



2022年第48期总369期

## 农业与资源环境信息工程专题

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## ▶ 前沿资讯

### 1 . Digital tools can transform agriculture to be more environmentally sustainable (数字工具可以改变农业，使其更具环境可持续性)

简介: Agricultural producers face dual challenges of increasing output for a growing world population while reducing negative effects on the environment. Digital technologies and artificial intelligence can facilitate sustainable production, but farmers must weigh opportunities and risks when deciding whether to embrace such tools. In a new Agricultural Economics paper, University of Illinois scientists propose a research methodology to measure producers' willingness to adopt new technologies related to digital agriculture. The paper outlines some of the sustainability challenges for U.S. agriculture and why it is difficult to address those challenges with conventional technologies, explains Madhu Khanna, distinguished professor in agricultural and consumer economics (ACE) and director of the Institute for Sustainability, Energy and Environment (ISEE) at the U of I.

来源: EurekAlert

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全文链接:<http://agri.ckcest.cn/file1/M00/03/44/Csgk0YfgNLSARva0AAMLq4iCDIc866.pdf>

### 2. 中国农业数字化变革的核心价值与有效路径

简介: 一、中国农业独有的产业结构特征,决定了第一产业升级必须走&Prime;大同大异&Prime;;的数字化变革之路二、农业数字化的核心在于建立有产业价值创造的、并可自主迭代更新的基础大数据采集体系,而&Prime;数字农服&Prime;;恰逢其时三、为每一块农田建档,打造农产价值与风险评估平台体系,让&Prime;价值&Prime;;与&Prime;风险&Prime;;各归其位四、中国农业数字化的终局之一:形成具备全球观瞻能力的农业大脑

来源: 世界农化网

发布日期:2022-11-10

全文链接:<http://agri.ckcest.cn/file1/M00/03/44/Csgk0Yfg0JKACdToAAIPvTArndU155.pdf>

### 3 . Small Robot Company launches Tom V4: Next generation monitoring robot (小型机器人公司推出Tom V4: 下一代监控机器人)

简介: Small Robot Co (SRC), a British agritech start-up for sustainable farming, today announced the launch of its next generation Tom v4 monitoring robots. This is a major milestone: commercialisation to both farmers and corporates. This comes just five years to the day from SRC's initial unveiling at Agri-TechE REAP 2017. Tomv4 is rolling out onto 20 farms in November to deliver SRC's first commercial services for Per Plant Farming. Farmer services are fully subscribed for 2022, with 2023 selling out fast. Services will roll out to a total of around 50 farms throughout the coming year, with additional farm services in Suffolk and Shropshire. A further 100 farmers have signed EOs for 50,000+ hectares potential future service. Farmers can try out the service on as little as 20ha, without a costly machinery outlay.

来源: SeedQuest

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全文链接:<http://agri.ckcest.cn/file1/M00/10/16/Csgk0G0Jg1aAEgOrAANnSTbiYyY500.pdf>

## ➤ 学术文献

### 1. 农业科研信息化发展态势与“十四五”展望

**简介:** 通过对科研信息化的内容和国外发展进程的阐述,分析凝练当前农业科研信息化发展三大态势,一是数据密集型科研范式推动新型科研信息化基础设施建设,二是科研信息化成为农业科研治理体系现代化的重要抓手,三是人工智能等新一代信息技术加速与农业科研活动交互融合。进而提出“十四五”农业科研信息化发展5项建议,一是完善科研信息化高质量发展生态体系,二是加速推进新一代科研信息化基础设施建设,三是提升农业科研大数据汇聚与计算能力,四是重视科研信息化应用效果,五是加强复合型科研信息化人才队伍建设。

**来源:** 科技管理研究

**发布日期:** 2022-11-10

**全文链接:** <http://agri.ckcest.cn/file1/M00/10/16/Csgk0G0JhbCAC9SZABjeNwOya4g405.pdf>

### 2 . Design of a Data Management Reference Architecture for Sustainable Agriculture (可持续农业数据管理参考体系结构的设计)

**简介:** Effective and efficient data management is crucial for smart farming and precision agriculture. To realize operational efficiency, full automation, and high productivity in agricultural systems, different kinds of data are collected from operational systems using different sensors, stored in different systems, and processed using advanced techniques, such as machine learning and deep learning. Due to the complexity of data management operations, a data management reference architecture is required. While there are different initiatives to design data management reference architectures, a data management reference architecture for sustainable agriculture is missing. In this study, we follow domain scoping, domain modeling, and reference architecture design stages to design the reference architecture for sustainable agriculture. Four case studies were performed to demonstrate the applicability of the reference architecture. This study shows that the proposed data management reference architecture is practical and effective for sustainable agriculture. Effective and efficient data management is crucial for smart farming and precision agriculture. To realize operational efficiency, full automation, and high productivity in agricultural systems, different kinds of data are collected from operational systems using different sensors, stored in different systems, and processed using advanced techniques, such as machine learning and deep learning. Due to the complexity of data management operations, a data management reference architecture is required. While there are different initiatives to design data management reference architectures, a data management reference architecture for sustainable agriculture is missing. In this study, we follow domain scoping, domain modeling, and reference architecture design stages to design the reference architecture for sustainable agriculture. Four case studies were performed to demonstrate the applicability of the reference architecture. This study shows that the proposed data management reference architecture is practical and effective for sustainable agriculture.

**来源:** Sustainability

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