Labour Cost Trends in Forest Nurseries

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Costs of producing planting stock in the Forest and Wildlife Service have been reduced appreciably since the early sixties and I have been invited to write a short note telling of the reductions that have been effected and the main factors that have been responsible for bringing them about.

Except for a small percentage of broadleaved stock intended for planting out as undercut seedlings the traditional method of sowing the seed broadcast in beds and lifting and lining out of the seedlings has remained unchanged.

Comparisons of cost expressed in money terms are obscured by the effects of inflation. We have, therefore, used the Work Study Section's records of expenditure in standard man hours[2] (S.M.H.) for each nursery operation.

Table I shows that while plants used in 1971-72 at 30 million as compared with 1961-62 have dropped by about 25% the labour costs have dropped by almost 55%.

Table 1

Total Labour Costs in S.M.H. for Period '61-'62 to '71-'72.

Year	Total Area of Nurseries (hectares)	Total Costs in S.M.H.	Number of Plants used (1,000s)	Costs per 1,000 plants in S.M.H.
1961-62	291	710,021	40,172	17.9
1962-63	286	637,301	38,408	16.6
1963-64	297	802,602	45,042	17.83
1964-65	309	760,229	40,784	18.6
1965-66	318	626,439	39,673	16.0
1966-67	318	536,991	34,783	15.4
1967-68	318	473,222	36,872	13.0
1968-69	313	389,911	35,063	11.1
1969-70	302	385,571	32,710	11.8
1970-71	302	347,374	31,920	10.9
1971-72	271	321,257	30,000*	10.7

*Provisional at the time of writing.

[1] Nurseries Inspector Forest and Wildlife Service, Dublin.

[2] The current cost of a standard man hour (early 1972) is estimated at £0.74.

The closing of small, manually operated nurseries and the opening of large mechanised ones was begun in 1957 and the change over, except for a few small units which are still in use, was almost completed by 1961-62. The average size of the mechanised nurseries is 22ha. While the Work Study and Incentive Bonus Scheme was fully operative in 1961-62 it continued to maintain efficiency by setting standards of work and giving accurate work values and accurate measurement of work output. The operations in which the main cost reductions have been made were weeding of seed beds and transplant lines. Table II shows the unit cost of these two operations for the years 1961-62 to 1971-72.

Table 2

Unit Cost for Weeding Seed Beds and Transplant Lines for One Year during period 1961-62—197172.

Year	Seed Beds 1 yr. and 2 yrs.	Transplant Lines
	Unit Costs in S.M.H.	Unit Costs in S.M.H.
1961-62	463	150
1962-63	426	79
1963-64	207	93
1964-65	313	99
1965-66	255	84
1966-67	148	62
1967-68	171	58
1968-69	142	57
1969-70	105	50
1970-71	84	50
1971-72	90	44

Herbicides have contrituted much to this reduction, especially Simazine. The discontinuance of the use of farm yard manure except in one or two cases where it was known that the manure was relatively free from weed seeds has also been important. Most important perhaps was Summer fallowing with successive rotations. This was carried out first by rotovating the soil at high speed to its full working depth to ensure fragmentation of roots of any perennial weeds such as scutch grass, *(Agropyron repens* Beauv,) sheep's sorrel *(Rumex acetosella L.)*, etc. If the soil was dry it was rolled to speed up germination of weed seeds. As soon as weeds appeared it was rotovated to a depth of 5cm which killed those weeds and brought further weed seed to the surface. When these germinated the soil was again rotovated, this time to a depth of 10cm, and so on increasing the depth of each rotovation by 5cm until the working

depth of the soil was reached. It was important to wait after each rotovation for the germination of the weed seeds; otherwise ungerminated seeds would have given further trouble.

This proved very effective on ground intended for seed beds as simazine could not have been used in the early stages of 1 year conifer beds—the perido during which in pre-rotovation days weeding costs ran high.

The system was also used on ground intended for transplant lines if space permitted, but the use of Simazine, as evidenced in Table 2 for the year 1962-63 when it was first used on an operational scale, had been effective.

It might be added here that the use of Simazine and other herbicides such as Paraquat and Vapourising Oil do not seem to have had any bad effects on the soil conditions although they have been used now for between ten and twenty years.

According as the seed population in the nurseries was reduced it was possible to go back to the ploughing down of green manure crops. This was, however, usually preceded by fallowing with rotovation until July when a crop of Westerwolth rye grass was sown. The July sowing gave ample time for this quick-growing crop to produce material for a good green-manure sandwich.

Table 3 shows the drop in cost of weed control as a percentage of labour costs over the last eleven years.

Table 3

Costs of Weeds Control Operations as Percentage of Total Costs in 1961-62 and 1971-72

Sub Head	1961-62 %of Total Cost	1971-72 %of Total Cost
Seed Beds	19.5	9.2
Transplant Lines	22.5	11.3

Lining out now accounts for the highest percentage of nursery costs at 31.8%. Everybody involved is thinking hard on how this cost can be reduced or even eliminated. There are many techniques being practised in countries where labour is difficult to obtain or is of poor calibre and expensive. Drill-sown seedlings, which are undercut and lateral root pruned. have been planted out successfully for many years. Production methods which lend themselves to mechanised planting such as tubed seedlings, bullet seedlings (which can be planted by planting "guns') soilless containers, etc., are being tried. A start is being made in the Forest

and Wildlife Service on work in this field. Even with our plentiful supply of good labour and mild Winters it is felt that there may be a future for such methods here and steps have been taken to initiate trials.

While not strictly within the terms of reference of this note it is difficult to close without mention of one very striking saving that has been made since the late fifties and early sixties and the 75% reduction in the quantity of conifer seed sown (excluding the true firs).

Even allowing for a 25% drop in plants required, with such an expensive commodity as conifer seed, this has been a substantial economy. It was due to the use of grit instead of soil for covering the seed, better seed, less seedlings lost due to less hand weeding and an increase in the demand for small-seed species such as Sitka spruce.