

## 《中国农业发展战略研究》专题快报

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### 【动态资讯】

#### 1. How much soil goes down the drain -- New data on soil lost due to water

**【EurekaAlert!】** According to a new study by the University of Basel, the European Commission - Joint Research Centre and the Centre for Ecology & Hydrology (CEH, UK), almost 36 billion tons of soil is lost every year due to water, and deforestation and other changes in land use make the problem worse. The study also offers ideas on how agriculture can change to become a part of the solution from being part of the problem. Healthy soil - healthy planet and people. Soil is an essential resource for satisfying human needs, such as food and feed production, fibre, clean air and water. Soil is not an infinite resource though. Human activity and changes in land use lead to increased soil loss, which in turn degrades nature's recycling system and diminishes land productivity, thus decreasing human wellbeing worldwide.

链接:

[https://srch.eurekaalert.org/e3/cs.html?url=http%3A//results.eurekaalert.org/pub\\_release/2017-12/ecjr-hms121517.php&charset=gb2312&qt=water+and+land&col=ev3new+ev3oneyr+ev3rel+ev3rel1&n=4&la=zh\\_cn](https://srch.eurekaalert.org/e3/cs.html?url=http%3A//results.eurekaalert.org/pub_release/2017-12/ecjr-hms121517.php&charset=gb2312&qt=water+and+land&col=ev3new+ev3oneyr+ev3rel+ev3rel1&n=4&la=zh_cn)

#### 2. AGU: Small clique of nations found to dominate global trading web of food, water

**【EurekaAlert!】** WASHINGTON - It's not easy, or economically feasible, to ship freshwater across the globe. But when scientists use food as a proxy for that water - taking into account how much crops are irrigated and livestock are fed - they can get a glimpse of the flow of freshwater between countries. When one research group studied this "virtual water network," they found that the interconnectedness between countries has almost doubled

over the last two decades - potentially lending some resiliency to the water trade. Still, a handful of nations control a majority of the freshwater flow, and some regions, including much of Africa, are left out of the trading loop. "In general, we have more trade going on, and more and more countries are now connected," said Joel Carr, an ecohydrologist with the University of Virginia in Charlottesville and one of the authors of the new study. "But these increases in trade and connections are not equally spread among countries." Food production is one of the primary uses of fresh water, and as countries grow in population, they need more food, and therefore more water, to support their residents. If they don't have the water to grow crops or raise livestock but have money to spend, countries can import food - essentially importing water. The virtual water network is a way to look at the global balance of this freshwater trade, Carr said.

链接:

[https://www.eurekalert.org/pub\\_releases/2012-03/agu-asc032212.php](https://www.eurekalert.org/pub_releases/2012-03/agu-asc032212.php)

### **3. Environmental changes in the Mekong Delta spell trouble for farmers**

**【EurekAlert!】** URBANA, Ill. - The Mekong Delta is home to 15 million people, many of whom rely on the delta's rich soil and water resources for farming and fishing. But their livelihoods are being threatened by rising sea levels, droughts, dams, and other hydrological shifts. A new article from researchers at the University of Illinois and Iowa State University explains the challenges. "The management dilemma for the Mekong Delta is to ensure a habitable environment for human well-being and for rice and aquaculture productivity, while strategically conserving wetland ecologies," says Kenneth Olson, professor emeritus in the Department of Natural Resources and Environmental Sciences at U of I and co-author of the article. The delta, which sits at the southern tip of Vietnam and Cambodia, is characterized by seasonal flooding and nutrient-rich sediment deposits from the Mekong and Bassac Rivers as they flow toward the South China Sea. Historically, mosquitoes, malaria, waterborne diseases, and unpredictable flow patterns made the delta a difficult place to live.

