FOREST NOTES

FORESTS DEPARTMENT
PERTH
WESTERN AUSTRALIA

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CONTENTS

Vol. 4, no. 3 September, 1966

EDITORS' NOTE

The rush of material which occurred just prior to the preparation of Volume 4, no. 2 in June has eased considerably, but it has lasted long enough to produce this issue of Forest Notes, and we offer our thanks to those who have contributed.

What about those of you who have yet to make a start? Surely your interest in the work you are doing is sufficient to find something which will interest other Officers.

Now that electric adding (multiple listing) machines have become widespread, there must be increment plots, survival counts etc. which can be accurately enumerated and electrically tallied.

See what you can do about it by November 15th.

P.N. Hewett J.A.W. Robley

CO-EDITORS

The Editor,
Forest Notes.

One can only agree with Alan Hill's comment that most of the volume and value of a P. radiata crop are realised from the clear felling. No local figures can be given yet but, as an example, the following figures were recently quoted as being typical for New South Wales.

Year 15	- first thinning	20	loads/acre, return	$ 30	/ acre
" 20	- second "	16	" " "	50	"
" 25	- third "	16	" " "	70	"
" 30	- fourth "	22	" " "	100	"
" 35	- fifth "	20	" " "	130	"
" 40	- clear felling	136	" " "	1,020	"

Clearly the contribution made by the early thinnings to the total profits is small, but they do form a significant part of the total timber yield.

If the market position is such that there is a strong demand for small logs from an established industry, as is the case for our northern plantations, then any reduction in the volume available from first thinnings is a matter for concern. Hence the need for better tree form.

However, where there is a doubtful or non-existent market for small pine logs, then it is the later thinnings and final crop which should be favoured from an early age by such measures as thinning to waste. This practice results in some reduction in the total volume yield but gives increased overall financial returns.

F. H. McKinnell

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PINUS PINASTER ON GRAVEL

by A. L. Clifton

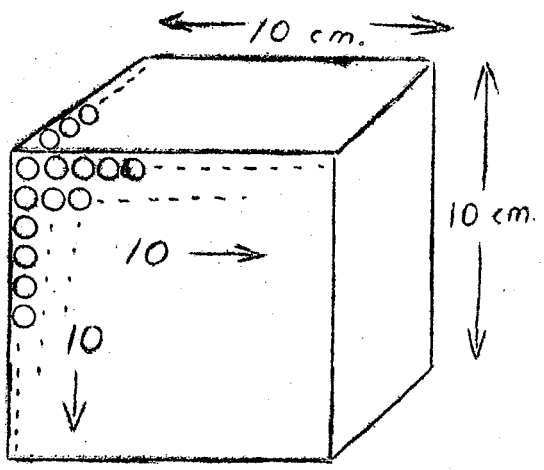
Think twice before you plant up that gravel deposit with P. pinaster. Chances are that it is an old jarrah die-back area. Maybe you have already probed the depth of it, and found 4 feet or more of easy penetration. But is this enough?

Experience at Gleneagle suggests that at least 4 feet of sand is needed to grow P. pinaster successfully, but does this depth-rule hold for gravels? - I think not.

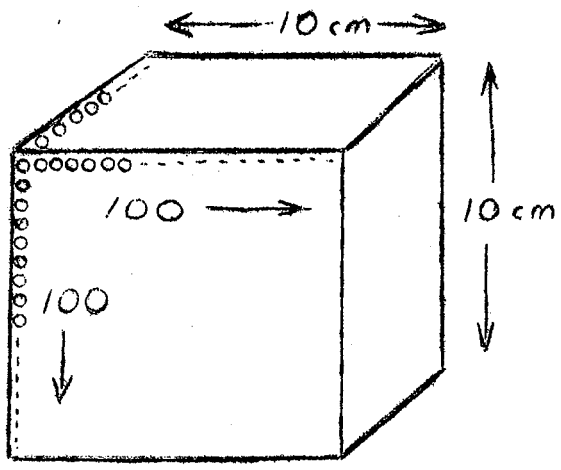
Gravels have very poor moisture retention - the result of having relatively small surface area to which a film of moisture can cling. The spaces between the gravels are of no value - free water in these spaces quickly drains away, either straight down, or even sideways through the deposit to feed springs and seepages downhill.

The following example oversimplifies the problem of "surface area" but serves to illustrate the relative ability of gravels and sands to hold moisture.

Let us assume a deposit of gravel composed of spheres all 1 cm in diameter and compare it with a hypothetical deposit of sand composed of cubes 1 mm square. Take a cubic decameter (1,000 cubic centimeters or one litre) of each.



= 1,000 gravel spheres.



= 1,000,000 sand grains (cubes).

Surface area of one gravel sphere

$$(\text{area} = 4\ r^2)$$

$$= 4 \times \frac{22}{7} \times 0.5 \times 0.5 = \frac{22}{7}$$

$$= 3.1416 \text{ sq.cm.}$$

The cubic decameter will hold about 1,000 spheres (10 in each direction).

