



2022年第47期总368期

## 农业与资源环境信息工程专题

### 本期导读

#### ▶ 前沿资讯

1. 澳大利亚 -综合农场数据，用于农场知情决策： 在西澳南部和 Riverina 地区进行了两季试验，拜耳的突破性数字农业平台 FieldView 正在向市场发布
2. 衡量农田养分盈亏的新数据

#### ▶ 学术文献

1. 基于物联网技术的智能农业系统的最新趋势
2. 通过应用农业4.0技术增强智慧农业

#### ▶ 科技报告

1. 利用数字化和自动化形成精准农业： 案例研究

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## ▶ 前沿资讯

### 1 . Australia - Integrated farm data for informed on-farm decision making - With two seasons of trials in southern West Australia and the Riverina under its belt, Bayer's breakthrough digital farming platform, FieldView, is being released to the market (澳大利亚 -综合农场数据，用于农场知情决策：在西澳南部和 Riverina 地区进行了两季试验，拜耳的突破性数字农业平台 FieldView 正在向市场发布)

简介：Bayer's Head of Digital Farming ANZ, Chris Staff says FieldView allows growers to gain a deeper understanding of their operations, through the collection, visualisation and analysis of data they are generating on their farm, in a single dashboard. "Digital farming integrates detailed information on factors such as weather conditions, soil moisture, soil nutrient levels and crop health to improve on-farm decision-making. Farmers can leverage application technology and data science to maximise efficiency and productivity." "FieldView overcomes the increased challenge of data aggregation and analysis, capturing a farm's information in a single dashboard. It provides an integrated picture from which a grower can make informed and timely farm management decisions, and use resources more precisely and effectively to conserve water, energy, fertiliser and crop protection inputs."

来源：SeedQuest

发布日期：2022-11-15

全文链接：<http://agri.ckcest.cn/file1/M00/10/16/Csgk0GN-QmARWy2AAJJGIp5RHA340.pdf>

### 2 .New data to measure cropland nutrient budgets (衡量农田养分盈亏的新数据)

简介：How much fertilizer is the right amount to ensure that crop production can achieve local and global food security needs while limiting harm to the environment? Answering that question remains a huge challenge, but one that can be better explored through new, robust data available in FAOSTAT. This new information tool is a joint effort by the Food and Agriculture Organization of the United Nations (FAO) and the International Fertilizer Association (IFA), in collaboration with top scientists and experts at the University of Maryland Center for Environmental Science, the Swedish University of Agricultural Sciences, CEIGRAM-Universidad Politécnica de Madrid, Wageningen University & Research, the University of Nebraska and the African Plant Nutrition Institute. This fruitful partnership has led to the development of novel data on cropland nutrient budgets, allowing to assess the environmental burden of fertilizer inputs in relation to the amounts needed to support sustainable crop production. The Cropland Nutrient Budget is a new data domain of FAOSTAT, the world's largest portal on food and agriculture statistics, serving as a global public good allowing Member States and all stakeholders in the world's agrifood systems to peruse harmonized data on production, trade and consumption and now the flows of nitrogen, phosphorus and potassium, the three major plant macronutrients needed by crops to thrive.

来源：FAO

发布日期：2022-11-15

全文链接：<http://agri.ckcest.cn/file1/M00/03/44/Csgk0YfVsIeAVyyBAAHnbj71z0A682.pdf>

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## ► 学术文献

### **1 . Recent trends of smart agricultural systems based on Internet of Things technology: A survey (基于物联网技术的智能农业系统的最新趋势)**

简介: Internet of Things (IoT) technology can be used to enhance traditional approaches by combining advanced technologies with sophisticated methodologies aiming to boost agricultural production quality and quantity. The global population is rapidly growing, and the demand for food is rising accordingly. Thus, traditional agriculture will be unable to fulfill the demands of the crops. This paper aims to review the state-of-the-art contributions of smart IoT-based agriculture system design including IoT technology which presents the core framework of present and future agricultural development. Also, the basic structure of the IoT agricultural system is highlighted including the hardware and the software along with the data processing components. The potential issues systems are also investigated. The results of previous works show that the developed agricultural based-IoT systems can provide higher accuracy for making the best decision to structure a healthy farm environment. Consequently, crop production can be increased many folds.

来源: Computers and Electrical Engineering

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### **2 . Enhancing smart farming through the applications of Agriculture 4.0 technologies (通过应用农业4.0技术增强智慧农业)**

简介: Agriculture 4.0 represents the fourth agriculture revolution that uses digital technologies and moves toward a smarter, more efficient, environmentally responsible agriculture sector. Agricultural technologies have emerged to enhance sustainability and discover more effective farm methods. This encompasses all digitalisation and automation processes in business and our daily lives, including Big Data, Artificial Intelligence (AI), robots, the Internet of Things (IoT), and virtual and augmented reality. These technological advancements are having a profound impact on our lives. From a technical standpoint, it brings us to precision agriculture. This provides a data-driven strategy for efficiently growing and maintaining crops on cultivable land, enabling farmers to use most of the resources at their disposal. Throughout the supply chain, daily operations create massive volumes of data. Most of this information was previously untouched, but with the help of big data technologies, such information can be used to improve the performance and production of any crop. Depending on the crop type and its growth needs, digitised harvesters can help handle huge areas in various situations, particularly agriculture. This paper is brief about Agriculture 4.0 and its condition. Smart farming, Various key technologies and specific domains for the Exploring Agriculture 4.0 Domain are discussed in detail and, finally, identified and discussed significant applications of Agriculture 4.0 technologies. These technologies are essential to our lives since they simplify our daily duties without recognising them. In Agriculture 4.0 systems, fleets of digitised equipment employ current infrastructures like cloud computing to connect, identify the processing condition of different regions and the requirement for input materials and coordinate the machinery.

来源: International Journal of Intelligent Networks

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## ➤ 科技报告

### 1 . Leveraging automation and digitalization for precision agriculture:

#### Evidence from the case studies (利用数字化和自动化形成精准农业: 案例研究)

**简介:** 精准农业的数字化和自动化解决方案可以提高效率、生产力、产品质量和可持续性。然而,采用此类解决方案也会存在相应的障碍,包括成本、缺乏知识和技能以及缺乏有利的环境和基础设施,可能会阻碍这些技术的应用获益。本研究根据全球22项案例研究的结果发现,国家数据政策和基础设施是数字化和自动化技术在农业领域采用的关键因素,农村地区的互联互通(如互联网)和电力投资也同样重要。还需要对这些解决方案的经济、环境和社会影响进行进一步的研究,以提供有关其效益的证据。为了确保包容性进程,必须在农业生产系统、区域和农场类型之间调整解决方案。交流信息和促进合作的伙伴关系以及合作网络将是关键。最后,提高认识和沟通很重要,因为消费者可能对新技术生产的食品持怀疑态度。总之,通过关注各种解决方案,本研究提供了数字和自动化解决方案的总体分析结果,并为加快采用更具包容性、可持续性和韧性的农业食品系统提供了指导。

**来源:** FAO

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**全文链接:**[http://agri.ckcest.cn/file1/M00/10/16/Csgk0GN- CiAf\\_U7AB7-iELNZdM071.pdf](http://agri.ckcest.cn/file1/M00/10/16/Csgk0GN- CiAf_U7AB7-iELNZdM071.pdf)