Young Professional Forester Exchange
Final Report

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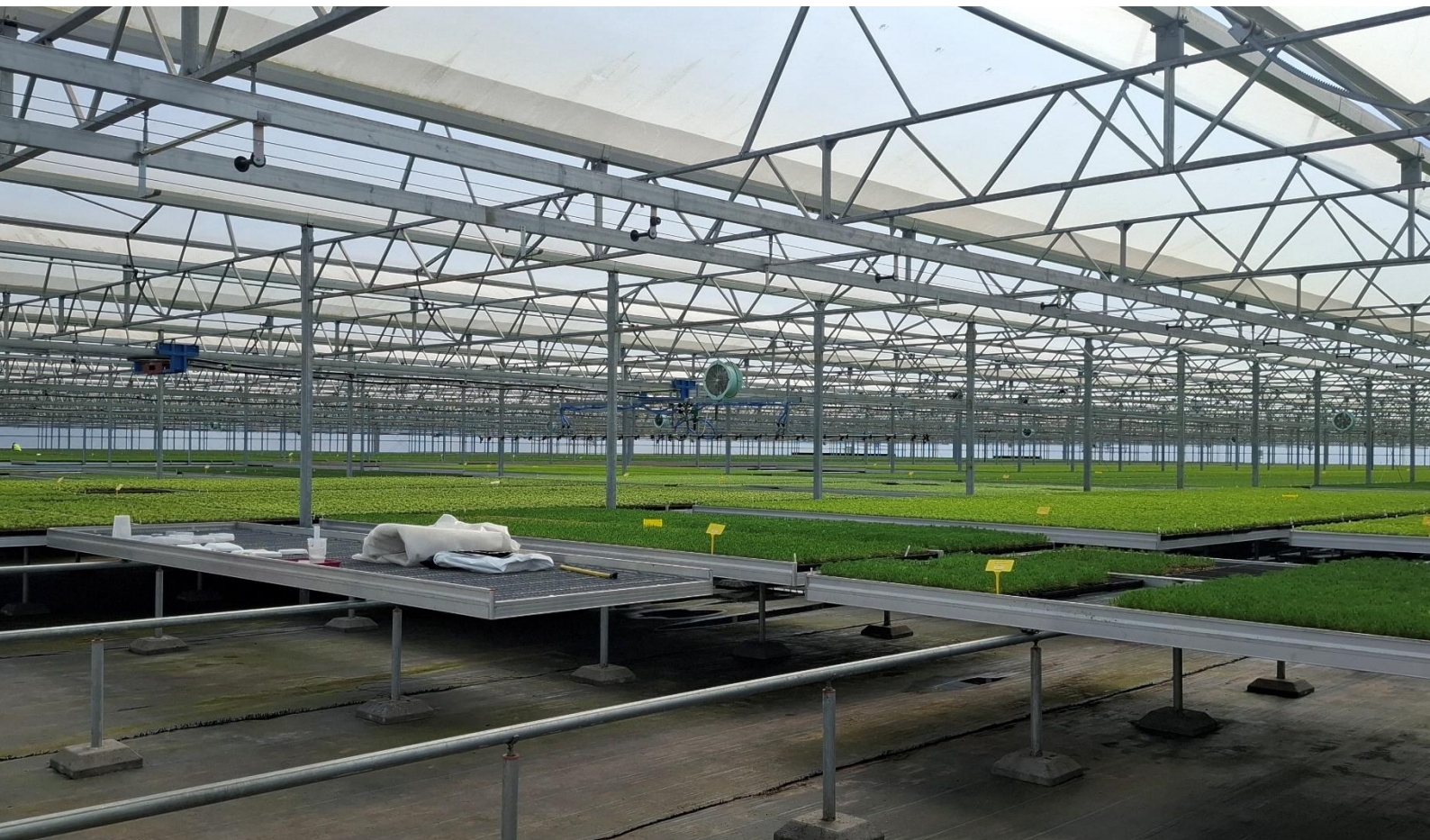

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Introduction

This report will be divided into the main differences and similarities that I noticed between the forest industries in New Zealand and the United Kingdom. Although both industries are production oriented and share some practices there are many differences in the way that they operate, some subtle and some glaringly obvious.
The majority of the exchange was spent in Wales with the Tilhill Forestry North Wales office. I spent a week in Scotland visiting various sites to get as broad an experience as possible. I also attended many field days and events, hosted by the Institute of Chartered Foresters, the Royal Forestry Society and Natural Resources Wales. It should be noted that any figures quoted in this report are approximate, and mostly relating to North Wales and there may be some differences between regions.

