

Improvement of plant quality through nursery research and added value

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John Kavanagh has talked about the management of quality in terms of day-to-day nursery management. My talk is going to take a more holistic approach to plant quality from a business perspective. It is perhaps apt that I first state that, for a nursery business, quality is a double-edged sword because it costs money to provide it and it costs money if you don't!

I show an example of a hybrid larch crop for which, in standard sizes of 30 cm+ height, we achieved a minimum price of €15 per 1,000 (Figure 1). Grading to a robust root collar diameter of 5 mm provides a yield of 70%. However, grading to a minimum of 40 cm in height drops plant yield to less than 60% which, on current pricing levels (€35 per 1,000), results in a drop of 10% in potential revenues to the nursery. If the customer further demands a strong root collar diameter (minimum of 6 mm) then the nursery would need to get a 25% price premium to compensate for the potential loss in yields from grading to this specification.

Realistically, the price obtainable in the market place is the price that the nursery can charge to the customer. Nevertheless, nurseries need to be earning a sustained level of profit in order to invest in three years 'work-in-progress' of plant stocks to meet customers' requirements and to be able to carry the necessary nursery infrastructure to produce quality crops, The question is how can they do this in a very competitive environment. The answers, I believe, are:

- adding value in terms of both products and services, and
- investing in research and process improvement.

Coillte Nurseries seeks to add value to the products that it grows through several means, The obvious priority is to provide the type of plant that our customers (and we) feel will have the greatest chance of survival in an out-planting situation. Often this is a question of balancing the ideal with what is economically feasible. To do so requires a heavy emphasis on reviewing growing systems to provide what the customer wants at least cost to the nursery. Irish nurseries are well able to compete on conifer production but find it difficult to compete against imports of one-year old broadleaf stock from mainland Europe. The question is whether a one-year old broadleaf plant is sufficiently robust to be used on an afforestation site with the potential for heavy competition from weeds, I believe not – but many customers merely have a view for short term price gains,

Coillte Nurseries management of the National Seed Centre ensures that the Irish forest nursery industry has the best provenances of seed available for production of plants for Ireland. Imported plants may not always have the same 'pedigree'. In addition, Coillte Nurseries also adopts a strategy of promoting even better selections of plant material, For example, we place heavy emphasis on the production of southern provenances of Sitka

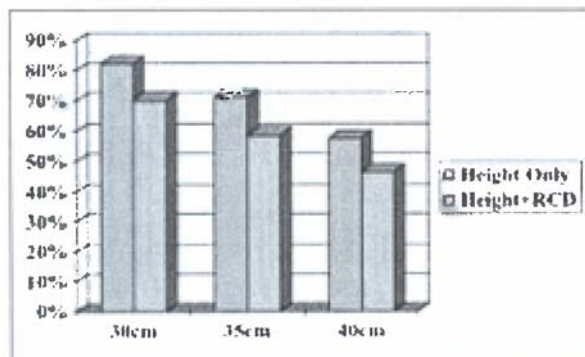


Figure 1. Hybrid larch yields based on height and RCD specification.

spruce over that of QCI due to the former's higher rate of productivity for the forest owner. We also invest in improved selections of Sitka spruce for our own company where increased productivity and better timber quality are a priority – even at the cost of more expensive planting stock.

Finally, we find it important to provide an option between both bare-root and containerised planting stock to provide our customers with opportunities for both mechanised planting and extension of the normal planting season.

Quality isn't all about plants – it's also about service, Irish forest nurseries have gone down the road of facilitating customers by providing delivery of plants straight to planting site, often at very short notice. In addition, significant risk is taken by providing cold-storage of plants to allow customers to extend their planting season. Recently, Coillte Nurseries has also invested heavily in the provision of chemical protection to planting stock against attack by pine weevil prior to the dispatch of plants to the site.

Cold-storage is a prime example of the customer demanding a 'product' that is not entirely suited to their circumstances, Figure 2 shows the general trend of plant sales for Coillte Nurseries in the spring season. A third of plants are dispatched to customers after 1 May when, it may be argued, planting should actually be winding down and maintenance programmes winding up. We always have customers with problems with plant survival from cold-storage particularly for less robust species like firs and larches – and they wonder why! Folks – nurseries don't particularly want to provide cold-storage. We don't make money from it – in fact year in, year out we lose money through operating costs and plant destruction.

Pre-planting treatment against pine weevil is an entirely different example. Working closely with our customers, we have managed to give a service that provides direct savings to the customer (even after paying a treatment charge). It provides better protection against weevil attack than field spraying, ensures that the chemical is applied in a controlled situation, reduces the amount of chemical used, and frees-up labour to continue planting during the period of greatest risk of weevil attack (March-April). Here's a service that reduces both environmental and health-and-safety risk and (most importantly) provides a good profit margin to our business!

