中国工程科技知识中心
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《中国农业发展战略研究》专题快报

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【动态资讯】

1． Microbial proteins could supplement animal feed, reduce land use and pollution

【EurekAlert!】As the world's population swells, humans will have to figure out how to keep feeding livestock without using even larger tracts of land to grow food for them or causing more harm to the environment. Scientists report in a study appearing in Environmental Science & Technology that the key could be bacteria that can efficiently produce large amounts of microbial proteins. These proteins could replace some of the crops grown today to feed animals.Livestock is the world's largest user of land resources, with pasture and land dedicated to the production of feed representing almost 80 percent of the planet's total agricultural land, according to the Food and Agricultural Organization of the United Nations. Producing these crops is one of the most important contributors to global pollution and can lead to large-scale deforestation and biodiversity loss. By 2050, estimates suggest that the world's population will top 9 billion people, increasing the demand for livestock to feed humans. In turn, feeding these animals will require more land and could lead to additional environmental harm. One possible alternative is microbial proteins, which were first produced on an industrial scale using methane in the 1970s. Now with growing demand and advances in technology, Benjamin L. Bodirsky, Ilje Pikaar and colleagues wanted to analyze the long-term effects that incorporating microbial proteins could have on land use, climate-warming greenhouse gas emissions and reactive nitrogen pollution.

链接:

https://www.eurekalert.org/pub_releases/2018-06/acs-mpc061518.php

2. Intensive agriculture influences US regional summer climate, study finds

【Massachusetts Institute of Technology】CAMBRIDGE, Mass. - Scientists agree that changes in land use such as deforestation, and not just greenhouse gas emissions, can play a significant role altering the world's climate systems. Now, a new study by researchers at MIT and Dartmouth College reveals how another type of land use, intensive agriculture, can impact regional climate. The researchers show that in the last half of the 20th century, the midwestern U.S. went through an intensification of agricultural practices that led to dramatic increases in production of corn and soybeans. And, over the same period in that region, summers were significantly cooler and had greater rainfall than during the previous half-century. This effect, with regional cooling in a time of overall global warming, may have masked part of the warming effect that would have occurred over that period, and the new finding could help to refine global climate models by incorporating such regional effects. The findings are being published this week in Geophysical Research Letters, in a paper by Ross Alter, a recent MIT postdoc; Elfatih Eltahir, the Breene M. Kerr Professor of Hydrology and Climate; and two others.

链接:

http://news.mit.edu/2018/intensive-agriculture-influences-us-regional-summer-climate-0213

3. Citizen scientists in Europe can help monitor land-use change with new FotoQuest Go app

【International Institute for Applied Systems Analysis】An expanded FotoQuest Go app, developed by IIASA researchers, launches today, and as well as now covering the whole of the EU rather than just Austria, it will have some other exciting new features. FotoQuest Go is a citizen science tool which allows members of the public to collect pictures and information on land use and land cover. Around 2.5 million m^2 of land in Europe changes use every day, into roads, or housing or offices, for example. This can have negative effects on the local environment, leading to soil degradation, unproductive agricultural land, water scarcity, or flooding, and FotoQuest Go was designed as a tool to help monitor these changes. "FotoQuest Go can track the effects of land use changes in Europe's rich and diverse landscape. This is only possible when scientists and citizens work together," says IIASA researcher Dilek Fraisl.

链接:

http://www.iiasa.ac.at/web/home/about/news/180608-fotoquestgo.html

4．PODCAST: Water Stress Is a Threat We Can't Ignore

【World Resources Institute】We measure water stress with satellites, model it with algorithms, see it in empty riverbeds and experience it with dry taps. But how do we define water stress? Where does it come from? How will climate change disrupt the supply and demand for water? What is the relationship of water to food and energy? These questions and more are explored by Charles Iceland, director of Global and National Water Initiatives, in a new podcast. With Aqueduct, he monitors water stress around the world, identifying shrinking reservoirs to watch and dangerous areas for river floods. Iceland is particularly interested in the intersection of water stress and human security. He recently authored a Commentary, "Water Stress Helps Drive Conflict and Migration," that tackles the intersection of water stress and conflict, and argues that despite development we remain vulnerable to the age-old problem of drought.

