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．Climate change threatens future of farming in Europe

【AgroNews】Adverse impacts of climate change are already being felt across Europe. Extreme weather, including recent heatwaves in many parts of the EU are already causing economic losses for farmers and for the EU's agriculture sector. These adverse impacts are expected to increase, due to projected climate change, according to the European Environment Agency (EEA) report 'Climate change adaptation in the agricultural sector in Europe.' The EEA report stresses that more knowledge, innovation and awareness raising are required to improve the effective use of the already available adaptation measures, like introducing adapted crops, improved irrigation techniques, field margins and agroforestry, crop diversification or precision farming. The EU's adaptation strategy is a key driver of adaptation actions in Europe. One of its objectives is to mainstream adaptation in various EU policies, including the Common Agricultural Policy (CAP). However, adaptation at the farm level often does not take place because of lack of financing, policy support to adapt, institutional capacity and access to adaptation know-how. New records are being set around the world due to climate change, and the adverse effects of this change are already affecting agricultural production in Europe, especially in the south. Despite some progress, much more must be done to adapt by the sector itself, and especially at farm-level, and future EU policies need to be designed in a way to facilitate and accelerate transition in this sector. The EEA assessment is consistent with the key messages from the recent report by the Intergovernmental Panel on Climate Change (IPCC) on climate change and land.

链接:

http://news.agropages.com/News/NewsDetail---32015.htm

2．How can we feed the world without overwhelming the planet?

【EurekAlert!】Sustainable Development Goal (SDG) 2 calls for ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture. The environmental challenges posed by agriculture are however massive, and many fear that they will only become more pressing as we try to meet the growing need for food worldwide. IIASA researchers and colleagues from Japan propose alternative hunger eradication strategies that will not compromise environmental protection. Researchers explored different ways to end hunger by reducing the inequalities in access to food rather than increasing agricultural production, thus reducing the potential conflicts with environmental protection. The first alternative hunger eradication strategy explored in the study, focuses exclusively on bridging the nutrition gap of the undernourished population, which can be realized through targeted government support in the short-term. Additional analysis shows that if equity of food distribution is accompanied by a reduction in over-consumption and food waste, as well as improved agricultural intensification, undernutrition can be eradicated while at the same time reducing agricultural production, thus leading to multiple benefits for environmental sustainability.

链接:

https://www.eurekalert.org/pub_releases/2019-09/iifa-hcw091119.php

3．'Planting water' is possible -- against aridity and droughts

【EurekAlert!】The water regime of a landscape commutes more and more between the extremes drought or flooding. The type of vegetation and land use plays an important role in water retention and runoff. Together with scientists from the UK and the US, researchers from the Leibniz- Institute of Freshwater Ecology and Inland Fisheries (IGB) have developed a mathematical model that can reflect the complex interplays between vegetation, soil and water regimes. They show, for example, that in beech forests water is increasingly cycled between soil and vegetation to increase evaporation to the atmosphere, while grass cover promotes groundwater recharge. With the developed model EcH2o-iso the researchers can quantify where, how and for how long water is stored and released in the landscape. The model helps to better predict the effects of land-use changes on the water balance under changing climatic conditions. In drought-prone areas in particular, this knowledge can help to develop land use strategies that increase the landscape's resistance to climate change and protect water resources. "So far, the type of vegetation has been considered primarily

with a view to preventing soil erosion. In view of more frequent extreme weather events such as droughts and floods, however, it is increasingly a question of which plants can be cultivated to control the retention or loss of water in the landscape," says Prof. Doerthe Tetzlaff, head of the study, leader of the research group "Landscape Ecohydrology" at IGB and Professor in Ecohydrology at the Humboldt Universitaet zu Berlin. Grassland use leads to more groundwater recharge and that in beech forests more water is returned to the atmosphere by evapotranspiration. However, the effects are site-specific and depend on the respective hydroclimate, biogeography and landscape ecology. With the help of the EcH2o-iso model, however, these differences can be taken into account in the future and local as well as large scale forecast models can be created.