$\therefore$ Total surface area of gravels

$= 1{,}000 \times 3.1416$

$= 3141.6$ sq.cm.

Take now the case of the sand grains; each sand grain has a surface area of $(0.1 \times 0.1) \times 6$

$= 0.06$ sq.cm.

Now one cubic decameter will contain 1,000,000 sand grains with a total surface area of

60,000 sq.cm.

which is roughly 20 times the surface area of the gravel.

Does this mean, then, that gravel deposits should be $20 \times 4' = 80$ feet deep before they are suitable for P. pinaster? - The answer is No.

Just for a start, the example does not take into account "closest packing" of the spheres, nor variation in size of the gravels, or the occurrence of finer particles such as sand, silt and clay between the gravels, the effect of evaporation, and many other factors. These would all tend to reduce the minimum depth requirement. Perhaps 8 feet of unconsolidated gravel would be nearer the mark for minimum depth to support a normal plantation.

THE EFFECT OF LOW PRUNING ON INCREMENT OF P. RADIATA

by F. H. McKinnell

In April 1964 an early pruning trial was laid out at Grimwade, by J. Gilchrist, located in pines planted in June 1960.

The pruning prescription was:

(a) Prune to 6' all trees 12' in height and over.

(b) Prune to half height all trees under 12' height

(c) Leave a minimum of two whorls.

Five plots were pruned and 5 were kept unpruned as a control and the height and D.B.H.O.B. of all trees measured. Re-measurements have been carried out by the Research Branch in July 1965 and April 1966.

The results to date are as follows:

A. Height Growth

Mean height increment April 64 - July 65 pruned plots = 6.6 ft.
" " " " " " " unpruned plots = 8.6 ft.
" " " July 65 - April 66 pruned plots = 6.0 ft.
" " " " " " " unpruned plots = 5.7 ft.

B. Diameter Growth

Mean D.B.H.O.B. increment April 64 - July 65 pruned plots = 1.40 in.
" " " " " " " unpruned plots = 1.60 in.
" " " July 65 - April 66 pruned plots = 0.75 in.
" " " " " " " unpruned plots = 0.75 in.

The indications are that pruning at age 4 results in a relatively small loss on increment during the first year, but growth has returned to normal in the second year after pruning. It is stressed that figures do not constitute a proof as the layout of the plots precludes any statistical analysis. The loss in growth and the duration of the loss are, in fact, both considerably less than that found in N.S.W. and reported by Shepherd in 1961.

In order to obtain more complete and reliable figures under local conditions a new project with a better layout is planned to commence in June 1966.

Reference:

Shepherd, K.R. (1961). The effects of low pruning on increment on radiata pine plantations. For. Comm. of N.S.W. Research note no. 6.

CHAIN SAW BOW BLADE

by A.W.R. Holland

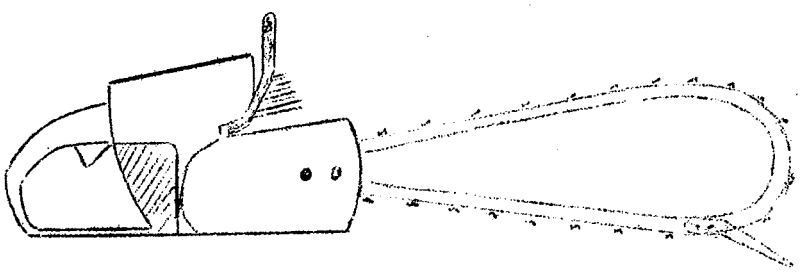
A bow blade was recently put into service on top disposal in the Division with the following results;

1. Readily handles limbs up to 8" diameter either on the ground or up to 24" from the ground, for which purpose it is superior to a standard bar.

2. For cuts greater than 8", the feet have to be removed.

3. Cuts above 24" from the ground are difficult as the saw is awkward to hold.

Other uses for the blade are for ripping bridge timbers; there is increased accuracy due to the increase in width of the blade and there is much less vibration.



BLASTING WATER HOLES

by J.K. Smart

A hole of 50-55 cubic yards can be blown for a materials cost of $8-00. Some subsidence and wall slip occurs but a finished hole containing 6-7000 gallons of water has been regularly achieved. This hole approximates 20-22' diameter 8-10 feet deep, and roughly cone shaped.

