystem integrity and societies in general. *Xylella fastidiosa* is one of the most dangerous plant bacteria worldwide, causing several diseases with profound impacts on agriculture and the environment⁶. Primarily occurring in the Americas, its recent discovery in Asia and Europe demonstrates that *X. fastidiosa*'s geographic range has broadened considerably, positioning it as a reemerging global threat that has caused socioeconomic and cultural damage. *X. fastidiosa* can infect more than 350 plant species worldwide, and early detection is critical for its eradication⁸. In this article, we show that changes in plant functional traits retrieved from airborne imaging spectroscopy and thermography can reveal *X. fastidiosa* infection in olive trees before symptoms are visible.

We obtained accuracies of disease detection, confirmed by quantitative polymerase chain reaction, exceeding 80% when high-resolution fluorescence quantified by three-dimensional simulations and thermal stress indicators were coupled with photosynthetic traits sensitive to rapid pigment dynamics and degradation. Moreover, we found that the visually asymptomatic trees originally scored as affected by spectral plant-trait alterations, developed *X. fastidiosa* symptoms at almost double the rate of the asymptomatic trees classified as not affected by remote sensing. We demonstrate that spectral plant-trait alterations caused by *X. fastidiosa* infection are detectable previsually at the landscape scale, a critical requirement to help eradicate some of the most devastating plant diseases worldwide.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvIVOAGW8HACvb7titMD4485.pdf>

6. The trade margins of Chinese agricultural exports to ASEAN and their determinants

作者: SUN Zhi-lu; LI Xian-de

文献源: Journal of Integrative Agriculture, 2019

摘要: How do Chinese agricultural exports to ASEAN (Association of Southeast Asian Nations) evolve? And what factors affected the evolution pattern? This study measures the trade margins of Chinese agricultural exports to ASEAN by utilizing the 2000—2015 Harmonized System's six-digit agricultural trade data, and further analyzes their determinants by developing an augmented gravity model of international trade. The results indicate that, the main growth source of Chinese agricultural exports to ASEAN has shifted from the extensive margin before the formal establishment of CAFTA (ChinaASEAN Free Trade Area) in 2010 to the intensive margin since the formal establishment of CAFTA, but changes in Chinese agricultural exports to ASEAN have always mainly depended on the intensive margin. Since the formal establishment of CAFTA, the evolution pattern of Chinese agricultural exports to ASEAN has shifted from "more varieties, low price, and small quantity" to "less varieties, high price, and large quantity". Relative economic scale, relative population scale, capacity of agricultural export, trade integration, global financial crisis, and common border significantly affect the trade margins of Chinese agricultural exports to ASEAN.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvIjiAQ3GjAAdE5M6VhM0359.pdf>

7. Understanding agricultural growth in China: An international perspective

作者: Jingfeng Zhao; Jianmin Tang

文献源: Structural Change and Economic Dynamics,2019

摘要: This paper studies the evolution of the agricultural sector in the Chinese economy, with a comparison to a number of selected economies that are at different stages of economic development. It shows that China's unprecedented agricultural growth comparing to other emerging and developed countries was mainly driven by its world-beating productivity improvement, resulting from a series of fundamental reforms that have been undertaken in the Chinese agricultural sector since 1978. Despite the remarkable achievement, however, agriculture is playing a diminishing role in the growing Chinese economy, including declining agricultural employment. The paper illustrates that, as in other developed countries, the decline trend in China is an outcome of market forces in balancing various demands and supplies for goods and services as income rises. The research results will have important implications for further policy designs that seek to maintain a healthy agricultural growth in China in the future

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvFhWAFyCJAAjudXK6-bQ477.pdf>

8. Virtual water trade of agricultural products: A new perspective to explore the Belt and Road

作者: Yu Zhang; Jin-He Zhang; Qing Tian, et al.

文献源: Science of the Total Environment,2019

摘要: The Belt and Road is an initiative of cooperation and development that was proposed by China. Moreover, most of the spanning countries faced water shortages and agriculture consumed a lot of water. Virtual water links water, food and trade and is an effective tool to ease water shortages. Therefore, this paper aims to understand the Belt and Road from the new perspective of virtual water trade of agricultural products. We considered agricultural products trade from 2001 to 2015. On the whole, the results indicated that China was in virtual water trade surplus with the countries along the Belt and Road. However, in terms of each country, N40 spanning countries were in virtual water trade surplus with China and eased water shortages. Russia had the largest net imported virtual water from China. Furthermore, the proportion of the grey water footprint that China exported to the spanning countries was much higher than that imported, no matter from the whole or

different geographical regions. Moreover, more than half of the countries' virtual water trade with China conformed to the virtual water strategy, which helped to ease water crises. Furthermore, the products that they exported to China were mainly advantageous products that each spanning countries have. Virtual water trade is a new perspective to explore the Belt and Road. Agricultural products trade with China definitely benefits both the countries along the Belt and Road and China from the perspective of virtual water. The findings are beneficial for the water management of the countries along the Belt and Road and China, alleviating water shortages, encouraging the rational allocation of water resources in the various departments. They can provide references for optimizing trade structures as well.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvGj2AQeS4AA9uemWA5R8813.pdf>

