

《中国农业发展战略研究》专题快报

2019年第2期（总第18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1月20日

【动态资讯】

1. 土地经营权入股发展农业产业化经营 激发乡村振兴新动能

【中华人民共和国农业农村部】本网讯 日前，农业农村部、国家发展改革委、财政部、中国人民银行、国家税务总局、国家市场监督管理总局联合印发了《关于开展土地经营权入股发展农业产业化经营试点的指导意见》（以下简称《指导意见》），记者就有关问题采访了农业农村部负责人。在新形势下深化农村改革，主线仍然是处理好农民和土地的关系。土地经营权入股发展农业产业化经营，是深化农村土地制度改革的一项重要举措，也是促进农业适度规模经营、实现小农户和现代农业发展有机衔接的重要途径。党的十八届三中全会明确提出，允许农民以土地承包经营权入股发展农业产业化经营。2015年、2016年中央一号文件进一步要求“引导农民以土地经营权入股合作社和龙头企业”“引导农户自愿以土地经营权等入股龙头企业和农民合作社，采取‘保底收益+按股分红’等方式，让农户分享加工销售环节收益，建立健全风险防范机制”。按照中央部署，农业农村部积极推动落实。近年来，组织黑龙江、江苏、浙江等部分省开展试点，探索了土地经营权入股的组织载体、运行机制和配套政策。在总结试点经验，特别对土地经营权作价入股、注册登记等具体问题深入研究的基础上，起草了《指导意见》，引导各地规范运行、有序开展。

链接:

http://www.moa.gov.cn/xw/zwdt/201901/t20190120_6170381.htm

2. Millions of Americans exposed to elevated nitrate levels in drinking water

【Silent Spring Institute】Newton, Mass. (January 17, 2019) - More than 5.6 million Americans are potentially exposed to nitrate in drinking water at levels that could cause health problems, according to a new study. In this first analysis of its kind, researchers found

that water systems with higher nitrate levels also tend to serve communities with higher proportions of Hispanic residents. The findings add to growing concern about the quality of drinking water in the United States and the disproportionate impact of contamination on vulnerable populations. Nitrate is a drinking water contaminant that can originate from multiple sources including fertilizers, sewage treatment systems, and animal manure. Using information obtained from state agencies and online databases, Schaider and her colleagues at Silent Spring Institute and Environmental Working Group (EWG) compiled nitrate data for 39,466 public water systems serving more than 70 percent of the U.S. population. For each water system, the team noted the number of people served by the system and the source of drinking water, whether from groundwater or surface water.

链接:

<https://silentspring.org/research-update/millions-americans-exposed-elevated-nitrate-levels-drinking-water>

3. 农业农村部副部长余欣荣在湖南湖北指导农村人居环境整治工作时强调深入学习推广浙江“千万工程”经验 扎实推动农村人居环境整治工作上铺开

【中华人民共和国农业农村部】本网讯 1月16-17日，农业农村部副部长余欣荣在湖南湖北指导农村人居环境整治工作时强调，要认真贯彻习近平总书记系列重要批示指示精神，深入学习推广浙江“千万工程”经验，落实好中央农村工作会议和农村人居环境整治会议部署安排，因地制宜推动农村人居环境整治，实现农村污水分类处理和循环利用，扎实有序推动整治工作从典型示范转向面上推开。随后，余欣荣来到湖北省咸宁市洪口村和群力村，深入了解当地探索垃圾“户分减、组保洁、村监管、镇集中、区运转”的模式，通过村容整治推进现代农业与乡村旅游融合发展的情况。余欣荣强调，农村清洁行动重点要求做好的“三清一改”，要抓紧贯彻落实，取得实效。整治工作切忌形式主义，决不能搞刮风、做表面文章，要充分考虑农民群众的实际需求和可接受程度。不能以城市治污的理念和路径来进行农村人居环境整治，要按照就地、就近、就农的原则，把农村人居环境整治与农业绿色可持续发展通盘谋划，实现农村污水垃圾和畜禽粪污等的分类处理和循环利用。

链接:

http://www.moa.gov.cn/xw/zwdt/201901/t20190117_6168788.htm

4. High pesticide exposure among farmers linked to poor sense of smell later

【EurekAlert!】EAST LANSING, Mich. - A Michigan State University study is the first to show

an association between unusually high pesticide exposure and poor sense of smell among aging farmers. The research examined more than 11,200 farmers over a 20-year period. At the start of the study, about 16 percent of participants reported having experienced a high pesticide exposure event, or HPEE, such as a large amount of pesticide spilling on their body. Two decades later, they were asked if they suffered olfactory impairment, a partial to complete loss of sense of smell. Farmers who reported an HPEE were 50 percent more likely to report a poor sense of smell at the end of the study. The research also showed that an immediate washing with soap and water might mitigate risk. Compared to farmers who never experienced a high exposure event, those who did and washed within three hours, had about a 40 percent higher risk of having problems with smell. Those who waited four or more hours, saw their risk potentially double.

