A NOTE ON SCRUB BURNING.

by J. McCormick

In controlled burning the Jarrah forest there are many factors which have to be taken into consideration as you are well aware. However, there is one particular and I think important factor of which the author knows little or nothing and that is the diurnal and seasonal fluctuation of scrub moisture content. When I mention scrub, I mean of course the major scrub species Acacia pulchella, Acacia drummondii, Bossiaea aquilifolium, Acacia strigosa etc. which occur throughout the forest in dense masses 3' to 6' in height; particularly in areas which have been subjected to previous wildfires. It is obvious that these dense scrub masses will have to go and that they will have to be removed by controlled burning.

I feel somehow that these scrub masses can be burned off satisfactorily i.e. without undue scorching and that maximum burning conditions are neither necessary or desirable. I am prompted to make this statement by recent observations in the field where a number of experimental fires have been run in dense scrub as described above.

The conditions obtained during these fires were - Temperature 70° - 75°, Relative Humidity 50 - 55%, Wind Speed 2 - 3 m.p.h. at 4'6" within the stand and a Fuel Quantity range of 2 - 3 T.P.A. whose Profile Moisture Content was 31.2%.

Nothing particularly alarming in these conditions, in fact they were approaching the ideal for the job in hand.

Results - A good clean burn in which the scrub was all but totally killed and in which scorch heights recorded were from 10 - 20 feet. A number of damaged veterans caught alight and burned for some hours and as a result of this they received complete crown scorching. Other veterans in the stand showed bark charring to a height of approximately 15 feet. In places where groups of small saplings occurred and whose height ranged from 6 - 15 feet, the individual saplings within these groups received about 50% crown scorch only and I contribute this to the fact that the scrub grew less densely beneath these groups. Taller saplings and poles showed little or no crown scorch. It is obvious that young regeneration will suffer mostly in these scrub burns, however, this I feel sure will be more than compensated by the clearing effect these burns will bring in making room for future regeneration and by eliminating competition.

Now the point I am coming to is that these experimental fires were lit <u>after</u> 11 a.m.; previous to this hour the bush would not support a scrub burn. On making a few enquiries concerning a number of excellent scrub burns around the Dwellingup division I found that these burns were put in <u>after</u> midday and this is the point I wish to focus on and which drew my attention to the somewhat neglected factor i.e. scrub moisture content. As a result, a small moisture trial was put in on A. strigosa by way of a feeler and showed some interesting results.

A. strigosa was sampled for moisture content at two hourly intervals from 0800 to 1600 on the days 1st Oct., 6th Jan. and 12th Jan. 1965 - 66 and results are illustrated by the three curves. Figs. 1,2 & 3. On looking at these curves the first and most noticeable factor is the drop in M.C.% which occurs befors midday;

also the period of least moisture content is progressed as the season progreses; furthermore the M.C.% pickup also progresses with seasonal progresses.

From such met. data as could be obtained during this trial the R.H. values (not included in this note) showed an interesting parallel to the scrub moisture changes and this was probably due to the effect atmospheric moisture (combined with other factors) has on stomatal closure.

My own opinion at the moment concerning scrub burning is - light up at midday (late Spring and Autumn when conditions are favourable) and as the season progresses the lighting up time will extend i,e. the actual burning time in hours per day. If scrub burns well early in the morning it will probably cook up in the afternoon; if it doesn't burn early in the morning then why bother? A patchy burn will be the result. In the meantime the burning gangs might well be better employed elsewhere.

To extend the scrub moisture experiment a number of major scrub types would have to be sampled throughout the day from about sunrise to sunset and at fortnightly intervals throughout the Spring/Autumn burning season. Met. data would be recorded at each sampling time. In future experimental scrub fires, scrub moisture samples will be taken and compared with burning results.

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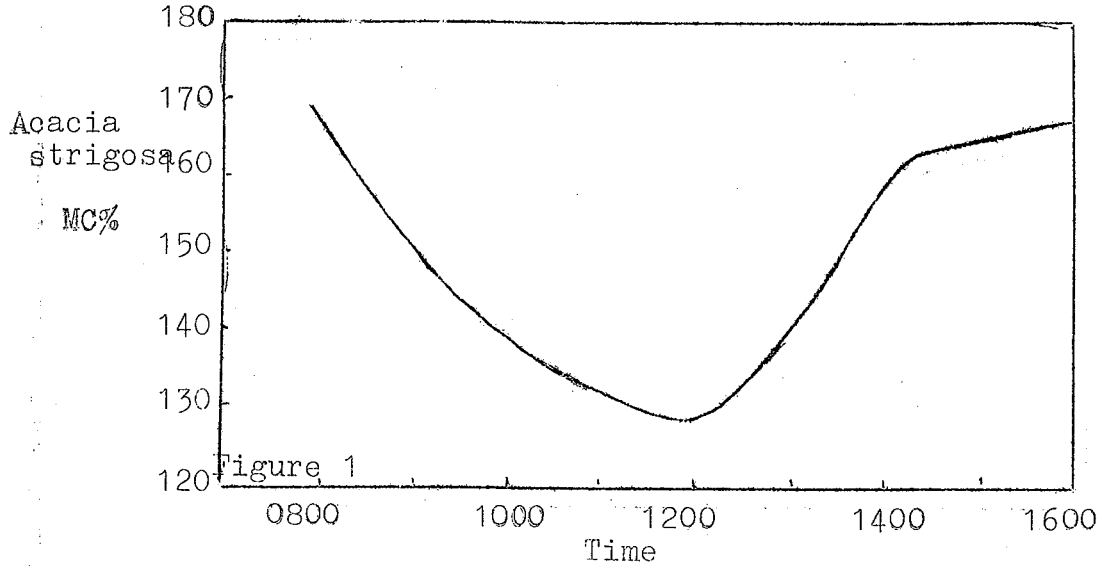

