COSTS AND USE OF A MACHINE IN SOUTH DAKOTA

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In the spring of 1949, ten shelter belt-planting demonstrations were put on by the Extension Service in 4 widely separated South Dakota counties. A tree-planting machine built by the Lowther Manufacturing Company of Joliet, Illinois was mounted on a Willys-Overland 4-wheel drive Jeep and this combination was used to put on the demonstrations.

The tree-planting machine was very similar in design to one developed by the Soil Conservation Service in Nebraska. The planter is a 2-man machine. A full crew consisted of 2 planters and a driver. However, it was found that one experienced planter could do a good job of planting even at the closest spacing used (4 feet apart in the shrub row.

The machine was designed to fit on the hydraulic lift of a Ford tractor. A Monroe hydraulic lift adapts the Jeep for pulling the planter, since the 3-point implement suspensions on both hydraulic lifts are identical.

In addition to the hydraulic life, the Jeep was equipped with a front bumper weight and a governor. Experience showed that overload springs are also desirable, since the weight of the planter was more than the standard rear springs on the Jeep are designed to carry.

A row marker was mounted on the rear of the Jeep. This marker was adjustable for 8, 10, or 12-foot spacing between rows. Only the first row of a planting was staked. Each subsequent row was marked by the row marker as planting progressed.

When ready to move from one site to the next, a short section of one and one-fourth inch pipe was inserted and secured in place between the center of the drawbar and the upper connection of the planter. The purpose of this pipe was to prevent any chance of the planting machine dropping while in transit from one site to the next.

Advantages of the Lowther-Jeep Combination

The Jeep proved to be a dependable and efficient power unit, but the greatest advantage of this combination was its mobility. The outfit could be moved over surfaced highways at 40 miles per hour without difficulty. Upon arrival at the planting site, it was only necessary

to stake the first row, load the stock box, and start planting. Mobility of planting equipment is extremely important in South Dakota since plantings are generally rather widely scattered.

Explanation of Costs

An allowance of 5 cents per mile has been made for travel. This is the amount the State of South Dakota allows for use of personally owned cars and does not necessarily indicate the exact cost of operation of the Jeep with planter attached. However, operation records indicate that this mileage allowance is very close to the actual operation costs of the Lowther-Jeep combination. No allowance has been made for depreciation of equipment. This item would need to be taken into account by a commercial operator.

Labor has been figured at $1.00 per hour because that was the prevailing wage rate at the time the plantings were made. Actually, the demonstration plantings were made with farmers and spectators doing the planting. This is the chief reason for the comparatively low output of 559 trees per hour. With two experienced men riding the planter, there is little doubt that an output of close to 1,000 trees per hour could be attained. Another factor contributing to the low output was the small size of the plantings (average size slightly over 3 acres). This required frequent turning because of the short rows. The plantings varied in size from 12-acre to 11 acres. On the 11-acre planting an output of 929 trees per hour was attained using inexperienced help.

Two of the plantings were check rowed to permit cross cultivation. This required considerably more time because the plantings had to be crossed marked first. This was done by staking the first row and running the machine over it with the plow set shallow and the row masker out. Each row was covered in like manner and the planting was then marked in the opposite direction following the same procedure. The planters then set the trees on the intersecting marks.

It will be noted that allowance for travel time includes the time of only one man. The writer drove the Jeep from one planting to the next and depended upon the farmers to provide the planting assistance. Anyone planning to do custom planting would need to figure travel time of the crew,

Cost Analysis: Lowther Planter - Jeep Powered

Total number trees planted	19,000
Total number acres planted	31.75
Average number trees per acre	598
Total number plantings made	10
Travel time (hours)	29
Total number miles traveled	1,203
Total hours planting time	34

Average number trees planted per hour	559
Average number acres planted per hour	.93

Costs

1,023 miles @ 5¢	$ 51.15
29 hours travel time @ $1.00	29.00
34 hours planting time @ $3.00	102.00
Total	$182.15
Planting cost per tree	$ 0.00959
Planting cost per acre	$ 5.74