链接:

https://www.eurekalert.org/pub_releases/2019-01/msu-hpe011519.php

5. Right green for crop, environment, wallet

【Crop Science Society of America】 Too much of a good thing can be a bad thing. That's certainly true for nitrogen fertilizers. Without enough nitrogen, crops don't grow well. Yields are reduced significantly. The winter wheat field experiment plots. Photo credit Guohui Feng. Applying too much nitrogen fertilizer, on the other hand, can hurt the environment. Nitrogen can enter the watershed, polluting aquatic ecosystems. Microbes can also convert the excess nitrogen into nitrous oxide, a greenhouse gas implicated in climate change. "Managing nitrogen is vital for global food security," says Yuxin Miao, an agronomist at the University of Minnesota. "It is also crucial for reducing pollution and climate change." Miao and his colleagues have been researching ways to efficiently manage nitrogen in agriculture. They compared several approaches. The researchers found that one approach, active canopy sensor-based nitrogen management, is the most efficient.

链接:

<https://www.crops.org/science-news/right-green-crop-environment-wheat>

6. New conservation practice could reduce nitrogen pollution in agricultural drainage water

【EurekAlert!】 URBANA, Ill. - Every summer, a "dead zone" forms in the Gulf of Mexico. Plumes of oxygen-robbing algae, fed by excess nitrogen coming in from the Mississippi River,

kill off marine life and threaten the livelihoods of those who fish the Gulf. States bordering the Mississippi River are putting strategies in place to limit nitrogen from wastewater treatment plants, surface runoff, and agricultural fields. In a new study, University of Illinois scientists have estimated that a new conservation practice known as saturated buffers could reduce nitrogen from agricultural drainage by 5 to 10 percent. "It might not sound like much, given that agricultural drainage only represents a portion of the nitrogen getting into the Mississippi. But 5 to 10 percent is pretty good for an inexpensive, passive system that farmers can put in and forget about," says Reid Christianson, research assistant professor in the Department of Crop Sciences at U of I and co-author of the study, published in Agricultural and Environmental Letters.

链接:

https://www.eurekalert.org/pub_releases/2019-01/uoi-ncp011519.php

7. 遥感技术让农业更“智慧”

【黑龙江日报】“遥感技术可以客观、准确、及时地提供作物的生态环境和作物生长的各种信息，它是精确获得田间数据的重要来源，在我省主要应用于作物的长势监测、灾害监测、精准管理。”刘焕军说，虽然它高深莫测，但它让现代农业变得更加“智慧”。近年来，高空间、时间和光谱分辨率遥感技术的发展，为利用遥感技术监测农业灾害和加快智慧农业发展提供了宝贵契机。“传统的灾害监测方法只能获取‘点’上的灾害发生信息，远远不能满足‘面’上对灾害的大面积及时防控需求，农业生产上迫切需要开展大面积、快速、动态、无损的灾害监测方法。”刘焕军说，通过与阳光农业相互保险公司合作，东北农业大学土地遥感团队实现了对我省近8000万亩耕地农业灾害的逐旬、具体到田块尺度的时空动态精准监测，实现了农业保险理赔的定量化、科学化。智慧农业方面，传统方法只能网格采样，大量测试土壤养分进行精准管理分区，耗时耗力成本高。而利用卫星遥感技术可以获得田块尺度的土壤养分、不同时期作物的长势和产量，构建了快速、低成本的精准管理分区技术体系，使得定时、定位、定量、定配方的精准农业管理模式成为可能。此外，依托遥感等空间技术，可以为绿色农产品动态监测、有机认证提供关键技术，保障了农民从种得好到卖得好的转变。

链接:

