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Pine Planting on Esperance Sand Plain.

The first planting of Pinus pinaster in plantation form was carried out by Esperance Pine Forests Ltd. during 1923-1929. Approximately 500 acres was planted with stock which is obviously a poor Mediterranean race and which, even under the best of conditions, would have given very poor returns.

On two compartments very small applications of Superphosphate, about a teaspoonful per tree were given at the time of planting, the fertiliser being placed in the bottom of the planting pit. Even this amall amount had a marked effect which, however, faded after a year or two.

Soil preparation was rough and inadequate. It consisted of a single ploughing with a mould board plough and it did not take the native scrub very long to re-establish itself. Owing to the unsatisfactory development and no doubt the economic conditions of the time this private Company went out of existance and the pine forest reverted to the Crown.

In 1936 two nutritional plots were established. Applications were made of various amounts of superphosphate varying from 2 ozs. to 32 ozs. per tree, both with and without zinc. Inadequate buffers were employed so that the plots, while showing a generally very marked respnnse to fertilising, did not give satisfactory comparison of the individual treatments.

Two years later, a further 9 plots were established, 2 using zinc and 7 superphosphate. The superphosphate plots consisted of approximately 40 trees which received 8 ozs. of super; 40 trees receiving 4 ozs; and 40 trees receiving no superphosphate kept as a control. The different treatments were separate by buffers. Each treatment consisted of 4 rows of 10 trees and the centre two rows of each treatment only were measured. The zinc plots consisted of 2 rows only. The superphosphate plots showed an outstanding response which, however, at about 5 years faded appreciably. Zinc alone had no appreciable effect.

In 1943, the second fertilising with similar amounts of superphosphate was given to ½ the supered trees each. There was some response but it was not great.

In 1944 a further 7 supered plots were established. Using 6 ozs. per tree with results similar to thos in the 1938 pl...

In 1946 the 7 compartments were fertilised; 6 ozs. per tree of superphosphate was applied.

The stocking by 1946 was below 300 trees per acre.

In 1951 an examination of the plantation indicated a zinc deficiency as well as the phosphate deficiency and the application of zinc to plots during that year gave an almost immediate response.

In 1947 a sowing of Pinus pinaster was made at Espera... however, owing to several machinery breakdowns, the contractor failed to prepare the area in time for the 1948 planting.

In 1949 the stock which was then 2 years' old, was used to plant about 5 acres. The work was not done under Departmental supervision and only about 8 % of trees survived.

In 1950, a small plot of about 1 square chain was

In 1951 the 5 acres [illegible] was replanted using trees from [illegible]. ment was made in the preparation of a larger area for further planting. Planting was carried out in 1953; approximately 20 acres on Compartment 13 and it is intended to plant a further 11 acres, being the balance of this compartment this year. The treatment with these later plantings has consisted of ploughing and then allowing the country to lie for a year and then reploughing and harrowing; superphosphate being applied at planting time.

Results have been particularly good and as the strain used has been the Portuguese Leiria, it is anticipated that with the treatment and the better strain, satisfactory results will be obtained. Zinc spraying of the compartment is to be carried out next August. It was intended to carry this out during last summer, but water shortage prevented this.

Provided methods of establishment incorporating the advances made during the last 25 years are employed, there is little doubt that Pinus pinaster can be satisfactorily established on the Esperance plain probably down to the 20" isohyet.

The establishment of trees, both pines and eucalypts as shelter belts has been satisfactory demonstrated on both Bow's and Turner's properties as single row trees. Mr. F. Bow has established not only Pinus pinaster but also Pinus radiata and Pinus halepensis as well as Eucalyptus globulus, Eucalyptus gomphocephala and Eucalyptus Lehmannii.

Following discussions with Mr. Shier of the Department of Agriculture, the planting of a number of species of [illegible] was carried out at the Research Station in 1951. The most satisfactory development was with Eucalyptus globulus, Eucalyptus cladocalyx, Eucalyptus gomphocephala and Eucalyptus Lehmanni. A planting of Eucalyptus Dielsii was also made in view of the value of this species for the production of piperitone which is used for the production of menthol. The seed of this was supplied by Mr. Marr. Other species tried were Eucalyptus botryoides, Eucalyptus torquata, Eucalyptus Woodwardii, none of which did very well and also Eucalyptus camaldulensis which fell somewhere between the 2 groups.

In 2 years Eucalyptus globulus had obtained an average height of 8', Eucalyptus cladocalyx 4'9", Eucalyptus gomphocephala 4'8" and Eucalyptus Lehmanni 3'8".

Trees which received an application of superphosphate and zinc showed a marked improvement as compared with unmanured trees.

The officers of the Research Station have willingly co-operated in this work and local pine stock is raised at the Station.

Owing to the bleak and exposed nature of the Esperance plain, I feel that the planting of shelter belts will be an essential part of any agricultural development and in view of the reasonably good results now being obtained with Pinus pinaster, I feel that this species should be mainly used. While the Eucalypts have given good results, the much greater expense of raising them in individual containers or in trays would be a major factor in establishment costs. Pines can be raised open-rooted for under £5. thousand. Eucalyptus raised in individual containers cost nearer £100 thousand.

While this Department has done no work with Golden Wattle, there have been private plantings with this species and it could be used to a minor extent.