

**What makes
Close to Nature Forest Management
an attractive choice for Irish farmers?**

Philippe R Morgan FICFor ACF
Director, SelectFor Ltd



PRO SILVA is a European Federation of Foresters
which advocates forest management based on natural processes.

Pro Silva Ireland:

pro silva (latin: 'for the forests')

Pro Silva Ireland recognises and values the unique history of Irish forestry and its past, current and potential contribution at local, regional and national levels. Members are convinced of the need in Ireland for a greater range of management skills amongst foresters and forest owners.

The organisation was founded in order to develop and promote Pro Silva Principles as an alternative to clear felling in Irish forestry.

GENERAL PRINCIPLES

PRO SILVA promotes forest management strategies which optimise the maintenance, conservation and utilisation of forest ecosystems in such a way that the ecological and socio-economic functions are sustainable and profitable. The general approach to management which is advocated by PRO SILVA, includes market and non-market objectives, and takes the whole forest ecosystem into consideration.

With reference to sustainability in its broadest sense PRO SILVA believes that forests provide four categories of benefit to society. These are:

1. conservation of ecosystems
2. protection of soil and climate
3. production of timber and other products
4. recreation, amenity, and cultural aspects

To read more on Pro Silva Ireland objectives, structure and strategies see www.prosilvairland.org Members can avail of study tours and workshops. Pro Silva Ireland also organises twice annual workshops in Ireland led by leading Pro Silva Europe foresters. Members and non-members are welcome to attend these valuable training days.

Pro Silva Ireland is a non-profit organisation and is a member of the European umbrella organisation Pro Silva Europe, which was founded in Slovenia in 1989. Pro Silva Ireland was founded in June 2000 and membership is made up of forest owners, foresters and others who wish to practice and learn more about Pro Silva forestry practice. Pro Silva Ireland is an all-Ireland organisation, embracing membership from both Northern Ireland and the Irish Republic.

Foreward

This brochure has been published by ProSilva Ireland following the Irish Farmers Association, National Farm Forestry Conference 2006 held in association with ProSilva Ireland at the Longford Arms Hotel, Longford on 10th November, 2006.

The conference was addressed by Mary Wallace T. D., Minister of State and the theme for half of the conference was Close to Nature Forest Management - A Profitable Alternative for Irish Farmers.

The speakers at the conference were Jan Alexander, Philippe Morgan, Per Herbert, Dr Cormac O'Carroll, and Dr Eugene Hendrick.



In the later stages of transforming even aged crops to continuous cover forests, it may be appropriate to adopt a target diameter thinning whereby the prescribed volume is removed by thinning all trees over a certain diameter / size

Philippe R Morgan FICFor ACF
Director, SelectFor Ltd
phil@selectfor.com
+ 44 (0)1974 261688, + 44 (0)7753 798985

Introduction

This brochure is produced from the presentation made by Philippe Morgan and is not intended as a detailed paper on the subject: What makes Close to Nature Forest Management an attractive choice for Irish farmers? The pictures in the brochure provide a view of the present state of transformation to continuous cover in Ireland and in Wales; illustrations of more advanced states of irregularity and differing species mixtures are shown from Germany and France.

Close to Nature Forest Management, also known as Continuous Cover Forest Management and Irregular Forest Management, is the management and transformation of regular plantation forestry into permanent, productive forest. Close to Nature Forest Management does not attempt to mimic nature, but makes use of natural processes such as the control of light by contriving stand structures through thinning and selective felling to produce in the most cost effective way, economic, environmental and quality benefits.



The immediate aftermath of a target diameter thinning which illustrates how irregular structure comes about when there has been no attempt to apply even spacing to the thinning

What Drives Forestry in Ireland?

