IDENTIFICATION OF AGE GROUPS OF MANAGED PINE PLANTATION USING REMOTE SENSING DATA

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Identification of different age groups is an important requirement for forest management. Forest cover can be estimated using Normalised Difference Vegetation Index (NDVI) from satellite data. The objective of this study was to assess changes of the forest cover in different age groups from the spectral reflectance measured by the satellites. This paper analyses the relationship between NVDI and different ages of managed pine plantation from 1994 – 1997 in the Kings forest, East Anglia, UK. The satellite data used were four – SPOT HRV multi – spectral images form June 1994, 1995, 1996 and 1997. Secondary data on forest management operations were derived from compartment records supplied by the forestry Commission and informal discussions with forest managers.

Age is an important variable in forest growth. Therefore this study investigated changes of NDVI in different age groups <7, 8 – 17, 18 – 37, 38 – 57 and >58 years. The study found that during the period 1994 – 1997, NDVI range from 0.445 – 0.747 in the pine stands. However, in each age group slight changes can be easily recognized. NDVI increased from 0.427 to 0.578 in the < 7 years and 0.706 to 0.738 in the 8 – 17 years pine stands. The results of the correlation analysis indicate a high positive correlation coefficient of 0.99 and 0.97 respectively. However, in the stands aged 18 – 37 and 38 – 57 years the increase with age showed an irregular pattern with more variations than in the very young stands. No significant correlation coefficient was found between NDVI and age in this group, and it shows the lowest correlation coefficient of 0.62 and 0.65 respectively. The next stage the old age group indicates positive high correlation (r = 0.81) due to considerable increase of NDVI at the age of 60 years suggesting that background features may have contributed to the reflected signals.