Competitive advantage springs from the ability to grow and produce plants of a similar or better specification than your competitors, at a reduced cost. Plants are not the only objects that need to be cultivated in nurseries! We also need to cultivate an ethos of continuous improvement what can we do better to meet the needs of the customer at a lower cost? Coillte Nurseries seeks to build this advantage through three main systems:

1. continuous review and development of both growing practices and business processes;
2. structured research programmes (both internal and in partnership with external bodies) to provide empirical evidence for changes to practices; and
3. availing of opportunities for technology transfer with others involved in our industry.

I would like to share a couple of examples with you on how research has helped to make us more effective and efficient in plant production.

The first is a study of the impact of grading hybrid larch seedlings prior to transplanting on final saleable yield and (ultimately) profitability

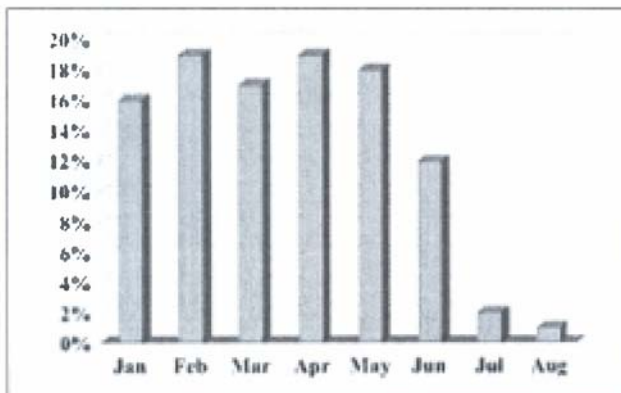


Figure 2: General trend of plant sales from cold-storage in the spring.

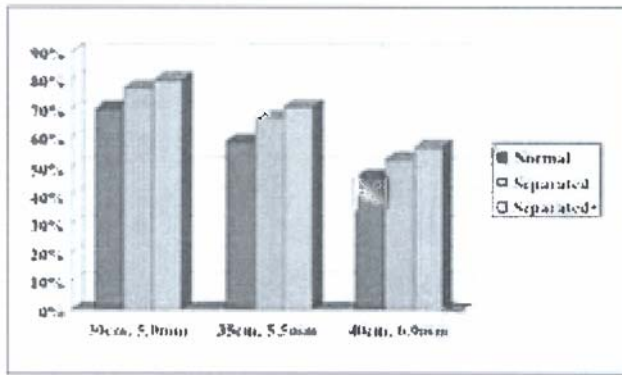


Figure 3: Grading of hybrid larch seedlings.

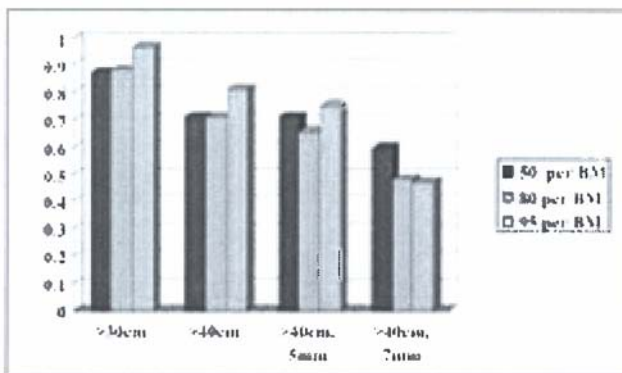


Figure 4: Sitka spruce transplant study.

(Figure 3). An initial assessment of the cost (€6.37 per 1,000 seedlings) would indicate that grading of seedlings prior to transplanting does not make sense. However, our study found that by discarding the smaller seedlings (less than 5 cm in height) and separating the balance into two grades (medium and large) resulted in a 20% increase in yields and, despite the increase in costs, up to 9% increase in net revenues. Here we had the opportunity to improve the quality of the product for our customers and to make a net contribution to our profitability.

The second study (Figure 4) looked at the effect of transplant density on the final height and root collar diameter of Sitka spruce transplants. In this study we were attempting to grow a plant that was consistently between 40 and 60 cm in height but had a root collar diameter of 7 mm+. We were convinced that we would have to reduce transplant density below our normal 90 plants per bed metre to achieve any material effect. Our study, in fact, showed that reducing transplant density had the opposite effect – reducing the yield of plants except for a height specification of 40 cm+ and root collar diameter of 7 mm+. At this point, the economic cost of increasing transplant area outweighed the benefits of improved yield.

In summary, I believe that Irish nurseries need to maintain their focus in order to survive in today's competitive environment. To achieve this they must seek competitive advantage through offering products and services of superior quality to that of their competitors. To achieve this in a cost effective manner requires an emphasis on product and process improvement through ongoing investment in research and development.