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Seminar on
AFFORESTATION IN THE CONTEXT OF SUSTAINABLE FOREST MANAGEMENT

in conjunction with the 24th session of the Joint FAO/ECE/ILO Committee on
Forest Technology, Management and Training

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Using GIS and site classification methods to predict the yield of Sitka spruce and to map potential productivity and windthrow hazard class in Co. Mayo, Ireland

Basic paper by Niall Farrelly

Summary

As detailed site investigation to determine the productivity of Irish soils for forestry was undertaken in Co. Mayo as a preliminary part of the Forest Inventory and Planning System commissioned by the Irish Forest Service. In order to measure the potential of soils for afforestation, measurements of general yield class were taken in stands on a range of soils. A geographical information system information (GIS) was used to combine and analyse data from the site survey with additional environmental and climatic information. Regression techniques were employed to estimate the potential general yield class of Sitka spruce (*Picea sitchensis* (Bong). Carr) from the range of factors used in the study. A model was developed that predicted general yield class using soil type, elevation and location. The GIS was used to extrapolate and generate maps of potential productivity for the entire county of Mayo, located on Ireland's western seaboard. The recent large scale mapping of soils using the Teagasc Irish Forest Soils methodology (developed at the Kinsealy Research Centre) and the availability of a digital elevation model facilitated the potential productivity map and also provided the basic soils input

for the development of a windthrow hazard classification map. The resulting methodology produces well-fitting models of timber yield that can be used in a GIS as an aid to determining areas that have limited productive capacity. It also identifies areas that are liable to windthrow using recognised methods, and aids the decision-making process of afforestation at a regional level.

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