利用多时相Landsat近红外波段监测冬小麦和苜蓿种植面积

Land cover mapping of winter wheat and clover using muti-temporal Landsat NIR band in a growing season

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中文摘要：

　　随着农业产业结构的调整，农作物的种植面积和分布有了较大的时空变化，必然对环境、生态和政府决策产生影响。由于近几年北京及其周边地区苜蓿种植面积大量增加，在利用遥感进行土地利用调查和更新时，原来提取冬小麦的一些方法受到苜蓿的干扰，使精度降低。该文主要探讨针对春夏季作物进行监测和面积提取的方法。通过从4月到6月初的地面测量的小麦和苜蓿的4个时期的光谱发现，初期小麦和苜蓿的差异很小，而后期差异增大，尤其在近红外波段处差异最大，5月下旬到6月初是区分小麦和苜蓿的最佳时期。但5月到6月期间不同地块苜蓿的刈割时间不一致，使小麦和苜蓿在单个时相的影像中难以区分。利用3个时相的Landsat近红外波段合成的假彩色影像图很容易区分冬小麦和苜蓿，并能判断苜蓿的刈割时间，经地面验证，该方法分类精度高。且只使用不同时相的一个近红外波段，将大大节约成本和提高处理速度，受薄云和气溶胶的影响小。

英文摘要：

　　With the adjustment of agricultural structure, the planting area and distribution of crops changed greatly in terms of space and time, which introduced much influence on environment, ecology and decision-making by government. When land use of Beijing and nearby region was investigated and updated through remote sensing, traditional method of extracting winter wheat produced inaccurate results because of mixing with clover whose planting area increased much just in recent years. The focus was put on monitoring crops in spring-summer and extracting their areas in this research. The spectra of winter wheat and clover were measured for four times from April to June, and it was found that there was little difference between winter wheat and clover during early period, but the difference increased gradually during late period. The great difference of spectra was located in near-infrared(NIR) region. It is the best time to classify wheat and clover during late May and early June. However clover in different lands was cut by farmers in different time from May to September. It was impossible to classify wheat and clover in one scene remote sensing image in May and June. The Landsat NIR bands of three days were used to compose a color map and it is easy to not only classify wheat and clover but also infer the cutting time of clover. Tested by ground data, classification results of this method were accurate. This method just used a NIR bands of Landsat, which improved the speed of data processing and reduced the cost, more importantly this method was less influenced by haze.

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