

NURSERY MECHANIZATION

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NURSERY foresters are continually worried about costs and endeavour to try out new ideas to keep them at a low level, whilst at the same time ensuring that the full annual programme is completed.

This controlling of costs is not at all easy when one remembers that present day wages and overheads are approximately three times the pre-war figure, while at the same time it cannot be said that the output by the Nursery Staff has kept pace with the increased expenditure.

To keep costs, therefore, within the limits of proper nursery economics, it is essential that manual effort be supplemented by as much mechanization as possible.

Nursery foresters may be interested in our efforts at Tair Onen, towards that end, for the past few years.

Tair Onen Nursery was started in 1936 and may now be considered in the established category with all its attendant ills—over-production due to necessity in its early years with consequent lowering of natural fertility and high incidence of weed attack.

Our main worry was the high cost of weeding broadcast seed beds which reached its peak in 1946. As well as the cost of weeding, at least 10% of the first year's seedlings were lost mainly through faulty weeding by inexperienced labour. When one considers that our weeding areas in an average year amount to about 60 acres including lines and seedbeds, one may appreciate our problem.

To meet the situation, the "Macslat" Multiple Seedsowing Drill was evolved. It is worked on the endless belt system with a density control, sows eight drills longitudinally, the drills being 4 inches apart. The machine opens the drills, sows the seed and covers with grit in one operation, though the grit covering part requires further development.

The 1946 model had a wooden hopper mounted on tyre-less cycle wheels, the endless belts being provided from an old inner tube of a lorry. The principle of its working was satisfactory.

The 1948 model is an improvement on our first effort. It is a compact, all-steel unit mounted on pneumatic tyred wheels, having its endless belt specially made. The machine at present is manually operated. It is visualized that a later model may be power driven with other refinements. The present machine cost approximately £55. Theoretically, drills take up three times the area of broadcasting, but in this instance, it was decided to drill at broadcasting density; species coming out as 1 + 0 would not hurt, whilst those remaining in for two years had a proportion pricked out at the end of the first year and bedded out leaving a number in for two years corresponding to that of drilling density.

In practice the following comparisons stood out this year. 4 lb. of S.S. were sown in each case, same identity.

	Drills	Broadcast
Density of sowing	55 sq. yds. per lb.	55
No. of seedlings per lb. at stock-taking.	13,500	3,540
Cost of sowing per lb. Prep. bed	45/-	45/-
	per 100 sq. yds.	
	Sow seed	5d.
	2d. per lb.	
Quantity of grit per 100 sq. yds.	4 cwt.	16 cwt.
Cost of grit per 100 sq. yds.	4/8	18/5
Cost of covering 100 sq. yds.	2/9	2/9

Weeding

	Hoe twice Weed twice	Weed twice
Number of times during season		
Cost of weeding per 100 sq. yds.	89/5	170/10
Cost per 1,000 seedlings	5/8	40/3

The following general results were found this year, taking in all species, some of very poor germination.

Drills		Broadcast	
Area drilled	27,868 sq. yds.	Area broadcast	6,350 sq. yds.
lbs. sown	416	lbs. sown	94.8
Yield	5,320 thousands	Yield	889.25 thousands
Yield per lb.	12,788	Yield per lb.	9,380
Yield per sq. yd.	191	Yield per sq. yd.	140

General Observations.

Manual weeding of drilled beds is only one-fifth that of broadcast. Hoeing can be carried out on the other 4/5. A seven-pronged two-inch spud multiple hoe was evolved complementary to the seed sowing machine. Two men hoe eight drills simultaneously and cover 2,400 sq. yards in one day.

It was noticed that seedlings in drills grew to a greater height the first year than those in broadcast beds. The constant hoeing gives better moisture retention. It is not suggested that drilling is necessary for all nurseries. Obviously in newly-started nurseries where there is no weed growth for the first few seasons, broadcasting is easier.

Readers of the Quarterly Journal of the Royal Forestry Society of England and Wales will have noticed an article in the October 1949 issue by Mr. W. E. Hiley on his observations on Nursery Machinery and Methods, from a recent visit to Western American Nurseries. He describes similar machines as those developed at Tair Onen for drill sowing of seed, except that the American product is tractor pulled.

It shows that other up-to-date countries are fully alive to the potentialities of Nursery Mechanization as a contribution to lower costs.