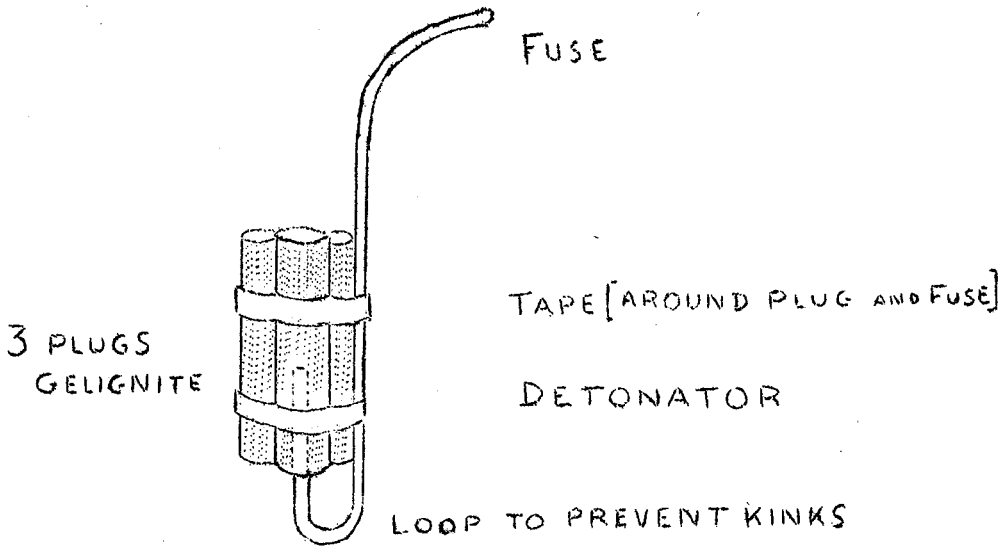
Materials and Cost

1 x 66 lb. bag Porous prilled Ammonium Nitrate.
3 x 6 oz. plugs Gelegnite.
1 detonator.
6 feet safety fuse.
3 pint distillate.

The Nitropril, as it is known, is purchased for $7-00 and $1-00 would cover the remaining material.

Method To the full bag of Nitropril is added exactly 3 pints of distillate, and this is mixed well through it in a wooden box, or on a plastic sheet. Never in a metal container. This mixture must then be allowed to stand for one hour.

Nitropril comes in a plastic bag which is covered by a strong paper bag. Care must be taken not to tear the plastic or paper when the Nitropril is taken out for mixing. When mixing is complete tip the contents back into the bags. This protects the charge and prevents the charge dissolving if water is present in the hole.



Three plugs of Gelegnite are then taped together with Durex tape and a convenient length of safety fuse with detonater inserted into one plug.

The fuse should then be doubled back and taped again to the plugs as shown in the sketch. This method should be used as it reduces the chances of a misfire to practically nil.

This priming charge is then placed in the centre of the bag. This too is important for maximum utilization of the charge.

The whole charge is then placed in a hole 4-5' deep and stemming packed around and above it. Invariably water is present so fuse should be greased and the neck of the bag tied and grease smeared around the frill. The charge is then ready to be fired.

Certain basic precautions must be taken.

1. It must be remembered that less than one plug of gelegnite weighing 6oz. can kill a man. In this case over 67 pounds of explosive are involved.

2. Always mix Nitropril in a wooden or plastic container with wooden paddles or by hand. Never use metal.

3. Observe all the usual precautions involving use of explosives as laid out in the manual.

4. All persons within range must take cover at least twenty chains from the site preferably up wind. This is necessary since debris can be lifted up to 400 feet in the air.

5. Allow a minimum of six feet of safety fuse to the charge.

One further refinement to the process has been tried with good results. A "necklace" charge of single plugs of gelegnite is placed around the expected perimeter of the hole. The plugs are connected to each and fired simultaneously using Cordtex fuse. The plugs are buried to about 18" and placed about 6' apart. This relieves edge pressure and allows more debris to be lifted out by the main charge.

The main advantages of this method of making water holes over dragline operation appear to be.

1. Dollar for dollar it is half the price of drag line holes.
2. It does not depend on availability of contract machines - this can be a real problem in the wetter portions of the State.
3. Relatively inexperienced operaters with adequate back ground training can be used.
4. A dry hole has not cost very much.
5. In the south where situations where water holes can be made are more frequent, a better spread can be obtained. e.g. a dragline hole containing 40,000 gal. costs approximately $80. Ten or twelve blown holes can be put in for the same cost. Thus reducing hauling distances for Heavy Duty tankers.

6. The unsightly spoil heap left by the dragline is eliminated.

Further trials using two and three bags connected in series and fired simultaneously are proposed together with some studies of the optimum charge and depth required for holes in "coffey" rock. These will be reported on when results are at hand.

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ROUND MINING TIMBER DURABILITY TESTS

by R. I. Button

The durability of different species of timber vary we know under normal circumstances. Jarrah is more durable than Yarri and Marri, but it was not known how these species, treated and untreated, would stand up to the varied conditions found down the Collie coal mines.

In November 1964 samples of treated and untreated round timber of Jarrah, Marri and Yarri were installed in each of the following four locations which represented a good range of conditions, found in any of our local coal mines.

Zone 1

Depth 60 ft. below the surface. In the main air intake, where the air is fast flowing, and dry air temperature is approximately 70° F.

Zone 2

Depth 60 ft. below the surface. Inside the main air outlet of the return air way, where is air is fast flowing, cold and damp, air temperature is approximately 67° F.

Zone 3

Depth 300 ft. below the surface. In an unused portion of the mine, where the air circulation is almost stagnant, the air is cold and damp, and the approximate temperature is 70°.

Zone 4

Depth 200 ft. below the surface. In the main inlet tunnel where the air is moist and fast flowing the approximate temperature is 70° F.

In April 1966 an inspection of these Zones was made and the following results up-to-date were noted.

