

《中国农业发展战略研究》专题快报

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【政策法规】

1. 资源税法通过：与改革同步 与未来同路

发布源：中国人大网

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摘要：2019年8月26日，经十三届全国人大常委会第十二次会议表决，资源税法正式通过，将于9月1日正式实施。在本次通过的资源税法当中，保留了与水资源税相关的内容，并作出完善，体现出与水资源税改革进程相衔接的特点。资源税法规定，国务院根据国民经济和社会发展的需要，依照本法原则，对取用地表水或者地下水的单位和个人试点征收水资源税。征收水资源税的，停止征收水资源费。“自然资源概念的认定范围在逐渐扩大。”北京大学法学院教授刘剑文认为，“这一表述的修改，为日后随着国民经济的发展，将森林、草原、滩涂等其他资源品纳入征收范围留出空间，也避免了以后出现制度障碍。”规范减免税政策，促进资源集约利用与环境保护。资源税法通过，保持现行资源税制框架和税负水平总体不变，对不适应社会经济发展和改革的要求做了适当的调整，有利于更好地运用税收手段促进资源节约利用，加强生态环境保护。

链接:

<http://www.npc.gov.cn/npc/c30834/201908/0317b2ca99734905a0f32fe25433e9b7.shtml>

【动态资讯】

1. India: Technology for turning Alcohol waste into Fertilizer

【AgroNews】A foul smelling waste from alcohol production is now being treated with a new innovative technology that yields fertilizer for agriculture. “The Prime Minister is committed to virtually inaugurate our technology being used in the first successfully commissioned spent wash treatment plant in Walchandnagar, Aurangabad sometime next month. We have developed the zero discharge technology in association with the Council of

Scientific and Industrial Research, that yields potash, currently imported by India for use as fertilizer,” informed Jagdish Parikh, managing director, Chem Process System. Currently India imports nearly 90 per cent of potash used in the production of fertilizers and is the second largest importer of potash in the world. The new technology helps in the treatment of spent wash, one of the most harmful wastes across the world, generated from a molasses based distillery, that yields potash. After all, molasses is rich in potassium. What’s more, the de-potashed byproduct can also be used as a binder in the production of cattle feed. This innovative technology has now been commercially applied at the spent wash treatment plant at Aurangabad Distillery in Walchandnagar, 135 kilometres from Pune in Maharashtra.

链接:

<http://news.agropages.com/News/NewsDetail---31826.htm>

2. The US National Academies of Sciences, Engineering, and Medicine identified 5 science breakthroughs to advance agriculture

【AgroNews】The United States has been the world's leading agricultural producer for many years. Today the U.S. food and agriculture system faces formidable challenges and will be tested as world food production must double to meet the needs of a global population expected to reach 8.6 billion by 2030. In addition, natural systems in many regions are stressed by water scarcity, increased weather variability, floods, and droughts. Science Breakthroughs to Advance Food and Agricultural Research by 2030 is released by the US National Academies of Sciences, Engineering, and Medicine (NASEM) to identify ambitious scientific directions in food and agriculture. The project involved the scientific community in describing scientific opportunities with high potential to create knowledge breakthroughs that will lead to new paradigms for research and food production. Below are the five scientific breakthrough areas identified by NASEM that could have the greatest positive impact on food and agriculture: 1) Prioritize transdisciplinary science and systems approaches. 2) Create an initiative to more effectively employ existing and new sensing technologies. 3) Facilitate the use of new agri-food informatics, information technology, data science, and artificial intelligence in food and agricultural research. 4) Use genomics and precision breeding to improve traits in agriculturally important organisms. 5) Increase the understanding of the animal, soil, and plant microbiomes. The report also points out that the science breakthroughs alone cannot transform food and agriculture. Investments are needed for tools, equipment, facilities, and human capital to conduct cutting-edge

research in food and agriculture. Innovation and adequate funding are crucial for making food and agricultural system more efficient, resilient, and sustainable.