<http://epaper.hljnews.cn/hljrb/20180523/355416.html>

8. Long term ag change impacts stream water quality

【Crop Science Society of America】In the early 1990s, Acton Lake in southwestern Ohio

had a muddy problem. Large amounts of sediment from nearby farms were entering the lake's watershed. These sediments traveled through streams draining the landscape and were filling up the lake. So, the USDA gave local farmers incentives to change some of their farming practices. One of these practices was conservation tillage, in which the soil is plowed less often. That can reduce sediment runoff. A new study examines how the switch to conservation tillage has impacted Acton Lake over the past decades. From 1994 to 2014, the researchers measured concentrations of suspended sediment, nitrogen, and phosphorus in streams draining into Acton Lake. Tracking changes in water quality over the long term is vital, says Vanni, a biologist at Miami University, Ohio. "We don't have a lot of long-term information on how water quality in a stream or lake responds to agricultural change," he says.

链接:

<https://www.crops.org/science-news/long-term-ag-change-stream-water-quality>

9. 监测长势预估收成农业生产“靠天”改“靠星”

【农业科技报】“卫星应用目前大体分为定位、通信、遥感三方面。卫星遥感技术在农业中的应用已经很深入，目前可以监测到地块的土壤的有机含量、水分的信息，不同生长期的农作物的长势、灾害情况，通过相关的多层空间数据，可以对农作物进行精准管理分区，农民可以根据分区的结果，针对不同的土壤条件、不同的作物长势情况，进行定时、定点、定位、定量、定配方的精准变量施肥，这样就可以减少投入、提高农民收益、保护农业生态环境。”刘焕军说，目前他们团队已经在省内多个农场试点，初步实现了农作物精准管理分区，取得了一定的成效。“我们可以为政府提供服务，6月份到10月份每旬的一个长势监测，已经实现对农业保险公司关于黑龙江8000万亩作物的灾害监测，通过不同时期的长势监测，结合往年的数据对比，在7月份就可以大体预估出黑龙江省整个农作物产量是多少，并且随着时间推移，我们会不断对产量进行校准，最终为政府管理部门提供一个客观详实的准确数据。遥感监测还可以服务于政府决策方面，比如说政府推行种植结构调整，那么哪块地调整了、某一县市减种玉米多少、农业补贴发放是否全部给种植户了，这些都可以通过卫星遥感监测实现，这样政府对农情长势会有一个整体的把握。”刘焕军告诉笔者，他们是省内唯一一个研究农业遥感技术的团队，省内相关政府部门及多家企业都是从他们这里获取农业第一手完整数据。

链接:

http://eb.nkb.com.cn/nykj/20190102/mhtml/page_03_content_000.htm

10. 中国农业遥感大数据怎么做？

【猪友之家】基因农业网（孙滔，权泽尚）报道，如今，在国内农业的每个环节都可以控制，对于种子、化肥、农药、收获，每个环节都有很好的技术作支撑，唯独天气没办法控制。人们希望从看天吃饭，到知天而作，知道天气变化，然后制订针对性措施，将天气对农业造成的危害降到最低。通过卫星影像、气象数据可以对农业生产进行数据化的决策支持。此类技术在美国应用较广，在中国则面临着从小农到规模化，再到数据化的过程，加上国内农田比较破碎，对农田级别的农业卫星遥感、卫星数据的处理，还有很多挑战。农业大数据的需求几多？我们采访了国内少有的遥感卫星大数据公司——北京佳格天地科技有限公司(以下简称“佳格”)的产品副总裁顾竹。顾竹告诉基因农业网，佳格的合作伙伴主要是企业农场，尤其是千亩规模以上的企业。原因有几点，第一，传统的农户通常依靠经验，而对于农业企业来说，他们对数据的渴求度非常强烈。第二，企业的管理者知道自己需要什么，尤其是在管理一个规模较大的农业公司时，减少成本、提高收益、逐渐走向信息化管理是他们迫切需要的。目前佳格的业务范围涉及新疆、东北、内蒙、华东和华南地区。主要涉及的粮食作物包含玉米、水稻、小麦、马铃薯、果类，其中水稻、马铃薯比较多。客户也比较关心马铃薯的病害、降雨量、温度，以及水稻、玉米的病害、积温。

