

FOREST NURSERY PRODUCTION IN THE UNITED KINGDOM: CASE STUDY MAELOR NURSERIES LTD.

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Abstract

Forest policy in the United Kingdom does not list timber production as a main objective, despite the fact that the country is heavily reliant on imports of timber products. The level of new conifer planting has been much reduced over the last ten years; timber prices are very low due to the high rate of sterling; competition from imports is high; devolution plus the recent impact of foot and mouth disease, cumulatively provide an uncertain future for British forestry.

Production from British forest nurseries is directed towards commercial forestry, amenity and landscape, native broadleaf plantings, hedging and Christmas tree markets. Of the handful of larger wholesale nurseries that still remain, Maelor Nurseries Ltd is holding on to its position as one of the dominant nurseries in a much reduced and competitive industry.

Key Words

Forest industry, nurseries, production, quality, *Picea sitchensis*, forest ownership

In many respects, forestry in the United Kingdom (UK) represents a similar picture to that of the United States. In recent years there has been an emphasis shift in the way we view and manage our forests. As we become more aware of environmental issues as a nation, sustainability of our forest resources takes priority over timber production. Forest policy and management now reflect the change in objectives and the forest industry adjusts and adapts in order to operate within the constraints that this imposes. In recent years, investment in forestry has declined and as a result the industry has downsized. Production from forest nurseries has fallen and only a small number of them continue to operate. We strive for a happy medium between a commitment to safeguarding our environment while maintaining a viable forest industry for future generations.

UK FORESTRY

Forest cover in the UK stands at 11% of the land area or 6.9 million acres (Figure 1). In comparison, Finland has a forest cover of 65%, Sweden 60% and Norway 27% (Smith 2001).

The Forestry Commission (FC) is the government department responsible for the protection and expansion of the UK's forests. Within the FC are two executive agencies: Forest Enterprise and Forest Research. Forest Enterprise is entrusted with the management of the nations forest estate and Forest Research carries out research, technical developments and surveys.

The majority of the UK's forest cover is privately owned. Conifers make up the greater proportion of forest cover, with the private sector and FC managing similar proportions (Figure 2). Sitka spruce (*Picea sitchensis*) is the primary species of conifer being grown.

Although a compulsory restocking policy ensures that the restock market maintains reasonably consistent (Figure 3), the area of new conifer planting has fallen dramatically (Figure 4). Levels of nearly 60 thousand acres in the early 1980s have fallen to today's levels of 15 to 20 thousand acres. In 1919, the main aim of the newly formed FC was to create a strategic reserve of timber in case of war and so afforestation was a primary objective. In more recent years, the Dedication Scheme allowed private forest owners to manipulate taxation incentives, making forestry an attractive long-term investment. In the 1980s this scheme was suspended and a decline in new plantings to the present day levels was the result. The broadleaf component dominates in the private sector as it does in those forests where timber production is not the primary objective. New planting of broadleaves has been maintained at a level of 20 to 30 thousand acres over the past five years. Of the 50 million cubic meters of timber used every year in the UK, only 10 million are produced from UK forests. As a consequence, the UK is second in the world after Japan in terms of the importation of wood products. Most of the UK's sawn wood is imported from Sweden, Finland and Norway, with increasing quantities from the Baltic States. The level and source of timber imports is a controversial issue. With the economy as it stands, timber prices are low and it is financially more economical to import timber than to fell the UK's forests. The Scandinavian countries are widely recognized as producers of high quality timber and so this makes for a viable source. The UK is a nation of 60 million people, with a high currency and limited land resources. For it to be self-sufficient in timber production is unrealistic. At present, the pendulum has swung too far in the wrong direction and UK suppliers struggle to survive in a market over-run with imports of timber. Present day forestry in the UK has shifted away from planting uniform blocks of conifers to sustainable forest management, which incorporates environmental assessments and a species mix. Environmental and biodiversity issues have become priorities over timber production. As quoted by the Director General of the FC, "every time we plant broadleaves on an acre of land we

reduce its productivity in terms of timber production, while enhancing it in terms of biodiversity and recreation." In 1999, producers and users of British forest products formally launched a forest management audit scheme to increase the certification of sustainably produced timber. Even though the concept was widely recognized, the sawmills are not insisting on certified material in the present economy.