链接:

<http://news.agropages.com/News/NewsDetail---31832.htm>

3. 提高耕地质量 推进绿色兴农 全国盐碱地改良技术培训班在大安举行

【中华人民共和国农业农村部】为总结盐碱地改良技术的成功经验做法,探索形成一套可复制、可推广的盐碱地改良技术模式,推动农业绿色发展,8月28日,全国盐碱地改良技术创新与推广高峰论坛在大安市举行。当前我国盐碱地改良形势严峻,盐碱地分布广、危害大,农业农村部耕地质量监测保护中心依托耕地保护提升项目,在20多个省(区)开展盐碱地改良工作,并组织全国技术推广部门负责人和企业代表现场观摩有机硅改良盐碱地这项特殊的技术,旨在针对东北苏打盐碱地改良进行技术推广与示范。盐碱地是吉林省重要的土壤资源,总面积达2520万亩,属于松嫩平原苏打盐碱土,主要分布于洮南、洮北、大安、镇赉、通榆、长岭、乾安、前郭、扶余、宁江、双辽、梨树、农安等13个县。多年来,通过物理改良、化学改良、生物改良和工程改良等几种方式,吉林省在盐碱地改良利用方面进行了积极探索和实践,积累了很多成功经验。全省改良利用轻度盐碱化耕地744万亩、中度盐碱化耕地240万亩、重度盐碱化耕地140万亩,为保障国家粮食安全,促进当地生态环境改善做出了积极贡献。

链接:

http://www.moa.gov.cn/xw/qg/201908/t20190830_6327033.htm

4. 西藏整治垃圾处理污水 改善人居环境 建设美丽乡村

【中华人民共和国农业农村部】西藏自治区农业农村厅相关负责人表示,截至7月底,共清运农村垃圾6.3万吨,清理村沟村塘淤泥1.2万吨,疏通渠道河道1000多公里,平整消毒转运牲畜粪污4500余处,规整农牧区柴火、饲草料乱堆乱放1.5万余处。全区排查河湖“四乱”问题825个,整改销号78个,清理整治垃圾围坝10处,关停取缔非法采砂场569家。大部分地区建立了每周集中清理、集中整治、跟踪督导制度,着力形成了村容村貌长期干净、整洁、有序的长效机制。西藏自治区住建厅相关负责人表示,截至6月,西藏自治区16个村落入围中国传统村落名单。同时,指导督促各地编制传统村落保护规划,目前已完成6个村落保护规划编制。此外,根据《关于通报2019年第二季度非正规垃圾堆放点排查整治工作情况的函》,截至6月30日,西藏自治区16处非正规垃圾堆放点均已整治清理完成,销号完成率达100%。

链接:

http://www.moa.gov.cn/xw/qg/201908/t20190828_6323327.htm

5. 黑龙江发展绿色农业 8046万亩地上长出“绿色农产品”

【中华人民共和国农业农村部】黑龙江省全面开创龙江农产品的质量时代,打绿色有机优势牌,绿色有机食品种植面积达到8046万亩,有效使用绿色食品标识产品达到2700个,多个农产品品牌已走出中国,走向国际市场。黑龙江是中国农业大省,粮食总产量连续13年一直稳居中国第一位。这些年,黑龙江实施农业供给侧改革,实施农产品品牌战略,促进优质农产品“走出去”。从种植源头上,黑龙江绿色有机食品种植面积达到8046万亩。其中,黑龙江省建设了16个中国绿色高质高效创建示范县,种植面积为1098.4万亩。同时,借助互联网的力量,该省还建设了1600个“互联网+农业”高标准示范基地,种植面积达424.6万亩。从绿色农产品追溯体系上,黑龙江对绿色农产品实行“全程可追溯”,大力完善农产品质量追溯平台,推进质量安全智慧化监管,推动已认证的绿色、有机、地理标志产品全部实现入网追溯,构建起“源头可追溯、流向可追踪、信息可查询、责任可追究”的农产品质量安全追溯体系,黑龙江省农产品国检总体合格率98.78%。从品牌建设上,黑龙江推进品牌规划布局、标准制定和评选认定,已形成一套切实可行的绿色农产品品牌建设机制。从政策扶持上,黑龙江鼓励出口企业建立农产品原料基地,支持企业开展国际产品认证、检测能力建设和国际市场开拓,让更多绿色的农产品被世界“看见”。目前,全省有2700个有效使用绿色食品标识产品,600个有效使用有机食品标识产品。

