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## Report for 1927-28

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### The Farm and Crop Results , Rothamsted, 1927, 1928

#### Rothamsted Research

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## THE FARM & CROP RESULTS

OCTOBER, 1926, TO SEPTEMBER, 1927.

The farm year was characterised by unusual wetness and great deficiency of sunshine. In the period under review there was 8 inches of rain above the average, and a deficiency of 119 hours of sunshine. There was no summer; the months June to September inclusive gave 6.5 inches more rainfall and 142 hours less sunshine than usual.

The year opened well. October was dry with night frosts and very favourable for the preparation of autumn seed beds. Work was well forward, the potatoes having been lifted in September. Practically all the winter corn was got in under good conditions during the month.

The rain came in November and totalled 5.32 inches for the month, which was more than twice the average figure. Ploughing was stopped and the seed beds were beaten down rather badly. Root harvest was continued under bad conditions, the crops being above the average. (Swedes 19 tons per acre.) December was mild, bright and dry, and formed a welcome change for the water-logged cereals. The favourable conditions continued till severe weather and snow in the latter half of January stopped the ploughs for a week. All cereals, except a piece of late November wheat, had wintered well. February brought hard weather and several torrential falls of rain, 3.98 inches in all, and was an unfavourable month for cultivations; and it was not until the third week in March that more genial conditions set in. Spring wheat was drilled on March 9th, and a start was made with oats and barley sowing during the month. A dry April with cool winds followed, which caused the wet furrows turned in March to dry out very harsh; seed bed preparation was difficult and the land under cereals cropped badly. Barley germinated unevenly, due to rough tilth. The drought continued in May and increased the difficulties of seed bed preparation for roots, but conditions were excellent for spring cleaning. Winter corn and spring corn were sown on good tilth looked well, but barley sown on rough tilths had suffered from drought and was poor.

Mangolds were slow to germinate and had only just chitted by the end of the month. The drought continued till June 11th, when a period of exceptional wetness set in, the month giving no less than 3.56 inches of rain, which was too late to repair the damage to the root crop. Mangolds failed on Barn Field and were replaced by swedes. Taking advantage of the first showers, sugar beet was sown on June 11th, swedes on 14th. Potatoes

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planted on May 11th did not appear through the ridges till late in June. July was dull, cool and rather wet. A tremendous crop of charlock came up with the young sugar beet and great labour was needed to save the plant. Haymaking was carried through in catchy weather. Corn was looking well, except barley sown on rough land. Spring sown Little Joss was particularly good, but later than the other cereals. August was an exceptionally bad harvest month: the average rainfall was exceeded by 1.69 inches, and in the week ending 20th there was over 2in. of rain. The corn crop was not badly lodged, but a few fields were cut one way. Clover grew tall under the barley, swedes and potatoes looked well, but late sown Sugar Beet was disappointing and seemed to make little progress. Harvest began on August 4th with black winter oats, but no barley was cut during the month. Conditions were if anything worse in September when no less than 5.45 inches of rain fell. Barley was cut during the month and much difficulty was experienced in drying the crop owing to the great amount of clover in the sheaves. Spring wheat was cut on September 5th and carted on the 13th, yielding 16 cwt. per acre, an unusually favourable result. Four acres of barley remained uncut at the end of the month. Owing to the wet weather a certain amount of corn was put in the stack in rather damp condition. Winter wheat yielded well (22 cwt.), barley gave an average crop where the seed bed had been good, but rough sown barley only yielded 9 cwt. Oats were a good crop, averaging about 22 cwt. Potatoes (7 tons) and swedes (19 tons) were average yields for the farm, but the disappointment of the season was late sown sugar beet which only yielded 3½ tons.

#### OCTOBER, 1927, TO SEPTEMBER, 1928.

##### *I. Farm Policy.*

The principal feature of the new farm year was the continuation, on a considerable scale, of the policy begun in 1925 of laying down part of the farm to grass. The weather conditions given below were rather unfavourable for this. In consequence of this policy, an extensive programme of fencing had to be undertaken, involving the splitting of a number of the old fields. The aim was to have an arable core surrounded by grass, particularly where the farm lands were bounded by woods. The details of these developments are given in Section V below.