链接:

[https://www.eurekalert.org/pub\\_releases/2018-07/uoic-eci072318.php](https://www.eurekalert.org/pub_releases/2018-07/uoic-eci072318.php)

### **4. ASU scientists use satellites to measure vital underground water resources**

**【EurekAlert!】** The availability of water from underground aquifers is vital to the basic

needs of more than 1.5 billion people worldwide, including those of us who live in the western United States. In recent decades, however, the over-pumping of groundwater, combined with drought, has caused some aquifers to permanently lose essential storage capacity. With the hope of providing water resource managers with better tools to help keep aquifers healthy, a team of scientists from ASU and the Jet Propulsion Laboratory (JPL) are using the latest space technology to look underneath Earth's surface to measure this precious natural resource. They've focused their efforts on one of the world's largest aquifer systems, located in California's Central Valley, measuring both its groundwater volume and its storage capacity. The results of their most recent findings in this ground breaking study have been recently published in Water Resources Research.

链接:

[https://www.eurekalert.org/pub\\_releases/2018-07/asu-asu071818.php](https://www.eurekalert.org/pub_releases/2018-07/asu-asu071818.php)

#### **5. To keep more carbon on the ground, halting farmland expansion is key**

**【EurekaAlert!】**The conversion of forests to farmland is recognized as a major contributor to rising levels of greenhouse gases. And yet it hasn't been clear how to best minimize the loss of sequestered carbon into the atmosphere. Is it better to maximize farm yields so as to use less land area over all? Or should farms be operated so as to retain more carbon on site, even at the expense of crop yields? Researchers reporting in Current Biology on July 26 say that, based on their extensive studies of agricultural operations in the humid tropics of Ghana, the dry tropical forest in Mexico, and temperate wetlands and forests in Poland, the best course in all cases is to limit the conversion of natural habitat to farmland, a strategy known as land sparing. That means maximizing yields on existing agricultural lands.

#### **6. 国家乡村环境治理科技创新联盟成立**

**【中国农业信息网】**7月14日，国家乡村环境治理科技创新联盟在北京成立，该联盟将重点围绕乡村环境重大科学问题开展科技创新，突出乡村生活垃圾、生活污水、厕所粪污处理处置等重点任务，进行技术联合攻关和系统集成，着力打造一批示范样板、推动成果转化与应用推广，促进乡村生产、生活、生态“三生”共赢，为我国乡村振兴战略实施提供科技支撑服务。据联盟理事长、农业农村部环境保护科研监测所所长刘荣乐介绍，该联盟由农业农村部环境保护科研监测所、中国农业大学、中国农业科学院农业资源与农业区划研究所等单位发起组建，已有国内高校、科研单位、示范单位和企业等全国性成员100多家。当前，我国乡村环境治理的主体处于脱节状态。政府高度重视，但缺乏

优质解决方案；科研单位有大量成果“待字闺中”，停留在实验室或档案盒，无法转化为生产力；企业有大量的资金找不到投资出口；农民改善自身环境的需求极为强烈，翘首期盼。成立后的联盟将担当起连接政府、科研单位、企业、乡村的最佳媒介，努力把联盟办成政策、科技、企业、农村“四位一体”交流和互助平台，成为政府、企事业单位、社会团体信赖和依靠的思想库、智囊团、参谋部和技术库。

**链接:**

[http://www.agri.cn/V20/ZX/nyyw/201807/t20180719\\_6196136.htm](http://www.agri.cn/V20/ZX/nyyw/201807/t20180719_6196136.htm)

## **7. 全国夏粮总产量13872万吨 各地推进农业供给侧结构性改革，调整种植结构**

**【中国农业信息网】**国家统计局18日公布的全国夏粮生产数据显示，2018年全国夏粮总产量13872万吨，比2017年减产306万吨，下降2.2%，但还算较好收成。统计显示，今年夏粮播种面积26703千公顷，比上年减少164千公顷，下降0.6%。夏粮产量因面积减少而减产86万吨。国家统计局农村司高级统计师黄加才分析，夏粮播种面积减少主要有三方面原因。一是各地积极推进农业供给侧结构性改革，大力调整农业种植结构，减少夏粮播种面积，增加花生、蔬菜等经济作物播种面积。如河北部分地区由于地下水严重超采而采取休耕政策，减少了小麦种植。二是上年秋冬播期间部分地区遭遇持续阴雨天气，江淮等部分地区水稻不能及时收割腾茬，影响了小麦播种。三是棉花目标价格改革政策的实施，促使新疆棉农种植棉花的积极性提高，更多农户倾向于扩棉减麦。