Establishment and Silvicultural Practices

It makes sense to start this report at the start of the rotation, and look at the differences in establishment practices. Planting operations are carried out manually with planting crews on shovels, as we do in New Zealand. Form-pruning is the only kind of pruning known in the UK, and the idea of pruning for clearwood seemed to be a strange concept to most UK foresters. A common response was to ask why we don't plant at higher stocking to reduce branching size, so an explanation of clearwood and its uses would then have to be covered. Thinning to waste is not carried out, as they try to utilise all forest products. Windthrow is a high risk on peat-bog sites, and in this case its common for stands to reach harvest age at the original stocking of 2500 sph.

Mitigating Chemical Usage

There is a focus on mitigating the use of herbicides and pesticides in the UK. As a result the management of competing weeds using chemicals is done on a case-by-case basis, and is never done using aerial broadcast systems. Typically regeneration of crop species is welcomed and encouraged to assist with meeting the UKFS requirements, unlike in New Zealand where regen control is important for preserving genetic improvements and crop quality. Pre-plant weed control is typically achieved by mechanical land preparation, such as trench mounding or hinge mounding. Trench mounding is a useful practice in the UK as the residual brash mats (what we would call slash in New Zealand) is moved into the trenches creating clean cutovers for planting crews. Although the mounding process works in the UK, and is very effective, it is an extremely costly operation. The majority of New Zealand forests are established on steep, marginal sites which would increase costs even more and potentially make forestry an unattractive investment. The idea of exposing more earthworks to the elements post-harvest is not something that makes sense in our erosion prone landscape.

Pests and diseases

Figure 1: Pine weevil.

One issue that the UK forest industry faces in establishment of production forests is the presence of insect pests, mainly the pine weevil (*Hylobius abietis*, pictured). There is only one way to deal with this threat, and that is through the use of pesticides. Unfortunately for the UK forest industry the constraints around which pesticide is available keeps changing, forcing the implementation of different pesticides that may be more costly, less effective and potentially even more harmful to the environment. Leaving sites untended is not acceptable as weevil populations can explode and ultimately completely decimate entire sites. As there is a global focus on reducing chemical use it would be good to see more trials and innovation implemented on managing this threat without the use of pesticides. Luckily the pine weevil does not target mature conifer species, however there is a threat in this regard in the form of the European spruce bark beetle (*Ips typographus*). *I. typographus* populations in Europe have exploded in recent years and devastated large areas of mature forest. Although it has not spread through the UK in large numbers It has been discovered in a few areas in southern England, and there are ongoing efforts to manage these infestations. The proximity to the European mainland makes it difficult to control the threat as specimens have been discovered flying straight across the English Channel.

This is a threat that the New Zealand forest industry has yet to face in any major capacity, and our biosecurity efforts as well as distance to any other large landmass are the main reasons that we haven't had to deal with a scenario on this scale before in the forest industry. If New Zealand were to have an infestation like this present within our borders, the proportion of our forests that are of a single species would make it very difficult to control and eradicate the infestation.

Production thinning

As forest rotation lengths in the UK can sometimes run in excess of forty years, the presence of mid-rotation income is a welcome boon to the forestry industry. Compared to the NZ forest industry which typically relies on motor-manual thin-to-waste operations due to site and market constraints, the UK industry seems to be relatively adept at utilising production thinning to improve the final crop without crippling expenditure and compliance risks. In a New Zealand context the implementation of production thinning would be extremely beneficial, from utilisation of woody material to improved health and safety. I have heard of many trials in New Zealand attempting to production thin stands in a financially and environmentally viable manner and we as an industry definitely have the know-how, ingenuity, and responsibility to implement production thinning. There is only one thing that is holding the industry back in this regard, and that is access to a suitable market. Reliance on the export market means that the majority of the time, especially in recent years, production thinning becomes cost prohibitive. Local markets such as sawmills have no interest in young stems for timber production due to poor strength qualities. If there were a suitable chip or biomass market then potentially these operations would be able to commence, and provide mid-rotation income to offset early silviculture costs.

