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DWELLINGUP

28th May 1953 xx

CONSERVATION OF FORESTS.

PERTH.

DWELLINGUP RESEARCH STATION.

1. CROWN DETERIORATION.

a. SUPERPHOSPHATE & CLOVER PLOTS.(D.S.H. 1.1).

Will be remanured on August. So far there has been no obvious response after 5 years. Half of each plot this year will be treated with Zinc and Copper sulphates, in addition to super-phosphate, at the rate of 10 lbs. per acre.

b. COMPT. 2 SAMSON BLOCK. WILLOWDALE. (D.S.H. 1.2).

Manurial plots will be resupered as soon as the super-phosphate is available.

c. NITROGENOUS PLOTS. HOLMES & HOLYOAKE BLOCKS.D.S.H.1.3.

Remanuring will be carried out in August. It is not proposed to remeasure the sample trees until 1954 (after 2 years).

The various manures to cover all experiments have already been ordered by Mr. Hatch.

2. DYING JARRAH AREAS.

a. TEESDALE.(D.S.H. 2.3.2.)

1. Marri regrowth. A report on the recolonisation by marri and jarrah from the regeneration plots was forwarded to you on 18.2.53. The proposed May recount has been forwarded to you. The 77 Jarrah and 111 Marri on the dying area in January have been reduced by 16 and 6 respectively, following the summer.

2. EXTENSION OF THE DISORDER (D.S.H. 2.3.5.)

No check survey has been made since 1951. A further survey will be made in September.

3. MILACRE PLOTS. GROUND VEGETATION (D.S.H. 2.3.6).

A replot of the main ground vegetation was

recorded in Field Book (D.S.H. 236/2).

There was no marked difference in floristic composition.

b. HUNTLY.

1. Eucalypt Plantings Marri.(D.S.H. 2.5.2.)

A report on the Marri sowings is attached hereto.

c. KEYSBROOK.

1. Soil Survey and Analyses.

No report has yet been made and the chemical analyses have not proceeded further than the determination of Organic Carbons,due to pressure of other work.

Remaining analyses will be finalised and the report prepared, after the present Dryandra determinations are completed. Results should be available about the end of June.

3. JARRAH LEAF LITTER STUDIES.

a. Jarrah Leaf Fall (D.S.H. 3.1).

A report on the position after the second year's observation was submitted to you on 27.1.53. This work is continuing.

b. Litter Accumulation. (D.S.H. 3.2.)

1. Jarrah.

Following this summer's leaf fall a concerted effort was made to obtain some information regarding the accumulation of litter after various periods of protection ranging from 1 year to 23 years in various canopy densities.

The figures seem to indicate that under a 50% canopy there is a steady increase for about 15 years to a total of 5½ tons and that after this period there may be some slight increase possibly due to slower decomposition of twigs. Under 35% canopy the 15 year total is about 4 tons per acre.

It is interesting to compare the figures of 2½ tons already established for the annual fall from 50% canopy. The apparent incompatability of these figures calls for serious thought, in view of the decomposition figure of 33 1/3% in the first year given by our lysimeter experiments.

I should like to discuss this with you. It is not proposed to submit a report until we have given further consideration to the figures available.

2. **Mallet.**

Three sets of litter samples were collected from natural Mallet stands. No analysis has yet been made but this will be completed during the coming fortnight.

3. **Goldfields.**

Mr. Barrett has forwarded samples from 10 different forest associations. The figures have been taken out but the report awaits typing. It is interesting that in this area the weight of litter per acre varies from 60 cwt. in Salmon Gum - E. Le Souëffii to about 198 cwt. in pure E. torquata and pure E. Compasse forest.

In this country the small twig and bark fraction is very much higher than in the Jarrah forest and amounts to 60% - 65% in the torquata and E. Le Souëffii areas. (c.f. Jarrah - Holmes 10 - 42%)

It is not clear, however, whether the Goldfields samples were taken from dense thickets only. If this were so, our figures would relate to small areas of maximum density.

4. LITTER DECOMPOSITION.

a. Repeat of Janny's Experiments (1949). D.S.H. 3.3.1.

The drying of two samples monthly has been continued, and although during the first 5 months, (March - July 1952) 26% of the original oven dry weight was lost, there was only a further 4% reduction in the next 4 months (to November) and between November (1952) and March (1953) there was virtually no change.

Figures for the first 12 months are being compiled at present and will be forwarded within a few days.

b. Lysimeter Experiments. (D.S.H. 3.3.2.)

Periodic collections of the leachate have been made but analyses since December have not been completed owing to pressure of work. It is expected that these will be completed by June when a report on the first 12 months work will be submitted.

c. Effect of litter on soil properties. (D.S.H. 3.3.3.)