**链接:**

[http://www.agri.cn/V20/ZX/nyyw/201807/t20180719\\_6196194.htm](http://www.agri.cn/V20/ZX/nyyw/201807/t20180719_6196194.htm)

## **8. 农业农村部就农业生态环境保护工作有关情况举行发布会**

**【中华人民共和国农业农村部】**农业农村部定于2018年7月26日（本周四）上午10时，农业农村部新闻办公室举行新闻发布会，通报农业生态环境保护工作有关情况，并回答记者提问。廖西元先生向大家通报有关情况。为贯彻落实《中共中央 国务院关于全面加强生态环境保护坚决打好污染防治攻坚战的意见》和全国生态环境保护大会精神，农业农村部近期出台了《关于深入推进生态环境保护工作的意见》，全面部署农业生态环境保护工作。农业农村生态环境保护是新时代生态环境保护的重要内容。习近平总书记指出，农业发展不仅要杜绝生态环境欠新账，而且要逐步还旧账，要打好农业面源污染治理攻坚战；推进农业绿色发展是农业发展观的一场深刻革命。农业农村部将农业生态环境保护工作摆在农业农村经济发展的突出位置，2015年打响了农业面源污染治理攻坚战，提出了到2020年实现农业用水总量控制、化肥农药使用量减少、畜禽粪便秸秆地膜基本资源化利用的“一控两减三基本”的目标任务，2017年进一步聚焦重点领域和关键环

节，启动实施了畜禽粪污资源化利用、果菜茶有机肥替代化肥、东北地区秸秆处理、农膜回收和以长江为重点的水生生物保护行动等农业绿色发展五大行动。

链接:

[http://www.moa.gov.cn/hd/zbft\\_news/nysthbgz/](http://www.moa.gov.cn/hd/zbft_news/nysthbgz/)

## 9. 农业农村部加强农业生态环境保护 全面打好农业污染防治攻坚战

【中华人民共和国农业农村部】7月26日，农业农村部新闻办公室举行新闻发布会，介绍农业生态环境保护工作有关情况。农业农村部科技教育司司长廖西元、种植业管理司副司长杨礼胜、畜牧业司副司长王俊勋出席发布会并回答记者提问。打赢农业面源污染攻坚战，重点领域取得积极成效。抓好“三聚一创”，持续推进化肥农药减量增效。畜禽粪污初步实现资源化利用，300个大县整县推进。秸秆综合化利用成效明显，农用为主多元发展格局基本形成。突出重点用膜地区，大力推动实施农膜回收行动。有序推进污染普查，建立农业污染源资料档案。下一步，将全面推进普查，建立农业污染源资料档案，完善农业污染源信息数据库和监测管理平台；加强质量控制，建立覆盖农业污染源普查全过程的“国家—地方—实施机构—实施人员”四级联动质控工作机制；做好总结发布，摸清种植业、畜禽养殖业和水产养殖业生产过程中主要污染物产生量、排放量、地膜使用量和残留量、秸秆产生量和利用量。

链接:

[http://www.moa.gov.cn/xw/zwdt/201807/t20180726\\_6154819.htm](http://www.moa.gov.cn/xw/zwdt/201807/t20180726_6154819.htm)