链接:

https://www.eurekalert.org/pub_releases/2019-09/fb-wi091119.php

4．2019加快推广有机肥，推进农业绿色发展

【搜狐】目标：努力实现耕地数量不减少、耕地质量不降低、地下水不超采，化肥、农药使用量零增长，秸秆、畜禽粪污、农膜全利用，实现农业可持续发展、农民生活更加富裕、乡村更加美丽宜居。至2020年，主要农作物化肥、农药使用量实现零增长，化肥、农药利用率达到40%；秸秆综合利用率达到85%，养殖废弃物综合利用率达到75%，农膜回收率达到80%。至2030年，化肥、农药利用率进一步提升，农业废弃物全面实现资源化利用。在推进化肥减量增效上，要实现“四减”：1.调优结构减量。调减高纬度、干旱地区和土地贫瘠地区玉米种植，减少化肥投入。2.精准施肥减量。推进农机农艺融合，推广机械施肥、种肥同播、水肥一体等技术，提高化肥利用效率。3.有机肥替代减量。推进秸秆养分还田、畜禽粪便资源化利用，种植绿肥，用有机肥替代部分化肥。4.新型经营主体示范带动减量。依托种粮大户等新型经营主体，创建化肥减量增效示范区，带动科学施肥技术推广应用。在措施上，主要抓好四个方面：1.改良土壤，重点是改善土壤理化性状，改良酸化、盐渍化等障碍土壤，改进栽培方式。2.培肥地力，重点是提高土壤有机质含量，提高贫瘠土壤肥力，提高耕地基础地力。3.保水保肥，重点是推广深松深耕和水肥一体化技术，提高保水保肥能力，实行节水节肥。4.控污修复，重点是减少化肥农药施用，防止重金属和有机物污染耕地，控制农膜残留。一个持续加快：加快新产品推广，重点是发展，有机肥，生物肥料，新型高效缓释肥料、水溶肥料。分区域、分作物集成组装一批化肥农药减量增效的技术模式。加强农企合作，探索农村合作金融、农业租赁金融、农业信贷保险等服务创新，支持化肥农药减量增效。

链接:

http://www.sohu.com/a/340272590_756422

5．The Future of Farming? No Sun, No Soil, But Lots of Data

【AgroNews】Humans have farmed for thousands of years, but do we have any idea what we're doing? Maybe not, said David Rosenberg, co-founder and CEO of AeroFarms, the U.S.-based vertical farming start-up, speaking at the Fortune Global Sustainability Forum in Yunnan, China on Thursday morning. "I've learned how ignorant we are about how to make plants grow. Agriculture has been underinvested in for centuries." Rosenberg has come to that conclusion based on experience—and farming in a particularly unconventional way. His company, which now grows 750 different crops, cultivates them using no sun, soil, or pesticides in a plant and sensor-dense warehouses (the crops are stacked in layers). Those controlled conditions allow AeroFarms to experiment with a range of factors-micronutrients, temperature, airflow, applied light—that farmers have little to no control over in their fields. Rosenberg said that farmers usually apply fertilizer once, water the crop and hope it grows. AeroFarms, meanwhile, applies fertilizers many times, adjusting along the way to optimize plant growth. "We adjust the fertilizers, we'll track magnesium, iron, zinc and all the minerals and elements," Rosenberg explained. By the end of the year, he added, AeroFoods will be making fertilizer adjustments every 15 minutes. When you can really play with those environmental factors and all these tools in a big data way in a farm the size of [a] building, it really becomes illuminating of how plants react in different ways. AeroFarms' experimentation, which draws up data from thousands of sensors, has also produced a lot of data. Too much data, said Rosenberg. "There are good aspects of data in that it makes us better farmers, but we've realized tracking data for data sake is just too expensive. We've started changing the dialogue from 'big data' to 'smart data' to understand what's really meaningful.

链接:

http://news.agropages.com/News/NewsDetail---31961.htm

6．调整种植结构 发展生态农业 长白"一谷一城"建设成效明显

【中华人民共和国农业农村部】推进"一谷一城"建设,不但要有绿色种植的现代农业思维,更要有敢于创新的生态农业带头人。长白县钰桂源农业发展有限公司总经理张金鹏就是其中之一。张金鹏从吉林农业大学研究生院毕业后,并没有如家人和朋友所期待的那样找一份"体面"的工作,而是义无反顾地回到家乡长白县,带着从吉林农业大学院士团队研发出的优质食用菌新品种——玉木耳,当起了返乡创业的"现代农民"。长白山地区优越的生态环境赋予了玉木耳优质的生长环境,绿色有机、肉质细腻的玉木耳引起了海