Figure 1

October 1,1965

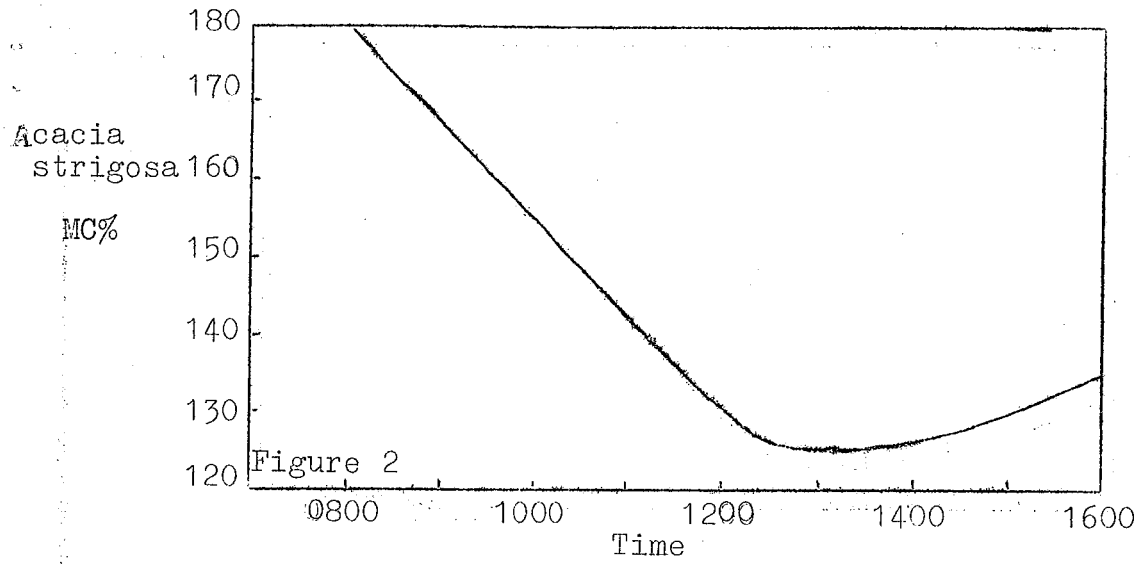

Figure 2

Jan 6, 1966

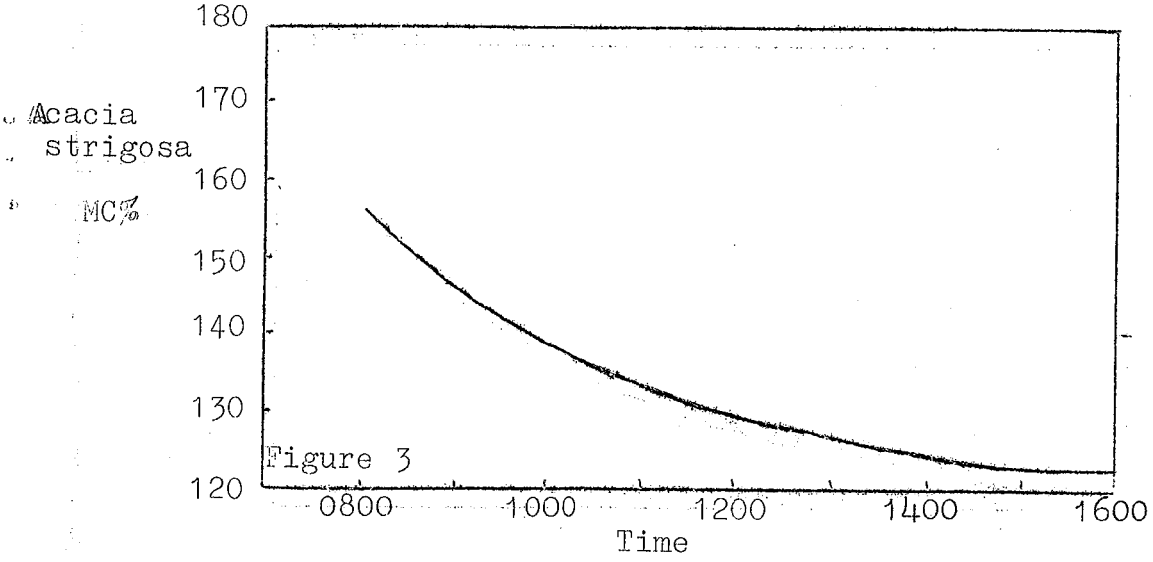

Figure 3

Jan 12, 1966