## 10. 韩长赋在河北调研时强调：加强农村人居环境整治 建设美丽宜居乡村

【中华人民共和国农业农村部】7月27日，农业农村部部长韩长赋在河北调研时强调，良好的生产生活环境是广大农民的殷切期盼，要按照《农村人居环境整治三年行动方案》的部署要求，扎实推进农村垃圾污水治理、厕所革命和农业废弃物资源化利用等重点任务，加强政策创设，鼓励科研创新，切实改善农村人居环境和农业生产环境，建设美丽宜居乡村，增强广大农民群众的获得感幸福感。得知三河市对公司收储小麦和秸秆，每吨分别给予330元和150元的补贴，韩长赋十分高兴。他强调，推进农业废弃物资源化利用，既要让农民获利，也要让社会化服务企业获利。政府、企业、科研单位等各方面要共同努力，加强政策支持投入、技术研发、运行管理等工作，加快推进农业废弃物综合利用，提高农业绿色发展水平。

链接:

[http://www.moa.gov.cn/xw/zwdt/201807/t20180727\\_6154882.htm](http://www.moa.gov.cn/xw/zwdt/201807/t20180727_6154882.htm)

## 【研究报告】

### 1. A Framework for Freshwater Ecosystem Management

发布源: UN Environment

发布时间: 2017-12-01

摘要: The UN Environment 'Framework for Freshwater Ecosystem Management' series presents a holistic management framework to guide country-level action to sustainably manage freshwater ecosystems. It builds on the decision by the UN Environment Programme (UNEP) Governing Council to develop water quality guidelines for ecosystems (Decision 27/3, 2013). The Framework supports national and international goals related to freshwater ecosystems, such as relevant Aichi Biodiversity Targets and Sustainable Development Goal (SDG) targets. An overview of the series, which currently consists of four volumes. Volume 1 provides an overview of the Framework, and places it in the context of supporting Agenda 2030. Volume 2 describes aspects of the Framework in more technical detail: classification systems for freshwater ecosystem types, setting targets for ecological status, and monitoring progress against these targets. Volume 3 provides examples from around the world, illustrating different aspects of the Framework. Volume 4 underpins the series and includes a review of water quality guidelines for ecosystems from around the world.

链接:

<http://agri.ckcest.cn/ass/9c95d8f5-f9fb-4c35-8f0d-3ed641aa9859.pdf>

## 【文献速递】

### 1. The virtual water flow of crops between intraregional and interregional in mainland China

作者: Yicheng Fu; Jinyong Zhao; Chengli Wang; Wenqi Peng; Qi Wang; Chunling Zhang

文献源: Agricultural Water Management, 2018

摘要: Agriculture is the main consumer of freshwater in the world. The paper described the process of virtual water content and flow in crops. Differences in climatic conditions of different regions in China result in large differences in water consumption during crop growth. The virtual water trade in crops connects water flows within and between regions, linking the actual water consumption with the invisible water trade as a whole. The objective of the paper was supplying the agricultural products virtual water trade evaluation system, determining quantitatively the virtual water flow within the region & regional. Using meteorological and agricultural data from 2003 to 2010, a comprehensive analysis of

China's domestic and international virtual water trade of agricultural products has been undertaken. The virtual water for the three primary crops and virtual water trade are discussed. The virtual water content of grain crops in northern and southern China was 1293 m<sup>3</sup>/t and 942 m<sup>3</sup>/t, respectively; the national average value was 1117 m<sup>3</sup>/t; and the regional differences in virtual water content for each crop were significant. China's inter-regional agricultural products virtual water trade was not consistent with water resource endowment expectations. The transfer of crops from northern to southern regions would have a significant impact on the sustainable utilization of water resources and would exacerbate water resources shortages in northern regions. China had a trade surplus in global virtual water trade of agricultural products. The exported agricultural products virtual water amounted to 31.5 billion m<sup>3</sup>/yr., and the imported amount was 145 billion m<sup>3</sup>/yr. The net import of virtual water embedded in agricultural products increased from 44 billion m<sup>3</sup>/yr. in 2003 to 178 billion m<sup>3</sup>/yr. in 2010. It is further concluded that the trend for agricultural products total virtual water, green water, and blue water is that China is increasing its imports year on year. A large increase in imports of agricultural products has led to a decline in the rate of self-sufficiency in domestic agricultural production. The paper provided the basis for the comprehensive evaluation of crop planting structure adjustment, grain import & export, and the potential of regional water resources development and utilization.