链接:

http://www.wri.org/blog/2018/06/podcast-water-stress-threat-we-cant-ignore

5．Reducing plastic waste in the environment: apply for funding

【GOV.UK】Businesses can apply for a share of £4 million to support innovative ideas that reduce persistent plastic waste in the environment through new alternatives. There is up to £4 million for innovative business projects that look at ways of reducing plastic waste through new polymers, processes, designs, recycling regimes and use of biodegradable alternatives. The funding is provided by UK Research and Innovation and delivered by Innovate UK. This competition forms part of the £20 million package of the Plastics and Research Innovation Fund. Tackling the plastic problem. There is growing concern about the amount of plastic waste in the environment and its impact on wildlife and the wider eco-system. The amount of plastic waste produced is growing fast. It was reported that in 2016, 1.5 million tons of plastic was produced globally. This is set to double by 2034. As recent as 2014, it was found that less than a third of Europe’s plastic waste was recycled, with another third ending up in landfill. The remaining third was sent to energy recovery facilities. Projects should improve recycling. The competition is seeking ‘circular economy’ approaches to plastic use that could include: developing new polymer materials, new product designs, new recycling processes, increasing the value of recycled polymer, innovations that encourage people to change behaviour and reduce plastic waste. Projects could also look at new business models or at approaches focused on compostable or

biodegradable materials.

链接:

https://www.gov.uk/government/news/reducing-plastic-waste-in-the-environment-apply-for-funding

6．桂林灵川：坚定不移推进农业可持续发展

【中国农业网】为推进“美丽广西”建设，助力桂林市创建可持续农业发展示范区建设，灵川县按照“产业兴旺、生态宜居、乡风文明、治理有效、生活富裕”的总要求，围绕“提质增效、转型升级、创新驱动、产业延伸、三产融合、生态循环”的农业发展思路，多举措推进农业可持续发展。一是推广生态循环农业技术。二是推进现代生态特色农业示范区建设。三是全面推进农业生产的产前、产中、产后环节绿色化的现代农业发展之路。四是加快"三品一标"农产品的发展。五是发展休闲农业与乡村旅游业。六是培育发展新型农业经营主体。七是建立“以种定养、以养促种”的农业生产模式。该县还积极推进其它涉农惠农项目建设，通过加强农产品质量体系建设、土地确权工作、“一干七支”沿岸生态农业建设、粮食生产功能区划定、耕地地力保护补贴、耕地土壤改良与培肥等工作，全面推进全县农业可持续发展。

链接:

http://www.agronet.com.cn/News/1223903.html

7．黄岩区多举措推进控制农业面源污染工作

【中华人民共和国财政部】一是以发展现代生态循环农业和开展农业废弃物资源化利用为目标，以农业“两区”建设为平台，稳步实施生态循环农业“2115”示范工程，切实提高农田的相关环保要求，减少农业种植面源污染。二是加快测土配方施肥技术的推广应用，引导农民科学施肥，在扶持政策上鼓励施用有机肥，减少农田化肥氮磷流失。三是推广商品有机肥，做好商品有机肥相关的宣传和指导工作，以示范、财政补贴等形式激发农户使用商品有机肥的积极性，完善商品有机肥销售网点，确保逐年降低化肥使用量。四是实施农药减量控害增效工程，推进绿色防控，集成优化病虫害绿色防控配套技术，形成一批防治效果好、操作简便、成本适当的绿色防控技术模式，促进绿色防控与统防统治融合发展。五是调整优化农药品种结构，加快淘汰环境兼容性差、防效严重下降的农药品种，加快先进植保机械和高效环保农药的推广应用，实现化学农药使用量零增长。六是健全化肥、农药销售登记备案制度，建立农药废弃包装物和废弃农膜回收处理体系，按照市场运作、政府扶持、属地管理的原则，建立以“市场主体回收、专业机构处置、公共财政扶持”为主要模式的农药废弃包装物回收和集中处置体系，全面实施农药废弃