底捞餐饮股份有限公司的注意,目前,双方已初步达成了合作意向。接下来,张金鹏准备依托“一谷一城”,建立玉木耳的质量可追溯体系,将监管延伸到消费端,真正打造令消费者放心的绿色有机品牌。打造“一谷一城”,不能一蹴而就。它是农业转型的长期计划,也是绿色经济发展的必由之路。极目长白沃野,“一谷一城”带动的“绿色农业革命”正当势头。长白县一手抓政策制定,统筹谋划绿色转型发展和乡村振兴战略;一手抓产业布局的优化,建设8个千亩以上特色产业化园区,打造5个休闲农业采摘园区,22个产业示范基地。同时,大力实施农药化肥施用量“双减半”行动。截至目前,全县落实种植业调整面积20.85万亩,落实休耕1.36万亩、退耕还林1831亩,“一谷一城”建设让田野还绿生金,也让万千农民欢笑。

链接:

http://www.moa.gov.cn/xw/qg/201909/t20190910_6327666.htm

7．松江东石村：“绿色”养殖让农民增收过上好日子

【中华人民共和国农业农村部】2019年以来，东石村在产业发展方面补上短板、生态建设和生活改善方面续足动力，全面实现乡村振兴发展。除了田野上的“加减法”换来的产业布局上的一手“好牌”，最关键的是，吴杰的农场实现了“订单农业”和“品牌农业”的转型。和叶榭镇其他16家农场一样，吴杰与松林工贸有限公司签约，订单种植，稻谷由松林公司统一收购，加工后统一印上“松林”品牌走向市场。为了进一步充实种粮户的“腰包”，村级也将积极支持农场主成立合作社，鼓励农民自身拓宽大米销售渠道，从“卖稻谷”到“卖大米”，从而提高农民种粮的附加值。东石村通过中小河道整治、拆违和污染企业减量化工作，大幅度恢复和提升农村生态，使农民的生活环境更美丽、更宜居。此外，绿色养殖也致力于农村生态的改善。不同于传统养殖，陈啸的猪场采取“绿色”养殖方式，喂养添加益生菌的专业饲料，提高生猪肠道功能，促进生猪成长的同时，也使排泄物更为健康，减轻异味。粪污收集后，制成有机肥就近还田，既削减了化肥使用，也实现废弃物“零排放”。

链接:

http://www.moa.gov.cn/xw/qg/201909/t20190909_6327535.htm

8．湖北嘉鱼县“绿色”用肥产出好果菜

【中华人民共和国农业农村部】2018年，按照化肥使用量零增长行动方案要求，嘉鱼县积极通过测土配方施肥、水肥一体化、有机肥代替等措施，扎实推进化肥减量增效工作，不断提升耕地质量。作为嘉鱼县12个县级示范区之一，该合作社的良好运营为嘉鱼县开展化肥减量增效、推动农业绿色发展提供了生动范例。经测算，这些举措全年可减少农

药施用3次，减少化肥施用2次，节约农药化肥及人工成本2.5万元。正由于坚持生态绿色发展，该基地经济效益逐年递增。2018年，该合作社实现销售收入170余万元，纯利润近百万元，连续五年被嘉鱼县农业部门列为示范基地。在灌溉的同时，实现了精准用肥，科学用药。测土配方施肥、水肥一体等现代技术已在合作社内得到充分应用，既提高土地效率，又保证了产品质量，效果良好。据县农业农村局土肥站站长徐卫锋介绍，该县目前有国家级耕地质量监测点2个，县级监测点12个，推荐各类农作物精准施肥肥料配方18个。12个示范区实现化肥减量15%，并通过示范带动，全县测土配方施肥技术覆盖率达91%，化肥利用率达到40.1%，节本增效约6100万元。

链接:

http://www.moa.gov.cn/xw/qg/201909/t20190906_6327434.htm

9．Plant gene discovery could help reduce fertilizer pollution in waterways

【AgroNews】Over-fertilization of agricultural fields is a huge environmental problem. Excess phosphorus from fertilized cropland frequently finds its way into nearby rivers and lakes. A resulting boom of aquatic plant growth can cause oxygen levels in the water to plunge, leading to fish die-offs and other harmful effects. Researchers from Boyce Thompson Institute have uncovered the function of a pair of plant genes that could help farmers improve phosphate capture, potentially reducing the environmental harm associated with fertilization. The discovery stems from Maria Harrison's focus on plants' symbiotic relationships with arbuscular mycorrhizal (AM) fungi. Harrison is the William H. Crocker Professor at BTI and an adjunct professor in Cornell University's School of Integrative Plant Science. AM fungi colonize plant roots, creating an interface where the plant trades fatty acids for phosphate and nitrogen. The fungi also can help plants recover from stressful conditions, such as periods of drought. But feeding the AM fungi with fatty acids is costly, so plants don't let this colonization go unchecked. To discover how plants control the amount of fungal colonization, Harrison and Lena Mulller, a postdoctoral scientist in her lab, looked at genes that encode short proteins called CLE peptides in the plants Medicago truncatula and Brachypodium distachyon.

