Grazing

PLOUGHING AND RE-SEEDING OLD GRASSLAND

[Report G12]

REPORT

by

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1. Introduction.

This Report concerns a survey of selected instances of direct re-seeding in the four northern counties. The survey was made in conjunction with the War Agricultural Executive Committees of the respective counties and was directed to the financial and economic aspects of the re-seeding operations.

The Survey was carried out between August and December, 1940.

2. The Sample Surveyed.

Of the 24 farmers interviewed, 2 were unable to supply any satisfactory details of costs and returns; 3 had been carrying out a general policy of grassland improvement (i.e. a course of arable cropping leading up to the sowing of permanent grass mixtures); and only the remainder were able to provide data (not complete in every case) relating to re-seeding by direct methods. In some cases the operations were carried out in 1939; others in 1940; and some in both years. Moreover, the programmes followed had significant differences. In some, there was direct re-seeding under a nurse crop such as rape or italian rye grass; in others, no nurse crop was sown; and in others a temporary seeds mixture was sown, to be followed, in a year or two, by re-seeding with a permanent mixture.

In all 24 separate re-seeding projects situated on 18 farms were surveyed. 5, covering 76½ acres were re-seeded in 1939. The other 19, covering 280 acres, were re-seeded in 1940.

Of the 1940 projects, 55 acres were below 500 ft. altitude, 202½ acres between 500 and 1,000 ft., and 22½ acres above 1,000 ft. Geographically they were distributed from North Northumberland to Teesside and from North Cumberland to Lunesdale.

The general sample, because of its great variety, does not permit of a tabulation of costs and returns which would provide a satisfactory comparative assessment of the merits of the different methods and objectives. It does, however, provide information which can be very useful in relation to advance budgetting and this is probably the direction in which farmers are likely to need guidance. In any case, few of the farmers were in a position to say, with confidence, just what their costs had been, and, as will be shown later, the measurement of returns was even more difficult.

No attempt will be made, therefore, to set out results in the form of a Profit and Loss Account. For reasons which will appear later, this method of presentation is not appropriate to the economic character of the re-seeding projects with which this Survey deals.

3. Economic Considerations and Financial Aspects.

(i) The main objective of a localised survey such as this is to crystallise the experience of those who have attempted direct re-seeding, firstly for the benefit of the much greater number who still require to be convinced that direct re-seeding can be economically successful, and secondly, for the guidance of those responsible for the important duty of planning wartime use of the country's hard-worked acres.

It can be said at once that there is general agreement amongst the farmers whose operations are here being reviewed, that the productivity of worn-out grassland can be greatly and quickly increased by direct re-seeding, and that, under presentday levels of operational costs and livestock prices, the practice is economically sound, provided certain conditions are satisfied. (These are dealt with in paragraph ii below.)
Representative opinions may be quoted.

RS1 28 acres re-seeded in 1939.
"...the rape and seeds on ——— have been a very profitable undertaking ..... the profit on the sheep alone more than pays the whole cost of the work, not taking into account the grant of £2 an acre .... the new grass will be a tremendous benefit to us next spring. We are hoping to re-turf in the same manner another large area adjoining, next year."

RS15 5 acres re-seeded in 1940.
"Until the storm the field was looking exceptionally well and providing fresh grazing for the 14 lambs still on. (December) .... We found it rather difficult to assess the appreciation of the stock accurately but all classes have done very well indeed."

RS21 .."The farm pays very handsomely nowadays and has for some years, and undoubtedly the general re-seeding carried out in various ways is the basis of its success."

RS28 15 acres re-seeded in 1940.
"The cattle did very well at this time of the year when the original pasture would have been no good at all.... I am going to re-seed some more if allowed..."

In addition to these expressed opinions it is also significant that on practically all of the farms, I was shown "the next piece to be done."
The following extract from Grow-More Leaflet No.49, "Re-seeding Poor Grass" may also be quoted:-
"Experience in many parts of the country has proved the success of ploughing out and direct re-seeding as a rapid and sure method of grassland improvement. Except on farms unsuitable for arable cropping however, this direct re-seeding must be regarded as a supplement and not an alternative to ploughing for arable crops."

(ii) The underlined part of the last quotation given above indicates clearly the criterion by which re-seeding is to be judged from the standpoint of food production policy. It is the responsibility of the War Agricultural Executive Committees to determine, in all cases, whether proposed re-seeding operations will be supplementary or alternative to arable cropping, and to give or withhold permission according to the degree by which food production as a whole will be increased.

From the farmer's standpoint, on the other hand, there are certain important conditions to be satisfied, apart from the simple question of covering the direct costs incurred, if re-seeding is to be an economic success. These are:-

(a) The operations themselves must be efficiently carried out. This means good cultural preparation of the seed bed and adequate manuring. All the examples inspected have demonstrated the importance of those specific points in cultivation, manuring, and attention to drainage which Agricultural Advisers have consistently emphasised. (e.g. well-turned furrows; free use of disc harrows; firm consolidation of the seed bed, etc. etc.)