链接:

<http://agri.ckcest.cn/ass/1a90fdce-45c1-499d-bde8-9992596232ac.pdf>

## 2. 土地综合承载力评价指标体系设计——以四川省彭山区为例

作者: 唐静; 洪姗

文献源: 科技创新与应用,2018

摘要: 文章在简述土地综合承载力内涵的基础上,详细阐述了土地综合承载力指标体系设计的原则,并以四川省彭山区为例,从水土资源承载、生态环境承载、社会承载和经济承载等四个方面展开,构建了彭山区土地综合承载力评价指标体系,并详细解释了各个评价指标的具体意义。

链接:

<http://agri.ckcest.cn/ass/5db825ec-4745-4838-a18f-941806d4f176.caj>

### 3. 基于可拓综合评价法的干旱区水资源承载力评价——以河西走廊地区为例

作者: 杜俊平; 叶得明; 陈年来

文献源: 中国农业资源与区划,2018

摘要: [目的]水资源是经济社会发展依赖的重要资源,水资源短缺是制约干旱区经济社会发展的瓶颈。通过研究,了解河西走廊干旱区水资源可持续开发利用状况,实现该区域社会经济良性发展。[方法]文章构建了水资源承载力评价指标体系,利用可拓综合评价法对河西走廊地区真实情景期(2003~2015年)、仿真情景期(2016~2025年)的水资源承载力进行测评。[结果](1)2003~2015年,河西走廊地区5市水资源承载力综合水平总体上呈波动上升趋势,武威市从强赤字承载波动上升为弱赤字承载。金昌、张掖、酒泉、嘉峪关从强赤字承载过渡到临界承载状态。(2)2016~2025年,水资源承载力综合水平呈逐步上升态势,武威和张掖从临界承载逐步上升为盈余可承载,金昌和酒泉由临界承载逐渐演变为基本可承载,而嘉峪关的综合水平虽然一直处于强赤字承载,但对应的关联度已经从2016年的-0.073下降为2025年的-0.259。[结论]农业用水量比重大,农业生产效益低下,水资源开发利用率高,成为制约该区域水资源可持续开发利用的瓶颈。

链接:

<http://agri.ckcest.cn/ass/d0f95ff9-522d-452e-99fc-1909d1e7f818.caj>

### 4. 湖南省相对水资源承载力时空变化分析

作者: 曾红春; 杨奇勇; 李文军; 谢运球

文献源: 水资源与水工程学报,2018

摘要: 采用相对水资源承载力的研究方法,分别以全国和湖南省为参照区域,分析湖南省及其14个地州市2000-2015年间相对水资源人口承载力、农业承载力和经济承载力的时间动态变化及空间差异。结果表明:湖南省水资源相对丰富,水资源承载力年际变化大,水资源承载力各地州市分布不均。从水资源承载力的动态变化上看,湖南省水资源承载的人口和GDP一直处于双重富余状态,而农业由富余状态逐渐变为超载状态,但是人口、农业和GDP水资源总量承载潜力较大,基本处于三重富余状态(除2011年)。从水资源承载力的空间分布来看,湖南省西部与南部地州市的人口、农业及经济水资源承载力潜力高,而北部、东部及中部地州市水资源承载力潜力低。研究为湖南省水土资源合理利用及经济持续发展提供科学参考。

链接:

<http://agri.ckcest.cn/ass/f5e55d22-7aa2-4c63-b7c4-4e14b6c130e4.caj>



## 5. 中国农业水资源可持续利用方略

作者: 王庆锁; 梅旭荣

文献源: 农学学报,2018

摘要: 针对中国水资源严重短缺、水体污染加剧、“水减粮增”矛盾突出、粮食生产与区域水资源分布错位、“北粮南运”难以为继等重大问题,以农业水资源可持续利用为目标,实施粮食生产区域再平衡战略、强化降水利用的绿水战略和短缺水资源的技术、非常规水、贸易替代方略,同时提出建立与水资源相匹配的种植制度,大力推进节水农业科技创新、升级节水灌溉技术、建立水资源转移补偿机制、改变膳食结构等建议。

链接:

<http://agri.ckcest.cn/ass/ff0611e9-2a69-40a7-b806-fc6453247f7f.caj>

## 6. 生态学期研究促进资源高效利用和区域农业可持续发展

作者: 沈彦俊; 胡春胜; 张喜英,等

文献源: 中国科学院院刊,2018

摘要: 华北平原农业的高强度水肥投入造成严重地下水超采和氮素污染风险。中国科学院栾城农业生态系统试验站立足农田生态系统的长期生态学监测和研究,围绕农业资源高效利用和可持续发展,建立了农田土壤-作物-大气系统(SPAC)界面节水调控理论与技术,提出基于农田水平衡的休耕轮作和适水型种植制度调整思路,阐明了农田碳氮循环特征和温室气体排放及硝酸盐淋失通量,在厚包气带水盐运移和硝酸盐转化和削减机理方面取得突破性认识,研发了农田生产信息快速获取和精准管理的技术产品与平台,并与农业发展紧密结合,集成了系列农业生产技术模式,为区域农业的优质高效发展和水资源可持续利用提供了理论和技术支撑。

链接:

<http://agri.ckcest.cn/ass/83ff1333-feaa-4025-852a-406c247982aa.caj>

## 7. Mapping environmental land use conflict potentials and ecosystem services in agricultural watersheds

作者: Ilkwon Kim; Sebastian Arnhold

文献源: Science of the Total Environment,2018

摘要: In mountainous watersheds, agricultural land use cause changes in ecosystem services, with trade-offs between crop production and erosion regulation. Management of these watersheds can generate environmental land use conflicts among regional stakeholders with different interests. Although several researches have made a start in

mapping land use conflicts between human activities and conservation, spatial assessment of land use conflicts on environmental issues and ecosystem service trade-offs within agricultural areas has not been fully considered. In this study, we went further to map land use conflicts between agricultural preferences for crop production and environmental emphasis on erosion regulation. We applied an agricultural land suitability index, based on multicriteria analysis, to estimate the spatial preference of agricultural activities, while applying the Revised Universal Soil Loss Equation (RUSLE) to reflect the environmental importance of soil erosion. Then, we classified the agricultural catchment into four levels of land use conflicts (lowest, low, high and highest) according to preference and importance of farmland areas, and we compared the classes by crop type. Soil loss in agricultural areas was estimated as 45.1 t ha yr, and agricultural suitability as 0.873; this indicated that land use conflicts in the catchment could arise between severe soil erosion (environmental importance) and agricultural suitability (land preferences). Dry-field farms are mainly located in areas of low land use conflict level, where land preference outweighs environmental importance. When we applied farmland management scenarios with consideration of services, conversion to highest-conflict areas (Scenario 1) as 7.5% of the total area could reduce soil loss by 24.6%, while fallow land management (Scenario 2) could decrease soil loss 19.4% more than the current scenario (Business as usual). The result could maximize land management plans by extracting issues of spatial priority and use-versus-conservation conflicts as ecosystem service trade-offs from arguments over land use policy.