包装物统一回收和集中无害化处置。

链接:

http://www.mof.gov.cn/xinwenlianbo/zhejiangcaizhengxinxilianbo/201806/t20180605_2917292.htm

8．2018年全球海水淡化产业竞争格局分析 沙特产能居世界首位

【中国水网】从国际看，大规模海水淡化应用已有成功实践。目前，沙特、以色列等国家70%的淡水资源来自海水淡化，美国、日本、西班牙等国家为保护本国淡水资源也竞相发展海水淡化产业。据不完全统计，截至2017年底，全球已有160多个国家和地区在利用海水淡化技术，已建成和在建的海水淡化工厂有接近2万个，合计淡化产能约为10432万吨/日。增长的主要力量来源于中国，摩洛哥，新加坡和海湾地区国家的公共事业部门和工业部门，后者凭借稳定的石油天然气价格整合了上下游海淡项目。根据GWIDesalData预测，2018年全球海水淡化产能将达到12300万吨/日。在迅速增长的海水产能之中，市政供水是海水淡化的主要应用领域。在已建装机容量中，市政供水占比最高，为63.1%，已解决了2亿多人的生活用水问题;工业及电力次之，占比为31.4%;其余用途约占5.5%。目前，世界海水淡化技术成熟的主要是美国、中东、日本等地区，他们不仅海水淡化历史悠久，技术成熟，而且海水淡化规模也在世界前列。沙特高度重视海水淡化，是世界最大海水淡化国，占世界海水淡化量的20%，其国有的沙特海水淡化公司(SWCC)规模全球最大，旗下拥有近40座海水淡化厂，通过5000公里长的管道向城市输水，全国70%的饮用水来自海水淡化。

链接:

http://www.h2o-china.com/news/276422.html

9．干旱半干旱地区更要合理利用水资源

【北青网】今年以来，北方一些城市的沙尘天气似乎比前几年多一些，这与内蒙古自治区近两年的气候变化有着密切关系。去年内蒙古遭遇严重干旱，重旱以上区域占全区总面积的50%以上。在牧区，干旱和高温导致牧草生长困难，产草量下降，缺少植被覆盖的地带最容易产生沙尘。今年内蒙古又连续出现高温和干旱，全区春季平均气温为9.3℃，比历史同期平均值偏高2.7℃，为1961年以来同期最高。同时降水普遍减少，在干旱严重的地区，降水比正常年份减少80%-90%，几乎没有有效降雨。连续的高温和干旱导致沙尘天气增加，今年春季，内蒙古出现了11次沙尘天气。牧区干旱不仅带来了沙尘天气，更对畜牧业生产形成了严重的威胁。去年牧草长势不好，今年又遇干旱，许多牧民家庭不得不大量购买饲草维持牲畜的存活，买草养畜导致生产成本大幅提高；地方

政府采取了一些救济措施，但是面对大范围的干旱，草原畜牧业仍然遭遇严重的困难。内蒙古自治区的西部大部分处于干旱地区，中南部大部分处于半干旱地区，降雨多的地方年均降雨量400多毫米，少的地方只有100多毫米，所以干旱天气经常发生。从气象学的角度看，干旱半干旱地区的气候充满不确定性，有些年风调雨顺，有些年又会干旱少雨，有些年可能会冰雪成灾，草原畜牧业正是适合这种气候而产生的。从全球来看，许多草原畜牧业都是在自然条件比较恶劣的地方发展出来的，或者是干旱少雨的地方，或者是高原地区，这些地区因为缺水和寒冷，而且土层很薄，无法从事种植业，只能利用天然草原放牧牲畜。干旱和半干旱地区的水资源是一个短板，决定着当地的发展模式和发展速度的选择。从这个意义上说，抗旱不仅仅是应对眼前出现的灾害，更重要的是加强水资源管理，更合理地利用紧缺的水资源。