When the grass programme is completed in 1929 it will leave five fields (*viz.*, Pastures, Gt. Knott, Fosters, Little Hoos and Great Harpenden) of approximately 12½ acres each, run on the rotation—wheat, hay, wheat, winter oats, and roots—each of these breaks, of course, remaining open to any modification subsequently desired. In addition to the classical fields, Long Hoos (24 acres) has been set aside for experimental purposes and has been divided into six sections run on the rotation—hay, wheat or oats, roots, wheat or oats, roots, barley. The ordnance acreage

of 280 acres will then consist of: grass (123 acres), arable ( $87\frac{1}{2}$  acres), classical experiments and exhaustion land ( $42\frac{1}{2}$  acres), the balance being accounted for by buildings, cottages, roads and minor enclosures.

## II. *Weather.*

The new farm year opened with the land wet, but the month comparatively dry and warm. There was little chance, however, for the sodden furrows to dry out, and this made the preparation of an autumn seed-bed difficult and unsatisfactory. Potato lifting was, naturally, under these conditions, a sticky operation, as was the lifting of the other root crops.

The land continued wet throughout the winter, but on December 15th a period of sharp frost set in (22 deg. being registered on the 19th). This gave way to heavy rain on the 22nd, which was followed by heavy snow on Christmas Day. Deep drifts formed and the farm road was closed for ten days. Severe conditions continued in January, there being 17 deg. of frost on the 18th. Thus work on the land was at a standstill for over a month, but the cap of snow saved the winter corn.

February with bright warm weather and only a slight excess of rainfall (.138in. above the 75 years' average) brought a welcome change. Drier conditions prevailed from now to the end of the season; each month had less rainfall than the average, September being no less than 1.64in. below its average of 2.43in. There was a deficit of sunshine during March, April and May, totalling 89 hours, but this was more than counterbalanced by the excess of 171 hrs. during the remaining four months.

These conditions made it difficult to secure a spring tilth, the soil drying out hard, and receiving little further rain to soften the clods. The soil in the autumn-sown fields had settled down very hard, and it was impossible to procure a tilth there for grass-seeds. The long dry spell, however, greatly favoured fallowing operations, both before sowing the roots and after removing the first crop of hay. During hay-time and harvest conditions were almost ideal.

## III. *Crops.* (For dates, yields and other information see Table on p. 120.)

Wheat and winter oats were sown under unfavourable conditions, with the exception of Broadbalk, where a two years' fallow on the top two-fifths of the field had brought the land into excellent condition. Wheat wintered well, except for 7 acres in Gt. Knott, which would have been ploughed up but for pressure of other work; it yielded only  $2\frac{1}{2}$  qrs. per ac. Grey winter oats in Stackyard looked rather doubtful in February, but after a good harrowing and manuring came on well and gave an excellent crop. Black winter oats in Gt. Knott had to be ploughed up.

The tilth for spring oats and barley was, on the whole, poor, and the dry spring held them back. In the barley in Long

Hoos there threatened to be a very heavy crop of charlock which was controlled by spraying.

Harvest was conspicuous for the absence of laid grain, except on two or three of the most heavily manured Broadbalk plots. Broadbalk yielded exceptionally well, and Stackyard oats and Pastures wheat were both very satisfactory, but the remainder of the grain crop was disappointing.

Potatoes were planted by April 21st in Gt. Harpenden. The land was in a dirty condition, but dry weather and frequent cultivation effectively cleaned it. Spraying was carried out on July 26th. There was little blight, but, although the seed was fresh from Scotland, a certain amount of Leaf Roll and Mosaic was observed. The year ended with conditions ideal for lifting the crop.

Sugar beet and swedes were grown in the same field as the potatoes. Three-tractor ploughings, with other cultivation, made a good seed-bed, and the beet was sown on May 5th. Swedes were sown from May 9th, after being dunged heavily in the drill. Both crops progressed steadily throughout the season and did well.

Mangolds which were sown on May 2nd were slow in starting because of the poor tilth, and were not thinned until June 20th, but after this went forward steadily.

The clover hay crop was good and well secured.

#### *IV. Stock, Etc.*

Thirty-two young cattle were bought in March and kept in store condition on rough grass until early summer. In August, 12 of them were sent to Woburn for box-feeding, the remainder being fattened here either inside or on the grass.

