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## Forestry Extension



### Key external stakeholders:

Forest Service  
Forestry extension professionals  
Farm Forest owners

### Practical implications for stakeholders:

The objective of the project was to assess the uptake of forest management interventions following a forestry knowledge transfer extension event on thinning your forests. Pre and post knowledge tests were conducted at the event and were followed up after 18 months by telephone interviews to ascertain the level of uptake of the skills/knowledge demonstrated at the event.

The outcome/technology or information/recommendation is that although the scope of this study is limited, the results are quite positive. In general, farm forest owners who attended the forestry extension events are engaging in management activities. However, many owners attend events before forests are ready for management interventions. The majority of farm forest owners in Ireland are first-time owners and would require more information before engaging in thinning. This is reflected in a preference for individual advice even after the group forestry extension/demonstration event.

### Main results: •

- Significant increase in rating of understanding
- 82% stated an intention to thin, 85% intended to create inspection paths
- Age of forest plays a central role in understanding decision making by owners- majority of farm forest owners are at or below age of first thinning making examination of management practices difficult
- Effectiveness of knowledge transfer difficult to measure but results would suggest information was successfully imparted (54% had inspection paths, 31% had thinned or were in the process). Teagasc was found to be the most popular source of information.

### Opportunity / Benefit:

This study shows that forest owners' knowledge of the management interventions required to thin their forests increased significantly as a result of the extension event. This was evidenced in the high number of owners who engaged in management operation such as "brashing" in order to prepare for thinning. For many of the forest owners who attended the events, their forests were still too young to commence interventions and hence these owners had not undertaken any actions. However, because most farm forest owners are "new" to forest management, most felt they would require additional assistance before thinning, highlighting the additional extension challenges for Irish forest owners who do not have a culture or tradition of forest management. In this context, multiple extension engagements or a variety of extension methodologies may be necessary to provide adequate information for forest owners to have the confidence to undertake forest management operations.

### Collaborating Institutions:

U.C.D.

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### 1. Project background:

In the past, forestry advisers have relied on individual farm forest visits to give advice to forest owners on the establishment and management of their crops. Given the changed resource environment, the focus of delivery now needs to encompass group events, courses and workshops to ensure that the largest number of farm forest owners can avail of information and technology that will improve their knowledge and the profitability of their forests. This project builds on previous work in the Forestry Development Department on evaluating the impact of forestry knowledge transfer events by additionally researching the key factors and conditions that impact on translating learning experiences from group events into action in terms of implementing forestry technologies and practices.

### 2. Questions addressed by the project:

This project analyses the level of knowledge obtained by farm forest owners at group forest harvesting training events and the level of practice adoption implemented on foot of attendance at group harvesting knowledge transfer events.

Extension services can have multiple goals but they generally involve guiding owners towards what is considered good management (Pregernig 2001). Although research has been conducted into the effectiveness of financial incentives to increase management in private forests, similar research is lacking in the area of extension. Ma et al. (2012) followed up participant's initial rating of an extension event with a second survey 6 to 12 months later in an effort to gauge the participants' ability to retain information. However, the analysis did not include an objective measure of the extension event's effectiveness. Assessing the participants' learning about key management practices that took place during the event is one way of assessing its effectiveness (Arnold, 2002; Davis, 2003). Another involves taking a longitudinal approach similar to Ma et al. (2012) but tracking whether participants' proposed future management actions identified during an event, were actually carried out. The latter approach is partly informed by the intention-behaviour gap literature from the health sector (Sniehotta et al. 2005), but in this case focusing on identifying possible reasons why forest management intentions might not be translated into action; a gap which could be the target of future extension service effort.

An issue which has not been investigated to date is the effectiveness of extension activities in explaining management practices. Furthermore, Ireland is relatively unique in that almost the entire private estate is still in its first rotation and a significant proportion is at or below the age of first thinning, following standard management practices.

### 3. The experimental studies:

This study reports the results of a number of surveys that examine forest management decisions by private forest owners in Ireland. The first was undertaken before and after a knowledge transfer event, an onsite thinning demonstration, and included questions pertaining to future management intentions and subjective measures of understanding. This cohort was then surveyed 18 months later to examine whether they had undertaken their intended management practices. An additional national survey was conducted to explore management practices and the factors that influence them more generally.

#### **Pilot Study in Roscommon and Follow-up telephone survey**

The pilot study was conducted at a thinning demonstration at a 6 hectare private forest in Roscommon, in the west of Ireland. The demonstration was publically advertised but invitations were also sent specifically to owners in the region whose forests were more than 10 years old. All of the 36 owners who attended the demonstration were surveyed on the day. A follow-up survey was conducted by phone. The demonstration focused on planning and operational issues related to first thinning in conifer forests including roads and felling licences, inspection paths and brash paths and timber marketing and security issues. A retrospective pre-test questionnaire (Davis, 2003) was used at the demonstration to identify whether learning on key management practices took place. The questionnaire also contained questions on planned future management actions.

Data from the pilot study were tested for normality, transformed and re-tested but were still not normally

distributed. Therefore, the appropriate test to use for comparing mean scores was the Wilcoxon Signed Rank Test for non-parametric data, which is the equivalent of the dependent t test for parametric data

#### 4. Main results:

The retrospective pre-test questionnaire sought to capture the self-reported knowledge of participants on 8 key forest management practices, before and after the thinning and timber management demonstrations. Respondents could rate their understanding out of 5 with the question presented in the following manner: "Rate your level of understanding of the following topics before and after the demonstration: Very little understanding about topic = 1, basic understanding-need to know more = 2, good understanding - would not be confident about putting it to use = 3, good understanding-would be reasonably confident about putting it into use = 4, very good understanding-would be very confident about putting it into use = 5".