链接:

http://news.ynet.com/2018/06/10/1243590t70.html

10．世界银行协助中国三省改善水资源管理

【经济网】中国经济周刊—经济网讯 （记者 王红茹） 世界银行6月7日发自北京的消息称：世界银行执行董事会6月6日批准向中国提供三笔贷款，用于协助浙江、江西、辽宁三省提高供水及污水处理普及率、服务质量及效率，实行污染和小流域综合治理。这三笔贷款项目分别是：浙江千岛湖及新安江流域水资源与生态环境保护项目、江西省城乡供水一体化及农村污水处理项目和辽宁城镇供水安全可持续发展示范项目。“水资源匮乏是中国实现可持续发展所面临的最紧迫的挑战之一。水污染带来严重的经济、生态和健康成本，在基本水服务的普及率方面仍然存在城乡差距，气候变化的影响也造成可用水量的不确定性。”世界银行中国局可持续发展业务主任戴柏乐说，“这些项目将协助中国三个省采用创新和国际良好实践来改善水资源管理和服务，加强应对气候变化的韧性，确保水安全以实现相关联合国可持续发展目标。”新安江和千岛湖是位于中国东部的浙江省的重要水源，为周边城市提供饮用水，并用于水利发电和农田灌溉。千岛湖是修建新安江水电站形成的人工淡水湖。经济快速增长、城市化、集约化农业生产以及旅游业使新安江和千岛湖面临的环境压力越来越大，主要问题是流域排放出的大量农业污染物和城镇污水。多年来，世界银行与中国在水资源领域建立了紧密的伙伴关系，合作解决政策和制度问题，尝试新方式，并与其他国家分享中国的经验和案例。

链接:

http://www.ceweekly.cn/2018/0607/226925.shtml

【研究报告】

1．State of the environment：water resources and water quality

发布源：GOV.UK

发布时间：2018-02-19

摘要：Environment Agency data and information summarising the state of water resources and water quality in England. These reports cover the key environmental issues relating to: water resources—how much clean water we have available; water quality—including rivers, estuaries, coasts and groundwater. The reports include the: status and trends, current and future pressures.

链接:

http://agri.ckcest.cn/ass/ace06de1-eea9-41bf-b485-0b1bb4a4e754.pdf

【文献速递】

1．Food-energy-water nexus: A life cycle analysis on virtual water and embodied energy in food consumption in the Tamar catchment, UK

作者：Gloria Salmoral; Xiaoyu Yan

文献源：Resources, Conservation & Recycling,2018

摘要：Evaluations of food, energy and water (FEW) linkages are rapidly emerging in contemporary nexus studies. This paper demonstrates, from a food consumption perspective, the potential of life cycle thinking in understanding the complex and often “hidden” linkages between FEW systems. Our study evaluates the upstream virtual water and embodied energy in food consumption in the Tamar catchment, South West England, distinguishing between domestic production and imports origin. The study also evaluates key inputs, including virtual nutrients and animal feed, when tracking supply chain of food products. Based on current dietary patterns and food products selection, the catchment consumes annually 834 TJ, 17 hm^3 and 244 hm^3 of energy, blue water and green water, respectively. Tamar is not self-sufficient in terms of food and requires imports of food products, as well as imports of virtual nutrients and animal feed for local production. Consequently, 51% of the embodied energy and 88% blue and 45% green virtual water in food consumed within the catchment are imported. Most of the embodied energy (58%) and green virtual water (90%) are because of animal feed production, where nearly half of embodied energy (48%) and green virtual water (42%) come from imports. 92% of blue virtual water is used for irrigation and primarily happens elsewhere due to imports. Irrigation is the process that demands the largest amount of energy for the crop-based

products, with 38% of their total energy demand, followed by fertilisers production (24%). Our study illustrates water and energy hotspots in the food life cycle and highlights potential FEW risks and trade-offs through trade. This is useful considering potential unexpected changes in trade under recent global socio-political trends. Currently available databases and software make LCA a key tool for integrated FEW nexus assessments.