- **Best climatic conditions for growing trees in Europe** - the high rainfall and a long growing season provides conditions for potentially very productive woodlands
- **Large market for wood & forest products** - a strong developing economy provides the demand for timber products, with many opportunities for import substitution; the competitive Irish timber industry is also well positioned to serve neighbouring export markets
- **Low proportion of forest cover** - from a very low baseline, expansion provides opportunities for developing the criteria to achieve critical mass while reconciling optimisation of land use and delivery of conservation benefits
- **Balance economic development with income distribution in rural communities** - agricultural diversification provides new income streams supporting rural economies
- **Meet Kyoto Protocol commitments** - new woodlands, on the right sites, provide the mechanism for carbon sequestration to meet national targets and with additionality, tradable carbon credits
- **CAP reform** - forestry is now an important part of the prescribed mix of changes to agricultural support; sensitive management will be at a premium in order to deliver ecosystem services under the Axis II proposals



A stand of Sitka spruce following 3rd Thinning - at this stage individual stem stability should have been engendered in the stand

What are the Threats to Forestry in Ireland?

- **Climate change** - It is now recognised that climate change is a reality we all have to face. The actual manifestations of this change are still not known or understood, presenting us with an uncertain future. Models show that Ireland will not suffer changes on the scale of those impacting on Continental Europe. These models often do not predict the indirect effects of factors impacting upon trees:
- **Loss of species adaptability** - increase in pests and diseases (e.g.: aphids, rusts ...)

- Extreme climatic events - severe winds and floods
- Seasonal disruption - summer droughts, disruption of growing seasons
- Globalisation
 - Loss of low-end competitiveness
 - The relatively new market developing in Ireland can be prone to competition from global markets until a more sophisticated embedded market develops in parallel with a high quality resource.
- Capital investment
 - Investment in processing capacity can provide access to market and increase demand for forest products particularly in the higher value sawlog sector.
 - Timber harvesting requires capital development of harvesting infrastructure at the forest scale.
 - Haulage requires development of the rural road network at a national scale to reduce the overhead costs of production.
- Quantum
 - Price premiums are paid by high added value markets for quality, quantity and guaranteed supply. Investors are only willing to invest in the resource if it is sufficient in quality and quantity for a given investment period.

What are the opportunities provided by close to nature forestry?

- **Added value to timber products** from harvest operations by increasing the proportion of sawlogs from selective felling from larger trees. Tree by tree management rather than clear felling enables trees to be individually felled at their optimum time.
- **Lower costs per cubic metre harvested** are achieved due to the efficiencies of harvesting increased average tree sizes.
- **Niche marketing enables small quantities produced from farm woodlands to attract premium prices** and also attract opportunities for owners to add value.
- **Being able to make use of natural regeneration when trees are mature minimises dependence on planting and greatly reduces costs**, eliminating the need for reinvestment when a plantation is felled or of incurring a reduction in the value of final felling.
- **Close to Nature Forestry provides maximum profit for owners who own woodlands with well structured irregular stands** by maximising the value of timber sales, by reducing harvesting costs, by reducing tending operations and by minimising planting costs.
- **Close to Nature Forestry allows for effective risk management strategies** where the growing stock is spread across a range of age classes on the same area, rather than even-aged stands where the risk increases exponentially as the value of the stand grows with increasing exposure.



Good access is key to the successful practice of continuous cover forestry

Why should farmers think of Close to Nature Forestry?

- Farmers are generally small or medium scale woodland owners not able to supply large regular supplies of single products as specialist timber businesses.
- They have diversified multiple incomes and do not depend on a single activity for their livelihood.
- They are independent
- They have existing structures for and are used to collaborative working
- They understand and know how to manage risk and to adapt to change



First Thinning in Sitka spruce

What are the benefits? Close to Nature Forestry...

- provides an increase in income from forest products due to a better mix of larger size material such as sawlogs and to higher quality material produced from irregular structure stands with access to niche markets.
- minimizes the operations costs of re-establishment with natural regeneration. Close to Nature Forestry also avoids the potential for duplication and waste when expensive restocking is swamped by unwanted regeneration incurring re-spacing costs. Regeneration is successfully managed through the control of light intensities by the maturing elements of the stand; the mature trees increase in value while they regulate stem numbers and improve the form of younger trees which increases future timber quality.

