

Report from the visit to Alba Trees nursery

Date: 05/03/2015

Location: Alba Trees, Lower Winton, Gladsmuir, East Lothian, EH33 2AL, website: <http://www.albatrees.co.uk/>

Participants:

Alba Trees: Rodney Shearer, Grant Murray

University of Edinburgh: Richard Ennos, Carolyn Riddell

Centre for Ecology and Hydrology: Stephen Cavers, Annika Perry, Richard Whittet, Juliette Young, Karsten Schönrogge

Royal Botanical Garden Edinburgh: Jo Taylor

Forest Research: Joan Cottrell

Forestry Commission: Sarah Radcliffe

University of Aberdeen: Hazel Davidson

Scotland's Rural College: Peter Hoebe, Marta Piotrowska

Aim of the visit:

The aim of the visit was to see how the nursery is operating, how they are cultivating their trees and controlling pest and diseases, etc. We were hoping that such activities will help us to better understand nursery problems, needs and goals as well as identify possible areas of cooperation between research and stakeholders.

1. General information about the nursery

The goal of the Alba Trees nursery is to produce healthy trees and keep pests and diseases to minimal acceptable economic level. Alba also nurtures a learning-based approach within the company, to constantly improve their operations and biosecurity measures. The nursery tries to take a horticultural approach towards tree cultivation. Alba Trees identifies three levels of defence against pests and diseases:

- i) Keeping good crop hygiene, keeping facilities free of pests and diseases.
- ii) Recognising pests and diseases; learning how to produce plants free of pests and diseases.
- iii) Applying chemicals to control pests and diseases.

2. Tree cultivation

- i) Alba Trees is a container rather than a bare root nursery. Trees are grown in single cells on metal frames approximately 10 cm above ground level (no rooting into the ground), in peat compost. Roots are air pruned so there is no growth of roots between containers. This system allows nursery to avoid soil-borne pathogens as well as facilitating shorter crop cycles.
- ii) Alba selected a peat supplier with good biosecurity measures in place to minimise contamination via this route.
- iii) The nursery site in East Lothian has a good climate for tree growth and is situated away from large areas of native or plantation forest. This means that the probability of infection from surrounding forests is much lower than in many other nurseries which have been established in areas of forest production.
- iv) The containers are reused, cleaned and sterilised to minimise the risk of pests and diseases occurrence. Alba Trees is also rotating their crops in the greenhouses.
- v) Greenhouses are multi-cropped during the year. The most important role of greenhouses is to keep the plants away from wind and rain and allow good establishment of seedlings. Inside the greenhouses there is a good environment for disease development, especially fungal infections. For that reason greenhouses are kept well ventilated.
- vi) The trees are grown in Alba Trees from UK collected seeds. They spend their initial period of growth in greenhouses and then they are transferred into open air. In the open air they are arranged in blocks, for example pines are grown as a block of four rows which is then separated by two rows of a buffer crop. In the case of DNB infection the whole block has to be destroyed but the neighbouring block can be sold as long as the customers were informed about the occurrence of DNB infection on the site.
- vii) Alba have two arms to their production – those to clients requiring trees for restoration of native woodland, as well as commercial growers requiring non-native species for timber etc.

- viii) Alba Trees grows two main provenances of Scots pines: Glen Loyne (native) and A70 (for commercial plantations). Native pine populations are sourced for seed for restoration planting of native pinewoods, and this is an area for which Alba Trees are very well known. Alba also produces Sitka spruce, alternative conifers and a range of broadleaf species.
- ix) Alba also collects seed from several UK sites that reliably produce high amounts of seed each year. Seed can then be selected and matched to provenances and conditions in a customer's planting area.
- x) Alba would be open to collecting seed from trees shown to be more disease-resilient, provided they produced good amounts of seed (to make it economically worthwhile) and met other criteria required by the customer.
- xi) Alba's main customers are estates in the North of Scotland where landowners are trying to make profit on difficult/unprofitable land. For contract orders, Alba will try to grow from seed matching the provenance of the area the trees will be planted in.
- xii) Alba Trees sources water from a bore hole, from a depth of around 300 feet in order to avoid agricultural fertilizer remnants such as nitrates as well as some diseases, such as for example *Phytophthora*. This system also ensures continuity of water supply so they avoid the risk of drought, which weakens plants and incidentally may make them more prone to disease. The water is not recycled.
- xiii) Alba Trees is conducting customer surveys and visits major planting sites. However in depth discussion are ongoing only when things go seriously wrong. There is no time and effort put to analyse why something became a problem, it's rather a lucky guess what happened. Particularly successful crops are not analysed to understand how this could be replicated in the future.

3. Fungicide treatments

- i) Alba Trees nursery spray mostly against DNB, rust, mildew and *Phytophthora*.
- ii) Alba Trees sprays protectively against DNB with copper oxychloride. For other pathogens the decision and fungicide regime is depended on the current disease problems in the nursery.