链接:

http://agri.ckcest.cn/ass/46804f37-1edf-4902-b13d-e9f2261d8b98.pdf

2．To trade or not to trade: Link prediction in the virtual water network

作者：Marta Tuninetti; Stefania Tamea; Francesco Laio; Luca Ridolf

文献源：Advances in Water Resources,2018

摘要：In the international trade network, links express the (temporary) presence of a commercial exchange of goods between any two countries. Given the dynamical behavior of the trade network, where links are created and dismissed every year, predicting the link activation/deactivation is an open research question. Through the international trade network of agricultural goods, water resources are 'virtually' transferred from the country of production to the country of consumption. We propose a novel methodology for link prediction applied to the network of virtual water trade. Starting from the assumption of having links between any two countries, we estimate the associated virtual water flows by means of a gravity-law model using country and link characteristics as drivers. We consider the links with estimated flows higher than 1000 m^3/year as active links, while the others as non-active links. Flows traded along estimated active links are then re-estimated using a similar but differently-calibrated gravity-law model. We were able to correctly model 84% of the existing links and 93% of the non-existing links in year 2011. It is worth to note that the predicted active links carry 99% of the global virtual water flow; hence, missed links are mainly those where a minimum volume of virtual water is exchanged. Results indicate that, over the period from 1986 to 2011, population, geographical distances between countries, and agricultural efficiency (through fertilizers use) are the major factors driving the link activation and deactivation. As opposed to other (network-based) models for link prediction, the proposed method is able to reconstruct the network architecture without any prior knowledge of the network topology, using only nodes and links attributes; it thus represents a general method that can be applied to other networks such as food or value trade networks.

链接:

http://agri.ckcest.cn/ass/dc3ee2c1-0d5f-4581-bb63-0c98f6a10dca.pdf

3．Worse than imagined: Unidentified virtual water flows in China

作者：Beiming Cai; Chencheng Wang; Bing Zhang

文献源：Journal of Environmental Management,2018

摘要：The impact of virtual water flows on regional water scarcity in China had been deeply discussed in previous research. However, these studies only focused on water quantity, the impact of virtual water flows on water quality has been largely neglected. In this study, we incorporate the blue water footprint related with water quantity and grey water footprint related with water quality into virtual water flow analysis based on the multiregional input-output model of 2007. The results find that the interprovincial virtual flows accounts for 23.4% of China's water footprint. The virtual grey water flows are 8.65 times greater than the virtual blue water flows; the virtual blue water and grey water flows are 91.8 and 794.6 Gm^3/y, respectively. The use of the indicators related with water quantity to represent virtual water flows in previous studies will underestimate their impact on water resources. In addition, the virtual water flows are mainly derived from agriculture, chemical industry and petroleum processing and the coking industry, which account for 66.8%, 7.1% and 6.2% of the total virtual water flows, respectively. Virtual water flows have intensified both quantity- and quality-induced water scarcity of export regions, where low-value added but water-intensive and high-pollution goods are produced. Our study on virtual water flows can inform effective water use policy for both water resources and water pollution in China. Our methodology about virtual water flows also can be used in global scale or other countries if data available.

链接:

http://agri.ckcest.cn/ass/e7b1bfec-42ea-472c-8ca7-08cab548783d.pdf

4．Development of an agent-based model for estimation of agricultural land preservation in rural Japan

作者：Ryohei Yamashita; Satoshi Hoshino

文献源：Agricultural Systems,2018

摘要：In rural Japan, the lack of successors for aging farmers has become a serious problem, given that these areas experience a population outflow as well. In response, national authorities have promoted reconsideration and strengthening of regional agricultural management systems. In order to achieve consensus for such a transition, it is important to streamline this agricultural management. In this study, we constructed an analytical

simulation model based on multi-agent simulations to support such changes. With this model, we investigated the effectiveness of deliberate organization of agricultural management. First, we collected data on farmer behavioral patterns and intentions. In addition, we gathered data at individual farm level with a field survey, and predicted an initial trend (Trend_Simulation). In order to compare simulations with the Trend_Simulation, we assumed that the future labor force in the model settlement was centralized and performed the work as an agricultural organization (Systematic_Simulation). The results from Trend_Simulation predicted that farmland degradation would occur from 2010 onwards, after which the amount of abandoned cultivated and fallow land would increase rapidly. In contrast, for the Systematic_Simulation, as a result of increased management efficiency through labor force accumulation and joint use of agricultural machines, abandonment of cultivated land would not occur for at least 20 more years. Finally, expansion of management scale per individual farm through land leasing between farms was predicted to decrease gradually in the Trend_Simulation, but to increase in the Systematic_Simulation.

