

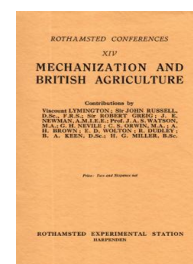
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Summary of the Agricultural Problems Involved

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H. G. Miller (1933) *Summary of the Agricultural Problems Involved* ; Mechanization And British Agriculture, pp 51 - 55 - DOI: <https://doi.org/10.23637/ERADOC-1-207>

SUMMARY OF THE AGRICULTURAL PROBLEMS INVOLVED

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THE most important point in this Conference for the ordinary farmer is the question of the effect of new mechanical developments, new knowledge and new ideas on his actual farming. Few farms in this country will escape these influences, but their extent will depend on the geographical and geological position of the farm, the layout of its land, and on the character of the farmer himself.

I. Complete Mechanization

The most extreme form of power-farming, mechanized corn-growing, is most likely to establish itself in parts of the South-East and South of England. Quite possibly this may prove the best means of utilising this area. The chief factor that determined corn-growing areas in the past was the climate and it is still the chief factor governing the general suitability—and therefore, essentially, the economic soundness—of various crops in any district. Political action here or elsewhere may, of course, profoundly modify the logical effect of climate. Also, there is no point in producing crops most suitable to the local climate if there is already world over-production of these. The newly issued Report of the Imperial Economic Committee on "The Wheat Situation" makes one more doubtful than ever of the desirability of corn growing—or at least wheat growing—in this country at present. Yet if new methods will enable us to produce corn as economically as any other country, mechanized and specialised corn-growing ought to have a place in some districts when world conditions become more settled.

An occasional break in continuous corn growing seems essential both for weed control and the maintenance of fertility. A fallow every third year may be necessary, either bare, or supplemented by the ploughing in of a green manuring crop like mustard or rape. In other cases less frequent breaks may suffice. Alternative crops may be preferable to fallows, such as clover for hay or seed, with or without a bastard fallow, sugar beet, if it should confound its critics by becoming a permanent feature of South-Eastern agriculture, silage or green crops for feeding to stock.

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This country, it is frequently claimed, has the best climate for grass production next to New Zealand. Grassland enthusiasts do not except the South-Eastern Counties from this generalisation. Temporary grassland is often advocated for inclusion in farming systems in that area. Our own experience at Rothamsted favours this idea. Yet can we honestly claim grass to be the most suitable crop in so comparatively dry a region? In two out of the last four years the yield of grassland measured in Starch Equivalent and Protein Equivalent units has been relatively low. For several weeks in each year growth ceased, at a time when required most for stock. Temporary grassland in the South-East has been advocated for two chief reasons—economic necessity and the maintenance of fertility. In the old days when each of the crops in the 4-course rotation was economically sound, grassland was of only minor importance in the South-East (apart from soil unsuitable for arable farming). If mechanization is to re-establish arable farming on an economic basis, what room will there be for a crop like grass which is so dependent on frequent showers? The maintenance of fertility by means of this crop may of course justify its inclusion. The possible losses on grassland in dry seasons may be less than the cost of maintaining fertility with the dung-cart. Fundamental information is badly wanted on the relative productivity in Starch Equivalent units, over a period of years, of the various crops in each of a number of different districts. Official statistics cannot supply this information for they do not give the yields of one of the most important crops, grass for grazing, or of those of considerable potential importance, grass and other green crops cut green for drying, while still young.

In the South-East then there are considerable possibilities of further rural depopulation on account of mechanization. Sugar beet does not offer much hope of counteracting this tendency, as is clearly shown in that admirable book of Lord Astor's and Dr. Murray's "Land and Life." Market garden crops on small farms, or on selected areas of large farms, are much more hopeful. Live stock dependent on grassland, whether temporary or permanent, occupy a doubtful position. Formerly their importance was slight in most parts of the South-East. Much grassland has lately been established on soils which, under the climatic conditions in this area, are not really suitable. An expanding milk market, or good beef and mutton prices, may keep them in grass and encourage temporary leys even if arable farming revives, specially while farmers are so short of capital for the purchase of the implements necessary for mechanization. Stock independent of grassland, such as pigs and poultry, however, offer more scope for reducing the risks of rural depopulation in the South-East.

II. Partial Mechanization

A new agricultural idea is often in grave danger of being brought into disrepute by over-emphasis. It is to be hoped that mechanization and all the new ideas accompanying it will escape this fate. Through-

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out most of the country the ideas and practices of complete mechanization must be modified to suit the particular conditions of different farms and districts. The various speakers at this Conference have given a very comprehensive survey of new facts, ideas, practices and possibilities. It is now up to the individual farmers to go through these carefully and pick out the material applicable to his own case.

