

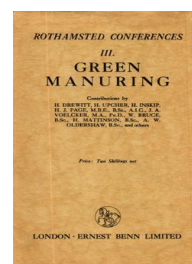
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## Green Manuring

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### Summary of Points

#### C. Heigham and H. V. Garner

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was the most widely known of all the green manures mentioned at the conference, and this practice might very well increase in popularity again along with a paying wheat crop.

The cost of farmyard manure was always a matter of dispute, but the figures given by different speakers ranged from 13s. to 35s. The cost to most farmers was probably somewhere between these wide limits, but any rise towards the higher one must undoubtedly be accompanied by some stimulus to green manuring in general.

## SUMMARY OF POINTS

BY C. HEIGHAM, M.A., AND H. V. GARNER, M.A., B.Sc.

### *General Considerations*

(1) Green manuring is an important feature of the agriculture of a great part of the world. It is general in the Tropics, frequent in America, and of great local importance in parts of Northern Europe.

(2) In England at present it is a feature of certain specialized systems of farming and is subject to severe economic and climatic limitations.

(3) Under favourable circumstances green manuring can cause great increases in the crops that follow it, and there is much experience and a number of accredited experimental results to support this statement.

(4) The general use of green manures in the hotter countries is associated with (a) the rapid growth of plants obtained there, and (b) a general shortage of live stock capable of producing other forms of organic manure.

(5) The relative importance of green manuring crops as a part of the supply of organic material to the soil increases when stock becomes scarce or when farmyard manure rises in cost.

(6) The extended use of any systems of green manuring in this country must depend largely upon the possibility of producing the green manure crops without disturbance to those main crops which support the finances of the farm, and without introducing increased risks of drought or disease.

(7) Satisfactory results from green manuring must always depend upon the successful production of two crops :

- (a) The crop for green manure ;
- (b) The crop to benefit from the green manure.

This implies that the farmer involved must use all opportunities and all due skill in the preparation and sowing of his green manure crop, and he must not treat it as a matter of secondary importance.

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### *Successful Practice*

(8) Green manuring has been used successfully in different districts and on different soils :

- (a) To build up fertility and water-holding power on very poor and hungry soils ;
- (b) To maintain the condition of some rich and highly farmed soils.

(9) The mustard fallow followed by wheat is probably the oldest and most general measure of green manuring in England. Its success on many types of land is well known, but its popularity at any time must depend on such varying factors as :

- (a) The price of wheat and other winter-sown cereals ;
- (b) The price of mustard seed ;
- (c) The cost of horse and man labour.

(10) As a preparation for potatoes, red clover under-sown in the preceding corn crop, and ploughed down with dung before it was frosted, has been found to be successful in one district. This treatment has been known to produce an increase of 2 tons per acre in the potato crop.

(11) Some green-manuring systems and the keeping of sheep seem to give mutual support to each other. Crops such as mustard, rape and rye can be grown quickly over wide areas, and can be used profitably either for the folding of sheep or for ploughing down, as the fall of the season may decide. The possession of an extra area of green crop which can be used as sheep feed in time of scarcity is of the utmost value to a flock-master.

(12) Lupins of the blue—and lately of the white—type have been used as a basis for successful green manuring on the lightest and driest lands of the Eastern Counties. Lupins as a catch crop have been used successfully in Suffolk after—

- (a) A spring fallow ;
- (b) Early potatoes ;
- (c) Sheep feed—such as rye or tares ;
- (d) Trifolium—folded or made into hay.

Lupins may also be used for sheep folding if a proper discretion is exercised and the plants are not allowed to become too old before being fed off.

(13) On some highly farmed land in Lincolnshire, beans (one sack to the acre) sown after early potatoes, and ploughed down when in flower, have been found to be a valuable catch crop for maintaining the rich condition of the soil.

(14) The custom of spreading heavy dressings of dung upon the aftermath of clover or of a seeds ley, and ploughing the whole down as a preparation for potatoes or some other root crop, appears to be well approved in several districts. This practice illustrates the function of green manure in augmenting without replacing the other methods of organic manuring.

(15) The use of green manure in Horticulture as apart from Agriculture is well exemplified by its growing popularity in districts where there is a large residential population and many small gardens, and where dung in retail quantities is either very expensive or impossible to obtain.

Tares and rye or mustard are often used after early or second early potatoes, while grass cuttings are applied direct to the soil.

(16) The use of green crops to keep land covered during the autumn and early winter and after the main crop has been removed is practised widely, particularly on those porous and hungry soils which are known to lose their nitrates rapidly in wet weather.

Whether the green crop is fed off or ploughed in the same purpose is served, and the nitrogen is prevented from going to waste. It appears from this that the relationship between green manuring proper and the more widely used forms of catch-cropping is a very close one.

#### *Difficulties in Practice*

(17) Green-manuring crops have often a short period of growth, and they require a quick and certain start. This is difficult to obtain unless the season is quite favourable.

(18) The preparation of a fine and cheap seed bed on a hard stubble after harvest is often very difficult, and on some types of land in a dry season is practically impossible.

(19) The increased drying out of the land in the spring, following the growing and ploughing in of a green manuring crop, may have a disastrous effect on a spring-sown main crop.

(20) A green-manure crop which is dry and fibrous when ploughed in may actually use nitrogen from the soil to assist its own decomposition, and thus temporarily decrease the supply to the growing crop. At critical seasons of the year this may have serious results.

(21) Leguminous crops sown under cereals and intended for use as green manure in the autumn are often very difficult to establish. Red clover seems to be the most generally successful in England, but the bulk it produces is often disappointing.

(22) In dry seasons the under-sown crop may compete with the main crop for moisture and so cause a reduction in its yield.

(23) A crop, such as rye-grass, which may be used for green manuring may also serve to carry an insect pest, such as frit-fly, to the following oat crop.

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(24) Green-manure crops cannot be used easily on dirty land, for their presence interferes with autumn and spring cleaning.

(25) The growing of green-manure crops is made more difficult by the fact that they may require attention at the busy seasons of the farm.

### *Results and Possibilities of Experiment*

(26) The results of recent experiments with green-manuring crops serve to stress the limitations in use of systems of green manuring in England, but at the same time show that under suitable conditions valuable increases of crop may be obtained.

(27) Curious and unexplained reductions in the yield of wheat and oats, following the use of mustard and tares as green-manuring crops, were reported from Woburn as the result of many years of continuous experiment conducted there by Dr Voelcker.

(28) In view of the difficulties and limitations made manifest by past experimental work it appears that, in any wide scheme of experiment in green manuring that may be contemplated in this country in the future, adequate regard should be paid to the great and sudden variations of local agricultural practice.

While general design of the experiments and the collection and collation of data might be centralized, it seems that execution in the field should be under very close local supervision and control.