

Windblow – Is there potential to minimise risk?

Background

Are there Management or thinning options that minimise the risks of windblow? Well we hope to provide at least some answers to the age old questions of thin early, thin lightly or don't thin at all to minimise windblow risk? The study – part of the WINDRISK project founded by COFORD – aims to examine factors linked to windblow and if silvicultural practices can increase the stability of Sitka spruce forests. The project is collaboration between Teagasc and UCD, coordinated by Dr. Áine Ní Dhubháin (UCD) and Dr. Niall Farrelly (Teagasc), and Master students Gonzalo González-Fernández (Teagasc/UCD) and Cian Gallagher (UCD).

The windblow damage from Storm Darwin in February 2014 blew down 8,000 ha of forests in the southern part of the country. Loss of timber, the increase of costs (unscheduled thinning and clear-cutting) and the problems associated with forestry planning are some of the main problems, but indirectly it can increase disease attacks, the risk of fire or the erosion and the decrease on landscape quality and the wildlife habitat.

Previous research has shown (Ní Dhubháin *et al.*, 2009) that five factors have the greatest influence on the occurrence of endemic windblow. These factors are: the height of the stand, location, soil type and altitude and whether or not the stand has been thinned. The first part of the study being undertaken by Cian Gallagher seeks to identify if these are important factors in catastrophic windblow (windblow as a result of storms). This will involve visiting areas that have been storm damaged and recording site and crop factors and determining if certain factors are associated with higher levels of windblow damage.

The second part of the study hopes to examine if crop management (i.e. thinning) plays any significant role in crop stability. This investigation is being carried by Teagasc and by Master student Gonzalo Fernández.

The aim of the study is to determine the influence of thinning type, thinning intensity and timing of thinning and their influence on stability of Sitka forest crops on wet mineral soils.

Specific objectives of the study are:

- *Are trees in an unthinned stand more stable?*

Trees in the unthinned plantations have poorly developed root systems, small crowns, long stems with little taper and a higher centre of gravity. These trees rely largely on neighbour support, but once exposed, the stand is very prone to wind damage.

- *Heavy thinning, light thinning – what's the difference?*

Little is known about changes in tree vulnerability with thinning intensity or about the relative merits of different thinning methods. However, at wider spacing trees could be more stable because they have a higher taper, more conical stem appearance than cylindrical and present bigger root plates and crowns.

- *Should we be thinning early?*

Young trees react quicker to new environmental features, so for stands subject to high wind risk there are advantages to an early start to thinning to develop more stable trees. By delaying thinning, even a low thinning, the risk of damage will almost certainly increase and it could be catastrophic in stands where large height/diameter ratios have been reached.

For further information

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