

A MAN, A BOY AND AN M.F. 165

by

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The man is Ted Lorkiewicz, the boy the most recent school leaver to join the Departmental employee ranks, and the M.F. 165 the newest and most reliable heavy wheeled tractor available. Together they form the essence of the subject of this article, "The Nannup Pine Nurseries".

There are in effect three separate nurseries. Firstly the Town Nursery, situated in Nannup itself, in two portions of 3.2 and 416 acres. The area is practically level with only very slight slope. Adjacent to the Blackwood River the soil is a sandy river silt with not very good structure. When the river rises thirty feet and is really in flood, so is the nursery and F.D. House No. 628, with four feet of the Blackwood over the nursery, as happened during the winter of 1964. Fortunately there were no plants in the nursery, but the house was occupied!! In this nursery is grown all the *Pinus pinaster* raised by Nannup Division.

Next we have the Lower Crouch nursery just over six miles from Nannup off the Bridgetown Road, an area of 5 acres. This was an old orchard on a south-easterly aspect, with a very fertile reddish brown loam soil, and the slope would average out at about one in seven. *Pinus radiata* has been grown in this nursery every year since 1962, with no fallowing, and continues to produce good plants.

With the thought that the Lower Crouch could not continue for ever, another nursery site was sought of reasonable slope and aspect, large enough to fulfil the *radiata* requirements and allow for rotational fallow. Needless to say the ideal could not be found, but a reasonable site was developed between the Lower Crouch and Bridgetown Road. This is an area of 13 acres with a north-westerly aspect and an average slope of one in nine. It has been a rough grazing pasture covered with bracken. After intensive ploughing with a Connor-Shea, blasting of tree stumps, picking-up and more picking-up, there was the semblance of a potential nursery. The soil is a brownish loam with clay patches and small pockets of loose stone. It does not appear to be such a fertile soil as found in the older *radiata* nursery. The first sowing in this nursery, now known as Upper Crouch Nursery, was a very small plot in 1964. The preparations referred to were carried out in 1966, and the first two acres of seed bed sown. Since then, sowing of *radiata* has continued each year on an ever increasing scale.

Regarding the techniques at present current in this Division, generally speaking they are much the same for the radiata and pinaster. After completion of the lifting, usually about mid-July, everyone breathes a sigh of relief, the Nurseryman has a well earned three weeks leave, and by the time he returns all the nursery areas have been cleaned up and levelled using a spring-tined cultivator. Quantity of seed allocated from Head Office is known, acreage calculated, for instance 1968/69 there were 4 acres pinaster and nearly 9 acres radiata. On the area selected for sowing, fertilizer is spread with the conventional tractor mounted spreader at the rate of 180 lbs potato manure "E" and 70 lbs Blood and Bone to the acre. This is turned in using a single furrow reversible mouldboard plough, ploughing to a depth of approximately nine inches. At this stage I should say we would be using two tractors or even three if, as happened last year, we were able to borrow another plough. This area is again cultivated, mainly to retain a reasonable level surface. Fertilizer is then spread over the total nursery area and cultivated into the top two or three inches of soil. Seed-beds are marked out with the nursery tractor wheels set on 68 inch centres. To keep a perfectly straight line when doing this is very necessary for future operations. To do this is quite an art and even a very experienced tractor driver will mark out a few raggedy old beds before acquiring the hang of the art.

The nurseries are now ready for sowing. This would be about the beginning of September with the soil still moist from the winter rains. A dry spell is required for the sowing. Any rain and the soil is too moist, which causes the seeding machines to clog up. Assuming the weather and soil conditions to be just right, the surface of the seed beds are raked giving a good tilth to the top couple of inches of bed. Seeding can now be carried out with the "multi-seeder". This is a machine devined, devised, designed and developed between the Nannup Division and Manjimup Workshops. It is basically a frame with seven Mintern seed boxes in a double bank which can sow either 5 rows 10 inches apart, 6 rows 8 inches apart or 7 rows 6.6 inches apart. Drawn by the M.F. 165, running on a roller which levels and firms the beds. It also drives a chain to a shaft which agitates the number of seeders which have been engaged. At the rear of the frame is a platform on which a second man sits to ensure the seed boxes are kept filled from a hopper on top of the frame and also to make sure all engaged seeders are functioning properly at all times. For turning and transport the multi-seeder is fitted on the three point linkage and can be lifted by the tractor. Given a good run, seeding of the Nannup nurseries can be carried out within a period of seven working days. Great care must be taken to ensure each seeder is callibrated between species and

also when changing to a different graded seed size. Until this last season all sowing at Nannup was 5 rows 10 inches apart. Last year the sowing was 6 rows 8 inches apart, to date it would appear there has been no adverse effect to the stock. Next season it is hoped to try a sowing density of 7 rows 6.6 inches apart. It can be appreciated if this higher density sowing is successful there should be a considerable saving on preparation and weed control, however it is anticipated heavier application of fertilizer will be necessary.

