基于GPS和SMS技术的土壤养分水分速测系统的研究

Rapid measurement system of soil nutrient and moisture based on GPS and SMS technology

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英文关键词：soil nutrient　information collection　precision fertilization　wireless data communication

作者	单位
李志伟	山西农业大学工程技术学院，太谷 030801；
潘剑君	南京农业大学资源与环境学院，南京 210095；
张佳宝	中国科学院南京土壤研究所，南京 210008

中文摘要：

　　为了满足精确施肥中对高密度、全面的农田土壤信息采集、数据无线传输和施肥决策的需要，本系统利用计算机技术和无线数传技术（SMS）对GPS、GIS和土壤养分水分速测系统进行有机集成。一方面通过AT89lv55单片机，使差分GPS和土壤水分测定仪有机集成，实现土壤采样、水分测定、定位一体化；另一方面研制开发了集成针对石灰性褐土的速测值向常规值转换模型的土壤养分速测仪，并利用BENQ M22 SMS数传模块实现土壤养分速测系统与土壤养分管理决策系统的远程数据通讯和资源共享；同时利用Visual Basic和MapObjects控件集成GIS，实现具有空间属性的土壤养分数据可视化管理和分析处理。

英文摘要：

　　Based on the technology of computer and the wireless data transmission, the rapid measurement system that integrates GPS, GIS and the quick analysis equipment of soil nutrient and moisture was developed in order to meet the needs of highly-densed and overall farmland soil information collection, the wireless data communication and fertilization decision in the precision fertilization. On the one hand, DGPS and the equipment of soil moisture were integrated through the AT89lv55 MCU, to realize the integration of soil sampling, measurement of moisture and orientation. On the other hand, the remote communication and the resource sharing between the rapid measurement system and administration decision system of the soil nutrient by using BENQ M22 were realized and the rapid measurement equipment was developed with the model that can quickly transform measured value into conventional value concerning calcareous cinnamon soil. Meanwhile, the system has realized the visualized analysis and management of soil nutrient and moisture with the spatial characteristics by integrating Visual Basic and Map-Objects into GIS.

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