A project has been commenced designed to trace the mobile organic and inorganic constituents from the leaf litter to soil. Samples are being taken every two months and the following analyses have been carried out on the first three samples - Organic Carbon. Nitrogen, P.h.,Specific Conductivity, Cation exchange capacity exchangeable Ca. Mn. Mg. Water soluble Ca and Mn. and easily reducible Mn.

There is some indication that the leached Mn. is not held as exchangeable Mn.and is possibly retained as one of the manganic forms.

d. Litter Population Studies. D.S.H. 3.3.4).

Mr. McNamara has collected litter samples to 1¼ inches from Holmes 1 firebreak and compartment. Two extractors have been made locally and appear to function satisfactorily.

Counting is in progress and identification so far, has offered no serious problem.

5. SOIL SURVEY - DRYANDRA PLANTATION.(D.S.H. 5.1.)

Due to Mr. Lorimer's departure, no action was taken in regard to heavy minerals.

Soil samples have been collected from Cpt. Turner 22 and from other soil types in the area viz., Natural Mallet, Mallee and poor Wandoo slopes.

Three plans have been prepared:-

1. Soil type.
2. Vegetation type.
3. Height Distribution of Mallet.

It has been found that the boundaries of types as shown on the map prepared from aerial photographs, could not be confirmed by ground survey.

Analytical work has been in progress for the past six weeks and should be completed within the next two weeks.

To date, the following have been completed:-

P.h. Specific Conductivity, Water Soluble Chloride, Organic Carbon, Nitrogen, Phosphorus.

Mechanical analysis on a number of samples is still outstanding.

The report will be submitted immediately after Mr. Hatch returns from Leave.

6. EUCALYPT BREEDING. (D.S.H. 1.4.)

Mr. Harding has visited the Region on several occasions and carried out some crossing of E. patens, E. calophylla, E. marginata, E. astringens and E. botryoides.

7. LEAF ASH ANALYSIS. (D.S.H. 3.1.).

Several Chloride estimations were made for various plantations and results have been forwarded to you.

8. EFFECT OF FIRE ON JARRAH FOREST SOILS. (D.P. 1.5.)

Analytical work on the samples collected in August 1952 from firebreaks and adjacent protected forest were completed

9. EFFECT OF ASHBEDS.

No work under this heading has yet been augurated.

10. BACTERIOLOGICAL STUDIES.(D.?. 1.7.)

Samples are being forwarded periodically to Miss Pirrett from Dwellingup and Glenesgle for bacterial counts.

11. RAINFALL SALINITY STUDIES. D. 9.1.

Two years' values have been completed for Dwellingup, and one year's values for Wuraming and Dryandra. The Dwellingup figures are attached hereto, and the Wuraming and Dryandra figures will be forwarded next month.

This project will be continued for a further year to allow confirmation of the Dryandra and Wuraming results.

It is interesting that with a salt content of about 109 lbs., per acre for Dwellingup (1952), Wuraming showed 60 lbs., and Dryandra 12 lbs., approximately.

12. NEW TECHNIQUES.

Several new techniques for Manganese and Phosphorus analyses have been received from Dr. Piper (C.S.I.R.O.), and have been tried out in the laboratory with satisfactory results.

13. EQUIPMENT.

No new equipment has been received, but a leaf grinding unit, when last heard of, was being held up by Treasury Dept.

The 5 K.V.A. which has been out of action for some months - being faulty after its overhaul - is being picked up today.

The E.E.L. colorimeter (provided by the Commonwealth) is not proving satisfactory for estimations of Ammonia and Nitrate Nitrogen. It is quite satisfactory for Phosphorus and Manganese, for example, but not sufficiently sensitive for Nitrogen.

If work on Ammonia (following Ingham) is to be carried out, the columetric estimations will have to be done

at the University.

14. PUBLICATIONS.

1. Three typescript copies of the "Crown Deterioration on the Northern Jarrah Forest" have been bound and two flimsy copies await the completion of 4 plans before being available.
2. A paper dealing with the "Effect of Leaf Litter on Soil Properties" has been prepared by Mr.Hatch for presentation at the Soils Conference - Waite Institute in June.

15. FILING SYSTEM.

In view of the multiplicity of projects being handled by workers at this Station, it has been found necessary to re-organise the filing system under a wider classification.

Projects have been divided generally under the main headings of Silviculture (D.S.H. & D.S.S. - Dwellingup-Silviculture - Hardwood and D.S.S- Softwood). Protection (D.P.) Management (D.M.) and Utilisation (D.U.) with a suitable decimal system under these headings for individual projects.

R.F.O. STEWART. MANJIMUP. R.F.O.

For your information.

R.F.O.