



2019年第54期总168期

粮食和食物安全专题

本期导读

▶ 前沿资讯

1. 即将成为新一代世界谷物产地的国家
2. 从玉米到大麻：2018年GRO的五大洞见

▶ 学术文献

1. 美国牛肉生产中的环境足迹
2. 使用气温衍生品对冲作物生产风险
3. 在农场规模审核中采用模型预测土壤含碳量

中国农业科学院农业信息研究所

联系人：董渤

联系电话：010-82106260

邮箱：agri@ckcest.cn

2019年1月7日

更多资讯 尽在农业专业知识服务系统：<http://agri.ckcest.cn/>

▶ 前沿资讯

1. The Countries That Will Be the World's New Breadbaskets (即将成为新一代世界谷物产地的国家)

简介: The world's population is forecast to grow by 30 percent to 10 billion people by 2050, bringing a sharp increase in demand for new food supplies. But in many developed countries, population growth is leveling out or declining, and these regions are expected to become increasingly important in helping to feed the rest of the world. In countries that make up the former Soviet Union, populations are predicted to drop sharply in coming years, just as the efficiency of agricultural production booms. The number of people living in Europe, too, will begin to shrink by the 2030s, while agricultural output should continue to increase slowly. Such excess supplies, if they end up as exports, could potentially offset any food shortages that might emerge in South Asia and sub-Saharan Africa, as well as quickly growing shortages of protein in China.

来源: GRO

发布日期: 2019-02-02

全文链接:

https://gro-intelligence.com/insights/worlds_new_breadbaskets?utm_campaign=January%202019%20content%20emails&utm_source=hs_email&utm_medium=email&utm_content=68724920&hsenc=p2ANqtz-92vHApUG58n4S8d-9zXqw2597G8aX6Bz_jNNq35zx6H09wXE9POGW_jDBuRrGn05CeNz47QDwp-u4fzZApr0kH1gKgVR3w&_hsmi=68724920

2. From Corn to Cannabis: Gro's Top 5 Insights of 2018 (从玉米到大麻: 2018年GRO的五大洞见)

简介: From Brazilian soybean plantations and US corn fields to Chinese livestock feedlots, Gro Intelligence took readers on a round-the-world tour of crops and trade flows this year with our Weekly Insight articles. As 2018 wraps up, we're presenting our Top 5 picks of the most astute and impactful Insights we published. There was no shortage of major agricultural news this year. The US-China trade dispute dominated headlines, with repercussions from Iowa to Mato Grosso state in Brazil and Guangxi province in China. Severe droughts in Australia, Europe, and South Africa hit wheat and corn yields, even as the US and Brazil enjoyed bumper soybean harvests. China, ever in search of food security for its huge population, continued forging new agricultural partnerships around the globe.

来源: GRO

发布日期: 2018-12-26

全文链接:

https://gro-intelligence.com/insights/from-corn-to-cannabis-gros-top-5-insights-of-2018?utm_campaign=December%20Newsletters&utm_source=hs_email&utm_medium=email&utm_content=68601124&hsenc=p2ANqtz-8x9i48ZSQwFOD3ubK8v4SP_gtA-HLG1Llq3_Jr9Ka5G9Gp2Y8CxACHVorTf0kRo01nFrnLcZI4VGncw4UMqUaB30prkA&_hsmi=68601124

学术文献

1. Environmental footprints of beef cattle production in the United States (美国牛肉生产中的环境足迹)

简介: The environmental impacts of beef cattle production and their effects on the overall sustainability of beef have become a national and international concern. Our objective was to quantify important environmental impacts of beef cattle production in the United States. Surveys and visits of farms, ranches and feedlots were conducted throughout seven regions (Northeast, Southeast, Midwest, Northern Plains, Southern Plains, Northwest and Southwest) to determine common practices and characteristics of cattle production. These data along with other information sources were used to create about 150 representative production systems throughout the country, which were simulated with the Integrated Farm System Model using local soil and climate data. The simulations quantified the performance and environmental impacts of beef cattle production systems for each region. A farm-gate life cycle assessment was used to quantify resource use and emissions for all production systems including traditional beef breeds and cull animals from the dairy industry. Regional and national totals were determined as the sum of the production system outputs multiplied by the number of cattle represented by each simulated system. The average annual greenhouse gas and reactive N emissions associated with beef cattle production over the past five years were determined to be 243 ; 26 Tg carbon dioxide equivalents (CO₂e) and 1760 ; 136 Gg N, respectively. Total fossil energy use was found to be 569 ; 53 PJ and blue water consumption was 23.2 ; 3.5 TL. Environmental intensities expressed per kg of carcass weight produced were 21.3 ; 2.3 kg CO₂e, 155 ; 12 g N, 50.0 ; 4.7 MJ, and 2034 ; 309 L, respectively. These farm-gate values are being combined with post farm-gate sources of packing, processing, distribution, retail, consumption and waste handling to produce a full life cycle assessment of U.S. beef. This study is the most detailed, yet comprehensive, study conducted to date to provide baseline measures for the sustainability of U.S. beef.

来源: Agricultural Systems

发布日期: 2019-12-27

全文链接:

http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwuoN-AdT7sACNq_Gb1ZyQ921.pdf

2. Hedging of crop harvest with derivatives on temperature (使用气温衍生品对冲作物生产风险)

简介: This article studies hedging strategies of crop harvest incomes with futures and options on indexes of cumulated average temperatures (CAT). To account for the time and space dependence, temperatures and crop yields are modeled by three dimensions Gaussian fields. In this framework, we study the features and dynamics of CAT futures and CAT basket options. Next, we find the portfolio of CAT futures minimizing the variance of incomes from crop in different regions. We compare this hedging strategy to the portfolio maximizing the expected exponential utility of incomes. Furthermore, we assess the impact

更多资讯 尽在农业专业知识服务系统:<http://agri.ckcest.cn/>

of CAT basket options on the variance of crop incomes. We conclude this work by a realistic case study in which the harvest of green maize in two Belgian regions is hedged against adverse deviations of temperatures with CAT futures or options.

来源: Insurance: Mathematics and Economics

发布日期: 2018-12-12

全文链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwuKZGAaGqKAA0z1EeF3UE857.pdf>

3. Using model predictions of soil carbon in farm-scale auditing - A software tool (在农场规模审核中采用模型预测土壤含碳量)

简介: We introduce a software tool for optimal sampling design in the context of farm-scale soil carbon auditing, where the amount of sequestered soil carbon will be estimated from a random sample. Existing tools do not use available ancillary information, or do not have the functionality needed for farm-scale soil carbon auditing. Using a grid of predicted carbon content with associated uncertainty, the software optimises a stratified random sampling design, such that the profit is maximised on the basis of sequestered carbon price, sampling costs, and a trading parameter that balances farmer's and buyer's risks due to uncertainty of the estimated amount of sequestered carbon. As the algorithm is computationally intensive, the package is written in Julia for speed. From a case study we conclude that our software is an effective tool for farm-scale soil carbon auditing, and that it outperforms the existing tools in terms of efficiency and functionality.

来源: Agricultural Systems

发布日期: 2018-12-03

全文链接:

<http://agri.ckcest.cn/file1/M00/06/5B/Csgk0FwunuqAbL-ZAAnBt1Rxd68896.pdf>