链接:

http://www.moa.gov.cn/xw/qg/201908/t20190827_6323165.htm

6. 修法保护农民土地权益：只做加法不做减法

【中国人大网】2019年8月26日上午,十三届全国人大常委会第十二次会议表决通过了关于修改土地管理法、城市房地产管理法的决定。其中,决定主要对土地管理法作出修改。新修改的土地管理法坚持保护农民利益这一基本原则和重要目标,将永久农田基本保护制度确定下来、允许集体经营性建设用地入市、明确国家要建立国土空间规划体系,同时在征地补偿、宅基地等直接关系农民利益的问题上,只做加法不做减法。2018年12月29日,十三届全国人大常委会第七次会议通过了关于修改农村土地承包法的决定:耕地承包期为三十年,届满后再延长三十年。被征地农民原有生活水平不降低,长远生计有保障;增加农民收入,允许集体经营性建设用地入市;尊重农民意愿,让农民“户有所居”。此外,新修改的土地管理法还下放了宅基地的审批权,明确要求通过规划合理安排农村的宅基地,为改善农村的居住条件提供便利。这些举措都将为农民利益提供更加充分的实实在在的保障。

链接:

<http://www.npc.gov.cn/npc/c30834/201908/72bd37ecec245469f5f0bea3aa10c54.shtml>

7. Scientists successfully inoculate, grow crops in salt-damaged soil

【AgroNews】 A group of researchers may have found a way to reverse falling crop yields caused by increasingly salty farmlands throughout the world. Led by Brent Nielsen, professor of microbiology and molecular biology at Brigham Young University, scientists have used bacteria found in the roots of salt-tolerant plants to successfully inoculate alfalfa plants against overly salty soil. The study identifies two specific bacteria isolates -- Halomonas and Bacillus -- that worked to stimulate plant growth in the presence of 1 percent sodium chloride (salt), a level that significantly inhibits growth of uninoculated plants. This discovery is significant since soils throughout areas of China, Australia and the Middle East have grown increasingly salty, as well as major farmland in the southwest United States. In addition to the work on alfalfa, America's No. 4 crop, the research team has already started to conduct lab and greenhouse experiments on rice, green beans and lettuce. The next step is to carry out field trials on the inoculated crops.

链接:

<http://news.agropages.com/News/NewsDetail---31714.htm>

8. How digital revolution in farming systems can boost productivity

【AgroNews】 With increasing population, urbanisation and contagious depletion of natural resources, there has to be a paradigm shift in farmer's perception from production to productivity and to profitability. In this present scenario, the major challenge arising are shrinking land and depleting water and other related resources in agriculture. There is need for promoting farmer friendly location specific production system management technologies in a concerted manner to achieve vertical growth in horticulture production dully ensuring quality of produce and better remuneration per unit of area with judicious use of natural resources. In this endeavour, precision farming aims to have efficient utilisation of resources per unit of time and area for achieving targeted production of horticultural produce. Many technological developments including Information and communications technology and Geoinformatics led to the development of the concept of precision farming. Its success relies on the integration of these technologies into a single system that can be operated at farm level with sustainable effort. These technological developments are as follows: Geoinformatics, GPS, RS Technique, GIS, Computer and Internet, Spatial Decision Support Systems (SDSS), Yield Mapping, Diagnosis and recommendation integrated system (DRIS), and Future strategy. Future strategy for

adoption of precision agriculture in India should consider the problem of land fragmentation, lack of highly sophisticated technical centres for precision agriculture, specific software for precision agriculture, poor economic condition of the farmers, etc.