链接:

http://news.agropages.com/News/NewsDetail---31882.htm

10．休宁县推进农业绿色发展

【安青网】在休宁县万安镇上观蔬菜种植区，万安镇海宁大棚蔬菜农民专业合作社邀请

技术人员指导安装4盏频振式太阳能杀虫灯，用于蔬菜防虫，有效防控害虫危害，切实保障“中秋”“国庆”两节的蔬菜市场供应。这是休宁县推进农业特色产业绿色发展的举措之一。该县蔬菜办负责人介绍，通过推广频振式太阳能杀虫灯等蔬菜绿色防控技术，可以减少农药使用，提高蔬菜产品质量安全。目前，全县蔬菜基地累计推广使用太阳能杀虫灯20余盏，可有效控制诱杀害虫面积达500亩以上。在农业技术上做好“加法”的同时，该县还做好“减法”文章，积极推进农药减量化应用，推进有机肥替代化肥行动，减少农药化肥的使用。今年1-8月份，休宁县建立绿色防控示范区3.2万亩。与此同时，该县大力推进有机肥替代化肥行动，全县有机肥施用面积达到6万亩，建立化肥减量增效示范片区28个，面积25.4万亩，新增有机肥替代化肥和水肥一体化示范片2700亩。截至目前，全县新增有机认证企业9家、产品9个，其中一个产品进入全省绿色食品50强，累计53家企业78个农产品获得“三品一标”认证。休宁县还被省农业农村厅等七部门确定为全省农业绿色发展先行区试点县。

链接:

http://www.ahyouth.com/news/20190903/1395841.shtml

【文献速递】

1．Approaching the environmental sustainable value in agriculture: How factor endowments foster the eco-efficiency

作者：Aleksander Grzelak；Marta Guth；Anna Matuszczak，et al.

文献源：Journal of Cleaner Production,2019

摘要：There is a commonly spread thesis that small and labor-intensive farms guarantee a higher degree of environmental sustainability compared to rich, capital-intensive farms. This study offers a methodological contribution to the value-based sustainability approach, consisting in computing a modified indicator of environmental sustainable value (ESV). Using this approach, the authors test how factor endowments (capital, land and labor) contribute to ESV using a long-term panel of region-representative EU FADN (Farm Accountancy Data Network) farms in 2004-2015. The seminal within-between specification was employed to control time variant and time in-variant space heterogeneity of European regions. The articles main finding is that higher capital endowment and lower labor-intensity is beneficial for ESV. The result that farming with higher labor endowment might be less eco-efficient contradicts the commonly known perception of this problem. In light of our findings, we conclude that the pro-investment direction of the CAP (Common Agricultural Policy) should be followed.

链接:

http://agri.ckcest.cn/file1/M00/00/02/Csgk0V14sMWATpEsABi22cRGbLI772.pdf

2．区际农业生态补偿：区域划分与补偿标准核算——基于虚拟耕地流动视角的考察

作者：梁流涛；祝孔超

文献源：地理研究,2019

摘要：从虚拟耕地流动的视角构建区际农业生态补偿框架,并在此框架下开展区际农业生态补偿支付/受偿区域划分和补偿标准测算的研究。结果表明:①区际农业生态补偿的基本原理是:利用虚拟耕地净流量(输入量与输出量的差额)指标划分区际农业生态补偿的支付/受偿区域。对于净流量为负的分室,通过虚拟耕地流动占用了其他区域的耕地资源,应该支付相应的生态补偿。对于净流量为正的分室,通过虚拟耕地流动被其他区域占用了耕地资源,应得到生态补偿。区际农业生态补偿额度应包含对农业生态环境保护和改善的投资成本以及占用农业资源使其牺牲的发展机会成本等方面,并由管理平台统一收缴和分发。②2004年以后虚拟耕地流动格局基本上保持稳定,只有个别省市(甘肃和云南)由净流入转变为净流出,在空间上表现为"北耕南流"的格局。③受偿区域(15个省市)主要分布在东北地区、华北地区和西北地区;支付区域(16个省市)主要分布在东部沿海地区和西南地区。④研究期内年均总受偿额度为1472.58亿元,处于高受偿省份(黑龙江、吉林、内蒙古、河南)年均受偿额度都在150亿元以上。研究期内年均总支付额度为543.10亿元,其中,处于高支付区域的省份(浙江、广东、北京、福建)年均支付额度都在40亿元以上。

