



**STUDYING INK DISEASE DISTRIBUTION PATTERNS ON HETEROGENEOUS  
LANDSCAPE BY MEANS OF REMOTE SENSING ACTIVITIES  
AND GIS TECHNOLOGY**

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Forest disease monitoring by means of remote sensing, using satellite or digital cameras carried by aircrafts, is getting more and more popular. The main advantages of this technique are the high image resolution (less than 1 meter), the possibility to acquire information on large surfaces in short time, the utilization of pre-defined spectral bands chosen to best discriminate the reflectance signature of healthy and diseased individual trees. Combination of remote sensing with GIS technology and geostatistic modules represents a powerful tool in order to develop risk maps based on disease variables, landscape features and climate, and to obtain important epidemiological information.

Monitoring of Ink disease in Italy was carried by mean of spectral images acquisition with ASPIS technology. Following image interpretation and definition of foci, a disease map was developed and resolved in a GIS. The association of disease presence with landscape features including slope, presence of roads and drainages was investigated by analysing the different informative layers. A significant effect of road density (expressed as meters/hectare) and slope on disease presence was evidenced. Furthermore disease gradient from roads and drainages followed the Kiyosawa and Shiyomi model. Patterns of disease spread was studied at small scale (2 hectares) suggesting that more factors, in addition to drainage and roads architecture, are associated to the foci expansion.