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- **increases the capital value of woodland.** Plantation forestry attempts to minimize the costs of development in order to avoid the cost of long term recovery. Close to Nature Forestry continuously improves the quality of both stand and forest, requiring a modest level of reinvestment to either improve tree quality or forest infrastructure and so provide increasing returns and capital values.
 - **harvests trees at the point of optimum production when biological growth and increase in value coincides.** Site limitations constrain biological growth and market demand determines the size of trees across the species and quality ranges.
 - **provides opportunities for own working** because smaller volumes of higher quality and value are timber produced at any one time. Managing the production from smaller woodlands tends to suit farmers. It allows them to deal with the mix of different responsibilities on the farm and creates new opportunities for work by adding value to their forest products.
 - **protects the environment by continuously maintaining uniform forest conditions across the site.** Changes to site conditions are not severe and are distributed by a shifting mosaic of variable stand structures. Responses to extreme climatic events, where stand productivity may be reduced, are quick allowing the productive capital to re-establish.
 - **provides greater stability and more robust stand structures** able to withstand and to respond to severe wind events.
 - **protects and improves forest soils** by maintaining forest conditions and reducing site impacts.

- **reduces tending costs** through light regulation reducing the need for weeding, re-spacing regeneration and high pruning.
- **maintains continuous levels of carbon sequestration capacity** and reduces disruption to soil carbon storage by maintaining even levels of productive forest and by minimising disruption of stands during harvests. Permanent forest provides ecosystem services which will be increasingly valued as a means of better regulating the environment.

How does Close to Nature Forestry work and How do you transform a forestry plantation into an irregular forest?

- **Maintain a forest environment as a continuously productive forest** from where timber is regularly harvested: The forest area always has a mixture of trees of different sizes so that it is both productive and replaces itself.
- **Harvest on a frequent and regular basis:** It is important to work Close to Nature forests very regularly to provide production and to maintain the irregular structure. If not, when left unattended forests tend to close over and fill all the gaps in the canopy and this will cut-off the young growth which will be future production.
- **Production is concentrated on the best trees:** If only the poorest trees are removed future production will always be better; every thinning and selective felling operation improves the overall quality of the crop.
- **Fell individual trees when they stop growing in value:** Even the best formed quality trees stop increasing in value past a size which

is difficult to market. At the point when trees stop growing in value they are felled at their optimum size.

- **Ensure that thinning selection is as clumpy as possible:** When selecting trees for felling the operators must resist the need to create even spaces. Uneven spacing creates a mix of dark and light groups on the forest floor where either new growth can develop or where slow grown quality trees can grow.
- **Grow trees for quality:** The higher the quality the greater the profit.
- **Fell larger diameter trees for cost efficient working and product efficiencies:** Larger trees are worked more efficiently since one individual yields a greater volume for the same operation of felling the tree. The greater efficiency in the product mix for sawmillers as sizes increase results in higher prices paid for larger size quality products.
- **Control production by volume:** To make sure that the forest is not over-cut only the growth between each harvest is removed. Sample plots and measurements can tell what the volumes of timber are at the time of each harvest. Careful record keeping is important in order to regulate the production from the forest.
- **Follow natural disturbances and respond to natural site limitations:** Thinning and selective felling opens the forest canopy and this combined with the Irish climate and Irish soils will result in some of the retained trees becoming blown. Blown trees can then be harvested and their production is not lost. Natural disturbances create good adaptive structures that are strong and robust and well matched to the sites that they grow on.



Second Thinning in Sitka spruce



Small scale harvesting and extraction equipment is often used in continuous cover forestry

What factors ensure a successful transformation?

- Start early and 'make haste slowly'; early thinning repeated on a short cycle
- A suitable growing stock where the quality is continuously improved through regular interventions removing poorer quality trees
- Canopy trees are maintained controlling ground vegetation and tree form
- Individual trees are stable, maintained by good crown and root architecture
- Contrive strong differences within the stand where areas are more open and light and others are closed and dark
- Tree seedlings germinate under the canopy and in open groups and grow into young trees where sufficient light is present
- If the trees are too young to bear seed then small amounts of planting will start the regrowth inside the forest
- Favour a mixed species stand to create dynamic and adaptive structures
- Maintain strong structural elements in the stand with older trees still remaining to produce seed
- Leave any dead trees standing since these provide habitat for insects and wildlife helping to ensure a balance and increasing biodiversity in the forest.

