

基于远程监控的农业气象自动采集系统设计 Automatic Collecting System of Agro-meteorology Information Based on Remote Monitoring Technique

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摘要: 针对传统农业气象观测和当前传感器技术系统、方法存在的不足,设计了一套基于远程监控的农业气象自动采集系统,其硬件设备由农田小气候信息采集前端、视频图像信息采集前端、数据采集装置、数据传输装置和供电设备组成。该系统实现了农田小气候和视频图像信息参数采集与传输的高度集成,自动采集降水量、气温、空气湿度、风速、风向、光合有效辐射、土壤温度、土壤湿度和农作物视频图像信息,并通过远程客户端软件实现各要素信息的实时动态显示和远程监控。通过在郑州市、鹤壁市、温江市和荆州市开展的采集试验和系统试运行表明,系统显示出较好的稳定性,农田小气候和视频图像要素数据的采集、传输、动态实时显示与远程监控等各项功能均可满足各级用户需求。 In view of the shortages of traditional agro-meteorological observations and current automatic collecting techniques based on the sensors, an automatic collecting system of agro-meteorology information was built based on remote monitoring technique. Its total devices were composed of collecting front of the field microclimate, collecting front of the video, data collecting device, data transmission device and power equipment. The system highly integrated collection and transmission of the field microclimate data and video information, and automatically collected precipitation, air temperature, air humidity, wind speed, wind direction, photosynthetic active radiation, soil temperature, soil moisture and crop video information. The remote client software could achieve a real-time dynamic display and remote monitoring for all information. The test in Zhengzhou, Hebi, Wenjiang and Jingzhou stations showed that the system had a good performance in automatic collection, integrated transmission, real-time dynamic display and remote monitoring. It provided the basis for automatic identification, disasters information extracting and even crop yields estimation.

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