Sheep were purchased for the basic slag grazing experiment, and for this purpose 110 Scottish half-bred ewe hoggs were obtained. At the close of the experiment these sheep were retained to found a permanent ewe flock, and run with Suffolk and Hampshire rams. In September three score Masham lambs were bought to fold on rape and kale.

It was possible to increase the number of pigs this season, because a piggery was erected by the farm staff during the summer. A start has been made with building up a herd of pure Wessex Saddlebacks.

A new Dutch Barn was built alongside the old one, thereby doubling the area under cover, which is now almost 10,000 sq. ft.

#### *V. Grass.*

The following two tables give the details of the grass programme. The new divisions of the fields with their fences are shown in the map of the farm.

TABLE I.

Field.	Area in Acres.	Sowing Date.	Nurse Crop.	Mixture.	REMARKS AND NOTES.
Little Knott	9½	19/5/25	Spring Oats	No. 9	Only 2 bush per acre oats sown and cut green 30/6/25. Wild white clover sown on bare places in 1926. Hayed 1926 and 1927.
"	1	7/9/28	—	—	
Great Knott	5½	22/5/28	—	1	Warm dry weather after sowing killed many of the seedlings unprotected by a nurse crop, so that by the end of the farm year the plant was rather poor and gappy.
"	10	25/4/28	6 acs. Wheat 4 acs. Spring Oats	1	In 4 strips starting from Fosters; Indigenous and commercial strains alternately. The young plant suffered from drought, but picked up after the harvest.
Fosters	3½	17/5/28	Rape	4	Rape fed off by sheep in September. A promising plant.
	2½	24/4/28	Wheat	4	Has done quite well.
West Barnfield	12½	28/8/28	—	4	Wheat stubble ploughed, harrowed, rolled before the grass was sown. Not as good as Gt. Harpenden or Sawyers. Sown rather late.
Sawyers	9½	25/4/28	Barley	1, 6, 8, 7, 4, 5	In the order given from the central road, all look well and promising. Equal to that sown under rape.
	8½	26/4/28	Barley	1	Alternate sections of indigenous and commercial mixture. A promising plant.
	4	24/8/28	—	4, 2	After fallow. Sown at right time. Very good.
	4	13/3/29	Barley	2, 3	Nearly as good as Gt. Harpenden.
Gt. Harpenden	4½	24/8/28	—	4	After clover hay and bastard fallow. Very promising, best grass on the farm.
	5	4/4/29	Barley	5	
New Zealand	7½	4/9/28	—	4	Sown in autumn on wheat stubble, which was ploughed, harrowed, and rolled before sowing. Sown too late. Very poor. Reseeded in spring. 1929.
Stackyard	8	21/4/28	Winter Oats	3, 1, 2, 4	In the order stated, strips parallel to Broadbalk drain. Seemed to be a complete failure at harvest, but soon began to fill up in a surprising manner after oats were carted.
	95½				All grass seeds were broadcast.

TABLE II.—DETAILS OF GRASS SEED MIXTURES.

Grass.	Number of Mixture.									
	1	2	3	4	5	6	7	8	9	10
Italian Ryegrass ... ..						4	4	4		4
Perennial Ryegrass (Evergreen Indigenous) ... ..	10	9	10	16	30				5	10* 14
Cocksfoot (Late Flg. Indigenous)	8	7	8	10	10	10	6	5	8	
Timothy (Late Flg. Indigenous)	2	2	2	4		2	4	2	2	
Tall Fescue ... ..						10				
Meadow Fescue ... ..	2	2					10	5	2†	
Meadow Foxtail (Cotswold) ...		2					3	5		
Rough Stalked Meadow Grass...	2	2	2	½		1	2	1	2	3
Early Flowering Red Clover ...	1	1	1				1			
Late Flowering Red Clover (Montgomery) ... ..	2	3	3	4		3	3	4	4	
Alsike Clover ... ..						1				
Wild White Clover (Kentish) ...	1	1	1	1	1	1	1	1	1	1
Trefoil ... ..							2			
Chicory ... ..	2	2				2				
Rape ... ..										4
	30	31	27	35½	41	34	36	32	29	26

Indigenous strains only used except where otherwise indicated in Table I.

\* 5 being commercial.

† In shade of wood only