链接:

http://www.pig66.com/2016/145_0711/17573304.html

【文献速递】

1. 基于CRCI-GRA模型的区域农业水土资源复合系统恢复力评价指标体系优选

作者: 刘东; 齐晓晨; 朱伟峰

文献源: 东北农业大学学报,2019

摘要: 指标体系合理构建是评价区域农业水土资源复合系统恢复能力基础和关键。文章以黑龙江省农垦建三江管理局为例,依据Dale单个指标入选原则及TOSE空间维度模型从自然、生态环境、社会、经济、技术管理5个维度构建农业水土资源复合系统恢复力评价指标体系框架,选择50个评价指标组成区域农业水土资源复合系统恢复力评价指标体系初选库。针对现有指标筛选研究适用性问题,利用指标相对离散系数及累计信息贡献率(CRCI)剔除对评价结果影响较弱的10个指标,运用剩余指标间灰色关联度(GRA)筛选信息重复5个指标完成最后优选。通过与信息可替代筛选指标方法比较,验证方法完备性与可靠性。

链接:

http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFs6AZw9PAArB_QHuNOk438.pdf

2. 基于 LOGISTIC 模型评估黑龙江农业生态系统水土资源利用与变化

作者: 冯钊; 张凯旋

文献源: 广东农业科学,2019

摘要: 水土资源是农业生态系统发展的两大关键资源,影响农业生态系统的可持续发展。

【目的】为探究黑龙江农业生态系统的变化和发展对水土资源利用的影响,【方法】利用 Logistic 模型和 RMSE 分析模型,在当前农业科技管理水平下,对黑龙江农业生态系统中作物用水量、种植面积等指标进行评估预测。【结果】研究表明,该农业生态系统粮食作物种植总积极值约为 $1.43 \times 10^7 \text{ hm}^2$,农业水资源供应极值约为 $3.16 \times 10^8 \text{ m}^3$,水稻单产极值约为 $7\ 030 \text{ kg/hm}^2$,粮食作物单产极值约为 $5\ 275 \text{ kg/hm}^2$,粮食作物总产量极值可达 $7.53 \times 10^7 \text{ t}$ 。同时,利用该模型对水资源灌溉总量、作物种植总面积、作物单产等指标的模拟值与统计值的拟合分析可知,决定系数 R^2 最小为 0.89,最大为 0.98,均方根误差 RMSE 均小于 10%,达到了 0.01 水平下的极显著相关关系。【结论】Logistic 模型能够较好地模拟 20 年间黑龙江农业生态系统水土资源利用与趋势变化。

链接:

http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFsYyAcI_WAAs8uKf2JBc234.pdf

3. Advances in Microclimate Ecology Arising from Remote Sensing

作者: Florian Zellweger; Pieter De Frenne; Jonathan Lenoir, et al.

文献源: Trends in Ecology & Evolution,2019

摘要: Microclimates at the land-air interface affect the physiological functioning of organisms which, in turn, influences the structure, composition, and functioning of ecosystems. We review how remote sensing technologies that deliver detailed data about the structure and thermal composition of environments are improving the assessment of microclimate over space and time. Mapping landscape-level heterogeneity of microclimate advances our ability to study how organisms respond to climate variation, which has important implications for understanding climate-change impacts on biodiversity and ecosystems. Interpolating in situ microclimate measurements and downscaling macroclimate provides an organism-centered perspective for studying climate species interactions and species distribution dynamics. We envisage that mapping of microclimate will soon become commonplace, enabling more reliable predictions of species and ecosystem responses to global change.

链接:

http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFsduANNrjAD750_CX_AA909.pdf

4. Interstate competition in agriculture: Cheer or fear? Evidence from the United States and China

作者: Binlei Gong

文献源: Food Policy,2019

摘要: Understanding how interstate competition affects agricultural production in the United States and China is important, as the international food market depends heavily on these two giants. This article aims to evaluate the overall effects of multi-dimensional interstate competitions on agricultural production, which is achieved using spatial production functions and model averaging methods. Using panel data, this article finds that interstate agricultural competition ought to be encouraged in the United States due to their positive impacts on spillovers and productivity but should be discouraged in China as it leads to negative spillovers and a decrease in productivity. Additionally, intrastate competition increases productivity in the United States but conversely decreases productivity in China. Other major drivers of productivity growth in the two countries are also found to vary, which provides evidence of a centrally planned system in China compared with the market system in the United States. U.S. agriculture enjoys the benefits of competition thanks to agricultural industrialization and a competitive market, while the planned system with government interference found in China has benefits as well as detriments. Food policy implications are also discussed.

