

Mr. Remington. ~~W~~
" " ~~B~~
Col. Blankenship ← ~~B~~

John

We have one on order for

Kerrhill

~~9/2~~
37.

None ordered for
Ledmore & none required.

~~D~~ 24. 2. 57

The Ransomes Vibro Hoe

Origin

There is an urgent need to reduce the weeding costs in nurseries and the introduction of the Ransomes Vibro Hoe at the Smithfield Show of 1952 offered a new method of weeding by machine in closely spaced transplant rows.

Description

The Ransomes Vibro Hoe is manufactured by Ransomes Sims & Jefferies Ltd., Orwell Works, Ipswich. The general outline and method of usage can be seen in the photographs attached to this report. The machine employs a single rubber tyred wheel which is driven through a centrifugal clutch by a 98 c.c. Villiers Engine. This engine also operates a pair of reciprocating hoe blades immediately behind the land wheel as seen in the photographs. The reciprocating movement is transmitted to the hoe blades through the system of ball cranks and levers seen in photograph 3. The hoe blades are of the Planet Junior type and are 6 inches wide, but for this trial special $4\frac{1}{2}$ inch blades were fitted and these were later cut down to $2\frac{1}{2}$ inch to cultivate a width of 5 inches between the 8 inch transplant lines. Through the method of slot attachment to the reciprocating toolbars the amount of overlap of the blades can be adjusted up to a maximum width of $11\frac{1}{2}$ inches. The price of the machine is £60 (retail).

Observations

1. A trial was carried out in sandy soil at Elvetham and Lytchett nurseries during the summer of 1953. The machine can just be handled in 8 inch spaced rows but it is considered that better results and fewer seedling casualties would be obtained by using 10 inch spacing.
2. Silvicultural Comments are as follows:-

(a) Cultivation of Alleyways

Standard, unmodified 6 inch blades were used, half the width of the alleyways being cultivated at a time. This was found quite satisfactory although there was a tendency for the weeds mainly poa annua to be insufficiently disturbed to prevent re-establishment.

(b) Cultivation of Inter-Row Spaces ($2\frac{1}{2}$ inch blades)

D.F. and S.P.: This was satisfactory in the early part of the season, but as lateral roots developed during the season the amount of damage done to crop roots by the machine increased considerably. This type of damage could be reduced

running the machine so that the blades did not penetrate the soil for more than an inch or so, but this greatly reduced the efficiency of weed removal.

C.P.: The bushy nature of the plants had the effect of narrowing the space between the lines of plants to about six inches, and frequently lateral shoots and foliage of the crop plants, were damaged by the reciprocating blades of the machine.

S.P.: Satisfactory in the early part of the season, but from mid-June onwards, lateral root development resulted in a number of trees being dragged out of the ground by the machine, and the probability of damage to many more.

Beech 1 + 2: The size of the trees and the density of foliage obscured the soil between the lines and it was found impossible to steer the machine accurately.

3. A trial to determine the comparative cost between weeding by hand and with the Vibro Hoes was carried out on a transplant area of 43,363 sq. yds. This area was weeded in 162 operating hours by the machine which after charging 3/- per hour for the operators wages and 2/- per hour as the estimated cost of the machine shows a cost of:-

1/10d. per hundred sq. yds. by machine compared with:-

2/6d. per hundred sq. yds. by hand.

The machine therefore shows a saving of 8d. per hundred sq. yds.

(The figure of 2/6d. per hundred sq. yds. is the normal piece work rate for hand weeding transplant rows at Elvetham.)

The actual rate of output by hand is about 125 square yards per hour compared with 270 square yards by a man with the machine.

4. It was found that when operating on side slopes there was a tendency for the wheel to slip downhill resulting in damage to seedlings.

5. A point of criticism was the fact that the operator had to walk immediately behind the machine causing some of the weeds to again take root. It was too difficult to control the machine when walking in the adjacent line.

6. An examination after 162 hours running revealed the following mechanical defects:-

(a) Failure of the rubber bearings on the oscillating unit (photograph 3).

(b) The driven gear wheel which was loose on the shaft (photograph 2).

New rubber bearings to the same design were fitted to repair (a) and a new type of socket headed setscrew was fitted for the repair to (b). A further 50 hours running has now been completed without mechanical trouble.

