Hybrid cypresses - a future plantation option

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Cypresses have been one of the most popular species advocated and planted over the last 20 years to complement radiata forestry. This has certainly been the case with the farm forestry movement and to a lesser extent corporate forestry. Of the cypresses, lusitanica has been promoted and planted in the warmer moister northern areas of the country while macrocarpa has been planted in the cooler southern regions.

Twenty years on, it’s fair to say that these plantings have never quite lived up to expectations. Lusitanica has proved to be very variable and site specific while macrocarpa has succumbed to cypress canker in many areas. These factors have combined to increase the risk and associated uncertainty of planting these species. As with all generalities, there are notable exceptions and it has been these that have fuelled the continued planting of cypress species.

During this period farm foresters started to plant, and are continuing to plant, increasing numbers of hybrid cypresses, namely the Leyland cypress and more recently the Ovens cypress (Ovensii). The Leylands are named clones or varieties grown from cuttings of naturally occurring hybrids between Cupressus macrocarpa and Chamaecyparis nootkatensis (Yellow cypress). Leyland cypress, or more specifically the variety Leighton Green, has been very widely planted in shelterbelts throughout New Zealand during the last thirty years. Until the mid 1990s very few pure woodlots of Leylands had been established as the plants, which are cutting grown, were considered too expensive (at $3 plus per plant) when compared with seedlings.

Leighton Green is just one of many different clones that comprise the Leylands. Today, clones such as Ferndown, Stapelhill, Green Spire and Haggerston Grey have replaced Leighton Green as the varieties of choice for planting. Although these clones are physiologically old, their growth rates are not too dissimilar to those of seedlings of macrocarpa or lusitanica. Given their pedigree, it would not be unreasonable to expect the Leylands to also have very good wood properties. This has been confirmed in a recent sawing study of 21-year-old trees conducted by Forest Research. In brief this study concluded that the Leylands have similar wood properties to both macrocarpa and lusitanica. The Leylands have grown and performed very well in most areas, but have proved susceptible to cypress canker on some North Island sites.

Ovensii is a hybrid between C. lusitanica and Ch. nootkatensis and as such is similar to, but not, a Leyland. It is a relatively recent addition to the 'cypress mix of species and clones' available to growers, one that is very resistant to cypress canker. It is proving to be a healthy, vigorous and adaptable clone that grows very well throughout most of the country. It is growing in trials from Northland to Invercargill and indications are that it is probably the most adaptable cypress variety currently available for planting. Having said this, it is very intolerant of hot, dry or exposed sites and salt laden winds. While the wood properties have not been documented, there is increasing anecdotal...
evidence that it is also a very good wood. This is a similar situation to that of Leyland timber a few years ago when very little was also known about it. *O. revigii* is now the cypress of choice for many farm foresters including BOP growers Geoff Beane and John Mackintosh.

*Ch. nookatensis* is notable within the cypress family for its tolerance of cool and wet conditions along with its ability to survive and grow on soils that are deficient in nutrients. The soil types it most commonly occurs naturally on are classified as Histosols, described as peat or muck, and Spodosols, naturally infertile soils that respond to good management. (In contrast, macrocarpa and lusitanica require somewhat better soils to survive and grow well in.) Given this, it is not surprising that hybrids of this species grow very well on a wide range soils and sites throughout New Zealand including Kaingaroa pumice, West Coast pakihi, Canterbury Plains and foothills and reverting East Coast farmland to name but a few.

Today, the majority of hybrid cypresses are being planted in woodlots whereas only a few years ago it was shelterbelts. As a general rule, a good radiata site is also proving to be a good hybrid cypress site. They have proved to be very easy to establish and manage. They can be produced as either open ground or containerised plants and are now available for considerably less than $2 per plant if ordered in quantity. Many of the techniques used for establishing and managing radiata are directly applicable to them. Both the Leylands and *O. revigii* respond very well to pruning and thinning. Anecdotal evidence suggests they are considerably easier to prune than seedlings of either lusitanica or macrocarpa. Chris Nasey, a silvicultural contractor based in Katikati who specialises in managing cypresses claims pruning these hybrids is in the region of 30-50% less work than pruning cypress seedlings.

In summary, these hybrids are developing a reputation for reliability and ease of management, and are proving to be a realistic complementary species to radiata on many sites. Just as importantly, they’re indicating a possible direction for the development of a New Zealand plantation cypress industry – one based on hybrids. So what are the next steps - or what is required for such an industry to start to develop?

Firstly, foresters need more experience with planting and managing hybrid cypresses on forest sites. This can only be achieved by establishing small stands (upwards of 10 ha) over a range of sites and planting years. In addition to experience and confidence, such stands will also provide future growth and yield data.

Secondly, foresters should accept that a current paucity of data on hybrid cypresses will restrict the level and accuracy of any financial analysis – existing models for macrocarpa or lusitanica may or may not be useful, hence they are going to need to rely more on their experience and training in any evaluation.

Thirdly, for any species to be successful it needs to be supported with an appropriate research programme and hybrid cypresses would be no exception. The development of new hybrid clones (currently only a limited number of hybrid clones are available) and propagation regimes along with growth and yield models would be some of the initial projects.

Lastly, growers need to work together to pool resources and share knowledge in a structured industry organisation. An appropriate model could be developed along similar lines to that of the Douglas fir cooperative. There is increasing interest in alternatives to radiata within Government and an industry organisation would be in a position to capitalise on this and attract significant funding.

To conclude, hybrid cypresses have been grown in New Zealand for over forty years. To date they have not been considered seriously as a plantation option, yet they have many of the required attributes. While radiata pine and Douglas fir will always be the mainstay of the New Zealand forest industry, there is definitely scope for increased species diversification and hybrid cypresses offer that opportunity.