链接:

<http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFSGKAPjCbAAiwvCxt72w974.pdf>

5. Optimization of virtual water flow via grain trade within China

作者: Zongzhi Wang; Lingling Zhang; Qing Zhang, et al.

文献源: Ecological Indicators,2019

摘要: The irrational virtual water flow caused by grain trade makes water use efficiency low and further threatens grain security in China. However, optimizing the grain virtual water trade flow from the perspective of the economic value of water resources has rarely been carried out in current research. This paper proposes a linear optimization model considering opportunity cost to fill this gap. The current situation of grain virtual water trade is analyzed and we find an irrational trade mode which quantity and direction of grain virtual water trade in some provinces are not consistent with actual demand. Then, opportunity cost is added to the linear optimization model to adjust grain virtual water trade which shows

several advantages compared to general linear optimization model. Results show that huge virtual flow is generated, up to 1179.24 billion cubic meters of water. And the economic value generated by grain virtual water trade can not only cover the transportation cost but can also eventually generate economic benefits of 7410 billion yuan. Finally, the relevant conclusions and implications of adjusting China's grain virtual water trade are obtained.

链接:

<http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFSTOADSXNACBfJIVzhPY108.pdf>

6. 基于综合气候因素聚类方法的吉林省种植区域简明划分探析

作者: 孙志超; 郭琦; 刘小丹, 等

文献源: 东北农业科学,2019

摘要: 吉林省是我国重要的商品粮生产基地,明确优势生产区域优劣对指导调控高效生产具有重要意义。本文通过对吉林省各地区气候特点进行聚类分析,同时结合各地区不同的自然环境,建议将吉林省划分为 4 个不同的农业生态类型区,并对各地域的农作物布局提出建议。特此推荐科研人员依据本区划进行农作物品种区域试验分组布局,农业管理部门依据本区划 安排农作物生产布局与指导吉林省农业生产。在应用本划分区域时还应考虑到各地土壤类型因素。

链接:

http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFs_2AJ9spABLU71eSmY932.pdf

7. 中国农田植被时空变化特征及其气候影响因子分析

作者: 张慧娴

文献源: 南京信息工程大学,2019

摘要: 植被是地球系统研究中物质与能量循环的关键环节,其监测与动态机制研究是目前研究的重点与热点问题。农田作为重要的陆地植被类型之一,约占全球非冰冻陆地面积的12%左右。随着全球变暖和人类活动的影响呈现了增加趋势。因此,研究农田植被的时空变化特征及其影响因子变得日益重要。农田植被相比自然植被具有独特的物候特征,造成这一特征的主要原因是农田的熟制。本文将中国农田作为研究对象,使用植被指数(GIMMS NDVI3g)、气象数据、中国农业区划数据以及土地利用类型等数据,以农田熟制为研究切入点。基于HANTS方法和农田植被的物候特征,提取出1982年至2013年的农田熟制信息,并进一步分析了我国农田熟制多年时空变化特征。结合农田复种的生长季特征,进而分析了我国农田植被时空特征与多年变化,并从温度和降水的角度分析了潜在气候影响因子。本文主要内容与结果有:(1)基于1km 土地利用数据分析表明,1980-2015年