Zone 1

All treated and untreated samples showed no visible deterioration , and no fungus growth present.

Zone 2

All treated Jarrah, Marri and Yarri had no visible deterioration.

Some untreated Jarrah, Marri and Yarri had signs of sap deterioration beginning. No fungus growth present.

Zone 3

All treated samples of Jarrah, Marri and Yarri showed no visible signs of deterioration.

The untreated Marri and Yarri had sapwood deterioration to the extent that tissue structure was no longer apparent. No signs of deterioration in the true wood.

The untreated Jarrah had sap deterioration which had penetrated 1/16 of an inch. Fungus growth on a few samples of Marri and Yarri.

Zone 4

There were only treated Jarrah, Marri and Yarri placed in this part of the mine, and all these samples showed no visible deterioration. No fungus growth present.

Conclusions up to date.

From the results, at present we find there are three ways in which round mining timber can be used down the mines over one year.

The First Method

All round timber could be treated. All the treated samples have not deteriorated in these conditions up to the present. This method will be expensive, raising the price of coal at least 2/- per ton.

The Second Method

To use untreated round mining timber with a crown diameter of $4\frac{1}{2}$ inches across the true wood, this being the minimum diameter required. Any sap wood deterioration would not affect this requirement. This method is much too cumbersome and handling costs would rise and make the operation uneconomical.

The Third Method

To air condition the working part of the mine, keeping a constant flow of dry air, at approximately 70° F in fast circulation.

This method seems expensive, but the outlay and maintenance would be more economic than the first method.

There has not yet been any research into the climatization of round mining timber down the mine, and this should be thoroughly investigated, as there is a great difference between the conditions, in the working face of the mine where the timber will be placed, and the other portions of the mine.

-- MEN --

Men are what women marry. They have two hands, two feet and sometimes two wives, but never more than one idea or one dollar at a time.

Like Turkish cigarettes, they are all made of the same material. The only difference is that some are better disguiscd than others. Generally speaking, they may be divided into three classes -- husbands, bachelors and widowers.

A Bachelor --- is an eligible mass of obstinacy, surrounded by suspicion.

A Widower ---- is a remnant with possibilities.

A Husband --- is one of three types --- a prize, surprise, or consolation prize.

Making a husband out of a man is one of the highest forms of plastic art known to civilization. He requires science, sculpture, common sense, faith, hope and charity (mostly charity). It is a psychological marvel that a small, tender, soft, violet-scented thing like a woman should enjoy kissing a big, awkward, stubby-chinned, tobacco-scented thing like a man.

If you flatter a man, you frighten him to death. If you don't, ycu bore him to death.

If you permit him to make love to you, he'll get tired of you in the end. If you don't, he'll get tired of you in the beginning.

If you believe everything he tells you, he thinks you are a fool. If you don't, he thinks you are cynical.

If you wear gay colours, rouge and a startling hat, he hesitates to take you out. If you wear a little brown beret, and a tailored suit, he takes you out, and stares all evening at a woman in gay colours, rouge and a startling hat.

If you join him in gaities and approve of his drinking, he swears you are leading him to the devil. If you are the clinging-vine type, he doubts if you have a brain.

If you are a modern intelligent woman, he doubts if you have a heart. If you are silly, he longs for a bright intelligent mate.

If you are popular with men, he is jealous. If you are not, he hesitates to marry a wall flower.

Man is just a worm in the dust. He comes along, wriggles around for a while, and then some chicken gets him ----------R.I.P.

P.S. Just quietly, from the girls' section --

YOU CAN'T DO WITHOUT THEM

EXOTIC SPECIES IN BIG BROOK ARBORETUM - PEMBERTON

Hicovia Ovata

by L. H. Jeffery

It is noted from the files, that hickory nuts received from Atlanta, Georgia, U.S.A., through the Commonwealth Forestry Bureau, were sown at the Hamel Nursery in 1938, and from these 200 plants were raised. Consignments of these plants were sent to Wellington, Margaret River and Pemberton.

Those received at Pemberton were planted in the Big Brook Arboretum on May 7th 1943; the soil in which they were placed being well-drained and rather dry.

By February 1947 there were only three of the plants surviving, their respective heights then being $6\frac{1}{2}$", 5" and 4". At this stage it was recommended that the species be moved to a wetter position nearer the creek, and in September of that year the three trees were moved to a swampy area about two chains from the bank of the stream at the Arboretum; the soil being of a brown sandy loam over yellow clay. One plant died soon after transplanting, but the remaining two are still alive and a recent inspection indicates that some growth has been made, though at a very slow rate. One tree is 10 ft.in height and the growth made in the last ten years appears to be about 3 ft. The other tree is 9 ft. in height. Both trees are of poor form, spindley and bent.

The Hicovia Ovata are on the edge of an opening, but there is some competition from warren cedars and dense bracken. It is intended to remove the competition and loosen the soil around the base of each tree, and apply a dressing of superphosphate at the rate of 4 ozs. per tree in order to try and improve the growth rate.