- iii) Trees are sprayed both in the greenhouses and in the open air with a hand sprayer with nozzles. Both contact inhibitors and systemic fungicides are used. Alba Trees considers hand spraying more accurate than tractor spraying and the timing of applications is more flexible (after wet weather tractors cannot get out as they will disrupt the land whereas a person with a back pack sprayer could, wind or rain can put back a spraying by a week or more or treatments can be missed entirely because of bad weather). Therefore they are more able to maintain their spraying regime.
- iv) Alba Trees obtains information on efficacy and available fungicide treatments from the UK pesticide guide (published by BCPC and CABI), chemical manufacturers and Horticultural Development Company (HDC), of whom Alba is a member. Access to the information on approved fungicides in forest nurseries is considered as problematic. The Forestry Commission is not considered as a good source of information in that matter.
- v) Nurseries tend to be very secretive about the fungicides regimes they are using. This can arise from both the lack of knowledge in the area of fungicide treatments as well as the difficulty in obtaining the relevant information. There is more discussion ongoing about herbicides than fungicides between nurseries.
- vi) Alba Trees tries to minimise their fungicide inputs in their nursery and highlights the importance of biological control and natural mycorrhiza fungi.

4. DNB and Alba Trees

Pine is an important crop in Alba Trees. Alba Trees is considered to be a relatively low risk nursery for DNB. There are no pine woodlands around the nursery, the crop cycles are short and the number of days trees are exposed to natural infection (outside the containments) is small.

5. Biosecurity

Biosecurity was one of the important topics discussed during the visit. Alba Trees tries to produce healthy crop, remain financially healthy and use biosecurity control as a selling tool. They are actively promoting the establishment of healthy trees/forests that do not

impact negatively on native/established woodland. However a number of issues regarding biosecurity and plant import have been raised during the visit, with the main points including:

- i) There is a need for a logical biosecurity system in the UK. It is important for the nurseries to understand the science and research behind the regulations and connect that to business, which is lacking at the moment.
- ii) Alba Trees has a feeling that most concerns about biosecurity actually come from the nurseries. The need for biosecurity control should come first from the customers to make the biosecurity system important and function well.
- iii) It is possible that the way that nurseries are functioning should be revised. As an example DNB control was given. For example pines could be grown in DNB free areas, such as Alba Trees which is not surrounded by pine forests. Other nurseries could focus on other conifers and tree species. In that way a logical system based on biosecurity control could be implemented.
- iv) Alba Trees considers importation of trees and a lack of regulations in that matter as a serious issue. It was suggested that the fundamental attitude to import should change. At the present moment nurseries are growing on their own around 80% of crops and the remaining 20% is imported depending on customers needs. The economics of the business very often leads to importation and there is not enough emphasis put on the need for home-grown cultivation of trees.
- v) Alba Trees suggested that the inspection regimes of imported trees are not working well in the UK. If large batches of trees are imported, it is impossible to inspect all of the trees. In that way not only commonly known tree diseases present in the UK can be further imported, but this practice poses a danger of introduction of exotic species, which currently are absent from the UK. For example notification of import rules were brought in on Oak, Chestnut and Plane (around last year?) and yet there have been 2.000 consignments of imported trees since then in England alone. Soil/root-based diseases are likely to be missed during inspection as well as leaf-borne diseases as imported bare rooted trees would be dormant.

- vi) Many of the commercial recommended tree seeds come from outside the UK, as for example Norway Spruce, Douglas Fir, Western Red Cedar etc. For other species, such as for example Sitka Spruce (which is the dominant species), almost all seed is grown in UK orchards, albeit from North American clones. The issue of a lack of seed certification system in the UK was raised. Certification in the UK seems to be based more on the need to ensure timber quality rather than on the criteria of pest and disease resistance. Currently for commercial purposes any seeds can be chosen. However in the case of planting for native forests grant award is generally dependent on use of suitable provenance so seed choice is more regulated.
- vii) Alba Trees is of the opinion that it is nurseries who are most concerned about pests and diseases, and more effort should be made through legislation to prevent import of disease and increase biosecurity. For example there is little regulation governing the sale of pines in garden centres compared with the regulations applying in tree nurseries.

6. Areas for improvement and cooperation

- i) Alba Trees will be very interested in improving their recognition of pests and diseases. They expressed willingness to receive training in that matter from the Forestry Commission.
- ii) Alba considers that provenance zones could be reviewed and categorised in a better way, for example by altitude/climatic zones.
- iii) Alba would be open to the idea of constructing screens between crop blocks if this would further reduce splash-dispersal of diseases such as DNB.
- iv) Alba Trees will be also interested in the discussion on fungicide treatments. They are of the opinion that stronger cooperation between the nurseries in that matter will be beneficial.
- v) Alba Trees is interested in stronger communication between research and nurseries, so that they can understand and learn from where the problems and regulations arise. For example they learnt by coincidence that DNB is a rain-splash pathogen and that the rows of buffer crops are aimed to reduce the spread

of infection. They explained that this information helped them to understand these regulations and that having this information they can think about further methods of limiting possible infection.

- vi) Alba Trees is also interested in student placements, and are currently interested in projects studying root architecture of seedlings.
- vii) One important issue that Alba Trees highlighted is that researchers should be very careful with the messages they are sending out. Misinterpretation of these messages can cost nursery and other forestry businesses significant loss of trade, and will make such businesses reluctant to cooperate with research programmes in the future.