间,农田增加区域主要位于我国北方,而南方区域呈现了下降趋势。然而这种变化并未引起我国农田在空间分布格局特征的变化,即农田始终主要分布在东北平原、华北平原、四川盆地和西北灌溉区。植被指数NDVI分辨率为1/12度,时间为1982-2013年。因此采用2010年的1km分辨率土地利用类型数据作为参考,对农田在1/12度上进行提取。依据农田比重将1/12度农田分为三类:低农田比重区(LC:0-50%)、中农田比重区(MC:50%-75%)、高农田比重区(HC:75%-100%),其中MC与LC可视为农田区,而LC区域信号更侧重自然植被的影响。利用中国农业区划数据将我国分为9个农业区。在各农业区,对三类农田比重区的NDVI多年平均季节特征进行对比分析。结果表明,农田区(MC和HC)与LC(即自然植被为主导)有着明显物候差异,特别是复种农田为主的区域。而MC与HC的物候差异较小,仅存在于个别农业区。(2)我国农田种植制度从北往南逐渐从单一走向多样化,复种指数逐渐增加。多熟制农业区的种植制度则复杂多样,但仍以二熟制为主。1982-2013年间,我国农田复种指数呈上升趋势(0.156%yr⁻¹),全国仅华南区的复种指数呈下降趋势(-0.248%yr⁻¹)。全国大部分农田的复种指数无显著变化。(3)本文使用二熟制的农作物的物候特征和自然物候划分生长季,包括一般生长季(GS:4月-10月)、夏播作物的夏秋生长季(SCS:6月-10月)、秋播作物的冬春生长季(WCS:11月-5月)。1982-2013年间,MC和HC农田区域的年平均NDVI年际变化呈显著的上升趋势,趋势值分别为 $0.485 \times 10^{-3} \text{yr}^{-1}$ 、 $0.508 \times 10^{-3} \text{yr}^{-1}$ 。年均增长主要是由夏秋生长季的生长贡献的。在国家 and 区域尺度上,不同生长季(SCS vs WCS)农田植被年际变化出现了很强的不对称变化趋势。特别是农田分布最为广泛的东北地区、黄淮海地区和长江中下游地区。东北地区农田NDVI在SCS和WCS期间分别呈现了上升与下降趋势。与之相对的,在黄淮海区和长江中下游区,农田NDVI的增加主要出现在WCS期间,其变率远大于SCS期间。(4)温度与降水1982-2013年间的多年变化趋势表明,温度多年变化在全国大范围呈显著上升趋势。尤其是在多熟制区域,温度在冬春生长季的上升趋势大于其他生长季。降雨在全国尺度无显著变化,在一熟制区域冬春生长季有显著的上升趋势。相关分析表明,气温与多熟制农田NDVI在WCS期间相关性较高。因此,黄淮海区和长江中下游区的农田NDVI不对称变化趋势的主要气候驱动因子是温度,这是因为冬春生长季变暖相对夏秋生长季的变暖更能刺激植被的生长。而降水与东北地区农田在WCS季节呈现较强负相关性。因此,东北地区(一熟制)不对称变化趋势则主要是降水导致的。但具体的影响机制有待进一步的研究。

链接:

<http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFTHCACDKSAAZN3lcSijI701.caj>

8. Global phosphorus flows through agricultural trade

作者: Thomas Nesme; Geneviève S. Metson; Elena M. Bennett

文献源: Global Environmental Change,2019

摘要: The global phosphorus cycle has been transformed in recent decades through increased use of mineral phosphorus fertilizer in agriculture and losses to water bodies, leading to risks of fossil phosphorus resource depletion and freshwater eutrophication. By moving phosphorus resources across world regions, international trade of agricultural products (food, feed, fiber and fuel) may contribute to these changes in the global phosphorus cycle, including critical nutrient imbalances. However, we lack a comprehensive, quantitative understanding of the role of agricultural trade in the global phosphorus cycle. By combining detailed data on international trade and the phosphorus content of agricultural products, we demonstrate that phosphorus flows through trade increased nearly eight-fold from 0.4 Tg P/yr in 1961 to 3.0 Tg P/yr in 2011, leading to an increase in the fraction of phosphorus taken up by crops that is subsequently exported from 9% in 1961 to 20% in 2011. The P flows in traded agricultural products was equivalent to 27% of the P traded in mineral fertilizers in 2011. Agricultural P flows were mostly driven by trade of cereals, soybeans and feed-cakes, with 28% of global phosphorus traded in human food, 44% in animal feed and 28% in crops for other uses in 2011. We found a strong spatial pattern in traded phosphorus in agricultural products, with most flows originating from the Americas and ending in Western Europe and Asia, with large amounts of phosphorus moving through trade within Western Europe, in strong contrast with the pattern of the mineral P fertilizer trade. We demonstrate that international trade of agricultural products has affected the domestic phosphorus cycle within many countries, making phosphorus exporters susceptible to the volatility of the mineral phosphorus fertilizer market. Overall, these results highlight the importance of trade as key component of the global phosphorus cycle.

