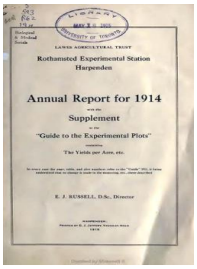
Annual Report for 1914 With the Supplements to the Guide to the Experimental Plots Containing the Yields per Acre, Etc.



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Mixed Crops

Rothamsted Research

Rothamsted Research (1915) *Mixed Crops ;* Annual Report For 1914 With The Supplements To The Guide To The Experimental Plots Containing The Yields Per Acre, Etc., pp 30 - 31 **- DOI: https://doi.org/10.23637/ERADOC-1-107**

But in regard to fallowing a difficulty at once arises. While the land is lying fallow it is subject to loss of nitrates by leaching; indeed one of the great merits of green manuring is that it puts a crop on the land in autumn when the stock of nitrates is high and the crop takes up the nitrates and holds them safely from the winter rain. A simple way round the difficulty is to have the necessary fallow only during the dry weather, and it so happens that all our experiments were made under these conditions.

It is to clear up these and similar problems that a definite green manuring experiment has been begun. A field is divided into four parts, one of which is farmed with artificials only, one with farmyard manure and artificials, and two with artificials and green manure but no farmyard manure. One of the two last carries leguminous crops and the other non-leguminous crops for the green manure. An eight-year rotation has been drawn up to keep the green-manured land as closely cropped as possible, and to reduce to a minimum all losses by leaching; whether other losses will also be reduced has yet to be determined. The eight-year run should show how far green manuring can be regularly practised under farming conditions, and whether periodical fallows will be necessary.

Meanwhile, in view of the marked benefit just recorded of the fallow coming after the lucerne ley and of other results of like nature, the question arises whether, in a dry summer, it is worth while to trouble about the aftermath of the seeds or clover ley (unless wanted for clover seed), and whether it would not be better to take the first cut early and plough up immediately so as to secure a long bastard fallow before the next corn crop. Under dry conditions the aftermath may be worth only little, while the benefit of the fallow is great. The practical difficulty on a heavy loam like ours consists in breaking up a hard baked ley at midsummer sufficiently quickly to avoid interference with other work. Not only for this purpose, but for the general object of being well forward in autumn, there is great need on medium sized heavy-land farms of a plough which will cheaply and efficiently do more than the one acre a day that has for untold years been considered the ploughman's proper and sufficient duty.

MIXED CROPS.

The harmful effect of some growing crops on others observed by Mr. Pickering, at Woburn, gives an added interest to the study of weeds. Hitherto it has been supposed that weeds are mainly harmful through depriving the plant of water, food, and root space, but Mr. Pickering's observations indicate that there is something more. Pot experiments have therefore been started and careful field observations taken to ascertain the importance of these effects in practice. We must know the real case against weeds before we can decide how much it is worth spending in order to eliminate them.

It does not always appear that one crop injures another. It is not uncommon in the west country for farmers to grow a mixture of oats and barley as dredge corn, and it is commonly stated that the yields are larger than when the two are grown separately. An experiment with the mixture has therefore been made at Rothamsted

https://doi.org/10.23637/ERADOC-1-107

during the past three years, and it was found to yield *exactly the same* as the mean of the two cereals grown separately during the first two years, and in the third year the comparison was vitiated by the failure of the oat crop.

If there was an ill effect at any period it must have been counterbalanced later, and in the end there was neither the decrease of crop expected from some of the pot observations, nor the increase claimed by the growers. To some extent the experiment is affected by the difficulty of growing spring oats at Rothamsted, and it would be a great advantage to have the experiment conducted in a district where the mixture is said to be a success.

There is evidence, however, that the sowing of a leguminous crop with corn leads to an increase in the latter crop.

Thus we have the three cases: (1) Mr. Pickering's observations certainly indicate that one growing plant has a directly harmful effect on another; (2) the dredge corn experiments indicate that no such effect is finally produced; and (3) other experiments indicate an actual beneficial effect when one of the crops is a leguminous crop. It is very necessary to clear up these apparent discrepancies, and a series of experiments is in hand for the purpose.

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