Figure 2: Production herring-bone thinning operation in a stand of sitka spruce.

Environmental Risks

Environmental risks are becoming more of a problem for the UK forestry industry, mainly storm events and fire risk. Early in 2025 Storm Darragh swept through the UK. The biggest issue with Storm Darragh wasn't the strength of the wind as much as the direction coupled with high amounts of rainfall. The wind direction was opposite what forests in Wales typically deal with, and as a result large areas of production forest were not able to withstand the storm event. This is increasingly seen as a more common threat in the future, much as it is in New Zealand

Figure 3: Windthrown Douglas fir in the background. Foremost log stack is pulp/chip with oversize Douglas fir logs.

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A new threat that the UK forestry industry faces is fire. The Tilhill North Wales office alone had four separate fire events from March through to June 2025. One of these was a machine catching fire, one was due to spread from a neighbouring farm burn and another was due to sparks from a nearby railway line. Compared to NZ where most forestry companies are used to managing operations during fire season and any fires that eventuate, this is a relatively new risk that is getting worse as the climates change. A high population density and potentially a lack of education around the risks of wildfire means that the risk from the public unintentionally starting fires is higher than in NZ.

Figure 4: Young sitka spruce area completely burnt through.

Harvesting and the Tendering Process

Harvesting in the UK is primarily carried out via harvesters and forwarders, with a very small amount of “skyline” crews operating. For example in North Wales there are only two crews operating that are capable of carrying out hauler operations. It is worth noting now that some of the equipment I saw in these skyline crews was not similar at all to what would be found in a hauler crew in NZ, and consisted of what was essentially home made winches attached to excavators.

I have heard some harvesting costs as low as 8 GBP, approximately 17NZD, on some of the easiest sites. More difficult terrain can increase costs to as much as 30GBP, approximately 65NZD. However as soon as skyline crews are used these costs skyrocket to approx. 60-90GBP, in some cases at least triple what we would consider acceptable costs in New Zealand. And those costs are with low-production custom built machines, unlike the purpose built swing yarders and tower haulers in New Zealand. Lack of competition between skyline crews is resulting in sky-high prices for these operations.

In the UK harvesting is carried out via the tendering of harvest areas to harvest procurement companies. These companies all tender prices on harvest areas based upon the usual constraints found in harvesting; log quality, markets, site constraints etc. Although this creates effective competition between the harvesting companies there is a large amount of downtime between forest owners deciding to harvest and the operation taking place. Forest owners and/or managers can also turn down tenders if they don’t reach a minimum price, resulting in attempts to cut costs throughout the process so that bidders can win tenders, and not always in a good way. Harvesting contractors and their employees typically spend more than twelve hours onsite each day, sometimes up to sixteen hours. From a NZ health and safety standpoint this would be extremely poor behaviour, and could lead to an increase in incidents. The UK is facing a dearth in machine operators even more dire than NZ, and the competition created by the tender process to lower costs in combination with the work environment is not going to have a positive impact on this issue.

One operation that I heard of but never witnessed was the process where brash (slash) was removed from the cutover to use in the biomass market. These operations only took place in areas where there were high levels of brash left onsite, and the sites were close to market. Although not a hugely profitable operation, it still provided enough of a margin to forest owners to make it worthwhile doing.

Governmental and Legislative Influence on Management Practices

Figure 5: Douglas fir being managed under a continuous canopy cover regime. Majority of the mature stems are too large for their most profitable markets, and would otherwise end up in low-value oversize sawlog or pulp/chip grades.

I noticed that governing bodies tend to have a greater impact on the management practices of forestry in the UK. The United Kingdom Forest Standard (UKFS) sets out the required planting stockings for plantation forests, both conifers and broadleaves. There is a requirement for conifers to be established at 2500 sph, broadleaves at 1600 sph. As this is a requirement on establishment and not planting, many coniferous sites were planted at 2700 sph to account for any losses in the first few years. Unfortunately, as the UKFS was first implemented many decades ago, I did not discover the rationale behind the required stockings. As the markets in the UK are mostly for smaller sized sawlogs this may have had an impact on it in the past, and these days it seems to work for them.

