

Re REPORT No 28



To whom it may concern

W 516/5

Addendum to Report No. 28

The use of a Grubber Blade for the Clearance
of Derelict Woodland

Page 2.

Third line of table at bottom of page should read:-

Wages of drivers' mate
(includes the cost of burning)

£72.0.0.

5.4.54. Mr G.B. Ryle added comments to Report No 28.

7.4.54 Leane S.E(E) was asked to send comments
on costs etc.

* 24.4.54 Leane S.E(E) replied

12.5.54. Copy of * sent to M.R.O.

J. HARPER

Secretary Headquarters Machinery Development Committee

See
File 356/35 for correspondence

Forestry Commission
30.3.54.

J 356/35

To whom it may concern

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of Derelict Woodland

(no Copy of Report
No 28 on
FILE 516/5- W10/2)

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J. HARPER

Secretary Headquarters Machinery Development Committee

Forestry Commission
30.3.54.

PA 356/35

Headquarters Machinery Development Committee

Report No. 28 on

The Use of a Grubber Blade for the
Clearance of Derelict Woodland

1. Director 2/82
2. Mr. G. B. Ryle 2
3. Mr. J. L. Bostock
4. Mr. J. L. Bostock 19/4
5. Brig. Batten 1/4
6. Mr. M. L. Richardson
7. Mr. Leman - for MDC 42
8. Mr. Stocks - 14/5

W 516/5

The shortage of land in the United Kingdom for all purposes of which afforestation is one has focussed attention on the large total area that is at present occupied by derelict woodland of little or no value.

The problem of clearing these areas for other uses apart from national policy is purely one of economics. Quite clearly if the ground is suitable for building or to make good agricultural land high clearing costs can be tolerated but for afforestation the strictly economic cost is low.

It is natural that machinery should be examined for this purpose and some progress has been made in this direction by the Forestry Commission.

An investigation was made into machinery that has been used both in this country and abroad on work of this character. Bulldozers were an obvious line of thought but they were rejected owing to their tendency to remove the valuable topsoil. Development passed through various forms of rakes pushed or pulled by tractors and the best solution for heavy scrub of the type seen in the photographs attached to this report was found to be the Grubber Blade also seen in the photographs. This equipment consists of a shallow bulldozer blade with detachable tines protruding at the bottom. With this tool it was possible to uproot almost any growth up to a diameter of 8 inches with particular success on strong rhododendron, thorn etc. When used in dry weather it was found that the tines enabled the top soil to be shaken out of the uprooted timber as it was pushed along the ground into windrows prior to burning.

It should here be mentioned that no comparison has been made between the grubber blade and the various forms of chain or cable sweeping by two tractors which has been used with success in other countries. The reason that this technique has not been tried here is that any method requiring two tractors of 60 H.P. or more is likely to be more expensive per acre where transport charges and unavoidable lost time would be comparatively heavy in dealing with a large number of small areas of under 100 acres.

Two sizes of the Grubber Blade have been used, one to fit an International T.D.14 and another to fit an International T.D.18. Both were equally successful

and although International tractors were used in these cases any tractor of over 60 H.P. should be able to handle the work.

The cost of the Grubber Blade was:-

For T.D.14 - £232 - 10 - 0 + £24 - 1 - 1 for fitting

" T.D.18 - £275 - 0 - 0 including fitting

Both these equipments were supplied by Sand and Shingle Ltd., - Faggs Road - Feltham - Middlesex.

The technique employed is to gradually cut into the standing timber and work it into windrows but leaving selected trees which could grow on to maturity and at the same time give protection to the newly planted trees.

Burning of the windrows is necessary because they absorb a large proportion of the cleared area and also form an ideal retreat for rabbits. This burning operation requires much time and trouble. A typical example of clearing was provided on 42 acres at Charlton, Sussex where the standing crop was practically solid blackthorn interspersed with scattered oak, ash, whitebeam, yew and holly. The thorn ranged from 10 feet to 15 feet in height. The attached photographs show the density of the growth that was tackled and the state of the ground after the clearing operation. Most of the roots are removed by the tines but large hardwood stumps are left as they are expensive to grub out and their removal is not necessary for reafforestation.