链接:

http://agri.ckcest.cn/file1/M00/0E/C8/Csgk0F14rAqASBYCAB6atE0x858431.pdf

3．基于 GIS 的资源环境承载力评估指标及模型建立

作者：高健峰;徐睿泽

文献源：国土与自然资源研究,2019

摘要：环境污染问题日趋严重,计算对生态系统造成的污染以及后续对环境一系列伤害的经济成本成为必要性,本文基于Pressure-State-Response模型(PSR),构建了科学合理的土地利用开发环境绩效评估指标体系。之后,利用遥感影像搜集污染区污染情况并利用ArcGIS提取数据及搜集各项指标,并利用主成分分析法(PCA)进行打分筛选出7个主要影响项目真实经济成本指标,并验证了依据不同工程规模进行成本计算的假设。

链接:

http://agri.ckcest.cn/file1/M00/0E/C8/Csgk0F14qwyAEdOBAALlIkLM_PM252.pdf

4．多尺度视角下资源环境承载力评价及其空间特征分析——以济南市为例

作者：刘金花；李向；郑新奇

文献源：地域研究与开发,2019

摘要：以土地利用现状地类图斑为评价单元,从图斑、区县、市域尺度,构建由资源、生态环境、经济社会构成的资源环境承载力评价模型,对济南市的资源环境承载力进行多尺度评价和空间特征分析,并在乡镇尺度上进行探索性空间数据分析,探索其空间集聚效应。结果表明:(1)济南市资源环境承载力处于中等水平,空间分布差异明显,承载力较高地区多分布在济南市章丘区、商河县东南部和济阳区北部,承载力较低地区多分布在历下区、市中区北部、槐荫区东部。(2)各子系统差异明显,资源子系统处于较高水平,生态环境及经济社会子系统处于中等水平,且各县区差异较大。(3)资源环境承载力及各子系统具有显著的空间正相关性,高值集簇区、低值萧索区空间集聚明显。

链接:

http://agri.ckcest.cn/file1/M00/00/01/Csgk0V14q4-ARUSHAAda21KZUX8029.pdf

5．The vulnerabilities of agricultural land and food production to future water scarcity

作者：N. Fitton； P. Alexander； N. Arnell， et al.

文献源：Global Environmental Change,2019

摘要：Rapidly increasing populations coupled with increased food demand requires either an expansion of agricultural land or sufficient production gains from current resources. However, in a changing world, reduced water availability might undermine improvements in crop and grass productivity and may disproportionately affect different parts of the world. Using multi-model studies, the potential trends, risks and uncertainties to land use and land availability that may arise from reductions in water availability are examined here. In addition, the impacts of different policy interventions on pressures from emerging risks are examined. Results indicate that globally, approximately 11% and 10% of current crop- and grass-lands could be vulnerable to reduction in water availability and may lose some productive capacity, with Africa and the Middle East, China, Europe and Asia particularly at risk. While uncertainties remain, reduction in agricultural land area associated with dietary changes (reduction of food waste and decreased meat consumption) offers the greatest buffer against land loss and food insecurity.

链接:

http://agri.ckcest.cn/file1/M00/00/01/Csgk0V14raSAZlgAABwcOz1Bmas342.pdf

6．Misunderstanding conservation agriculture: Challenges in promoting, monitoring and evaluating sustainable farming