The UKFS also sets out limitations on how much of each forest can be planted in a single conifer species, and has requirements on open ground and native broadleaf areas. Currently the maximum area of each forest that can be planted in one conifer species is seventy-five percent. At least ten percent of the total area has to be open ground, and five percent native broadleaves. The remaining ten percent can be either additional open ground, native species, or a different conifer species. The main production forest species in the UK is sitka spruce (*Piceae sitchensis*), and in larger scale forests this normally accounts for the first seventy-five percent of land area. From my observations many of the older woodlots typically meet the requirement for native broadleaves by default due to natural regeneration, and tend to be planted in a mosaic of production conifer species as well. This does seem to be changing as these smaller forests are harvested and replanted in sitka spruce to increase financial return and meet market requirements. This requirement around planted species seems to be well received in most cases, however some larger forest owners have more financially focused objectives. Having a requirement to plant a mix of production species is important in the UK as it provides greater resilience to pests and diseases.

Governmental and Legislative Influence on Markets

Forgive me if I go slightly off-tangent in this piece, however it is the one area that I feel may have the most impact on our industry going forward and as such this topic requires a certain amount of digression. I will pose some arguments that people may consider more emotional than rational, and although I am most definitely a young forester (although my back would argue otherwise) with potentially hare-brained ideas, that is essentially the purpose behind this exchange scheme. As such any constructive discussions that result from this piece are not only welcomed but encouraged.

Government and corresponding legislative support can have a major impact on the efficiency of an industry. Especially so in regards to subsidisation and support of industries. Any arguments in this regard I would point towards two industries in NZ, namely the mutton and wool industry (sheep) and the now non-existent tobacco industry (I know it is a controversial subject, but it used to be a substantial industry in parts of NZ). Both of these industries were major earners for NZ, but now either a mere shadow of what they were or completely non-existent. On its own the NZ sheep industry should be heralded as the best of its kind due to its productivity, environmental awareness and animal welfare standards. Don't forget the sustainability of its main fibre; wool. If sustainability and environmentalism were truly as large an issue as people like to suggest, then why is the wool market in decline? In parallel with NZ grown radiata pine it is one of the most renewable, sustainable, and environmentally friendly fibres in the world. In the current market shearing sheep is not done for the production of wool, but to maintain animal welfare at cost to the farmer. The NZ tobacco industry lost not only its subsidies but also its support due to the impact of smoking tobacco on one's health. Rightly so. And the NZ farming industry, mainly wool production but I won't disregard beef, dairy and venison at this point either, may be surviving the lack of subsidies rather well, but without governmental support these industries face many challenges in the future despite their sustainability and environmental/social benefits.

This may digress from the overall point of this report, ie forestry, however I would pose the question "What is one without the other?". Having spent my time on this exchange in Northern Wales, an extremely sheep farming focused area, I spent a large amount of time around these farmers and those connected with farming in some way. Unlike in NZ, where farming subsidies ended in the 1980s, these farmers seem to be altogether too reliant on government subsidies. Although there is no doubt that they are efficacious, I would question their efficiency. Google the difference, I had to. At this point in my report it may seem like I am arguing against the use of subsidies to support industries, and counter-intuitively I am. The NZ primary sector operates on a whole without any major subsidies, there may be some such as erosion control programmes etc, however nowhere near what some other countries offer. As a result these industries have had no choice but to be as *efficient* as possible, increasing productivity and reducing wastage. Having efficiencies at this level is an utter waste of time and resources if the markets are either limiting, degrading, or just non-existent.

This is the point where I start arguing that in order for these industries not only to survive, but also thrive, subsidisation should be directed towards their relevant processing industries. Despite the efficiency of our primary industries, the subsequent processing industries face a variety of challenges in the global market. These industries are the ones that face the most challenges in terms of employment, health and safety requirements, and other compliance issues. There have been multiple instances in the past where meat or wood processing plants have closed throughout NZ due to prohibitive costs.

