

## Plant Research Group

### Forest of RITE in Western Australia

In the plant research group, we have just started the construction of Forest of RITE in Western Australia as the first step to mitigate CO<sub>2</sub> increase in the atmosphere. Environmental factors affect the growth of plant directly because plants are not allowed to move about. The most suitable ground for plant growth is usually used for food production, agriculture. In this project, plantation of trees in the semi-dry area where is not used for agriculture, to inspect quantity of the growth and CO<sub>2</sub> absorption.

Forest of RITE occupies about 30 hectares in the neighborhood of Collie, Western Australia (figure 1). Here is the semi-dry area of precipitation around 600mm in a year. In addition, it is the area where damage from salt breeze occurs partially.

When we construct a forest in arid condition such as semi-dry grounds, an application of suitable trees that are tolerance against the environmental stresses is required. Even if we apply a eucalyptus for the construction of the Forest of RITE, normal growth could not although a eucalyptus is the tree that comparatively resists drying. An application of genetically modified trees is alternative. However, the use of genetically modified trees with an environmental stress tolerance is hard to say quick-acting technology because development of those trees are in research stage and, in addition, social acceptance is required to cultivating them in the outdoors even if the genetically modified trees reached a practical use stage. The quick-acting method we used this time is the application of a non-genetically-modified but a clone of elite trees.

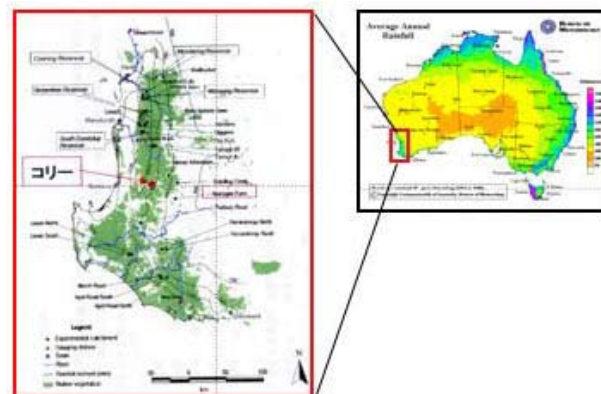


Figure 1. Location of the Forest of RITE in Western Australia.

Forest of RITE occupies about 30 hectares in the neighborhood of Collie, approximately 100km south of Perth.

Although propagation of the elite trees usually performs by the method of cutting, the application of normal cutting method to a eucalyptus, the tree we use for Forest of RITE, seems to be difficult. Thus we used an alternative method for the propagation of elite eucalyptus instead of general cutting method. The alternative method has basically been developed by Nippon Paper Industries, including a tissue culture technique to amplify eucalyptus tissue in a container, an effective rooting technique under a relatively high CO<sub>2</sub> condition. As the result, we prepared a young plant of 20,000 elite clones containing high growth rate, drought tolerance and salt stress tolerance, respectively, in a relatively short period. After acclimatization, the plantation has started in July that is local rainy season (figure 2).

We will measure growth rate and photosynthetic activity of the planted trees. We will improve the practical use of elite clone planting through evaluation of Forest of RITE in terms of CO<sub>2</sub> reduction.



Figure 2. Elite clone seedlings (the left) and scenery of the planting (the right).