Next begins the long campaign of weed, fungal and insect control. Starting with a pre-emergence spray application of "Simazine" (Gesatop), as soon as practical after sowing, at the rate per acre of $1\frac{1}{4}$ lbs on the light sandy soil and $1\frac{1}{2}$ lbs on the heavier loam nurseries. If there is any show of weeds prior to the germination of the pine seedlings, the weeds can be eliminated with an application of 16 ozs. "Diquot" (Reglone), with 16 ozs. "Paraquat" (Grammaxone), mixed in water with a suitable spreader. Needless to say one has to be sure there is no germination of pine seedlings! Generally speaking, insect control has been carried out as soon as any insect damage is noticed, usual application is 2 pints of 15% D.D.T. per acre. A common pest is a small green caterpillar which eats the radiata cotyledons and/or primary needles. A thought on insect control; instead of applying D.D.T. as a very effective insecticide, one should be more specific and obtain the most effective insecticide for the insect which has to be eliminated. A warning, D.D.T. has been used so please don't eat the Pines!! During the growing season mineral oil is used to keep the weeds down. This season, after a visit to Gnangara where their success with this was noted and committed to memory, we applied 66% power and 33% lighting kerosene with good results. "Damping off" always occurs in the pinaster nursery but only during the wet spring years in parts of the older radiata nursery. To combat this, we have to date followed the "Forester's Manual" and applied "Cheshunt", however perhaps quicker results could be obtained with some of the modern fungicides.

It is hoped next season to greatly reduce the weed problem in the pinaster nursery with a pre-emergence application of "Dacthal" at 10 lbs per acre over the whole nursery. Trials of this weedicide during the past two seasons have shown it to be particularly effective in the almost total elimination of crab-grass, (*Digitaria Sanguinalis*), as a serious weed and also very effective in keeping couch-grass, (*Cynodon Dactylon*), within manageable proportions. To anyone who has had to deal with the control of both these grasses they will appreciate what a breakthrough this promises to be, I sincerely hope!! Dacthal is quite an expensive weedicide!!

During the summer months, generally after Christmas with a bit of luck, irrigation is necessary. Firstly in the pinaster nursery and continued after the first watering at approximately fortnightly intervals until the first heavy rains. In the radiata nurseries watering depends on the season, usually two or three weeks after it is necessary in the town nursery and thereafter another couple of times during the summer. The irrigation is carried out with 3" aluminium piping and "rain-spray" sprinklers. Direct to the Nannup town water supply for the pinaster, although the Blackwood River can be utilised early in the season before the level drops and the water is too saline. For the Lower Crouch nursery the East Nannup Brook is a permanent stream close by the nursery. The irrigation water is pumped with a '2" high lift centrifical p.t.o. driven pump' attached to the M.F. 165 by the three-point linkage. A very powerful, mobile and versatile pump, which can also be very useful at a fire. To date, a dam below the Upper Crouch Nursery has proved adequate, however in a severe summer this may not be so.

For the last few years root pruning or under-cutting has been carried out, the object being to cut the tap root six inches below the nursery level to encourage the plant to produce a more fibrous root system. Also by root-pruning every two or three weeks with a very sharp rigid blade drawn by the tractor, theoretically there should be less shock than just one under-cutting just prior to lifting and planting. However at the present time this is debatable as results from two field trails in last years planting showed better survival in the non-root pruned stock!!

The final item on the nursery year calendar, lifting, commences at the beginning of June. This year, 1968/69, we have to lift 1,500,000 Pinus radiata and 950,000 Pinus pinaster, which is a slight increase over previous years. The target is to lift an average of 100,000 plants per day. To achieve this, the nursery crew is augmented with an Overseer, tractor driver, two employees and six female casual employees. It is found the females are much quicker and more dexterous at handling, sorting and counting plants and thus preferable to bringing regular forestry workers into the nursery. To speed up the lifting and improve the working conditions, a couple of years ago a sorting machine was introduced; this machine is usually known as "Hills Hurdy-gurdy". It was manufactured in the Manjimup Workshops and has certainly achieved the objects set out for it. The lifting operation works with the tractor under-cutting with a tilted blade to loosen the plants which are pulled by hand and placed on the conveyer belt of the sorting machine. On the machine the plants are sorted and counted into twenty-fives and

placed in receptacles on an endless belt. This belt is clutch operated by the person bundling, tying and dropping 5 by 100 bundles of plants into the wet sack fixed on the side. The full sack is dropped on the ground, wrapped and secured, loaded onto a trailer which, when full, plants are taken to a dump in the nursery where they are kept damp to await collection.

Finally, what do these plants cost to raise? For the 1967/68 nursery year, both species, it cost per 1,000 plants \$3.90 to raise and \$2.13 to lift and bag, a total of \$6.03. Which was \$1.92 better than the previous year and it is anticipated there will be a further improvement this year.