Forestry in the UK is very much grant led, with native broadleaf and pinewood planting schemes receiving a higher level of grant aid than conifer plantings. In line with the new forestry objectives, further grant aid is available where recreation and public access are also key issues. Devolution is a recent political and geographical split, resulting in assemblies or parliaments in England, Scotland, Wales and Northern Ireland. Along with the recent outbreak of foot and mouth disease, one can only predict what the changes in land use might be as a result. In Scotland, forestry is regarded as a primary industry. Therefore, in the wake of devolution and foot and mouth, there is a good chance that the level of forestry will increase. Certainly, with large areas of forest in Scotland due to be felled in 5 to 10 years, this is the time to be attracting markets and ensuring that processing facilities are in place for the timber.

CASE STUDY: MAELOR NURSERIES LTD

As the forest industry scales back, so does production from FC nurseries and the private sector. Only a small number of highly competitive nurseries remain, each concentrating on their specialization and market edge to survive. Maelor Nurseries Ltd is one such private nursery, located near the Welsh border in central England on 435 acres of land. Maelor prides itself on bare root production for commercial forestry and hedging markets. The nursery grows up to fifty different species of conifer and broadleaf species combined, with various different stock types.

Production

A large proportion of Maelor's stock is aimed at commercial forestry, new planting and restock sites. Maelor is also at the forefront of producing broadleaf stock from British provenance seed sources. It is a priority within UK forestry to use

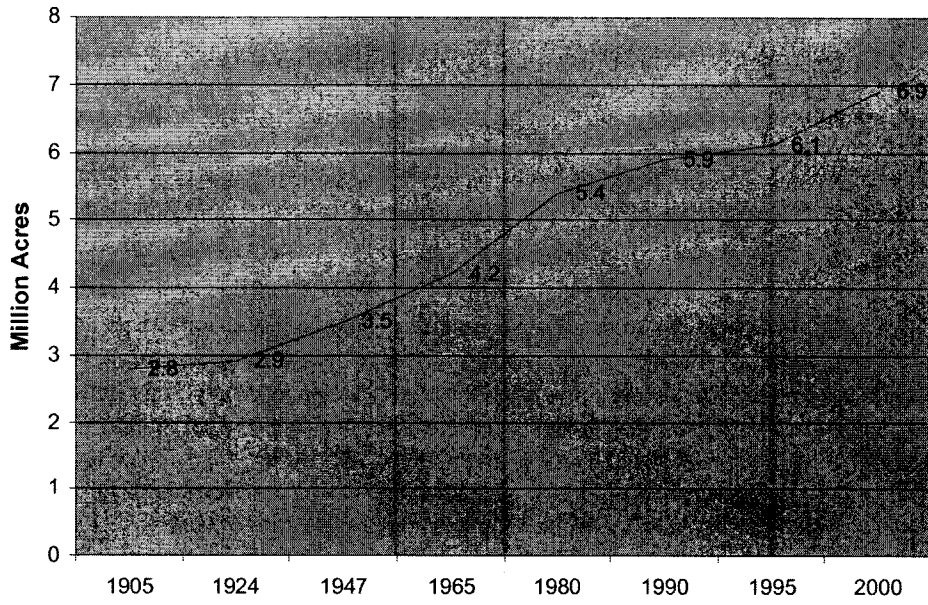


Figure 1. Forest cover in the UK (data from Smith 2001)