链接:

<http://news.agropages.com/News/NewsDetail---31700.htm>

9. Bad Blooms: Researchers review environmental conditions leading to harmful algae blooms

发布源: EurekAlert!

发布时间: 2019-08-26

摘要: When there is a combination of population increase, wastewater discharge, agricultural fertilization, and climate change, the cocktail is detrimental to humans and animals. This harmful cocktail produces harmful algal blooms, and many of these are toxic to humans and wildlife. Wayne Wurtsbaugh, Professor Emeritus in the Watershed Sciences Department at Utah State University, along with Hans Paerl and Walter Dodds published a global review of conditions that lead to these harmful algal blooms in rivers, lakes, and coastal oceans. Wurtsbaugh says that the review will be an excellent resource for students studying pollution and for managers wanting to review recent advances in this field of study. Their review highlights how agricultural, urban, and industrial activities have greatly increased nitrogen and phosphorus pollution in freshwater and marine systems. This pollution has degraded water quality and biological resources costing societies billions of dollars in losses to fisheries, the safety of drinking water, increases to greenhouse gas emissions and related social values. Their findings have been published in, "Nutrients, eutrophication and harmful algal blooms along the freshwater to marine continuum." The technology currently exists to control excessive nutrient additions, but more effective environmental regulations to control agricultural nutrient pollution, and investment in more advanced wastewater treatment plants will be needed to reduce these inputs and improve water quality. The enhancement of the quality of freshwater and coastal systems will become essential as climate change and human population growth place increased demands for high quality water resources.

链接:

https://www.eurekalert.org/pub_releases/2019-08/sje-bbr082619.php

【文献速递】

1. 日本和欧盟农业支持政策的转型路径比较与启示

作者：马红坤；毛世平

文献源：华中农业大学学报(社会科学版),2019

摘要：选择切合我国农业发展现实的转型路径对加快增产导向的农业支持政策转型意义重大。选取近年来沿着不同路径持续推进农业支持政策转型,资源禀赋、转型背景同我国相似、转型绩效良好、借鉴价值较大的日本和欧盟进行比较分析,深入探讨了二者选择不同转型路径的原因、相应的转型路径和主要政策措施。研究发现:日本立足小农生产格局下农业竞争力弱化的现实,选择提高小农竞争力为首要目标的转型路径,并构建了竞争力导向的政策新体系;欧盟则从农业环境保护现状远低于社会预期的现实出发,选择以促进农业绿色发展能力提升为重点的转型路径,沿着该路径推进了近年来的两轮改革。当前,我国农业发展面临竞争力弱化和绿色发展能力不足的双重压力,政策转型应以促进小农竞争力和绿色发展能力提高为目标,立足小农现实,多措并举,提高农业竞争力的同时,全面践行“两山”理论,推动农业实现绿色发展。

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1spneAIDRyAAXALN2KMs0714.pdf>

2. 资源环境承载力综合评价方法在西藏产业结构调整中的应用

作者：牛方曲；封志明；刘慧

文献源：地理学报,2019

摘要：经济的快速发展造成资源的过度消耗和环境恶化,资源环境承载力研究逐渐得以关注。本文构建了产业、人口、经济、资源、环境综合分析框架,该框架首先评价各产业对区域社会经济的重要性,确定产业结构调整方向;进而分析产业、人口与资源环境间相互作用机制,明晰产业经济、人口规模与资源利用、环境污染的关系;然后开展资源环境承载力综合评价,为实现环境友好、资源有效利用前提下的最大社会经济发展规模提供依据。西藏自治区案例研究结果显示,有色金属矿采选业、旅游业、酒饮料和精制茶制造业对当地社会经济系统有着重要作用,成为支柱产业;不同发展情景的资源环境承载力评价,确定了资源环境限制下各种产业结构调整所能支撑的最大人口和经济规模,为区域产业发展提供决策依据。本文所构建的分析框架可为实现“社会经济—资源环境”系统可持续发展提供决策支撑。该框架的建立增强了资源环境承载力评价方法在辅助决策方面的可操作性,有助于推进区域资源环境承载力理论研究和实践应用。