9. Environmental Footprints of Agriculture Embodied in International Trade: Sensitivity of Harvested Area Footprint of Chinese Exports

作者: Jan Weinzettel; Richard Wood

文献源: Ecological Economics,2019

摘要: Consumption-based accounting seeks to link a population's lifestyles to their environmental impact. Input-output analysis (IOA) serves well in this approach as it covers all traded products, their full supply chains and explicitly delineates final consumption. However, using IOA comes at the expense of precision due to aggregation error. There has been a recent discussion on the plausibility of IOA results of agricultural pressures. We look at the harvested area footprint of Chinese exports, open the black box of the results of IOA and provide a detailed composition of the footprint. This helps to understand whether its size is a result of the poor precision of IOA methods, or whether it is based on plausible production patterns of the exported products. We hybridize the EXIOBASE database, identify the most important exported products, apply structural path analysis in order to identify the most important production nodes in their production paths and apply a sensitivity analysis over the model. We show that the results of the hybrid MRIO method are generally robust to assumptions. Our results indicate that while the uncertainty of the sign of net trade footprint can be high, the uncertainty of national environmental footprint accounts is low.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvHbeARId3AAONRbFnBXk308.pdf>

10. China and Trans-Pacific Partnership Agreement countries: Estimation of the virtual water trade of agricultural products

作者: Yu Zhang; Jinhe Zhang; Chang Wang, et al.

文献源: Journal of Cleaner Production,2019

摘要: The Trans-Pacific Partnership Agreement (TPPA) is one of the most important multilateral free trade and investment agreements in recent years. Although as a major economic power in the Asia-Pacific region, China has yet to join the TPPA. Existing research on China and TPPA countries has mainly been conducted from political and economic perspectives. This paper first reports the relationship between China and TPPA countries from the perspective of virtual water trade of agricultural products and completes a diachronic analysis from 2001 to 2014. The results indicate that China was in virtual water trade surplus with TPPA countries for agricultural products and that the surplus had an expansion trend. The exported virtual water totalled 7.47 billion m³/y, whereas 63.45 billion m³/y was embedded in imported products. Malaysia was the biggest virtual water surplus partner of China and Japan was the biggest virtual water deficit partner. Additionally, the proportion of the grey water footprint of agricultural products that China exported to TPPA countries was about five times higher than that imported from TPPA countries. It reflected the difference of agricultural science and technology. Moreover, the products structure of China's virtual water trade was not reasonable and was excessively focused on several products. Finally, with respect to environmental and water allocation ethics, TPPA countries were classified into four types in terms of net import and water abundance: mutual benefit countries (Australia, Canada, New Zealand, the United States, Malaysia and Chile); unilateral benefit countries (Peru and Brunei); supported countries (Japan and Singapore); and double pressure countries (Mexico and Vietnam). With respect to the virtual water trade of agricultural products, there is a close relationship between China and TPPA countries. The virtual water trade promotes the sustainability of water resources and the findings are conducive to the adjustment of trade structure to achieve optimal state of ecology, economy and politics.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwvHquAL0sjABD5V1JzF6I579.pdf>

【研究报告】

1. Final Report: Enabling Land-Use in E3SM Land Model

发布源: OSTI.GOV

发布时间: 2018-04-02

摘要: Human activity has significantly altered basic element cycles (e.g. of carbon and nitrogen), the water cycle, and the land surface (e.g. vegetation cover, albedo) at regional, continental, and planetary scales, and these alterations are influencing the regional and global environment, including the Earth's climate system (Hurtt et al 2011). Looking ahead, population and the demand for energy, food, fiber, and water are all expected to increase, placing even greater pressure on the Earth system. New advanced Earth System Models (ESMs) are now able to explore the combined biogeochemical and biogeophysical effects of land-use changes and greenhouse gas emissions on the Earth's climate system, and land-use change is now a required forcing for global coupled model experiments. A key challenge is to couple this modeling in the most complete and consistent manner possible.

链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwyqSiAcEJRAAIWRZklpRg846.pdf>

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