

Bombing helps research

PLUGGING heaters into trees and bombing pine needles at four in the morning is the basis for new silvicultural research in pine plantations near Harvey.

The aim is to measure the growth response to fertiliser applications and thinning.

CALM already knows a great deal about how trees respond to fertiliser; now plantation managers want to know when to apply it for optimum stand densities.

Dwellingup-based forest scientist and plant physiologist Stuart Crombie says CALM wants to work out the most economical way to manage plantations and maximise wood production.

"By understanding how trees manage their nutrient and water supply, we can assess the number needed to produce a given amount of wood," he says.

"It's no use whacking on fertiliser if the trees run out of water and die."

CALM tree nutritionist and joint project leader of the trial John McGrath says fertiliser increases a tree's leaf area so it can photosynthesise more efficiently and grow quicker.

"Increasing leaf area also means the tree transpires more water, John says.

"Thinning trees reduces competition for the available ground water and allows the trees left standing to take up the fertiliser.

"There's optimal response in terms of wood production, stand density and fertiliser applications.

"The riddle yet to be unravelled is the relationship between wood production and water use of different species of trees."

A three-year plan to monitor 36 plots began this summer after the trees were thinned to varying densities. Ground water is monitored to a depth of

by Tammie Reid

eight metres with a neutron probe, and the water status of pine needles is measured by a Scholander pressure bomb.

Transpiration is measured using the latest and best heat pulse velocity probe—a type of heater—connected to a computer that can record in the field for up to six weeks continuously.

"The probe is a vast improvement on former manual methods that meant people sitting by trees, for hours, days or even months," Stuart says.

Busselton technical officers Bob Hingston, Beth Read, Terry Reilly and Steve Ward, and forest workman Alan Woodward were involved in the early phases of the project.

Members of the pre-dawn measurement team are Stuart Crombie, John McGrath, Dwellingup technical officer Joe Kinal and Busselton technical officers Ian Dumbrell and Keith Mungham.

"Everyone shares the task of taking these measurements and their enthusiasm is undimmed by the fact that all five are trying to sleep in one little on-site caravan."

Although the measuring has just begun, John McGrath gives some interesting observations so far:

"Radiata absorbs more soil water, so is able to photosynthesise for longer than pinaster, but it may run the risk of running out of soil water before the summer drought ends," he says.

"Pinaster appears to conserve water by having a much smaller leaf area and by its ability to close down its water loss during transpiration through the pine needles.

"There is no external funding for this project but we've had invaluable help from Pine Hauliers who



Above: Ian Dumbrell (foreground) and Stuart Crombie using Scholander pressure bombs.

Right: Stuart Crombie and a far safer bomb than the first Scholander model. Made from an old central heating boiler, it blew up when first used, nearly wiping out the USA's botanical elite scientists gathered to observe the new technique.

Photos by Tammie Reid



thinned the plots, softwood timber supply officer John Kaye who organised it, and Central Forest Region which provided funds for the fertiliser."

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