

## WHY PUT FERTILISER ON FORESTS?

by A.L. Clifton.

In Western Australia where soils available for forestry have generally been poor, it was found necessary to use fertilisers in the establishment of plantations. However, world thought in this field is turning more and more toward the need for fertiliser applications in the maintenance of plantations.

The application of fertilisers in the establishment of plantations in Western Australian forestry has been the practice for a long time. It is rare in other parts of the world, even unheard of in some circles. Locally, the application of "fortified" superphosphate on P. Pinaster at planting time, and the use of zinc foliar sprays on P. Radiata are well known. More recently, super has been used in the maintenance of our coastal P. Pinaster plantations.

Significant responses to other fertilisers have not been reported until recently, but the search for "balanced fertilisers" which will give trees a range of required nutrients at optimum levels has been carried on by small groups of patient workers. West Australians have long been regarded as authorities in this field.

The search was dramatised recently by the results of work by C.S.I.R.O. and Forests Department officers in W.A. pine forests. The work was done on a pilot trial established in 1964 at Gleneagle in failed P. Radiata and poor P. Pinaster. Nitrogen and phosphorus fertilisers were tested. Used separately, applications of these nutrients did not produce significant responses, but used in combination, the results were spectacular. Both species responded significantly to the applications. The work on these pines showed that the whole plant system was vitalised by the treatment - needle length increased, crown colour improved, photosynthetic activity increased, height growth stepped up; as a result wood production increased.

Cross-sections of trees taken from the plots were placed on display in the newly opened C.S.I.R.O. building in Perth. The sections clearly demonstrate the stimulating effect of a combination of nitrogen and phosphorus fertilisers on these pines.

Let us look briefly at the background to the search for balanced fertilisers.

It is true that a large proportion of nutrients taken from the soil by plants are returned to the soil from the breakdown of leaves and slash, but it is not generally realised that important amounts of essential nutrients are removed in logwood and bark.

In a recent article by T.E. Maki in *Unasylva* V. 20 (3), it was pointed out that nutrient loss through this drain must be replaced by fertilisation, or productivity of the site will decline. A table given by the writer is very

enlightening, even though it does not include P. Pinaster. A modification of the table is given below:-

Trees	<u>Nutrient Drain in Pounds per Acre by Various Trees through bark and wood removal.</u>					
	Age	Ca	K	P	N	Source
Pines	100 yrs	250	95	19	?	Rennie (1957)
Hardwoods	100	266	279	56	?	Rennie (1957)
<u>P. silvestris</u>	55	135	58	9	101	Ovington (1957)
<u>P. radiata</u>	35	170	230	30	200	Will (1964)

Nutrient status of the soil is one factor of the environment over which the forester can gain effective control to increase productivity. Here is a challenging field. Increasing the productivity of existing plantations, extending the area of plantable land into areas hitherto considered non-productive and the possibility of rehabilitating disease-ravaged forest land, offer tremendously rewarding fields of study. Such work offers the prospect of great economic gains and of heightening the status of the forestry profession.

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#### TOES

I think that I shall never know  
 A poem as lovely as a toe.  
 A toe that is so firmly pressed  
 Within my shoe, where five congest.  
 A toe that takes me on my way  
 With speed and sureness, through the day.  
 A toe that grants me freedoms stride  
 And keeps me walking tall, with pride.  
 Upon whose tender nail could drop  
 Loose objects that might crunch or lop;  
 No fool am I - I'll always choose  
 To keep my toes in safety shoes.

"A non!"

(Extract from a commercial safety pamphlet, contributed by J. McCoy).

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