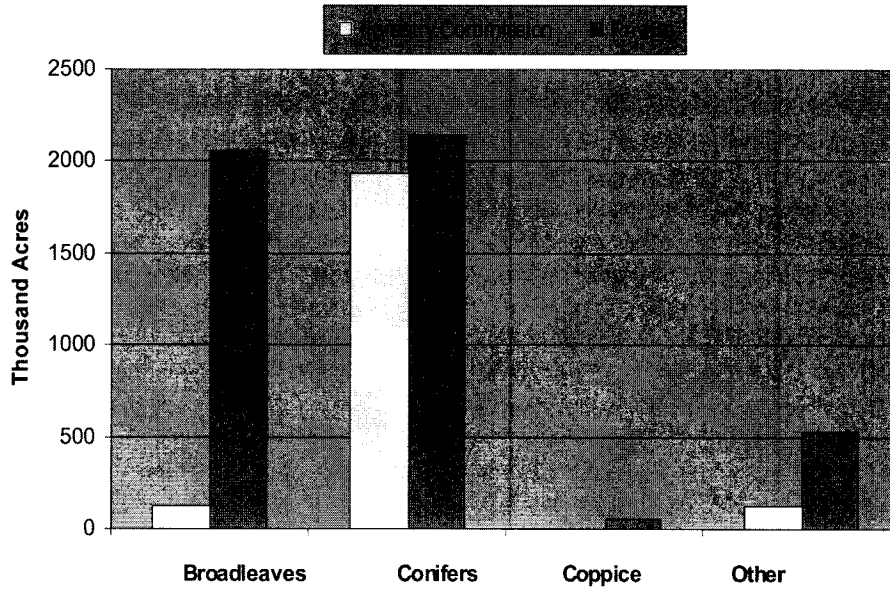


Figure 2. Area of forest, forest type and ownership (data from Smith 2001)

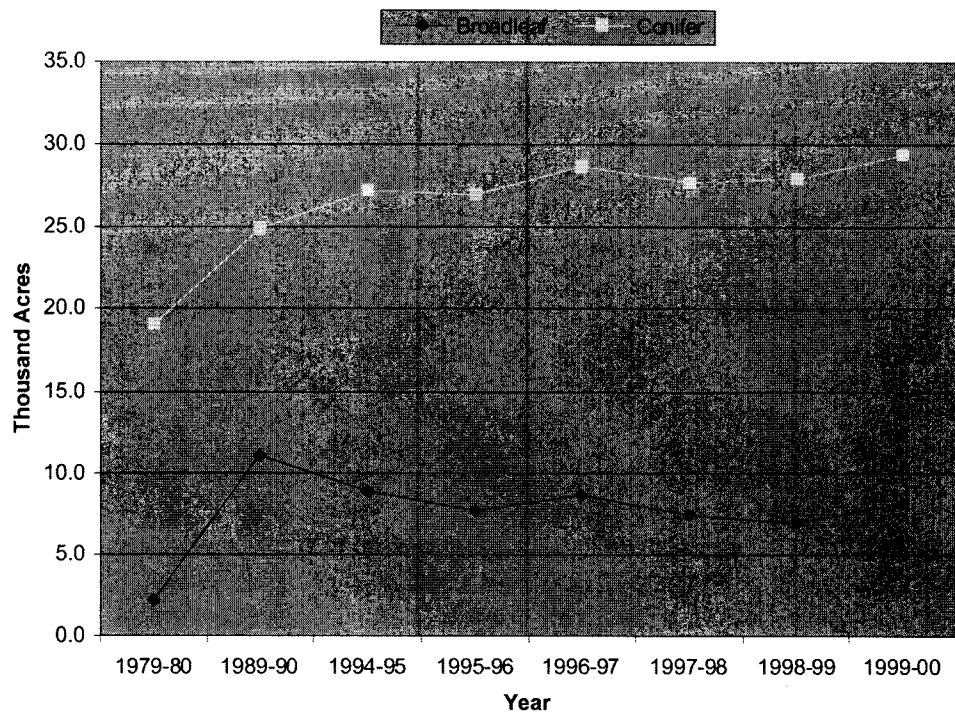


Figure 3. Area of restocking in the UK (data from Smith 2001)