(b) Supplies of suitable fertilisers must be available. This point is now more than ever important because of the priorities in the use of fertilisers dictated by the supply situation. This consideration is not confined to the first applications, but is also relevant to the further manurial treatment which is normally necessary before the new sward can be said to be established.

(c) The successful establishment of new swards is as much a question of appropriate stocking and grazing management as of cultivations and manuring, and available capital resources for the purchase of livestock may well be the limiting factor to the scale of re-seeding operations.

Financial limitations may provide one explanation for a tendency to rely heavily upon sheep for grazing new seeds. This is not just a question of buying cattle. Many of the farms on which re-seeding has been done, are in outlying districts where the supply of suitable grazing cattle is inadequate. Moreover, the re-seeded areas are often parts of larger, open areas, so that drainage, fencing and water supply may require additional outlays on labour and materials before effective cattle grazing is possible. Again, because of the intermittent grazing required while the maiden seeds are being established, alternative grazing, roots, and/or other feed resources must be available if the stock are to make steady progress.

Taken together, these considerations seem to have encouraged a tendency in several instances to rely too much upon sheep grazing alone, to the prejudice of the sward, while in others, where experience of direct re-seeding is lacking, there has been uncertainty as to how hard the maiden seeds should be grazed.

Altogether, as a matter of general policy it is clearly desirable to tackle smaller areas and do them well, rather than to attempt larger acreages which can only overstrain the financial and economic capacity of the farm.

4. Costs.

No attempt will be made to set out costs and returns in the form of a profit and loss account. The main reasons are:-

(i) In most cases, the necessary details are not available. This applies particularly to estimates of returns where the re-seeded acreage has been grazed alternatively with other grazings on the farm, and it is impossible to assess the returns from the re-seeded acreages alone.

(ii) The wide geographical dispersion, differences in altitude, soil conditions, method, and objective (indicated in para. 2) would invalidate direct comparisons from farm to farm.

(iii) The essential problem for the farmer is to determine whether the additional outlays incurred over and above normal farm expenses have added more than the value of these outlays to the total farm output.

(iv) What these "additional outlays" might be depends very largely on whether the job is done by the farmer's own labour supply and mechanical equipment, or by contract labour specially hired. In the former circumstances the cultural operations can often be done in the slack season between the completion of the main ploughing and sowing and the beginning of the haymaking, i.e. between May and July, and thus provide opportunities for the more effective use of manual and mechanised labour whose cost (apart from fuel, etc.) would fall to be borne in any case. Where the work is done on contract, of course, the cost is an "additional outlay".

The extent to which drainage works and fencing are required also has an important bearing upon direct outgoings.

The following comments upon the various items of costs and the specimen examples of returns described later will, it is hoped, serve as a guide to the financial aspects of the subject, and assist forward budgetting.

(v) Cultural Operations.

In 10 instances all cultural operations were carried out by the farmer's own labour force.

The extra outlays on fuel and maintenance could only be given in one of these cases.

In the remaining 8, the work was done by contract, and the charges were as follows:-

Per Acre.

Farm	Ploughing	Disc Harrowing ø	Rolling.	Manure Distrib.	Sowing.
RS1		30/- (4) *			
2	17/6	12/-(3)			
15	20/-	10/-(2)	15/-(4)	5/-	3/-
16	25/-	20/-(2)	15/-(4)	10/-	3/-
17	20/-	19/6			
27	25/-	17/6(4)			7/3 +
28	20/-	12/-(3)			

ø The bracketed figure is the number of times disced.
* includes some drainage work and repairs.
+ Oats and Seeds.

These charges will be offset by the Ploughing Subsidy of £2 per acre where the land qualifies for it.

In connection with contract work, it is worth noting that

(a) in all cases, having regard to the character of the job, the work was described as "satisfactory", "good" or "excellent".

(b) Contractors themselves are becoming better conversant with the particular needs of this kind of work, and are acquiring a useful degree of specialisation.

(vi) Manurial Costs varied considerably owing to differences in the amounts and kinds of lime, slag, and other fertilisers applied.

In all cases, the lime requirements had previously been determined by analysis, and varied from 4 tons to 1 ton per acre. The applications made were up to 1 ton per acre in 5 cases, between 1 and 2 tons in 7 cases, and over 2 tons in 4 cases.