- Apply regular treatments alternating between harvesting and managing regeneration. Seedlings and young trees need attention to ensure the species mix is right and that poor quality is removed early when it is cheap to do so.



A Sitka spruce stand following a target diameter thinning at age 32



When natural disturbances such as wind-blow occur they can be tidied up to create gaps for new natural group formation either through natural or artificial regeneration (planting)

A simple example of transformation from even-aged plantation to irregular forest

- First thinning at age 15
- Second thinning at age 19
- Third thinning at age 23
- Selective fell at age 27



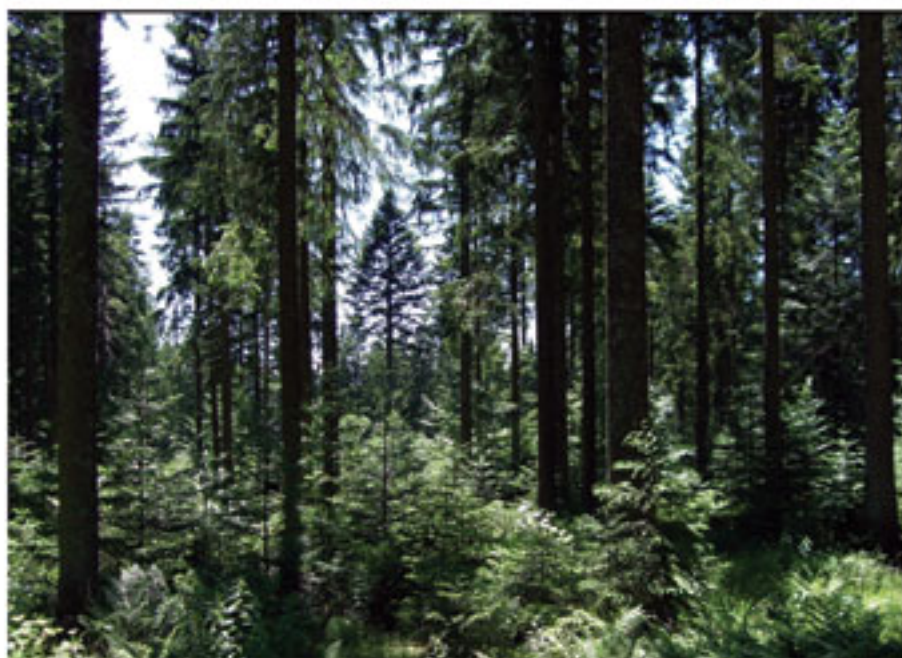
Natural regeneration developing in an open space

- Enrichment planting
@ 200 plants per hectare initiating species mixtures
- Continue selective fell age 31 concentrate on optimum size trees
- At age 31 the forest is permanent and only the biological growth between harvesting interventions is removed
- Maintain growing stock at a balanced equilibrium

There is a bright future for the development of Close to Nature Forest Management in Ireland

Given the following policy conditions:

- Continued investment in forestry focused on improving the growing resource
- Continued investment in infrastructure development
- Possibility of using the Woodland Improvement Grants, Native Woodland Grants and Roding Grants to assist with the transformation to Continuous Cover and Close to Nature Forestry
- Development of Research into Continuous Cover Forestry by COFORD
- Initiating of training courses in Continuous Cover Forestry in association with Coillte, ProSilva Ireland and Forest Training & Education Ireland Ltd



Shelterwood in transformation to Selection Forest



A Selection forest with a full range of tree sizes



PRO SILVA Forestry Principles

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Forest Service



PRO SILVA IRELAND

36 Fitzwilliam Square, Dublin 2, Ireland

E:: prosilva@eircom.net, W:: www.prosilvaireland.org