作者：K.M. Findlater；M. Kandlikar；T. Satterfield

文献源：Environmental Science and Policy,2019

摘要：Commercial agriculture is central to problems of sustainability in food, water, energy and climate change. Appropriate solutions will depend on the effective promotion, monitoring and evaluation of changes in farming practice. Conservation agriculture (CA) is an important example of sustainable intensification and climate-smart agriculture, increasing the productivity and reliability of grain production while reducing agricultural inputs and future climate risks when adopted comprehensively. But to understand its implementation and benefits, researchers often rely on simplified measures of CA adoption (e.g., single proxies, binary measures, broad selfassessments, expert estimates). Here we use a national survey of South Africa's commercial grain farmers (n = 441), contextualized by previous interviews, to investigate common measures of adoption and their implications for CA's promotion, monitoring and evaluation. These farmers are unusually informative, because they are unsubsidized but have the capacity, incentive and willingness to adapt to climate change. We find that they are adopting CA autonomously, but that their implementation is highly variable and their interpretation of farming practice differs from that of local experts. Single proxies, binary adoption variables and broad farmer self-assessments suggest that between 40 and 80% of farmers have adopted CA. However, when evaluated across the three CA principles using UN-defined adoption thresholds, the comprehensive adoption rate is only 14%. Farmers' definition of "conservation" differs substantially from that of the local experts most likely to be asked to contribute adoption estimates to global monitoring efforts, creating the potential for miscommunication. There is therefore substantial cause for concern in how CA is currently promoted, monitored and evaluated. Inaccurate adoption estimates jeopardize CA's potential as a climate change adaptation strategy, creating illusory progress that may disincentivize further substantive efforts towards agricultural sustainability and climate resilience.

链接:

http://agri.ckcest.cn/file1/M00/0E/C8/Csgk0F14sWeACe2WAA8ViD1HPDY798.pdf

7．Recuperating dynamism in agriculture through adoption of sustainable agricultural technology - Implications for cleaner production

作者：Gershom Endelani Mwalupaso；Mariko Korotoumou；Aseres Mamo Eshetie，et al.

文献源：Journal of Cleaner Production,2019

摘要：Sustainable agricultural technologies are being touted as a requirement for a sustainable world in many parts of the globe. Consequently, they have become a critical issue in the development policy agenda for Sub-Saharan Africa. Despite several studies conducted on the adoption of Sustainable agricultural technologies, they remain poorly understood in Mali. Thus, research that could inform policies capable of simultaneously addressing low agricultural productivity and environmental degradation is obstructed. To begin to fill this research gap, we use cross-sectional data from rice farmers in Mali. Stochastic production frontier is adopted for rice production and technical efficiency analysis in a one-step estimation using maximum likelihood method. The results reveal that adoption of the system of rice intensification, a sustainable agricultural technology, is consonant with cleaner production concept. Particularly, adopters are more technically efficient than non-adopters. The policy implication is that, if all farmers adopted system of rice intensification, their efficiency would increase by 17% while waste in production would reduce to 4.8%. Therefore, our study puts forward substantial empirical evidence to encourage the adoption of system of rice intensification as it could eventually enhance agricultural sustainability.

链接:

http://agri.ckcest.cn/file1/M00/00/02/Csgk0V14r2GALPM-AAiTbGLG_Uw762.pdf

8．资源环境承载能力监测预警的制度功能与完善

作者：张真源；黄锡生

文献源：北京理工大学学报(社会科学版),2019

摘要:资源环境承载能力监测预警制度已经成为引导中国地方资源环境与经济的协调发展,提升公众应对资源环境风险理性的新型治理手段。作为国家环境治理风暴中急速诞生的制度"半成品",其制度运行化效果并不乐观。资源环境承载能力的技术风险性质决定了其无须经涉复杂的价值论与认识论的博弈。因此,为保障制度功能的有效实现,依"理性—工具范式"来完善该制度是较为可行的路径。首先,实行以承载能力监测预警为统领的资源环境风险预警立法模式;其次,实施定期综合资源环境承载能力预警与动态单项资源环境风险预警相结合的信息发布模式;再次,设置民主协商路径,进行有效的资源环境风

险沟通;最后,建立动态的预警应责机制,保障制度功能的落实。

链接:

http://agri.ckcest.cn/file1/M00/0E/C8/Csgk0F14rOSAF6QlAAbvEfMjvn4683.pdf

9. Water resources and nitrate discharges in relation to agricultural land uses in an intensively irrigated watershed

作者：R. Sorando；F.A. Comín；J.J. Jiménez，et al.

