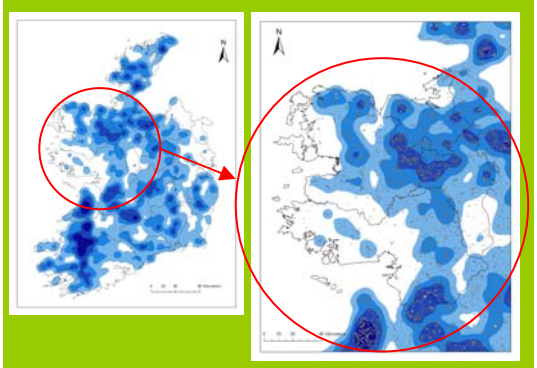
# USING CLUSTER ANALYSIS TO IDENTIFY FOREST RESOURCES - 1

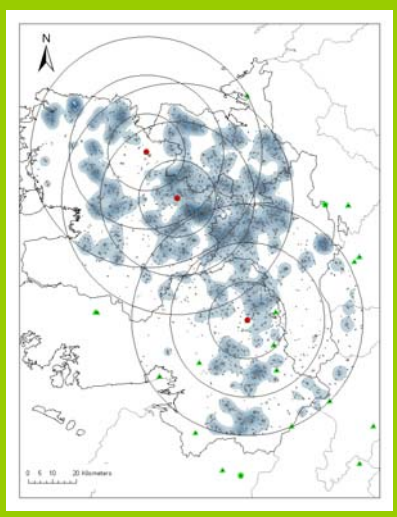
**A new research project cofunded by COFORD and Teagasc hopes to provide a framework for quantifying the wood resources from farm forests in order to maximise potential markets . The study will utilise a Geographic Information System (GIS) in order to provide information about the location of forest plantations using a *cluster approach* for locating areas with large concentrations of private forest cover that are approaching first thinning. Remote sensing techniques will be used to provide information about the current state of plantations, including access, development stage, thin status, and forest stand parameters such as height, and crown assessment which will be captured remotely.**

**This poster demonstrates an overview of the methods to quantify farm forest resources which can be utilised to help develop new or existing market opportunities for farm forest produce.**

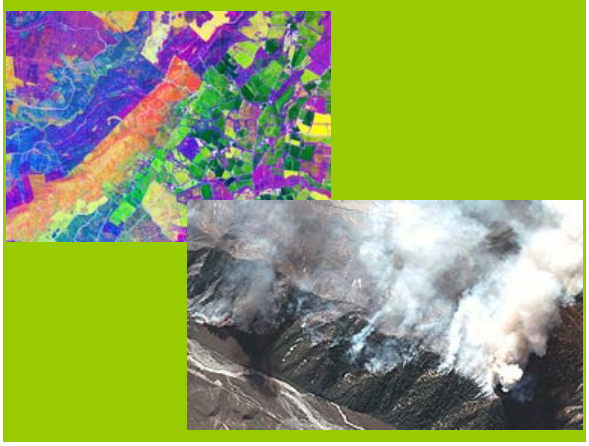
**1** **a Geographic Information System (GIS) will be used in order to provide information about the location of forest plantations. Cluster analysis will be used for locating areas with large concentrations of private forest cover that are approaching first thinning, in order to maximise the area covered by the survey.**



**2** **A number of target clusters will be identified based on the amount of forest and the proximity to a market place. In the example below the analysis indicates cluster centres with hotspots of forest cover below.**



**3** **In addition remote sensing techniques will use Satellite imagery and the latest Quick Bird™, IKONOS™ to provide information about the current state of plantations within clusters providing, access, development stage, thin status. Forest stand parameters such as height, and crown assessment can also be captured.**



**4** **In each cluster additional details will also be gathered by the use of digital aerial photography in order to capture value added data about the plantations such as productive area, roading, access, and development stage.**

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# USING CLUSTER ANALYSIS TO IDENTIFY FOREST RESOURCES - 2

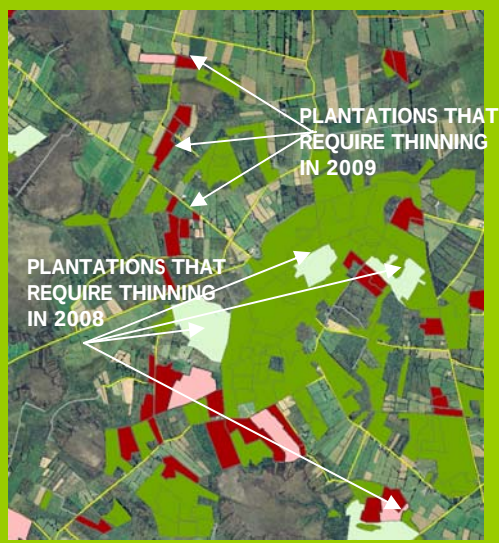
**5** In the second phase all plantations within a cluster, that are approaching first thinning stage will be visited in the field where an assessment of timber quality and volume will be performed in each stand. The field survey will be capture forest growth parameters such as area of stand Top height, basal area and stocking.

FIELD ASSESSMENT

**6** Data collected in the field will compiled into a field database and the volume of each stand will be computed using the COFORD Dynamic Yield Model "Growfor" (COFORD, 2007). These models will be used to generate forecasts of volume production by projecting the growth of stands forward to a reference age.

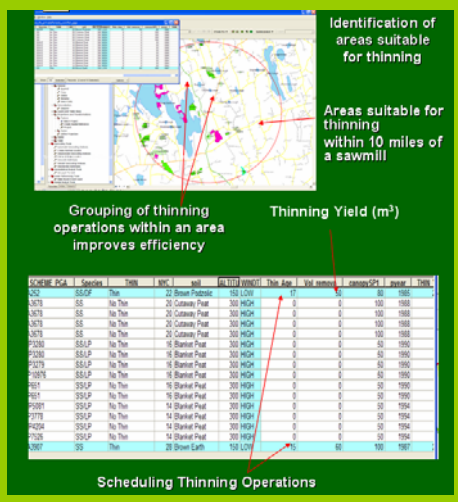

The stand projection model "Growfor" has greatly facilitated the modelling of forest stand development

**7:** Forest resource information available in a high end database within a cluster provides identification of areas suitable for thinning, and shows the areas within proximity of a sawmill or urban area.




*Data supplied under Licence No. 6155 from the Ordnance Survey Ireland*

**8** Information on volume, thinning cycle, thinning yield, thinning year and windthrow risk for each stand in the cluster will be available in a database and will be used as the main tool for further development work for marketing or in the identification of suitable locations for new market opportunities.




**In this example Clustering identifies wood energy resources within proximity to a town orcan be used to find the optimum location for a municipal wood energy boiler**

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