Subsidisation should be used to encourage new industries and markets, allowing them to grow until they are able to compete on the global stage with producers from countries with lower

standards in regards to health and safety, welfare, and environmental protection. Having said that, other forms of less direct government intervention will always be required to ensure that these industries continue to be competitive on the global market.

What I am essentially getting at is the need for support within the NZ wood processing industry. The NZ forest industry is very adept at adapting to changes in legislation, however what I think everyone is noticing these days is a decline in the Chinese export market. I may not be old enough to remember the switch from the Korean and Japanese markets to China, but the only other developing country that is best suited to our timbers hasn't seemed very receptive in recent years. Despite this pessimism there is no doubt that our sawlogs will always be in demand, both domestically and overseas. However sawlogs only make up a certain percentage of each stem, and dealing with even our current wastage is a managerial nightmare. Recent changes to the National Environmental Standards for Commercial Forestry (NES-CF) require the removal from the cutover of any harvesting residue longer than two meters and larger than ten centimeters diameter at the large end. What this essentially means for our industry is that we are currently paying to remove non-merchantable products from the cutover, but only to a central skidsite/landing. This legislation came about as a result of a few weather events that caused devastation throughout the East Cape/Tairawhiti and whilst the outcome of these events is not to be sneered at in any case, it is essentially a "knee-jerk" reaction to public outcry rather than a reliance on factual information. I have heard that these dimensions were used as it allowed the passage of any wood debris from plantations under council instated bridges and other infrastructure, however it does not address the issue around woody material from other sources in our waterways. Perhaps this greater issue may never be solved until someone invents the flying car and bridges are no longer needed. Once again I digress.

What I noticed in the UK is they waste very little biomass from their harvesting operations, I would hazard a guess (and be right) that this is mostly due to their high population density. I have heard that they import as much as forty percent of the timber that they utilise, and they utilise pretty much all of their sawlogs with only a small percentage of chip/biomass being exported from areas that are too far from local markets to make transporting overland financially viable. Although different from NZ I don't think any of this would be too surprising to the average NZ Joe Blogs apart from one term; biomass. Biomass is an untapped resource in NZ, forget arguments around oil exploration and drilling, we should be utilising the resource that we have readily available on the surface.

Figure 6: The BSW Group sawmill at Fort William. Produces sawn lumber mainly from sitka spruce. This is a relatively modern sawmill.

Through proper governmental support and subsidies, the NZ forest industry should have access to biomass markets that, at least, don't make the removal of otherwise non-merchantable timbers cost prohibitive. The proper utilisation of what is currently a waste product with a plethora of issues should also help NZ meet carbon sequestration targets, and provide green, sustainable energy for our domestic market. This doesn't just mean processing waste wood into chip for industrial scale boilers, this is already being done and the majority of forests are planted too far from markets to make it a viable option at this point in time. The proper utilisation of our woody debris requires the implementation of processing plants that can change our woody debris into a highly sort after product that is in use globally. There are many options available to us, and yes the majority of these new technologies may be in their infancy, however "He Who Dares Wins". The process whereby any biomass is transformed into bio-crude is actually a relatively mature technology that has worked on a medium scale, and would be of great benefit to NZ as it removes a large amount of the woody debris that is currently left onsite to decompose, as well as providing stability to New Zealanders as a sustainable, local fuel source. Having said that, it is also important that biomass prices do not exceed local sawlog prices, as NZ needs access to suitable timber for the housing industry.

Conclusion

The UK forestry industry has strong constraints around chemical usage, increasing man hours and costs for pest control. Production thinning is a viable operation in the UK due to the availability of markets, and if those markets were present in NZ it would be a much more common operation here. Harvesting residues were typically very low in the UK, again mainly due to market availability. The lack of available skyline crews has resulted in an extremely high rate for these operations, unlike in NZ where they are more readily available. The biggest advantage that the UK forestry industry has over the NZ industry is the availability of markets. The NZ forest industry needs access to reliable, effective biomass markets to reduce harvest residues and increase the utilisation of woody material. Governmental support of biomass markets is needed to reduce the use of fossil fuels and help NZ meet its climate change commitments.