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基于时间序列影像的中观尺度农作物长势监测采样方法

Sampling method of meso-scale crop growth information monitoring based on multi-temporal remote sensing images

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英文关键词: [remote sensing](#) [sampling](#) [monitoring](#) [vegetation index](#) [meso-scale](#) [quantile classification](#) [proportional probability sampling \(PPS\)](#)

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中文摘要:

地面采样调查是遥感应用中一个重要的手段。采样点的空间位置和数量决定了监测点的代表性,并受到监测成本限制。高效和经济地设计采样方案是推进地面采样数据更好地服务于遥感应用的重要问题。该文以遥感在农业方面的应用为切入点,在对现有农作物监测现状研究的基础上,通过对时间序列的遥感影像进行农作物长势分布的分析,运用概率比例规模抽样(PPS)的思想提取采样点。通过对2007年的农作物长势分布区进行农情参数监测点采样,并与2009年的农作物长势分布对比,发现采样点达到较好的一致性。基本满足中观尺度农作物长势监测中采样点具有代表性、典型性和稳定性的要求。

英文摘要:

At present the application effect of Precision Agriculture which is developing rapidly is highly affected by the distribution and quantity of monitoring sensor equipment. The typicalness of the monitoring location was determined by the distribution of monitoring sensor equipment, and the level of capital investment was determined by the quantity of the monitoring sensor equipment. How to design an efficient and economical monitoring method is the key issue to get typical monitoring results. Firstly several existing agricultural monitoring methods were evaluated, then a monitoring method which based on the Vegetation Index and Proportional Probability Sampling (PPS) was proposed. At last, a case study was carried out in Yanqing county, Beijing. The results showed that: 1) By the remote sensing theoretical support, the effect of the method could be verified well by reference data; 2) The method was easy, convenient and repeatable to implement; 3) The method can be used not only for monitoring points program design, but also for monitoring points program validation. After validation, the overall accuracy of the new method in this paper achieved 85%. The method can meet the requirements of representativeness, typicalness and stability for agricultural monitoring applications.

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