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1sqCKA0lo1ABPX4Y-e2iU766.pdf>

3. 绿色发展背景下农户施肥及其决策行为研究进展

作者: 王恒; 易小燕

文献源: 中国生态农业学报(中英文),2019

摘要: 生态振兴是"五大振兴"之一,是乡村振兴的内在要求。为了实现生态振兴,应促进农业绿色发展,在化肥施用过量的背景下采用符合绿色发展理念的施肥行为是农业绿色发展的重要举措。为此本文对相关文献进行梳理,以期科学施肥实施及相关研究提供参考。首先总结了绿色施肥行为的内涵,即选择符合绿色发展理念的肥料,选择绿色生产技术,提高肥料利用效率和减少过量施肥带来的环境污染行为。然后系统地整理了包括计划行为理论和农户行为理论在内的绿色施肥的决策机制,并从地块特征、外部政策环境、个体和家庭特征及农户感知4个方面归纳总结了国内外有关农户绿色施肥行为决策影响因素的研究成果。并提出了研究内容及研究主体有待于进一步拓展和延伸的结论,未来关于绿色施肥的研究主要有以下两大趋势:1)研究内容将随着绿色施肥科技的进步不断拓展;2)研究的主体会聚焦于新型农业经营主体的绿色施肥行为。

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1sn0qAS7lQABQKByVJiAk862.pdf>

4. 耕地资源可持续发展的系统动力学仿真分析

作者: 张雪花; 滑永胜; 韩成吉

文献源: 水土保持通报,2019

摘要: [目的]探讨耕地生态修复对粮食产量和土壤重金属含量的影响,为耕地可持续利用提供决策。[方法]以天津市为例,运用系统动力学方法,构建耕地生态修复系统动力学模型(CLERSD),设置绿色发展策略、可持续发展策略、生态修复3种策略下的6种情景,对天津市2016—2030年不同用地模式下的系统发展趋势进行仿真。[结果]从长期趋势看,绿色发展策略中,增加化肥农药的使用虽然可以短期增产,但于长期无益,而且还会有较多的耕地由于受损而需要生态修复。可持续发展策略中,增加投资可以提高粮食产量,促进农业可持续发展;而增加污水灌溉,虽然可在短期内更好地满足作物生长用水需求,但长期使用会导致重金属镉的含量上升,使较多的耕地需要转为生态用地;生态修复策略中,种植具有较强金属富集能力的植物,可以使生态用地在较短时内完成对受损耕地的修复,使土壤重金属含量降低、耕地数量增多。[结论]在农业生产中,可以通过改变农药化肥投入、资金投入、降低污水灌溉和耕地生态修复等措施,维护粮食安全和促进农业绿色可持续发展。

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1sn8eAciR2AAldk17ZhDY054.pdf>

5. Toward sustainable agriculture in the tropics

作者: James Erbaugh; Rosina Bierbaum; Guillermo Castilleja, et al.