In this case at Charlton the cost using a T.D.18 worked out as follows:-

Tractor working time = 590 hours at 31/9d = £936 - 12 - 6

Charge for depreciation and maintenance
of Grubber Blade = £55 - 0 - 0

Wages of drivers rate = £72 - 0 - 0
(INCLUDES THE COST OF BURNING)

Total cost of 42 acres = £1,063 - 12 - 6

Cost per acre = £25 - 6 - 6

The ground was left in a condition suitable for planting without further cultivation.

It will be appreciated that conditions on this type of work vary greatly so the above figures can only be taken as a rough guide to the costs likely to be encountered on a heavily wooded area for the clearing that is shown in the photographs.

FORESTRY COMMISSION
(ENGLAND)
3 APR 1954
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Conclusions

For the clearance of derelict woodland the Grubber Blade is a very effective tool. The operation is, however, an expensive one and is likely to cost about £25 per acre.

R. G. SHAW

Machinery Research Officer
February, 1954

It would be valuable to have the Contractor's comments (a) on the comparative costs of hand clearance and (b) on the condition of the soil for replanting. I imagine in (a) he would have left a bigger shade crop, but he might be far more seriously worried by coppice re-growth.

What surprises me here is the low cost of burning at only £1.7 per acre being the part time work of the driver's mate.

Clt
5 Apr 54

COPY

FORESTRY COMMISSION,
S.E.(E) CONSERVANCY,
"DANESFIELD",
GRANGE ROAD,
WOKING, SURREY.

24th April, 1954

TO: THE DIRECTOR (ENGLAND)

My ref: 81/14
Your ref: W.516/5

H.Q. M.D.C. Report No. 28 GRUBBER BLADE

I refer to your memorandum of 7th April, 1954 regarding the M.R.O's report on "The Use of a Grubber Blade for the Clearance of Derelict Woodland".

Hand clearance of similar type of scrub would cost approximately £30 per acre, and is less satisfactory because of coppice regrowth. A bigger shade crop would be left, but I would not like blackthorn left for this purpose. Furthermore with the Grubber Blade the project can be completed by two men only; this is a great help where difficulty is experienced in recruiting labour.

The effect of the Grubber Blade is to cause considerable soil disturbance and so make planting easier. This method will probably eliminate one year's weed growth anyway.

With regard to the low cost of burning I would point out that the figure of £1. 7. -d. per acre is based on the false assumption that the mate carries out all the burning work. In fact it is essential for the tractor to spend approximately one third of its time attending to the fires i.e. pushing the debris into heaps, shaking up smouldering fires to remove earth and keep them burning.

A check of the records reveals that the machine spent 402 hours on grubbing and 188 hours on attending to the fires. I would therefore divide the costs as follows:-

	<u>Grubbing</u>	<u>Burning</u>	<u>Total</u>
Tractor Working Time	£338. 3. 6d.	£298. 9. -d	£636. 12.6.
Charge for Depreciation and Maintenance of Grubber Blade	£ 37. 9. 6d.	£ 17.10. 6d.	£ 55. -.-.
Wages of Drivers Mate		£72. -. -. .	£ 72. -.-.
Total cost for 42 acres	£375.13. -d.	£387.19. 6d.	£1063. 12.6.
Cost of Grubbing	£16. 1. 9d. per acre		
Cost of Burning	£ 9. 4. 9d. per acre		
Total Cost	£25. 6. 6d. per acre		

Sgd. G.H.H.

for Conservator



PHOTOGRAPH 1. The grubber blade mounted on a tracked tractor T.D. 14.



PHOTOGRAPH 2. A typical view of the ground at Charlton before clearing.



PHOTOGRAPH 3.

A section of the ground at Charlton after clearing. Note that certain selected trees have been left standing. The actual number of trees left standing depends upon local conditions.



PHOTOGRAPH 4.

The T.D. 14. and grubber blade in action. This photograph was not taken at Charlton but near Blandford Dorset during an earlier clearing operation.