Slag was also used freely, the applications being as follows:-

Up to 5 cwts. per acre	1 case
Over 5 and less than 10 cwts.	3 "
10 cwts.	9 "
Over 10 cwts.	1 " (15%)

In most instances the grade of slag was not specified. In addition, Mixed Fertilisers were sown in 8 instances. In only a few instances were the seeds given a spring dressing in the year following the re-seeding. (This applies to the 1939 operations). It is worth noting therefore that the conditions which made re-seeding necessary, are conditions of poverty. It is not reasonable to expect that full recovery can be made by a single dose of fertilisers, even on a generous scale.

(vii) There were considerable variations in the Seeds Mixtures sown but, as was pointed out earlier (paragraph 2) there were differences in objective. Even where permanent mixtures were sown, the cost varied from 30/- to £3. per acre. The price trend is upward and seeds mixtures for sowing in 1941 have been quoted at higher figures.

(viii) Speaking generally, where contract labour is hired for cultural operations, outlays on re-seeding in 1941 may be expected to fall between £8 and £12 an acre, assuming that no great expenditure on drainage or fencing is required. Where expenditure on drainage is likely to be appreciable and financial assistance is considered necessary, the War Agricultural Executive Committee should be consulted.

5. Returns.

The difficulties of assessing returns arise largely from the fact that re-seeding is not a self-contained operation which can be divorced from the rest of the farm, but a supplement to the feeding resources of the farm as a whole. Moreover, while in a few cases sheep and cattle may have been bought to stock the new grazings, in the majority, the stock grazed were either home-bred or had spent some time on the farm before being put on the new seeds. In one or two cases, also, supplementary feeds were given while the stock were being grazed.

Further, the precise dates on which the stock were moved on to and off the new grazings were not always recorded.

Valuation of the improvement made by stock in these circumstances can only be approximate. In no case was it possible to obtain any measure of live weight increases. Nevertheless, the following examples, using such data as were forthcoming, provide useful evidence of the improved output made possible by the re-seeding operations.

R.S.1. 28 Acres. Estimated Rental Value before re-seeding, 4/- per acre. Re-sown with rape and seeds in 1939.
Fed 398 Crossbred lambs in the autumn of 1939. These left an average of 10/- per head, which more than covered the expenses of the re-seeding. In the spring of 1940, the same area was stocked with 20 head of strong grazing cattle. The numbers were raised, as the season progressed, up to a maximum of 80 head (for about 5 weeks). By the beginning of August the grazing cattle had been removed to finish elsewhere, and were replaced by 16 cows with calves and 60 cheviot ewes.

R.S.3A. 20 acres re-seeded with rape and italian rye-grass in 1939. (Permanent re-seeding to be done in a year or two.) This land was stocked in the first week of August with 300 lambs and 26 young sheep. Supplementary feeding was given at the rate of ½ lb. per day, of a mixture of ground nut cake 1 part, dried grains, 2 parts, and crushed oats 1 part.
262 of the lambs and all the young sheep went off fat by the 3rd week in October.

R.S.3B. 17 acres re-sown under rape (4 lbs.) and italian rye-grass (20 lbs.) in 1940.
This land was stocked in the 3rd week in August with 198 crossbred lambs (Suffolk x Mule) costing £276.
The lambs were run off onto a grass field for the first 3 weeks at night. From the beginning of October, supplementary feeding was given of a mixture of 2 parts crushed oats, 1 part molassine, 1 part dried grains, and 1 part ground nut cake. The mixture was fed sparingly at first and gradually increased during October to a maximum of ½ lb. per head per day.
All the lambs were sold off and graded by the 17th December realising £571 after deducting transport costs to the grading centre.
It should be noted that buying prices for store lambs were more than usually favourable to this kind of operation and the margins realised were therefore larger than might normally be expected.

R.S.5. 18 acres of very rough grazing land, largely covered by bracken and heather, and previously carrying blackface sheep at about 1 ewe per 3 acres, re-seeded with a temporary mixture and rape in 1940. (To be re-sown with a permanent mixture in 1942.)
This acreage was stocked with 110 XS lambs (aged 14 wks.) on July 10th. These were sold off on September 10th, making an estimated gain of 12/- per head. 25 H.B. ewes (4 yr. old) were put on on September 25th and sold off on October 20th, making an estimated margin of 5/- per head.
All these sheep had ½ lb. of mixed cake per day. No supplementary grazing was available for them.

R.S.11. 11 acres of land covered with brushwood (after timber felling in 1926) was grubbed, gyro-tilled and re-sown in 1939.
During the autumn of 1939 this land provided 4 weeks keep for an average of 175 lambs. In the spring of 1940, 40 cattle and 60 ewes had 3 weeks grazing. 20 tons of hay were then cropped, and 3 weeks aftermath grazing was provided for 200 lambs.