文献源: World Development,2019

摘要: Wide-scale transformation promoting sustainable agricultural production in the tropics will be crucial to global sustainability and development. Although contemporary agricultural production has increased alongside international demand, it has resulted in extensive changes in land cover, often at the expense of tropical forests and other native habitats. Conservation and development professionals from civil society, private foundations, multilateral and specialized international agencies, along with academic organizations and, increasingly, the private sector, have cited the urgent need to transform tropical agricultural production to meet current and future food needs without compromising environmental, economic, and sociocultural outcomes for present and future generations. This introduction identifies the processes by which sustainable agricultural production is being implemented and scaled-up in the tropics. We propose a typology that, in broad terms, conceptualizes the implementation of sustainable agriculture. This typology depicts how contributions to this special issue advance the understanding of sustainable agriculture in the tropics. Together, these articles demonstrate that implementing the sustainable production of agriculture often occurs through hybrid governance, with actors from the public sector, private sector, and civil society working together to define and implement interventions. Evaluation of sustainable agriculture production in the tropics often relies upon transdisciplinary teams that bring data, analysis, and firsthand knowledge together. Future research would do well to focus on sustainability outcomes as a combination of environmental and human well-being indicators; the composition and outcomes of different intervention mixes; and how implementation cycles influence subsequent definition, governance, and evaluation of sustainable agriculture in the tropics.

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1swJmACj9IAAaPGtSmGL8069.pdf>

6. Research on Agricultural Environmental Prediction Based on Deep Learning

作者: Shuchang Chen; Bingchan Li; Jie Cao; Bo mao

文献源: Procedia Computer Science,2019

摘要: The environmental security of agriculture is closely related to human beings. Analytical training of agricultural environmental data, forecasting its development trend, has positive significance for the protection of the safety of agricultural products. This paper

proposes an agricultural environment prediction model based on deep learning LSTM (Long Short-Term Memory). By analyzing the agricultural environment parameters of the current period, the environmental parameters of the next moment can be predicted to achieve the purpose of early warning. The experimental results show that the model's prediction results have little deviation from the actual values; on this basis, the LSTM model is optimized to replace LSTM with GRU (Gated Recurrent Unit), and the model is more effective.

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1sxOKAKYXnAAIPvAQ5kQ4911.pdf>

7. An overview of arable land use for the world economy: From source to sink via the global supply chain

作者: X.D. Wu; J.L. Guo; M.Y. Han; G.Q. Chen

文献源: Land Use Policy,2019

摘要: As an extension of a previous work (Chen and Han, 2015a), this study explored the arable land use of the world economy from source of exploitation to sink of final consumption via the global supply chain, by means of embodiment accounting that includes the indirect feedbacks associated with both intermediate and primary inputs. In magnitude, the global transfer of arable land use is estimated to be around 40% of the total direct exploitation. The connections as well as imbalances of major economies in intermediate and final trades of arable land use are discussed. Canada, Australia, Argentina, Pakistan and African regions turn out to have a massive deficit of arable land use in both intermediate and final trades. In contrast, the United States, Japan, Mainland China, the United Kingdom, Germany and France obtain a surplus of arable land use in both intermediate and final trades by land displacement in those net exporters. Indices in terms of arable land use self-sufficiency rate by source and that by sink are devised. For India as the biggest source region, around 20% of the arable land resources exploited locally are for final consumption abroad. For the United States as the largest sink region, around 40% of its arable land use originates from foreign regions led by Canada. For Japan as the biggest net importer in both intermediate and final trades, over 90% of its arable land use comes from foreign economies led by African and Asian regions. For sustained development, regions are suggested to be more adapted to the global supply chain based on their behaviors in both intermediate and final trades of arable land use.

链接:

http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1spg-AShm3ACIz_b1owOU375.pdf

8. 世界农业的发展与变迁：1961年来的洲际比较

文献源：世界农业,2019

摘要：本文分析了1961—2014年世界的农产品产量和自然资源变化情况,同时比较了洲际产量增长差异及不同农产品的产出情况。研究发现,随着农业生产的专业化与品种的多元化,农业生产效率不断提高,农业实现了大幅增产;这也使得国际农产品市场格局走向需求决定,大宗农产品价格长期呈现出下降趋势,相应的价格波动也趋于收敛。尽管商品农业与生计农业都有增产激励,但是目的与效率的分化使得世界农业格局正在快速重构。

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1splmAKrEsABaNQ5cAEHg639.pdf>

9. Phosphorus recovery and reuse by pyrolysis: Applications for agriculture and environment

作者：Daquan Sun; Lauren Hale; Gourango Kar, et al.