What of the Hicovia Ovata planted at Wellington and Margaret River? Some comparisons of growth and treatment might well be of interest.

Think of all those axe-handles!!

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LINES: TO G.B. A RETIRED FORESTER.

ON BEING NOT SO YOUNG

by J. McCormick

The young will teach us what we already know
And smile on us "as if their education
Had cost ten millions to the nation"
Which it probably did.

Yet the spruce trees we planted on the shores of Loch Etive
Were mirrored on its still waters
And the chestnuts we planted by the roadside
On the way to Balynena cast their gentle shade
Upon the road, before they reached the age of puberty.

We are at an age of looking back
And wishing not to be young,
For youth with all its benefits
Hath not the gift of contemplation
And the minds eye part blinded by ambition
Seeks not symmetry in arborial form
But concentrates its view on strict utility
As if the bread were life
And not the bread of life.

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Extract from 'Forestry Abstracts, January 1966, vol. 27, no. 1

India. Growth of pea, geranium and tomato under the influence of musical sounds was tested in greenhouse experiments. The plants were irradiated with classical, rock-and-roll, and religious music for 30 min./day for 6 months. The music-treated plants were taller than the controls. The growth of the plants was directly correlated with the speed of the music. English peas and geraniums were stimulated more by the rock-and-roll music followed by classical and religious music, whereas tomato plants responded better to the classical music followed by rock-and-roll and religious music.

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NOTES ON PRESERVING MARRI FENCE-POSTS BY THE SAP REPLACEMENT METHOD.

by G. S. McCutcheon

Vol. 3, No. 4 of "Forest Notes" carried an article in which preserved round Marri fence-posts were given favourable cost comparison, from a user's view point, with the traditional split Jarrah posts; though slightly more expensive initially, because of their expected greater service life, the Marri posts should prove more economical on an annual charge per post basis in certain districts. It was also pointed out that from the forester's point of view, a tree split to posts gives a lesser royalty return than would probably accrue from milling it, and from the State and National viewpoint is wastefully utilised while an equally suitable forest product (viz. the round post) is not being utilised at all.

As part of a demonstration of the practicability of the preserved round post a section of fence has been erected along the Bussell Highway near Ludlow H.Q. using Marri posts prepared by the Kirup Division. Appropriate signs will be erected and it is hoped that this will lead to increasing interest and inquiries regarding preserved round posts.

This method of cutting and treating posts is well suited to a farmer who has not learnt the art of splitting posts or one who has a quantity of Marri saplings available on his property. It could be a useful fill-in job to prepare a reserve of posts which can be stored till actually required.

Method of Preparation.

Saplings were felled and docked in the bush by chain-saw, de-barked with an axe, mainly by slaving away by you at that time, and transported to H.Q. where pointed was most conveniently done by two men. One supported the post on a block while the other wielded the axe. The square top and pointed end are necessary to facilitate driving in of the posts.

The posts were then placed upright in the preserving solution, butt down for 4 days and top down for 3 days, after which they were stacked butt down until transported away. The preservative was a $3\frac{1}{2}\%$ W/W solution of Tanalith "C" (copper, chrome, arsenic) purchased as dry crystals from Hickson's Timber Impregnation Co. in Bunbury.

Precautions

The powder and solution should be stored out of reach of children and if spilled on the skin should be immediately rinsed off. Particular care is necessary to remove dust from under finger nails following weighing out of quantities. Accidental swallowing of the poison necessitates calling a Doctor and first-aid treatment to induce vomiting, instructions for which were provided on the container by Hicksons, and can also be found in first-aid manuals.

Cost

The overall cost of departmental production was 86 cents per post, which is very much higher than the estimate quoted in the article cited. Various reasons for

this can be advanced viz:-

1. Addition of charges for overheads and administration in departmental costing.
2. High cost and low capacity of the transport used (a gang truck with fire-fighting equipment aboard).
3. Inefficient working, operations often having to be in 2 hour stretches between other jobs at that time of year.
4. The fact that the operation was in the nature of a trial run.
5. It was done in mid summer - the worst time of the year for barking.

As 45 cents of the per post cost was for wages alone it is expected to considerably reduce that cost by more efficient cutting and carting operations in the winter months, and by paying on a piece-work basis.

Standard of Impregnation

On one post rejected after preservation and later cross-cut at 1' intervals, depth of impregnation was measured on diameters arbitrarily selected. Ten depth estimates on five diameters gave an average depth of impregnation (as judged by colour) of 0.75 inch. However as the greatest depths were measured on knobbly irregularities it is suspected that a regularly formed post would produce an average slightly lower.

In order to keep the solution out of reach of children and animals the trial was most conveniently conducted in a garage with only a barred window opening providing for air circulation. A covered out-door location safe guarded by a netting enclosure is to be used for winter operations in order to obtain maximum evaporation.

Transport Costs

A point worth noting is that the 200 posts, 12 strainers and 6 struts formed a part truck-load which would have weighed about 2.4 tons, while the same number in split jarrah would have weighed in the region of 6 tons. The saving on transport costs on these figures is 60%.

