

17-1-58

Origin

Several demonstrations of the Wilder Rainthorpe Chopper have been held and it has been shown that this machine is very effective for the destruction of unwanted vegetation. Since all these demonstrations have been of short duration a longer trial to prove the mechanical reliability of the machine took place in the New Forest in November, 1957.

Description

The machine was originally designed for chopping up stubble but has now been further developed to deal with the many types of derelict growth which, so easily, take possession of large areas where regular maintenance has not been possible. It consists of a rotor driven from a Fordson tractor power take-off, carried on a two wheel trailer. The rotor carries two rows of tines which are flung out radially under centrifugal force when in motion. The machine can be used in conjunction with the P.T.O. of any tractor but in this series of tests the tractor used was a 1957 Fordson with live P.T.O.

The height of the rotor is adjustable so that the tines can actually touch the ground for the complete elimination of all vegetation under easy conditions or be raised to clear the ground by 10 inches when dealing with heavier growths.

Rotor speed with the tractor engine at governed speed is 1,500 R.P.M. The tractor is fitted with a radiator guard and cab for the protection of the radiator and driver.

The price of the Forestry Model as tested is £394, a lighter model (the Scrub-Masta) being available at £359.

Either model can be adapted for use as a forage harvester.

The following photographs are attached to this report.

1. $\frac{3}{4}$ rear view of the Machine. Note the two rows of tines on the rotor and the shaft drive from the tractor. The V belt drive to the rotor is on the far side of the machine.

Mr O'Shaughnessy
Mr Brynne: Will you include
 a Agenda for March meeting:
 (1) Discussion of above Report
 (2) " " Report on Woblesley
 (3) Relative merits & capabilities
 of MS/2/58

From the right onwards to me it seems the machine has great possibilities for areas which cannot effectively be tackled by the (chopper) Woblesley Super Turbo. I asked the M.D.C. to arrange brief experiments of the machine and relative merits & capabilities of the two machines & be brought very quickly to the notice of all Comd.

MS/3/1.58

See below

1. ~~Director~~
 2. Mr. Bannister 28/1
 3. Mr. Packwood 5/2
 4. Mr. Stock 20/1
 5. Mr. Richardson 10/2
 6. Mr. Brimmer 21/1
- return to Mrs O'Shaughnessy 11/2

2. The machine in action showing how thick gorse seen in the background is reduced to a shredded mass by two passages of the machine.

Observations

1. The trial covered 14 hours 57 minutes actual working time during which the following land clearance was done:-

Site 1 was a typical area of mixed growth consisting of heather up to 18 inches high, hawthorne with stems up to 3 inches diameter, birch up to $2\frac{1}{2}$ inches diameter with some bracken and brambles. All of this was satisfactorily cleared but a few stems of bigger hawthorne and birch were left standing as it was considered unreasonable to tackle them with a machine of this size.

The actual area cleared was 2.6 acres in 6 hours 32 minutes. This included going over the more heavily infested patches as much as four times in some cases in order to reduce the more robust hawthorne and birch to a shredded mass. No sweeping up or burning was necessary as the shredded vegetation would rapidly form a mulch. A few hawthorne and birch stumps were still left in the ground but they were badly lacerated and unlikely to recover.

Site 2 consisted of pure gorse which was so thick that it was not possible to walk through it. Height was 6 feet in places and there were many stem diameters of nearly 4 inches.

The acreage cleared was 0.5 acres in 1 hour 40 minutes including going over it twice with the machine in order to break up the cut stems on the ground.

On the same site an area of less dense gorse up to 4 feet high was satisfactorily disposed of in one cut by the machine. 1 acre of this gorse was cleared in 40 minutes.

Some other smaller gorse was cleared on this gorse site resulting in a total area of 2.9 acres being cleared in 4 hours 10 minutes actual working time.

Site 3 was another area consisting mainly of gorse rather less dense than on Site 2 but growing amongst it were some scattered scrub oak and holly. This oak and holly was mostly small but included in it were stems up to 3 inches in diameter. The total area was 2.8 acres and this was cleared in $3\frac{1}{2}$ hours actual working time. This was

all done with a single cut by the machine through the driver stopping to deal with the larger stems using his live power take-off to break them up with the tractor stationary.

It was noted at this stage in the series of trials that the driver was becoming more accustomed to using the live P.T.O. to the best advantage and some of the areas cleared earlier could probably have been cleared in one cut by better use of the live P.T.O.

Site 4 was rhododendron up to 5 feet high under widely spaced mature Douglas fir. Stem diameters did not exceed 1 inch and density was very variable. Acreage cleared was 0.15 in 15 minutes in one cut. The material was well shredded but many stalks 6 inches high were left in the ground.

Site 5 provided a very dense growth of rhododendron up to 10 feet high and with stems up to $3\frac{1}{2}$ inches diameter. Here the limiting factor was the ability of the tractor to force its way into the dense mass. This was a very severe test but the machine was able to destroy the growth wherever the tractor forced access. Acreage cleared was 0.13 in several cuts in 45 minutes.

NOTE

The reason that such small areas were used for these trials on rhododendron was because it was not possible to find larger areas where the growth was consistent.

2. Several hardwood stumps buried in the undergrowth were encountered during the trial. No damage actually occurred at the time of striking them but they do "punish" the tines and are a hazard to be avoided wherever possible.

3. Rate of Output and Cost

During the whole series of tests a total acreage of 8.6 was cleared in 14 hours 57 minutes actual working time. If the operator and machine costs are taken as 25/- per hour the average cost per acre is £2 3s. 6d.

4. Reliability

During the whole trial the only mechanical defects noted were six tines broken and several bent but the machine was still effective with these defects. Cost of repair of these tines was £3 10s. 3d.

A complete new set of tines was fitted half way through the trial as a precaution. The time required for this operation was 30 minutes.

Conclusions

1. The Wilder Rainthorpe Chopper has shown that it is capable of dealing with much of the derelict vegetation that invades areas which have not been cleared for a number of years. The fact that no subsequent raking up or burning is necessary is a great advantage.
2. Bearing in mind the severity of this trial over a period of almost 15 working hours the machine showed a high standard of mechanical reliability.
3. The immense advantage of using the machine in conjunction with the live power take-off on the Fordson tractor was very clearly demonstrated.

R. G. SHAW

Machinery Research Officer

17th January, 1958

