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Felling Decision Tool





Information required

Step 1 Select Species and Estimate Yield Class

The tool provides support for a range of conifer species, including: Sitka spruce, Norway spruce, European larch, Japanese larch, Douglas fir, Lodgepole pine (north and south coastal) and Scots pine. Yield Class as a measure of the annual productivity of the forest is required as an input. Yield class can be estimated in the tool by providing details on species, age and top height.

Step 2 Select Rotation Type

Rotation type refers to the period of time between the establishment of the forest and when that forest is ready for clearfell. The rotation type will vary due to factors such as tree species, site type and market demand. There are three rotation types to choose from including a financial rotation, and a rotation which will provide a mean tree volume of 0.5 cubic metres (m³), or 0.7 m³, at the time of clearfell. These sizes reflect what sawmills may require, as tree sizes in excess of 0.7 m³ are not typically processed by sawmills.

Step 3 Select Management Prescription

Management prescription describes how the forest will be managed during the rotation. Within the Felling Decision Tool there are two management prescription types to choose from: no thin or three thinning cycles.

Step 4 Timber Prices

Timber price will impact directly on the estimates for thinning and clearfell revenues. Within the Felling Decision Tool there are three different price time periods to choose from (i.e. 5, 7 or 10 year), based on independently sourced average timber prices in Ireland. Prices are indexed linked to the Consumer Price Index, published by the Central Statistics Office.

Step 5 Select Discount Rate

The discount rate is used with the timber revenues to determine the best financial rotation. The discount rate is based on the assumption that revenue received today may be preferable to waiting a number of years to receive the same income and a perception of risk. Within the Felling Decision Tool there are three discount rates to choose from: 4%, 5% or 6%. A middle range of 5% is normally chosen.



Information provided by the tool

After the user submits information for their forest, the estimated net clearfell revenue per hectare is output together with the gain or loss if the forest is felled earlier or later. In the example in Table 1, if the owner wishes to fell the forest at age 30 then the estimated clearfell revenue per hectare is €21,855. However, the forest at this age is increasing significantly in value year-on-year and delaying the felling decision for even another three years will result in an estimated increase in net revenue of €4,668 per hectare.

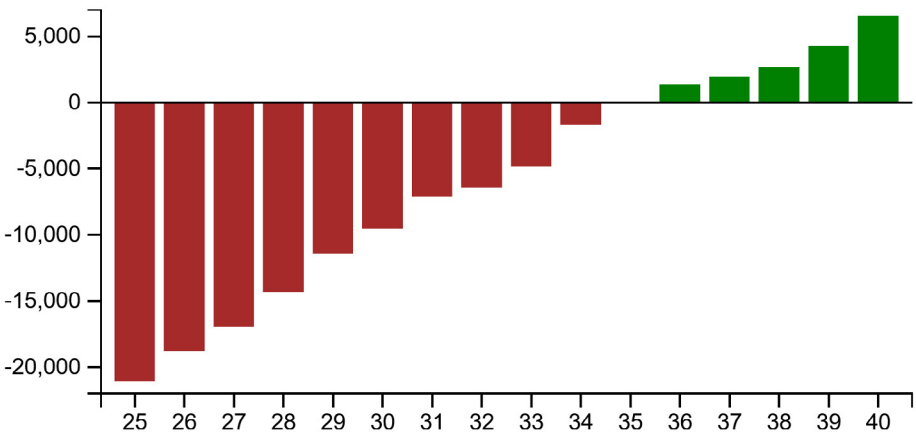
This information allows for a more informed decision to be made on whether to fell the forest or to retain it for a further number of years. The percentage value increase provides an indication of the return the forest is making by retaining it for another year. The revenue values are estimated based on average prices. The values achieved by an individual forest may vary significantly depending on timber quality, access, distance to mill, etc.

Table 1. Sample output from the Felling Decision Tool

Age	Top Height (m)	Net Thin Revenue Pre Clearfell (€/ha)	Net Clearfell Revenue (€/ha)	Loss / Gain (€/ha)	% Value Increase	Average Tree (m3)	Net Clearfell Volume (m3/ha)	Discounted Revenue (€/ha)
25	18.1	€0	€10,308	-€21,076		0.250	339	€3,044
26	18.9	€0	€12,606	-€18,778	22.3%	0.270	362	€3,545
27	19.6	€0	€14,430	-€16,954	14.5%	0.300	385	€3,865
28	20.3	€0	€17,056	-€14,328	18.2%	0.330	409	€4,351
29	21.0	€0	€19,986	-€11,398	17.2%	0.350	431	€4,856
30	21.7	€0	€21,855	-€9,529	9.4%	0.380	454	€5,057
31	22.4	€0	€24,277	-€7,107	11.1%	0.410	477	€5,350
32	23.1	€0	€24,928	-€6,456	2.7%	0.440	499	€5,232
33	23.7	€0	€26,523	-€4,861	6.4%	0.470	521	€5,301
34	24.4	€0	€29,725	-€1,659	12.1%	0.500	543	€5,658
35	25.0	€0	€31,384	€0	5.6%	0.530	565	€5,690
36	25.6	€0	€32,766	€1,382	4.4%	0.570	586	€5,657
37	26.3	€0	€33,378	€1,994	1.9%	0.600	608	€5,488
38	26.8	€0	€34,086	€2,702	2.1%	0.640	629	€5,338
39	27.4	€0	€35,658	€4,274	4.6%	0.670	649	€5,318
40	28.0	€0	€37,971	€6,587	6.5%	0.710	670	€5,394

The information presented in Table 1 is also detailed on a chart in Figure 1. Those bars coloured in red details the extent of revenue foregone by felling the forest before the age when the financial returns are normally at their highest. The decision to fell and the timing of felling is ultimately a decision for the forest owner. This tool will allow for a more considered and informed decision process.

Figure 1. Estimated Loss/Gain Compared with Chosen Rotation (€/ha)



As a forest management tool, extending the length of a forest rotation retains and grows the carbon stocks within a forest for an additional period of time. Research has shown that extension of rotation age can offer one of the largest, most cost-effective and short-term pathways in the land use sector to reduce greenhouse gas emissions and enhance carbon sequestration. However, forest owners and managers have to be mindful of the challenges associated with extending the forest rotation, including forest stability, delay in obtaining clearfell revenue and marketability of larger log sizes.

The Felling Decision Tool is available on:
<https://www.gov.ie/en/publication/tree-felling-and-management/>

Disclaimer: The Felling Decision Tool provides estimates based on assumptions regarding growth models, access, harvestability, timber quality, product recovery, timber price information and stocking which may or may not apply to individual plantations or particular tree species. While every effort has been made to ensure the information provided is accurate, the Department of Agriculture, Food and the Marine does not accept any responsibility or liability for errors of fact, omission, interpretation or opinion that may be present, nor for the consequences of any decisions based on this information. Forest owners are advised to seek professional advice on the management of their forest, particularly if they are concerned about the stability the forest by extending the rotation.