All respondents indicated an increase in their levels of understanding across all topics and as a whole, a significant increase in self-reported understanding was identified. However, as shown in Table X, while participants recorded that after the event they would be reasonably confident about putting their knowledge of felling licences and how to go about thinning into use, they also recorded that they would not be confident about putting the other elements of the demonstration into use. Border line topics in terms of being reasonably confident about putting into use included internal and external access and timber categories. Although not shown in the table, respondents were also asked to identify how long it took to produce a crop of both Sitka spruce (*Picea sitchensis* (Bong. Carr.)) and ash (*Fraxinus excelsior*) and the results indicated a good approximation to reality.

Issue	Before	After	Difference	P-value <sup>+</sup>
Access - Internal and External	2.48	3.97	1.48	0.000
Felling Licences	2.42	4.13	1.71	0.000
Basic Pre-Thinning measurement: - knowing your forest	1.90	3.60	1.70	0.000
Harvesting - operational issues	2.07	3.79	1.72	0.000
Timber categories	2.00	3.93	1.93	0.000
Timber security	1.71	3.57	1.86	0.000
Marketing and Selling timber	1.90	3.52	1.62	0.000
How to go about thinning your forest	2.19	4.03	1.84	0.000

<sup>+</sup> Wilcoxon signed ranks test

Source: Authors

The follow-up phone survey 18 months later, included 26 owners who had attended the demonstration. The survey focused on the management actions that owners had undertaken since the demonstration or planned to undertake in the future. Owners were also asked about their advice requirements. Out of the 19 who planned to put in inspection paths after the demonstration, 10 had done so confirming the learning from the demonstration and confidence in that learning identified in the retrospective pre-test. Nevertheless, a further 9 of those who said they planned to install access did not.

Of the 14 respondents who had inspection paths, 12 had installed them themselves and two were in management agreements with an external company that had undertaken the work. The large proportion of forest owners who had installed inspection paths themselves (as opposed to engaging a contractor) is important as it demonstrates that (a) these owners are actively engaged in forest management and that (b) it is likely that they have attended other extension events where the installation of inspection paths was demonstrated.

Two respondents had thinned their forest but a further six were in the process of preparing and planned to undertake the work in the following six months, again supporting the learning and confidence about putting that learning into use, identified at the demonstration event. Notwithstanding this, 15 others who recorded that they planned to thin after the event had not yet thinned. The majority of the remaining respondents described their forests as still being too young to thin and some were not planning any intervention due to concerns about increased wind-throw risk, the low productivity of the forest or the difficulty of accessing the forest. Although only one respondent indicated that they had not thinned due to a lack of information, 16 of the respondents who hadn't thinned indicated that they would seek more information before thinning, suggesting that they might not be fully confident about putting this knowledge into use.

The importance of the issue of forest age is corroborated in the results of a Teagasc National Farm Survey (NFS) which was undertaken in 2012. In a supplementary survey to the main NFS (presented below), 45% of farm forest owners who had not yet thinned their forests gave the young age of the forest as the reason, whereas only 4% stated that they were not sure how to thin. The results of the pilot studies show that forest owners attend extension events well in advance of when management interventions are due and there can thus be a considerable time-lag involved before management interventions are undertaken.

Although the results indicate that extension can play a positive role in transferring knowledge and promoting management, it is likely that gaining an understanding of management practices amongst private forest owners will only be possible in the coming decade as a significant number of forests reach maturity.

Reason	N	%
Forest too young	45	66.18%
Not profitable due to size	9	13.24%
Not sure how to thin	4	5.88%
Forest is unstable	2	2.94%
Timber is better from un-thinned forests	1	1.47%
No answer	7	10.29%
Total	68	100%

Source: NFS 2012 Supplementary Survey

#### 5. Opportunity/Benefit:

This study highlights the importance and success of extension services in promoting active management practices amongst new forest owners and the necessity to understand these practices in the context of forest stage. The survey conducted at the demonstration and subsequent phone survey show that the majority of participants went on to install inspection paths in their forests. A significant number had also thinned their forest or were in the process of planning to thin their forests. Amongst those who had yet to thin, the majority believed their forest was too young and the information on forest age suggested that this was the case. It is important to note the small samples size involved in both surveys presented in this study. Although the results indicate that extension can play a positive role in transferring knowledge and promoting management, it is likely that gaining a deeper understanding of management practices amongst private forest owners will only be possible in the coming decade as a significant number of forests reach maturity.

#### 6. Dissemination:

The results of this study have been presented at a Teagasc National Knowledge Transfer conference in 2012 and at the 2015 International conference of the 2015 International Union of Forest Researchers conference which was held in Galway. A journal article is also currently in preparation.

#### Main publications:

Upton, V., Ryan, M., Heanue, K., Ni Dhubhain, A., 2015. Knowledge transfer challenges for new forest owner types. IUFRO Extension and Knowledge Exchange Working Party. Galway, Ireland. 28/09/2015.

Ryan, M., Heanue, K., Clarke, A., Ni Dhubhain, A. 2012. The adoption of a new forest practice needs more than one extension approach. Teagasc National Knowledge Transfer Conference. Dublin, Ireland. 26/10/2012.

#### 7. Compiled by: Mary Ryan, Teagasc Rural Economy and Development Programme