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NOTES ON EFFECTIVENESS OF DIFFERENT WEEDICIDES AT HAMEL NURSERY - 1965.

by A. J. Hart

SUMMARY

a. Results of tested weedicides on P. pinaster.

1. "Banana Total" and "Graypon" show promise of ability to check weed growth without undue damage to pine seedlings.

11. Maximum rates of application at present acceptable.
"Banana Total" - $\frac{1}{8}$ oz/gallon of water without sticker.
"Graypon" - $2\frac{1}{2}$ ozs/3 gallons without sticker and are considered at present, complimentary aids to weed control only.

b. Results of tested weedicides on P. radiata.

Only "Graypon" has been tested on this species and $2\frac{1}{2}$ ozs/3 gallons seems acceptable as a complimentary measure at present to knock down and check growth of weed population to be contended with.

GENERAL

Heavy infestations of weeds in the 1965 pine crop at Hamel nursery made tests with various weedicides imperative in an endeavour to control weeds and bring tending costs to a reasonable level.

"Simazine" had been used in trials during 1964-65 but with disappointing results, mainly, it is thought because of soil type, cloddy clay soil being a difficult medium for this material to work in effectively, and because of the nature of weeds, one-check control is sought e.g. paspalum, crab grass, milk thistle, dock, chickweed and sorrel, the first two being the largest portion of the grass competition. P.R. 46 was less effective as a spray. Because of the poor results, other weedicides were tested. These were:-

(a) Primatol "A" (1) (b) Agserv "Banana Total" (c) Shell Weedkiller "E"
(d) Dowpon (e) Agserv "Weedazol Total" (f) "Graypon" (g) "Karmex".

Rate of Application of Weedicides and Results (in terms of effect on pine seedlings and control of weeds).

1. Primatol "A" - this was applied at $\frac{1}{8}$ oz. per gallon of H_2O without a sticker about mid February 1966.
Result:- No effect on Paspalum sp. but was completely effective against Milk Weed (Sonchus sp.). No other species seemed affected by this treatment to any extent. Effect on Pines: P. pinaster suffered no apparent damage and was not tested on P. radiata.

2. Banana Total (Agserv).

Weeds were sprayed with pressure knapsack spray without sticker at $\frac{1}{8}$ oz/gallon of water about mid February 1966.
Result:- Severely checked all weed growth including chickweed, (Portulaca sp).
Effect on Pinus pinaster - damage to pines slight, some pinking of top leaves occurred but was not considered excessively damaged.

3. Shell Weedkiller "E".

Rate of application 1 teaspoon per $\frac{1}{2}$ gallon without sticker about mid February 1966.
Result:- Severe damage to tops of pines, the check to weed growth not being outstanding.
Effect on Pinus pinaster, serious damage, malformation and aberration of plants.

4. "Weedazol Total".

Rate of application 1 oz/gallon of water without sticker.
Result:- Kills crab grass (Digitaria sp.) superficially but did not effect a complete kill at this concentration. It also checked other species Paspalium included. Effect on Pinus pinaster: Slow whitening of top needles but appear to recover from this condition.

5. "Dowpon".

Rate of application: 1 oz/gallon of water without sticker during early February 1966.
Result:- Not outstanding at this concentration and time of application.
Effect on Pinus pinaster: not excessively damaged, but sufficient to preclude further tests due to top damage.

6. "Karmex".

Rate of application approx. 0.42 ozs/gallon of water. Deaths from this weedicide on both species were heavy and its use in not recommended.

7. "Graypon".

Rate of application.

a. 1 oz/gallon of water without sticker, applied late December - early January 1966.
Result:- weeds of all species were knocked back heavily; some damage attributed to this agency was considered due to cut worm larvae attack.
Lack of follow up treatment to remove weeds manually lost the initial effectiveness of knock down. Effect on Pinus pinaster: no serious damage seems to have occurred although some losses may have happened of unknown magnitude.
Comment. More controlled application with a spray unit such as "Xpando" could improve results it is felt.

b. 2 ozs/3 gallons of water without sticker, applied in late December 1965.
Result: no damage can be detected on these seedlings, losses which occurred are not necessarily weedicide deaths.
Comment: Use of the weedicide at an earlier stage of growth should be more effective.

c. $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4 ozs/3 gallons of water, was tested but found injurious to seedlings.

Method of Application.

All weedicides were applied using 3 gallon Rega knapsack pressure spray with double Bordeaux type nozzles in such a way that leaves of weeds were moistened, till the mixture was seen to form running drops on leaves and stems. No attempt was made to shield pine seedlings in these tests.

Further Action.

It is proposed to carry out further tests in 1966 with "Dacthal" (reported to be effective further north) "Reglone" and "Paraquat" mixtures. (also effective at a Forrestfield Nursery).

The question of weed control has now reached such importance that an acceptable procedure has now to be evolved using chemical weedicides either with or without complementary hand weeding.

References:

1. Acknowledgement is made to Mr. McKinnell for his communication on weedicides.
2. "Advances in Agronomy, 1963"; ed. by A.G. Dorman. pp. 172-173.