链接:

http://agri.ckcest.cn/ass/e903cab8-ecf9-4bea-ba36-42a95f81a2e9.pdf

5．Agricultural trade and virtual land use: The case of China's crop trade

作者：Wenli Qiang;　Aimin Liu; Shengkui Cheng; Thomas Kastner; Gaodi Xie

文献源：Land Use Policy,2018

摘要：Trade liberalization has greatly accelerated the volume of traded agricultural products in past decades. As land resources become more limited in some countries, international trade plays an important role in compensating for land scarcity in these countries. This paper aims to measure and locate the virtual land use hidden in China's imports and exports, for both primary crops and processed products, from 1986 to 2009. The results show that as China's crop imports had grown greatly during the last decade, the net virtual land trade hidden in international trade had increased from −4.42 Mha in 1986 to 28.90 Mha in 2009. The main category of virtual land imports had changed from cereals to oil crops, which accounted for 82.2% of the total virtual land imports in 2009. Over the two decades the main source of virtual land imports had changed from North America to both South America and North America. International trade could also lower demand for land resources at the global level: our results showed that China's crop trade was contributing to global land

savings by 3.27 Mha on annual average during 1986—2009. Economic development, and associated dietary changes and policy shifts were linked to the change of China's virtual land trade pattern. To make land use more sustainable at the global level, both importing and exporting countries of virtual land should consider ecological and socio-economic impacts of these trade flows in their policies.

链接:

http://agri.ckcest.cn/ass/088ada54-8e0b-4ee0-b6d7-bd435783ea0b.pdf

6．滇池流域农业虚拟水核算研究

作者：刘嫦娥；肖俞；孟祥怀；秦媛儒；董红娟

文献源：环境科学导刊,2018

摘要：计算比较了滇池流域包括农作物、养殖业、苗圃、科技示范园、休闲农家乐及蔬菜加工等在内的14种农业类型的单位净产值虚拟水。研究发现,单位产值所需虚拟水最多的是休闲农家乐,最少的是蔬菜加工业,其它农业类型单位产值虚拟水消耗量之间差异度较小。运用虚拟水理论核算出不同农业类型的单位产值虚拟水需求量,可以将有限的水资源投入到低耗水的农业产品,进口高水耗农业产品,优化区域农业产业布局,降低水资源的消耗,从而缓解区域水资源压力,实现水资源的优化配置。

链接:

http://agri.ckcest.cn/ass/3570b270-72a0-4d6a-a643-d89a83ed7d32.pdf

7．基于多中心治理与分类补偿的政府与市场机制协调——健全农业生态环境补偿制度的新思路

作者：王彬彬；李晓燕

文献源：农村经济,2018

摘要：新形势下健全农业生态环境补偿制度,除了秉承一般意义上农业生态环境补偿制度的基本内容、实施层次以外,还需要顺应新形势下农业生态环境补偿制度的发展要求,从农业生态环境的生产功能和生态功能入手,破解现有制度实施中遇到的难题。在中国特色农业现代化道路下,农业生态环境保护必须与农业发展、农民增收有机统筹起来,这就要求进一步健全农业生态环境补偿制度,构建多方主体参与,政府市场互补,市场供求、农民增收与生态保护相协调的农业生态环境补偿机制与政策体系。