R.S.12. 9½ acres old grassland - no record of any kind of treatment for at least 30 years - re-seeded 1939. Rental value before re-seeding was about 2/6d. per acre; after treatment it was as good as the best on the farm, about £2 per acre.
Grazing began in second week in July with 20 bullocks, 49 ewes and 60 lambs. 15 bullocks were added at the beginning of August and grazed till Mid-September. The bullocks were then removed to finish inside. The sheep, with the exception of 25, continued grazing to the end of September. All stock were cleared for the winter.
In the spring of 1940, 80 ewes and lambs were grazed from the end of March to mid-May. The grass was then reserved for silage making, which was unavoidably delayed till the grass was somewhat stemmy. 60 tons of silage were made.
An adjoining area (9 acres) was similarly re-seeded in 1940 and stocked with 24 bullocks on July 7th. Later records are not available.

R.S.15. 5 acres, at an altitude of 1,200 feet, re-seeded 1940. 95 B.F. wether lambs were put on in the first week in August. 11 Shorthorn Heifers (18 months) were added in the third week in August. 11 Black-polled Bullocks (2 yr. old) were put on in the third week in October, and 14 B.F. Lambs on December 1st.
50 of the first batch of lambs were removed on August 16th and were estimated to have appreciated by 1/- per head. The remaining 45 were taken off on September 11th, having appreciated by 5/- per head. The heifers, taken off on September 2nd improved by £1 per head, and the bullocks, removed after a fortnight, had improved by 10/- a head. The remaining lambs were still enjoying fresh grazing at the end of December.
The cattle were fastened on the re-seeded land, while the sheep, though having access to 10 acres of rough pasture adjoining, showed marked liking for the new seeds.
"All classes of stock have done very well indeed."

R.S.17. 5 acres, at 1,000 feet, re-seeded 1940. 60 ewes and lambs were put on on July 26th and a further 58 added on August 2nd. 33 B.F. ewes were added on October 4th. Sales began on October 16th and continued till November 28th. The average improvement per head over store prices was 12/4d.

R.S.22. 12 acres re-seeded 1940.
Carried an average of 62 sheep (x Down Lambs, followed by greyface ewes) for a period of 14 weeks.

R.S.23. 18 acres re-seeded 1940.
Stock were put on as follows:- 35 dairy cows, second week in June; 12 stirks (15 months) second week in July; 125 Down lambs at beginning of October and 10 cows in the first week in October.
The 40 cows were transferred to meadow fogs for a period of 21 days. The stirks were removed when the seond batch of cows were entered. The cows grazed the area till the end of December and received supplementary feed of a load of kale daily. The whole of the stock had access to another 12 acre field. None were sold direct from the re-seeded acreage and no financial assessment of the improvement provided by the re-seeded acreage is possible.

R.S.24. 25 acres re-seeded in 1940.
Stocked on 1st September with 50 Oxford X Lambs and 50 H.B. & Cheviot Lambs. These were sold off on October 20th, having had alternative grazing for 2 weeks. The appreciation in value was £75, i.e. 15/- per head. 75 B.F. Lambs were then grazed for 2 weeks before going on to roots for finishing.

R.S.27. 17 acres re-seeded under oats in 1940.
The oats yielded 15 cwts. of grain and 26 cwts. of straw per acre, the value of which, after deducting harvesting costs, was assessed at £14 per acre.
The seeds were grazed by 80 crossbred and swaledale lambs during September and October and by 10 shorthorn Bullocks (18/24 months) during October and November.
The stock had the run of an old pasture of about the same acreage. No assessment of the appreciation in value is available.

R.S.28. 15 acres re-seeded in 1940. (8 acres under Oats, 7 acres under a light seeding of rape.) The oat crop was light and the seeds an excellent 'take'. During July, August and September 150 B.F. and H.B. lambs were grazed and sold, partly as stores, while markets were still easy, and partly fat. The overall improvement was about 10/- per head. In addition 15 cattle had seven weeks grazing. Adjacent rough grazing was available, but from the end of September this was of no value. The cattle "did very well".

These brief summaries give a clear indication of the supplementary character of the re-seeding operations in relation to the needs of the individual farms. Although no precise financial value has been given for the output from the re-seeded areas in most cases, there is enough to show the substantial contributions made to the farming resources.

Farmers requiring assistance in budgetting for their own needs should apply either to the County Agricultural Organiser, or to the Advisory Agricultural Economist, King's College, Newcastle-on-Tyne, 2.

6. In conclusion it is worth while pointing out that all the cases reviewed in this Survey were carried out in collaboration with the County and/or Provincial Advisory Services, and in the majority, the farmers concerned had no previous experience of direct re-seeding operations.

Two guiding principles may therefore be stated.

(i) Whether to re-seed in a particular case must depend on the possible alternative uses of the land as a source of human food. The Committees will be aware that many farmers will be willing to accept orders to plough and re-seed as an alternative to ploughing and cropping. The criterion, however, is productivity and not convenience.

(ii) Where re-seeding is permissible the farmer should be encouraged to seek competent advice forthwith, and before operations begin.

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