Hoe blades in the sandy soil of Elvetham appear to have a life of 100 hours. They are very easily replaced and their cost is £1.7.0d. per pair. The engine and centrifugal clutch have performed very well throughout the trial.

Conclusions.

The Ransomes Vibro Hoe provides a means of considerably reducing the cost of inter-row weeding, but in rows as closely spaced as eight inches the proportion of seedling casualties is high. For ten inch spacing or perhaps even at nine inches the machine would be a great asset since the degree of weed suppression is adequate and the speed of operation would allow frequent cultivation during the growing season.

R. G. SHAW

Machinery Research Officer

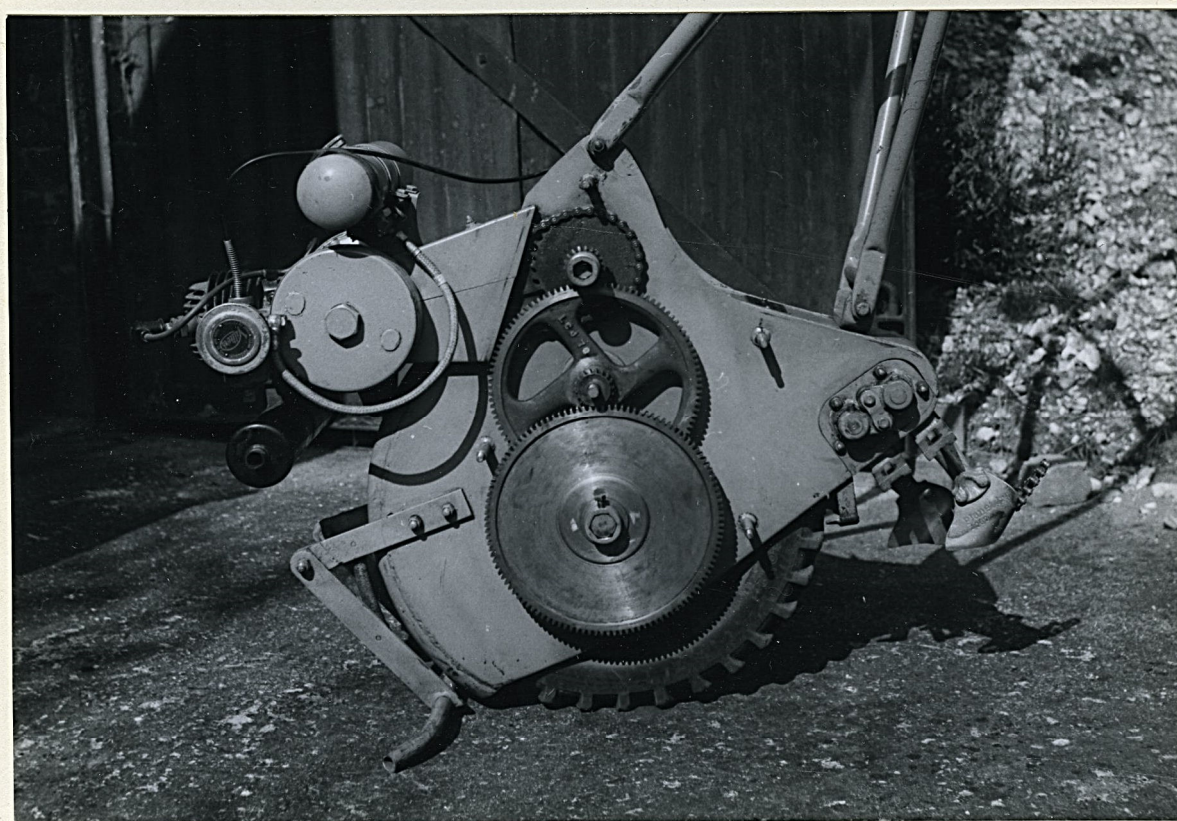
G. D. Holmes

Assistant Silviculturist (S).