链接:

http://agri.ckcest.cn/ass/bfca4a76-3b0f-4bf1-9427-6f8e726b6b50.pdf

8．欧盟共同农业政策框架下德国耕地资源可持续利用的做法与启示

作者：尹昌斌；陈章全；易小燕；尤飞；袁梦；陈世雄

文献源：农业现代化研究,2018

摘要：探讨欧盟共同农业政策是如何促进各成员国实现政策目标,德国是如何实施该政策并促进耕地资源可持续利用,遵循怎样的政策机制,对我国耕地资源可持续利用与政策制定有重要借鉴意义。运用实地调查法和归纳总结法,对德国落实欧盟耕地资源可持续利用政策的做法进行梳理,并运用典型案例分析法对德国精准农业进行分析,探讨对我国耕地资源可持续利用的政策启示。结果表明: 1)德国严格贯彻落实欧盟共同农业政策,在耕地资源可持续利用方面主要做法包括土地经营适度规模化、耕作方式绿色化、耕地利用精准化和农业废弃物生态循环与资源化；2)这些做法主要得益于欧盟及德国具有完善的政策机制,一是耕地保护制度化与法制化强制性的结果,二是农业绿色补贴政策诱致性的结果,三是以科技与大数据为支撑制定耕地利用措施的结果,四是以产学研紧密结合构建农业经营者准入制度的结果；3)欧盟及德国的促进耕地资源可持续利用政策值得学习与借鉴,亟须从加快立法进程、改进农业补贴方式、建立农业科技与信息系统及加强产学研等方面着手,全面加强耕地资源保护,实现耕地资源可持续利用。

链接:

http://agri.ckcest.cn/ass/8f911713-11e5-4138-9da3-ecffb0c7121f.pdf

9．“一带一路”倡议下农业生态效率对比研究——以中国和东盟10国为例

作者：王丽莉；杨婷婷；许荔珊

文献源：世界农业,2018

摘要：农业生态效率作为衡量农业经济与资源环境协调程度的重要指标,已成为学术界研究的热点领域。本文基于非期望产出的SBM模型对中国以及“一带一路”沿线的东盟10国农业生态效率进行了测算,并对各国农业生态效率进行了敏感性分析。研究结果表明:(1)2006—2015年,农业生态效率整体呈上升趋势,但除了中国等国家发展水平相对乐观外,其他国家农业生态效率水平较低。(2)中国农业生态效率对农业节水灌溉、化肥及农药施用量仍较为敏感,其余国家主要受农业从业人数、役畜数量和农业用水量等因素的影响,在不同地区的敏感程度存在一定差异。因此,因地制宜地转变农业发展方式,采取相应的政策措施规范人们的生产行为,普及推广农业生态效率技术研究,提升农业生态效率,追求经济—资源—环境复合系统的协调发展才是未来各国农业良性发展之路。

链接:

http://agri.ckcest.cn/ass/22b6ba9f-c1fb-4d45-aa05-ed892cec080e.pdf

10．基于模糊综合评价的四川省水土资源承载力时空演变分析

作者：唐宏；马历；肖月洁；杨中华

文献源：灌溉排水学报,2018

摘要：【目的】正确认识和评价水土资源承载力,为四川省水土资源高效利用、生态文明建设提供科学依据。【方法】基于四川省经济社会、资源环境等相关数据,构建模糊综合评价模型,分析了四川省水土资源承载力的动态变化及区域差异。【结果】2005—2014年,四川省水土资源承载力整体呈波动缓慢上升趋势,其中压力子系统与响应子系统均缓慢上升,与水土资源承载力变化趋势基本一致;状态子系统评价指数呈明显波动上升趋势。从空间分布特征看,高等承载力区主要集中在东、中部地区,呈现出东高西低的特点。相对而言,2005—2014年四川省各市州水土资源承载力呈不同程度的波动变化。川中平原区、川东北丘区的大部分市州水土资源承载力有减小趋势,而川南丘区、川西高原区和攀西山地区整体呈上升态势。【结论】2005年以来,四川省的水土资源承载力小幅提升,但仍有较大的改善需求和空间。为全面提升水土资源承载力,提出了通过供给侧改革转变经济发展方式、严格控制用水定额和执行土地使用管制制度、重视水土资源的生态环境功能等对策。

链接:

http://agri.ckcest.cn/ass/ef04fa8d-a9f2-430c-bec6-c5d5b2939245.pdf

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