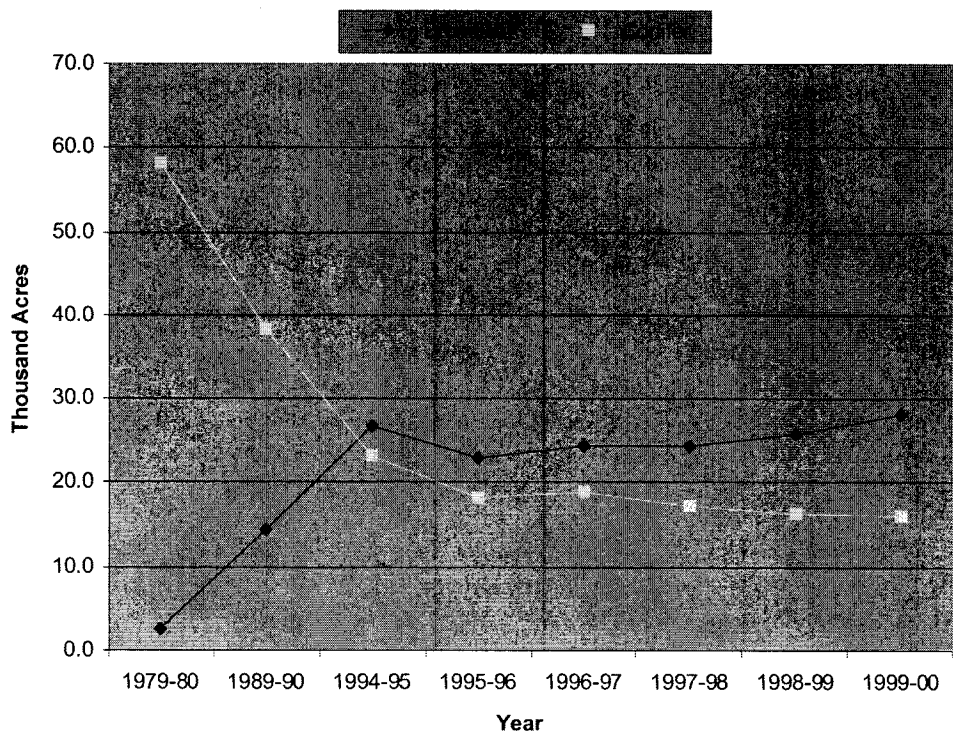


Figure 4. Area of new planting in the UK (data from Smith 2001)

native species of local provenance stock in planting schemes. Local provenance stock is best able to provide the maximum benefits to wildlife, adapt to local conditions and may provide a higher yield of timber. Using the UK seed zone map, collections of seed are organized throughout the UK. Much of the extraction, cleaning and treatment of broadleaf seed is carried out on site. In-house germination testing is carried out throughout storage and treatment of all seed.

Maelor's latest venture is with vegetative propagation, predominantly with selectively improved Sitka spruce (*Picea sitchensis*). The improved material offers a potential gain in vigor and in form over standard material, with these gains being widely recognized for use on commercial forestry sites. Improved Sitka spruce seed is available from FC seed orchards, but due to the inevitable delay in establishing orchards and harvesting seed, the production of vegetatively propagated material has taken precedence for many nurseries. The genetic base of the planting stock is maintained at a level as high as improved seedlings derived from seed orchards. Cuttings are taken from stock plants and rooted in poly houses before being transplanted out in the nursery.

Nursery Operations

Soil fumigation is carried out in the autumn and spring using metham-sodium. Conifer and broadleaf sowings commence in early spring as the weather dictates. Conifer sowings are broadcast rather than drill sown and grown for two growing seasons before being transplanted into rows. Many of the broadleaf species are drill sown and grown in the nursery bed until lifting for sale. Frost is a major threat to newly planted seedbeds and a fleece material is laid over metal hoops across the seedbeds to protect the seedlings.