链接:

http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFRbCACIJNACgTVF4_ck4502.pdf

9. 中国农业地域分异与现代农业区划方案

作者: 刘彦随; 张紫雯; 王介勇

文献源: 地理学报,2019

摘要: 农业是自然再生产与经济再生产过程的统一, 农业地域格局取决于自然、经济、

社会和技术等要素的综合影响,而且伴随着这些要素的长期变化而产生时空演化和区域分异,由此奠定了综合农业区划的科学基础。本文探讨了中国工业化、城镇化、信息化和农业现代化协调发展新战略,剖析了现代农业发展环境的时空转变及其动态特征,建立了农业自然要素与农业地域功能耦合测度指标体系,应用聚类分析和定性评判综合手段提出了新时期中国现代农业区划原则和方法,制定了全国现代农业区划方案。该方案包括15个农业一级区、53个农业二级区,并与1981年农业综合区划方案进行比较分析,深入揭示了快速工业化、城镇化、信息化进程中中国农业生产结构、地域功能、格局动态和发展趋向,为新时期加快各地区现代农业战略性结构调整,促进农业现代化发展奠定了重要基础,为创新发展现代农业与乡村地理学,促进地理学综合研究服务国家战略需求提供了重要参考。

链接:

http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFTM-AGADQAEpQSQT_AIE613.pdf

10. Revisiting China-Africa trade from an environmental perspective

作者: Shupe Huang; Haizhong An; Silvio Viglia, et al.

文献源: Journal of Cleaner Production,2019

摘要: International trade patterns can be seen as ways to redistribute natural resources and manufactured products, by means of convergence and divergence pathways, in support of production and consumption processes worldwide. By making needed resources to potential users (individuals and economies) trade acts as a driver of resource extraction, processing, degradation, especially if this is facilitated by market dynamics in which prices are determined by contingent factors that have no links to the environmental dynamics of resource generation and do not match the real quality of natural capital and ecosystems services involved. A fair trade relationship should take these aspects into proper account, in so promoting additional criteria for resource value and, as a consequence, towards efficient resource use and cleaner production processes. A comprehensive cost and benefit evaluation to consider the economic and ecological impacts is therefore a much needed prerequisite for a balanced trade relationship. To conduct this evaluation, we firstly choose the trade data of China with South Africa, Sudan, Algeria, Nigeria, Egypt and Morocco in the years 2001, 2004, 2008 and 2012 as sample set. Then we apply the emergy accounting approach to the international trade dynamic between China and above selected African countries to quantify the exchange of natural capital and ecosystem services among partners (including resources that support know-how and technology exchange), as well as

to identify benefits and compensation measures that may increase trade balance and equity via the prevention of uncompensated resource exploitation. By accounting for the environmental support embodied in traded resources and their capability to support an economic process, the emergy approach applied in this study provides a complementary tool to economic evaluation, which enables a more comprehensive understanding of trade, beyond the monetary terms of trade. In terms of the total emergy exchange, the investigated African countries (with the exception of South Africa and Sudan) receive more emergy from China over the investigated period, which appears to suggest a reversal of the typical trend in which industrialized economies exploit African countries and return small or no benefit to their economies. However, the composition of the emergy trade indicates that China's import from Africa is mainly composed of primary products, whereas manufactured products dominate its export. This composition is likely to promote the Chinese economy (supporting resource processing and jobs), as well as increase the lifestyle of the wealthy fractions of the African population as a result of increased access to consumer goods; however, in turn, it may contribute to heavier pollution in China and certainly does not favor the development of local industry in Africa. Thus, more balanced import and export relations and trade structure that simultaneously involves human and natural capital will be helpful to construct a cooperative relationship.

链接:

<http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFR2WAGcbuABrwqLfU3G8979.pdf>

【研究报告】

1. Step-by-step methodology for monitoring water use efficiency (6.4.1)

发布源: UN-Water

发布时间: 2018-10-18

摘要: The Integrated Monitoring Guide provides a basis for national governments to monitor progress towards the new Sustainable Development Goal on water and sanitation (SDG 6). The Guide includes step-by-step methodologies outlining how countries can monitor each of the SDG 6 global indicators. The methodologies have been designed to allow countries to monitoring SDG 6 at a level in line with their capacity and resource availability, and they promote harmonization and the use of international standards. The step-by-step methodology for 6.4.1 explains how to monitor the change in water use efficiency over time, including definitions, computational steps, and recommendations on spatial and temporal resolutions. FAO is the custodian agency of indicator 6.4.1, and they

have developed this methodology in a consultative process that included countries, international agencies and other experts.

链接:

<http://agri.ckcest.cn/file1/M00/06/5C/Csgk0FxFT6OAeHhOABPCoI8t3Mk078.pdf>

主编：赵瑞雪

本期编辑：郑建华

地址：北京市海淀区中关村南大街12号

邮编：100081

电话：010-82105217

邮件地址：agri@ckcest.cn