链接:

<http://agri.ckcest.cn/ass/e09f385a-0e88-47cd-b811-adf3f0aa900f.pdf>

## **8. Agricultural water supply/demand changes under projected future climate change in the arid region of northwestern China**

作者: Ying Guo; Yanjun Shen

文献源: Journal of Hydrology,2018

摘要: The water resources in the arid region of northwestern China, which are impacted by climate change, tend to be more unstable, and the environment and ecosystems will suffer from severe water shortage. In this paper, potential future climate trends were predicted based on CMIP5 simulations in this region. The water availability and agricultural water demand under future climate change scenarios were estimated. Impacted by increases in

temperature, the irrigation water demand will increase by 4.27 6.15 billion m<sup>3</sup> in this region over the next 60 years, compared to the demand of 32.75 billion m<sup>3</sup> during 1971—2000. However, the annual runoff will only increase by 4.88.5 billion m<sup>3</sup>, which is equivalent to or even less than the increased irrigation water demand. In fact, the increased demand for industrial, domestic and ecological water were not considered here. Thus, the water supply/demand contradiction will result in more severe water shortages in the future. According to a comparison with simulated irrigation water demand under three adaptation strategy scenarios, we should take effective measures such as improving the efficiency of irrigation water utilization, reducing crop planting areas and adjusting crop planting structures to alleviate the impacts of future climate changes and human activities on the water supply and water use in this region.

链接:

<http://agri.ckcest.cn/ass/d9c24210-9641-4fd7-bc22-659bf06a176b.pdf>

## **9. Sustainability impact assessment of peatland-use scenarios: Confronting land use supply with demand**

作者: Till Hermanns; Katharina Helming; Hannes J. Königa; Katharina Schmidt; Qirui Li; Heiko Faustb

文献源: Ecosystem Services,2018

摘要: Sustainable development of land use is determined by changes of the regional supply of Land Use Functions (LUFs) and the demand of future societal land use claims. LUFs are based on the ecosystem services concept, but more adapted to human land use. In this paper, we assessed two peatland-use scenarios towards sustainable development in Northeast Germany in order to understand their impacts on LUFs and land use claims. For this, we extended an analytical framework designed to confront LUFs with land use claims identified in multi-level stakeholder strategies in a participatory manner. The sustainability assessment was performed with peatlanduse scenarios “Services for services” and “Market determines usage” that favoured environmental and economic land use claims, respectively. Findings revealed possible trade-offs between land use claims for biomass production and regional value creation as well as for peatlands` carbon and nutrient sink, and habitat functions. The core achievement is an extended sustainability assessment framework integrating land use demands of multi-level stakeholder strategies into participatory impact assessment, in a way that land use claims serve as benchmarks for LUFs. This facilitates the

understanding of sustainable land use in both supply and demand perspective, and the normative evaluation of ecosystem services.

链接:

<http://agri.ckcest.cn/ass/0f00d53a-7dfe-4b76-a98e-fe81043cb0ab.pdf>

#### **10. An integrated sustainability score based on agroecological and socioeconomic indicators. A case study of stockless organic farming in Italy**

作者: Paola Migliorini; Francesco Galieto; Massimo Chiorri; Concetta Vazzana

文献源: Agroecology and Sustainable Food Systems,2018

摘要: The purpose of our research is to develop an integrated sustainability score (ISS) choosing the farm level as system's boundaries and developing a methodology, based on a geometric mean algorithm, which is negatively affected by the internal imbalance of the agroecosystem. The first step is to identify and calculate the indicators of systems and sub-systems to assess the agro-ecological and socioeconomic dimensions of sustainability. The second step is the selection, weighting and integration of indicators that permit the calculation of the ISS ranging from 0 to 1. The farm sustainability score is categorized into three levels: weak, intermediate and strong. This methodology has been verified on a stockless organic farming system case study of 12 farms in Italy. Results show that most of the farms reached intermediate levels of sustainability but there are significant differences on ISS scores within the study group. Agro-ecological and socioeconomic dimension play a different role in highlighting the coexistence of different models of sustainability. A further development of the present methodology should include an in-depth analysis of the social dimension of sustainability and integrate an assessment procedure to formulate improved management practices that will help farmers to find win-win solutions that decrease the contrast between environmental and economic sustainability.

链接:

<http://agri.ckcest.cn/ass/5d456074-c76b-49dc-8ba5-69931678695a.pdf>

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