文献源：Science of the Total Environment,2019

摘要：Application of integrated hydrological models to manage water resources and non-point agricultural pollutants are increasingly used in decision-making processes. In this study SWAT (Soil and Water Assessment Tool) was used to simulate the water balance and nitrate pollution in an intensively irrigated agricultural catchment (Flumen River in Monegros, Aragon, NE Spain). Rainfall comprised only 45% of the inputs of water in the Flumen watershed and the rest is contributed through irrigation canals from two other rivers outside the Flumen watershed. Green water storage and green water flow are the dominant components of the water balance in the watershed, which is related to the important contribution of water for irrigation. In general, green water storage and green water flow are quite similar in the subwatersheds dominated by irrigation agriculture that are located in the central part of the watershed. A similar pattern was observed for blue water, with high amounts in the central irrigated subwatersheds compared to the non-irrigated subwatersheds. Consequently, nitrate infiltration in the aquifer was higher in the inner irrigated subwatersheds (100-250 kg N ha^{-1} $year^{-1}$) but much lower than the lateral flow rates estimated in the non-irrigated subwatersheds (1400-2000 kg N ha^{-1} $year^{-1}$). Two scenarios simulating the effects of expected climate change factors in this zone were performed. A reduction in the availability of water for irrigation will transform the area from irrigated crops to cereal. In this case the water flow of River Flumen at the outlet of the watershed is reduced by 15%. If a reduction of 40% nitrate fertilization is applied, the nitrate exported to Flumen River would decreased by 28%. These results suggest that dosing irrigation water and fertilizers in accordance with crop requirements would contribute to buffer peaks of water and nitrate discharges and to a more efficient agricultural use of the resources.

链接:

http://agri.ckcest.cn/file1/M00/0E/C8/Csgk0F14rleAW2B4ADhnIF0WMXo670.pdf

10．河南省生态农业布局及承载力预测

作者：王瑾

文献源：中国农业资源与区划,2019

摘要：[目的]揭示区域生态农业的布局特征,探讨生态农业的承载力,以期为农业持续发展提供科学依据和参考意见。[方法]文章以河南省为例,通过空间基尼系数和最邻近指数反映生态农业的布局,同时采用投影寻踪建立模型来预测河南省生态农业承载力。[结果]河南省的郑州市和信阳市生态农业基尼系数较高,其他市区的空间基尼系数较小,整体上河南省生态农业呈弱集聚。河南省生态农业布局的最邻近指数不同,郑州、信阳、济源、周口、鹤壁、商丘、三门峡、平顶山和驻马店等9个市的最邻近指数小于1,呈凝聚型分布;而洛阳、安阳、新乡、濮阳、漯河、南阳、开封、焦作和许昌等9个市的最邻近指数大于1,呈均匀型分布。此外南阳市的生态环境承载力最大,信阳市的农业资源承载力最大,应加大该地区农业生态的开发力度,科学规划,持续发展,而郑州市的生态农业承载力均较低,现阶段应加强开发保护力度,促进可持续发展。[结论]河南省生态农业布局和承载力呈区域差异,今后应充分考虑各市区的实际特征和发展潜力,促进其持续发展。

链接:

http://agri.ckcest.cn/file1/M00/00/01/Csgk0V14rHyASwanAAQNnZPN8yo027.pdf

【研究报告】

1．Indicators of Sustainable Agriculture: A Scoping Analysis

发布源：World Resources Institute

发布时间：2014-06-15

摘要：Quantifiable indicators of the environmental sustainability of agriculture—by which we mean minimizing the environmental impacts of agriculture—are an important tool for helping move the world toward a sustainable food future. Indicators enable policymakers, farmers, businesses, and civil society to better understand current conditions, identify trends, set targets, monitor progress, and compare performance among regions and countries. What indicators are most appropriate for tracking progress and motivating actors toward a sustainable food future? To address this question, the World Resources Institute (WRI) conducted a scoping exercise to identify a preliminary list of candidate indicators at the nexus of agriculture and environment. This working paper describes the methods and results of this analysis. First, we identified, analyzed, and profiled the landscape of existing indicators, indices, and datasets relevant to the environmental sustainability of agriculture. Second, we selected the most relevant “thematic areas” for environmental sustainability in agriculture. These areas are water, climate change, land conversion, soil health, and

pollution. Third, we identified three generic stages of the “causal chain” of action that indicators can represent or seek to influence. These stages are public policy, farmer practice, and biophysical performance.

链接:

http://agri.ckcest.cn/file1/M00/0E/C8/Csgk0F14pySAJ3LZAAWPIzdRhtk633.pdf