Transplanting is carried out in spring, summer and autumn. Many seedbeds are lifted during the winter and the seedlings are held in cold storage until spring transplanting commences. The nursery utilizes two main types of transplanting machines, the disc mechanism and belts depending on the stock type (Figure 5).

Pesticide applications are complex due to the variety of species being grown. Restrictions on the availability of approved chemicals and their usage is a constant concern. Inter-row spray applications (Figure 6), are frequently carried out to ensure improved efficiency of chemicals and to minimize crop damage.



Figure 5. Belt operated transplanting machine



Figure 6. Inter-row spray applications

On average, the nursery receives 30 inches of rainfall per annum and irrigation is necessary during most growing seasons. Hydrants are located in the main seedbed growing fields and on-site reservoirs store water supplied from a local canal. Irrigation water is applied through retractable reels, which can cover up to 15 beds at a time.

Lifting commences in mid-October and is carried out largely with the use of machines. Lifting machines lift one row of stock at a time and are operated by a crew of four people. Labor is difficult to source and rates of pay are high, making machine lifting an economical choice (Figure 7). Lifting continues throughout periods of good weather and stock is placed into freezer storage until grading. Grading separates out stock in terms of height, form and root collar diameter. Once grading is complete, the stock is packed into co-extruded bags and freezer stored until shipping. The use of bar-coded labels on the stock allows for accurate stock control figures



Figure 7. Machine lifting a row of stock

throughout the season. Large freezer stores provide temperatures of minus two degrees Celsius and stock can be stored for up to six months without any detrimental effects on quality.

Quality

The production of a high quality product is a priority and Maelor incorporates various assurance methods in order to maintain quality throughout nursery operations. During the winter months, root electrolyte leakage (REL) tests are routinely carried out on stock to monitor physiological quality from lifting, grading, cold storage to shipping. The REL test provides our customers with a valuable guide to the expected survivability of stock at the time of shipping. The test can also provide valuable information on the level of dormancy of the stock. As part of Maelor's effort to ensure a quality product, the Company is accredited under ISO9002 Quality Management System. A comprehensive and fully audited Quality Manual, detailing nursery operations from seed collection, sowing through to shipping enforces this.

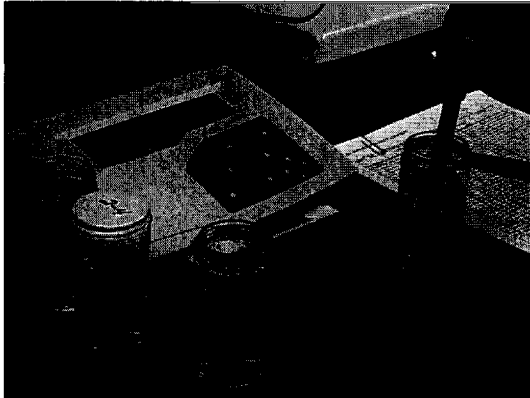


Figure 8. Root electrolyte leakage testing

CONCLUSION

The abandonment of a commercial core to the continuation of any industry has its dangers and one can only speculate over the future of the UK's forest industry as it tries to balance environmental issues with commercial production. The current level of planting is unlikely to significantly alter in the near future and nurseries have to evaluate their production in order to supply stock in line with demand. Over the last twelve months, several private nurseries have been forced out of business. Those that remain must stay focused and actively compete to sustain their market position. Maelor Nurseries Ltd sold its Scottish based site earlier this year and has reduced the main nursery site so that only the most productive areas of land are in use. With market awareness, a good team of people, the production of high quality products, and the continued support from major shareholders, the Company stands at the forefront of what lies ahead for the forest industry in the UK.

REFERENCE

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