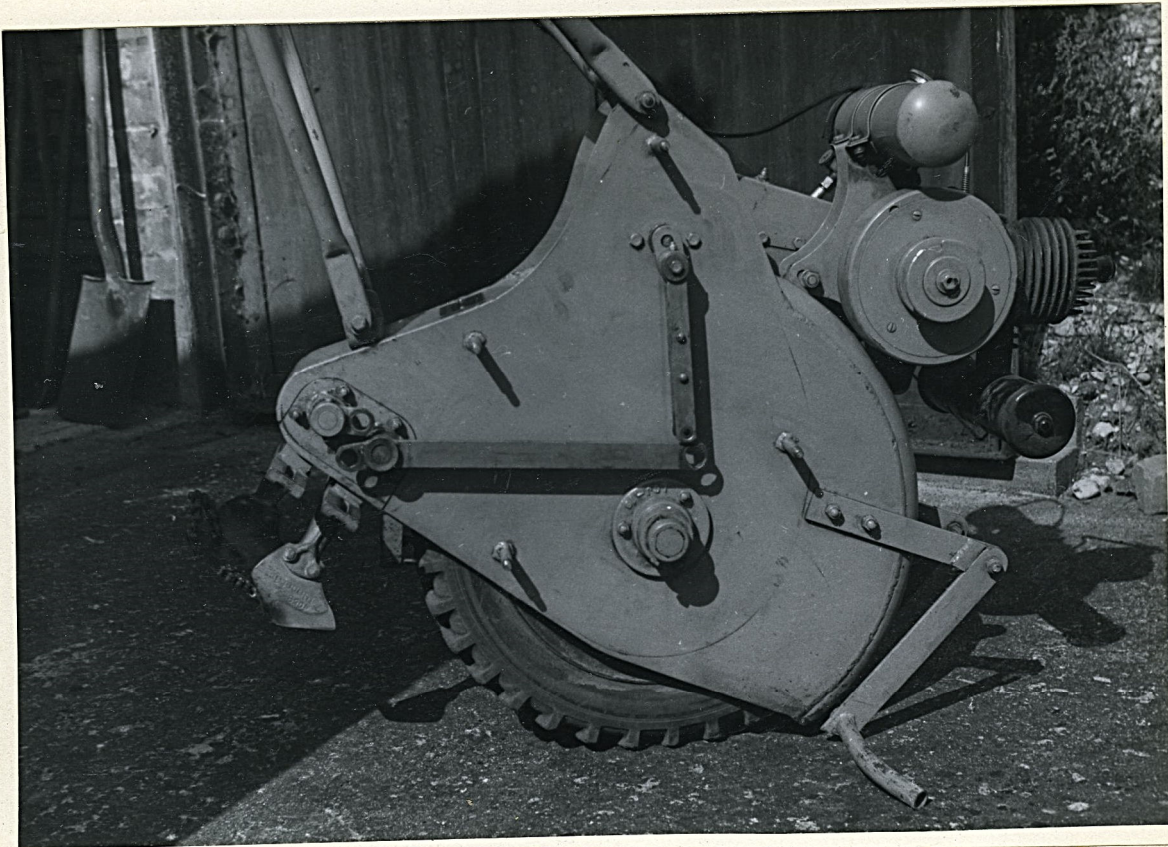
PHOTOGRAPH 1.

THE VIBRO HOE BEING USED TO WEED AND CULTIVATE IN 8 INCH SPACED ROWS. THE RECIPROCATING TOOLBARS AND HOE BLADES CAN JUST BE SEEN UNDER THE REAR OF THE MACHINE. NOTE THE OPERATORS' FEET TREADING ON THE CULTIVATED AREA REFERRED TO AT PARA. 5 OF THE REPORT.



PHOTOGRAPH 2.

A LEFT SIDE VIEW OF THE MACHINE WITH THE COVER REMOVED. THE DRIVEN GEAR WHEEL (LOWEST OF THE THREE IN THE PHOTOGRAPH) BECAME LOOSE ON THE SHAFT. SEE PARA. 6 (a) OF THE REPORT.



PHOTOGRAPH 3.

RIGHT SIDE VIEW OF THE MACHINE WITH COVER REMOVED SHOWING THE POSITION OF THE RUBBER BEARINGS WHICH FAILED IN THE OSCILLATING. IN THIS PHOTOGRAPH THE BEARINGS HAD BEEN REMOVED AND THE HOLES AT EACH END OF THE HORIZONTAL ARM CAN BE SEEN.