MAINTENANCE OF FOREST ROADS AND TRACKS

by F. J. McKay

Every year a considerable amount of money is expended on road and track maintenance throughout the forest areas on log removal, grading and drainage.

To avoid some of these costs we should:

1. Remove millable trees leaning over roads during construction or realignment.

2. Plan grading with controlled burning.

3. Supervise and educate grader drivers to a higher standard of grading and drainage.

1. When constructing new roads or realigning existing roads, and while trees removed in road clearing are being salvaged, treemark for removal any millable trees leaning over the road, plus dry trees and stags. Dry trees and stags close to the road could be pushed during clearing, which would greatly assist in fire control.

2. Unnecessary grading can at times be avoided by drawing up the grading plan to coincide with controlled burning as quite often it becomes necessary to regrade minor roads and tracks one or two years after grading, so that controlled burning may be carried out and confined to a specific area.

3. Inefficient grading and supervision can cause undue scouring of roads necessitating frequent grading both in natural forests and plantations.

Well-used major roads require grading two or three times a year, depending on the traffic. In summer the corrugations are cut down and the spoil deposited close to, but not in, the table drain. Then just before the heavy rains start this spoil is spread back over the road to leave a slight crown, taking care not to leave ridges along the edges of the road which would cause water to flow back onto the road or scour the edges. At this grading, run-off drains should be constructed in suitable places to ensure that water from table-drains runs clear before reaching a fill over pipes or bridge foundations.

Many minor tracks and roads have become rough and severely washed due to persistent grading from the uphill side to the low side. This practice removes the gravel and soil from roots and stones on the uphill side and forms a mound on the low side which holds the run-off water and channels it down the road to scour earth from roots and stones in the wheel tracks. This is avoided by grading from the low to high side at alternate gradings and keeping the surface with a slight fall to the low side. In this way the run-off is across the road providing there is no mound of earth left along the edge.

Where this type of grading cannot be practiced due to roads running almost straight up and down a slope, sufficient run-off drains should be constructed to ensure that water does not accumulate to volumes which will scour the road edges and possibly run back onto the road, causing scouring of wheel tracks. After each grading and before first heavy rains it is essential to check and clear pipes and culverts.

REVENUE GOING BEGGING FOR ROYALTY ON P.M.G. SIZE JARRAH POLES.

by C.W. Moore

Up until the last few years Jarrah poles have been practically the only pole in W.A. used by the P.M.G. We now find the tide has turned; Jarrah is no longer wanted and Marri is the wanted species. In the northern forest area at least there are only very few pockets of Marri of the quality required available, as Marri has previously been regarded as useless and in turn destroyed in various ways.

The reason given for Jarrah not being wanted is that it pops when being seasoned. However, one would think that this could be easily overcome as most P.M.G. poles used prior to the time when poles weren't required to be treated are still quite firm and show little sign of popping after years of use.

P.M.G. requirements are for approximately 15,000 poles per year. Assuming we obtained 2/3 of the orders (10,000) and a man spent 2/3 of the year on thinning, with the royalties recouped we could employ 5 extra men for no extra cost to the Department for the thinning period.

These figures are based on the average royalty for P.M.G. size poles being 85c and the average man's wage being $40.00 per week (overheads of 22½% for pole marking costs etc. allowed for).

The contract for the felling of these poles could be let out to our Forest Workers on the weekends. This in turn would be an added incentive we could offer our key men and could be the turning point in these workers staying with this Department.

By being able to employ five extra men this would be of a great advantage to us as far as numbers go for the burning season.

All that is now required is to convince the purchaser that Jarrah can be succdessfully seasoned and we'll be in business.

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COPPICE ON W.A. BLACKBUTT

by H.E. Dawson

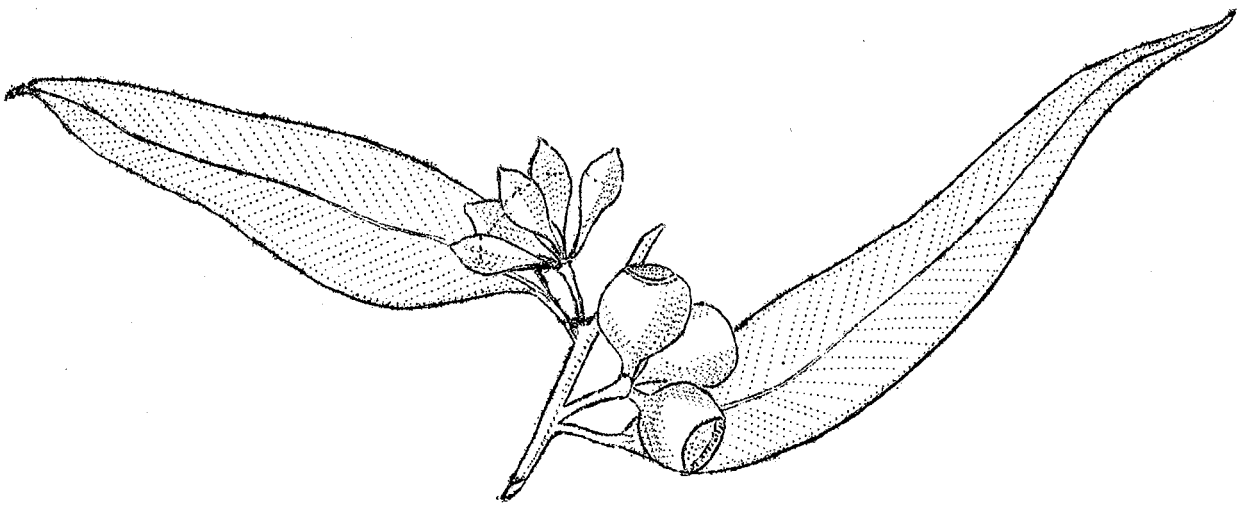
Here is one for the Record Book.