文献源：Chemosphere,2019

摘要：Phosphorus ore extraction for soil fertilization supports the demand of modern agriculture, but extractable resource limitations, due to scarcity, impose a P reuse and recycling research agenda. Here we propose to integrate biochar production (pyrogenic carbon) with municipal and agricultural waste management systems, to recover and reuse phosphorous that would otherwise be lost from the ecological food web. A meta-analysis and available data on total P in biochar indicated that P-enriched feedstocks include animal manure, human excreta, and plant-biomass collected from P-polluted sites. Phosphorus in biochar could participate in P equilibriums in soils and is expected to supply P. The release, sorption and desorption of P by biochar will codetermine the potential of P replenishment by biochar and P loss from biochar-amended soils. Abiotic and biotic factors are expected to affect sorption/desorption of P between biochar and soil aggregates, and P acquisition by plants. Chemical extraction, using acid or alkaline solutions, is considered as a means for P retrieval from high P biochar, especially for biochar with high heavy metal contents. To bridge the gap between academia and practice, this paper proposes future development for phosphorus acclamation by pyrolysis: 1) identification of high-P bio-waste for pyrolysis; 2) retrieval of P by using biochar as soil amendment or by chemical leaching; 3) biochar modification by inorganic nutrients, P solubilizing microorganisms and other organic matter; and 4) compatible pyrolysis equipment fit to the current waste management context, such as

households, and waste water treatment plants.

链接:

<http://agri.ckcest.cn/file1/M00/OE/80/Csgk0F1swYWAY5YNABnT3Pfrck841.pdf>

10. Exergy analysis of Chinese agriculture

作者: Bo Zhang; Pengfei Jin; Han Qiao, et al.

文献源: Ecological Indicators,2019

摘要: Along with the growing population scale and improving diet structure, a great challenge has been faced to reconcile food supply, resource use and environmental impact in contemporary agriculture. This paper presents an in-depth exergy analysis of Chinese agriculture covering cropping, forest, stockbreeding and fishery over the period of 2001-2015. The resource, environmental and economic performance of the agricultural system are illustrated by accounting all the major exergetic fluxes, which include free nature resources input, purchased economic investments, waste emissions or virtual environmental inputs, and harvested yields of agricultural products. Chinese agriculture has experienced accelerating transition from a self-supporting mode to a modern energy-intensive pattern, which is characterized by lower renewability index, higher non-renewable resource consumption and economic investment ratio, and larger waste emissions and environmental resource input. The improvements of resource use efficiency and total agricultural productivity are also identified as indicated by the evolution of resource yield ratio and system transformity. In 2015, as to 100 units of agricultural yield, there were about 109 units of purchased resource input including 18 units purchased nonrenewable resources, 748 units of free natural resource input and 21 units of environmental impact. Exergy analyses capture the resource and environmental performance of agricultural ecological economic system by pinpointing the real exergy dissipation and cost processes, which could help policy makers to couple biophysical concepts more robustly for improving resource use efficiency and achieving sustainable development of Chinese agriculture in the 21st century.

链接:

http://agri.ckcest.cn/file1/M00/OE/80/Csgk0F1swmGAa-0_ABSHq_JIs2w572.pdf

【标准】

1. 畜禽粪便农田利用环境影响评价准则

发布源：国家标准

发布时间：2012-03-13

摘要：本标准规定了畜禽粪便农田利用对环境影响评价程序、评价方法、评估报告的编制的要求。本标准适用于畜禽粪便农田利用的环境影响评价。

链接:

<http://agri.ckcest.cn/file1/M00/0E/80/Csgk0F1snQqAUOjsADB2-xNYumU130.pdf>

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