The maintenance of fertility has been fully dealt with, but the question of dung has been left in a rather unsatisfactory position. The cost of handling it is easily exaggerated, because it is a job which can be done at leisure. Old farming systems were admirably balanced in their labour requirements throughout the year. Now in our zeal for labour economy we may end by advocating a new system in which, during two or three of the winter months there is no work left to be done. Dung-carting is a very suitable operation for this period and requires no big staff.

I do not suggest that we should necessarily aim at a system giving a high production of dung but rather that we should not regard as a liability the dung produced by necessity, where stock are kept indoors—as certain classes to a large extent always will be. The need for dung has been, and is being, reduced. But the idea of using the animal as the dung cart while possessing many advantages does not eliminate carting. Concentrates must be carted to the field and in some cases straw and hay. This is a particular disadvantage where no odd horse is kept, and in spells of bad weather. I am very doubtful of the practical possibility of outwintering fattening cattle. Under the best conditions it is difficult to make a profit in this department. Frequent and regular feeding and the stockman's constant watchfulness are essential. Outside, the cattle would miss these, and, in addition, would require additional food to supply the energy for greater movement.

The mechanical handling of dung deserves more attention from implement makers and would go far towards answering criticisms as to the costliness of present methods.

The position of live stock has been emphasised already. How best to fit live stock husbandry in with the new developments of mechanization is a most important problem. Professor Watson's suggestions certainly seem practicable. They present a strong argument, ably supported by Mr. Nevile and Mr. Wolton, for leaving the sizes of fields as at present. If a push-combine is developed, the headland difficulty at harvest will disappear; and the introduction of smaller machines will make it possible to use combines on farms at present using only two binders.

Professor Watson's cropping scheme is a modification of a common Scottish rotation, where sheep occupy a prominent part in the utilisation of the temporary ley. One of the most interesting questions in live stock husbandry to-day is whether sheep can maintain their present place in combination with temporary leys, or whether there will be a big swing over in favour of dairying. A strong point in favour of sheep maintaining their position in lowland

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farming is that, unlike Denmark, we have a great reservoir of sheep in our hill and mountain districts.

But whatever form of live stock is best adapted to combination with new cropping systems, the question of winter keep inevitably arises. Root growing is the *bête noire* of many farmers and nearly all agricultural lecturers. The root acreage has certainly dropped heavily in this country, especially where conditions of either soil, climate or labour were unsuitable. But in several districts, roots are as largely grown and as important a crop as ever they were. New methods open up the possibility of actually increasing the root acreage. Roots are on the borderland of being economic in many cases ; if the labour bill could be reduced, they might once again be grown on a sound basis. If we regard them as a crop for clean land—where the cleaning has been done on another occasion by the tractor—are they not more promising? The extension of piece-work rates in paying labour would also help.

Professor Watson's suggestion concerning kale is timely, especially for most of the southern part of the country where the day of the mangold and swede appears to be over ; in fact, if the weak points of kale can be overcome, it may even invade the strongholds of orthodox root growing. Much information is still wanted about kale, for example :

- (1) The difference in yield, if any, between thinned, bunched and unthinned crops.
- (2) The difference in feeding value between thinned and unthinned, at different stages of the plants life and at different times in the year.
- (3) The relative advantages of wide and narrow rows regarding yield, ease of cultivation and weed control.
- (4) The loss in feeding value and bulk occasioned by frost and means of minimising this.
- (5) The possibilities of replacing roots with kale in late March and April.

There is strong justification for the suggestion that we should use mechanization to the full in this country as a means of increasing our supply of feeding-stuffs for live stock, thereby reducing our bill for imports, and maintain the rural population by intensive stock farming and market gardening. One suggestion for increasing this supply is to cut and dry young green stuff. Lord Lymington thinks there are more possibilities in growing corn for this purpose than in harvesting it. I have found no figures to support his assertion that corn when cut green and fairly young, yield more pounds per acre of Starch Equivalent than when carried through to harvest. While it is true that with modern methods both crops would have to go through a drier, the cost of drying the green stuff would be much the greater. Further, the second growth from the corn that had been cut green would be very poor and straggly. It would really need to be ploughed up and a fresh crop sown involving more expense

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for cultivation and seed, and running the very serious risk of failure through drought. Under-sowing is a possible means of overcoming this difficulty. Catch-cropping is far too risky except in rainy districts. There may well be a big future for the preservation of young green stuff by drying, but scarcely along those lines.

The potentialities of mechanization are so great that we cannot expect them to be fully discovered and exploited immediately in all the different farming systems in this country. Farmers must feel their way towards new methods. The "inevitability of gradualness" applies to farming practice as well as to social progress. It may be wrong to patch old ideas with new methods but it is safest to begin the change-over in that fashion. Electricity is a factor which can do much by saving labour and time, in modernising old methods and ideas. Careful consideration is necessary before saying a new idea is better than an old idea modernised.