A Blackbutt tree was felled in 1908 by the old Yelnester Mill, and it produced vigorous coppice growth. The remaining coppice stem was felled during 1966 by Mr. J.A. House and when measured contained 456 cubic feet true volume of log.

The tree was growing in a good deep loam amongst pasture, and this data concerning it, was supplied by Mr. House of Yallingup.

Editor's Note

It seems probable that this particular specimen had the benefit of chemical and organic fertilizers but the prospects of this type of growth on even 50 trees per acre are very encouraging. At 50 trees per acre this would amount to 22,800 cubic feet in 60 years, for a MAI of 380 cubic!



FROST DAMAGE ON EUCALYPT TREES IN COAL DISTRICT

by R.I. Button

An area was planted up with Hamel produced seedlings of Eucalypts, to find out what species would be able to survive the climatic conditions, and grow in sandy soils which are found in abundance in the Eastern Collie district.

LOCALITY HISTORY

Proprietary compartment 10, a low lying sandy flat, very exposed to frost. This area was originally planted with Pinus pinaster in 1937. Following a fire it was replanted in 1944. The area was twice dressed with superphosphate, only the individual plants were treated. In 1960 the area was clear felled and further treatment abandoned.

NEW TRIAL PLOT

Between the 7th. and 10th days of June, sixteen plots were established with thirteen different species of Eucalypts, each plot containing approximately 300 trees. Each plot was ripped prior to planting.

THE WEATHER

Frost was recorded on the 20th. and 29th days of June, the lowest temperature recorded was 31 ^{o}F on the 29th June, 1966.

INSPECTION

All the plots were inspected for frost damage on the 1st July, 1966, showing the following results

PLOT NO.	SPECIES OF EUCALYPTS	NOT AFFECTED BY FROST	FROST KILLED GROWTH TIP	PARTIAL DEATH BY FROST	TOTAL DEATH BY FROST
1	MICROCORYS	37%	- %	50%	13%
2	"	"	-	"	"
3	PROPINGUA	88	12	-	-
4	PILULARIS	42	-	43	15
5	RESINIFERA	32	49	19	-
6	MACULATA	94	2	4	-
8	MICROCORYS	4	20	49	27
9	ROBUSTA	68	27	3	2
10	SIEBERI	13	10	27	50
11	CAMALDULENSIS	100			
12	BICOSTATA	99		1	
13	GIONIOCALX	78	4	16	2
14	MICROCORYS	12	22	38	28
15	NITENS	100			
16	LINDLYANA	100			
17	SALIGNA	100			

FURTHER OBSERVATIONS

Plot no. 9 had 20% damage by insects.

Plot nos. 15-17 inclusive, plant heights averaged 3 inches.

In plots that were affected by frost, it was found the larger and exposed plants were damaged by frost. The small plants planted in furrows six inches below the surface were not affected by frost.

CONCLUSIONS TO DATE

It would appear plot nos. 11,12,15,16 and 17 will stand frost and temperatures down to 31°F.

Plot nos. 3,6,9 and 13 need further observation as there had only been two frosts since the planting of these plots, and there is an average of 16 frost days per year in the Collie district, with in some cases lower temperatures.

These factors can alter the affected and death percentages over a one year period.

Plot nos. 1,4,5 and 10 would not be suitable species to grow in these conditions, with the present methods of raising these plants.

REPLANTING

Plot nos. 1,2,4 and 5 were partially replanted with Euc. saligna and Euc. bicostata; the seedlings were raised at Hamel Nursery.

Plot nos. 8 and 14 were partially replanted with Euc. robusta, Euc. bicostata, Euc. pilularis, Euc. paniculata, Euc. obliqua and Euc. maculata. These seedlings were raised at Collie.

Date planted 6th. July, 1966.

THE WEATHER

Frost was recorded on Sunday the 10th July, the temperature was 32°F; no rain had fallen since date of planting.

INSPECTION

All these species were thoroughly inspected on the 11th July and it was found that all plants were not affected by frost.

CONCLUSIONS TO DATE

Euc. robusta and Euc. pilularis locally grown from seed appear well able to stand a temperature of 32°F as also do Euc. paniculata, Euc. obliqua and Euc. maculata will also grow in these conditions.

From observations the locally raised plants are sturdier and with more woody stems and appear better suited to local conditions.