EXTRACTION OF PLANTING AREAS OF MAJOR CROPS AND CROP GROWTH MONITORING IN NORTHEAST CHINA

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ABSTRACT—This paper presents a method used in China Agriculture Remote Sensing Monitoring System (CHARMS) for automatically identifying crop planting areas and monitoring crop growth conditions at a large scale based on time-series of MODIS NDVI Datasets. In doing that, the characteristics of NDVI time series of spring wheat, spring maize, soybean and rice in Northeastern China were firstly analyzed to determine the threshold values used for extracting different crops. Then using these thresholds, extraction models for above-mentioned four major crops were established and applied to obtain the spatial distribution of these four crops in Northeastern China in 2009. In comparison with the average statistic data of several years, the total extraction accuracy can reach to 87% or more, which suggests its feasibility to extract planting areas of different crops at a large scale using MODIS data. Based on the extracted crop planting areas, the same MODIS NDVI time series data were used to monitor crop growth conditions in 2009 and compared with the average crop growth of last five years. The crop growth conditions were categorized into three classes, better than usual, usual and worse than usual. The results showed that crop growth conditions in Northeastern China varied over both spatial and temporal scales.