

## Japanese Red Cedar

# 'The Azores' experience

Based on his experience on the Azores Islands, engineering consultant **Daniel Estrella** offers a 'biopic' of a tree that seems to be promising as a timber species in the UK

**C**ryptomeria grows in relative warm and humid climates with high precipitation and is very shade tolerant. In terms of soil type it does not show to have specific requirements. In the Azores it grows in very steep terrains, usually between the altitude of 300 to 800 meters, where temperatures are cooler, more similar to South England and Wales.

It is a fast growing species with a very narrow sapwood. Annual growth rates in the Azores average to 21 m<sup>3</sup> per hectare which produces an estimated 630 m<sup>3</sup> per hectare when reaching the legal felling age of 30 years. This species reaches heights of 35 to 45 meters with dbH of 60 - 80cm; however, it can reach diameter of up to two meters in older trees. In dbH of 30 cm. Presently, the older stocks available are aged 40 to 50 years old in western parts of the main island and of 60 years in the Eastern part. The main island holds about 75% of all stocks.

### Tree characteristics

The tree is characterised by a straight fust and small diameter branches. Three distinct tree varieties exist with the heartwood varying from a pinkish color (the most common), a reddish brown and a dark brown. Trees with pinkish color heartwood are lighter and have less mechanical resistance than trees with the darker heartwood which stronger and denser. However, no significant differences have been noted in dimension stability.

The tree's density averages 330 kg/m<sup>3</sup> at 12% humidity but these values can vary considerably with many factors, from tree to tree and within a tree, from 280 to 380 kg/m<sup>3</sup>. Recent approved guidelines for visual grading of Cryptomeria, requires, among other factors, density to be of 310 kg/m<sup>3</sup> in order to be classified as a C14, in terms of mechanical resistance class.

### Silviculture

Reproduction of trees is achieved through plantation of elements obtained through seeding. However, plants can be obtained via rooting of stem cuttings. Plantation occurs when elements are at the age of two. In more exposed areas, plantation could occur at the age of three, although this is a more difficult process. Germination rates of the seeding process usually vary between 35% to 50%.

Tree spacing varies from 1.5 to 2.2m. Tighter com-



**A Cryptomeria plantation in the Azores**

passes are used in more windy and exposed areas and larger compasses used in more protected areas. It is common to use a shorter compass in the outer perimeter of the plantation so it could work as a wind curtain for the inner trees. It is a delicate balance to meet.

Ground maintenance after plantation is undertaken twice a year for the first two years and once a year for the following three to four years. Pruning should be undertaken three times at heights 2/3m, 4/5m and 6/7m.

Thinning should happen three times, respecting minimum periods of at least four years, until the tree reaches about half the legal felling age, to reduce trees to a density of about 700 units/ha.

Although these are the guidelines for an efficient production, they are not always followed. It is common to find old stocks and even new stocks where trees are left to self prune and thinning is not managed but rather happens in a natural form, resulting in plantations with much higher tree densities of 1900 trees/ha. In this case the norm is to find many trees of small diameter which do not have commercial value.

The present tendency is to use larger compasses of 2.2m to attenuate the thinning process. *Cryptomeria*, as many other trees, is susceptible to the *Armillaria mellea* fungus disease and using these larger compasses makes it more difficult for the disease spread from tree to tree.

### Timber uses

Japanese Red Cedar (*Cryptomeria Japonica*) commonly known by *Cryptomeria* was introduced in the >>



>> Azores in mid-XIX century as an ornamental tree. Today it occupies almost two-thirds of all production forestry at an estimated 8572ha according to the last Forestry Inventory (2007).

Along many decades, due to its abundance, its timber was used for a variety of applications. First-grade quality *Cryptomeria* has been used in traditional building in roof structures, wood ceilings, windows and doors and in carpentry. Second grade quality produce finds use as roof underlay, in concrete form work and some in field fencing. More recently, for the last 15 years, it has also been used in milled log homes and in the fabrication of wood laminated panels.

**Durability**

*Cryptomeria* is well respected for its natural durability, which makes it a potential alternative to other similar species in the UK market. It produces light-weight timber with a high strength-to-weight ratio and very good dimensional stability. It's easy to work with and also glues and stains very well. It has a distinct and pleasant cedar type odor.

Red cedar is an easy timber to process however it does require cutting tools to be sharpened as it has a soft surface.

In general one of *Cryptomeria* main advantages would be its fast grown potential, specially consid-



ering shorter rotation periods. The other main advantage is its natural durability, not common in most softwoods commercialised in larger volumes, which makes it ideal for use in cladding and in the construction of milled log homes among other applications.

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