ROTHAMSTED RESEARCH

Report for 1956

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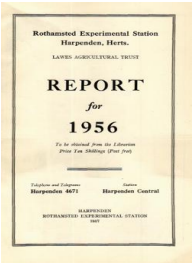

The Farms : Rothamsted

J. R. Moffatt

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THE FARMS

J. R. MOFFATT

Rothamsted

The weather in 1956 was very unusual. After the reasonably favourable autumn of 1955, the year 1956 started with land work well up to schedule. Spring operations started rather late, but the dry weather enabled all crops to be sown in good time. The dry spell developed into a spring drought which lasted until the end of May, retarding the germination and growth of most crops. Three months of exceptionally bad weather followed. Heavy rain and strong winds did much damage to hay and corn crops, while low temperatures and lack of sun delayed the ripening of the cereal and pulse crops. Both yield and quality of grain suffered, while harvesting costs were high. Some compensation was afforded by the fact that the root crops made good growth during the summer, and improved weather conditions in the autumn enabled these heavy crops to be harvested under good conditions. Land work, which had fallen seriously behind, was again up to schedule by the end of the year.

THE EFFECT OF WEATHER ON CROPS

Weather during the autumn of 1955 was generally mild and dry, and all the root crops were lifted by early December. Winter wheat was sown under excellent conditions, Broadbalk being drilled on 2 November 1955. The mild weather encouraged the germination of weed seeds, and a second ploughing was given to several areas to kill the seedlings. Weather in January 1956 was very changeable, and little land work was possible. At the end of the month a severe cold spell started and, with the exception of a short thaw about the middle of the month, continued until the end of February. Ground or air frosts occurred on 26 days, and the mean air temperature was 9° F. below the average. The cold spell broke on the last day of February, and the ground thawed out rapidly in March. However, the land was then so wet that no work could be done for several days. The generally dry and sunny weather during March enabled the preparation of seedbeds and the sowing of spring cereals to go ahead rapidly, as the ground worked down easily. However, there were many night frosts which impeded the work, and winds were cold. The preparation of the land for root crops followed, and the planting of main-crop potatoes started in March. April was a cold, dry month, frost being recorded on 18 occasions and rainfall being recorded on only 9 days. The planting of the potato and root crops and the grasses and clovers was completed during the month.

The dry spell continued almost unbroken throughout May, rainfall being recorded on only 8 occasions and totalling 0·63 in. Temperatures were higher than normal, and hours of sunshine were well

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above average; May was in fact by far the sunniest month of the year. There were, however, two sharp frosts during the third week of the month, but fortunately little damage was done. Throughout the four spring months February–May the total rainfall was less than 3·5 inches compared with the normal 8 inches. This dry weather retarded the growth of all corn crops and grass. The early-sown sugar beet carried a good even plant, though growth was slow, but the later sown beet and mangolds germinated very slowly and unevenly.

June brought a complete reversal of weather conditions; the rainfall totalled nearly 4 inches, more than in the previous three months together, and spread over 16 days; the mean temperature and hours of sunshine were well below normal. All crops made a spurt of growth, and a second germination took place on all root seeds, lucerne, grasses and clovers. There was also a very rapid germination of weed seeds, and fields which looked perfectly clean at the end of May soon became very weedy. July was another wet and cool month, with little sunshine, and there were several heavy storms. The weather retarded the ripening of cereal crops and caused lodging in considerable areas of barley. Haymaking was also severely affected by the bad weather in these two months, yet most of the hay was of quite fair quality. Potatoes, sugar beet and kale maintained good growth throughout the month.

The weather during August and early September was very bad. It was cool and almost sunless, with heavy rain and gale-force winds. The rainfall in August totalled 5·34 inches, over twice the normal, and was spread over 24 days. Many of the cereal crops became badly lodged, and grain in both lodged crops and in standing corn sprouted in the ear. The crops were very slow to ripen, and harvesting did not begin until early September. In some fields where early lodging occurred weeds grew through the lodged crops and presented many difficulties at time of cutting. Much of the corn was combined when containing about 25 per cent moisture, but on some small experimental areas the moisture content rose to over 30 per cent. Each batch of corn had to remain on the platform drier for much longer than usual, and almost every load of grain needed drying. Potatoes and other root crops continued to make good progress under these conditions, but Late Blight (*Phytophthora infestans*) spread rapidly despite protective sprayings. The weed problem in the root crops became acute under the wet conditions; however, the extra help engaged for the harvest but not used for this work, helped to keep them under control. The conditions suited the grassland, which maintained good growth throughout this bad spell of weather. The bean crop continued to grow in height, but ripened extremely slowly. The latter part of September was mainly dry, with bright spells and temperatures considerably higher than in the early part of the month. The cereal harvest was completed by the end of the first week in October, about three weeks later than usual, but the harvesting of the bean crop was not completed until mid-October, and even then it was barely ripe.

The improvement in the weather lasted through most of October and although there were 17 rainy days the rainfall was well below average. Potato lifting followed the end of the cereal harvest and

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went on steadily until it was finished about mid-November. Yields were high, but the tubers were rather dirty, and many of them were split as a result of the excessive rain. The weather also favoured autumn ploughing, but the furrows turned up in a rather wet and solid condition, which made it difficult to prepare seedbeds. However, the drilling of winter cereals started during the third week of October although on Broadbalk field the drilling was delayed until 7 November by strong winds which prevented the sowing of fertilizers.

November was a dry month, and the small amount of rain, which was mostly light and was spread over 16 days, was less than one-third of the normal. There were several sharp frosts towards the end of the month, by which time the arrears of ploughing and other autumn cultivations arising from the protracted harvest had been overtaken. The harvesting of the potatoes was followed immediately by the lifting of the mangolds and sugar beet.

The early part of December was dull but dry, and good progress was made with the beet harvest. Later the weather deteriorated, and during the last week there was sleet and snow. This slowed down the beet harvesting, and conditions steadily worsened, so that the work had to be abandoned for 10 days and was finished early in January 1957.

Field Experiments

The field experiments programme was again very full, but the favourable conditions in autumn and spring enabled it to be carried out. The wet, stormy summer caused severe lodging on many of the cereal plots, especially barley plots, and harvesting was a difficult and protracted operation. However, the combine harvester was able to make a much more satisfactory job of the harvesting than the binder would have done, and losses of grain were small. The only experiment which suffered much from loss of grain was the Deep Cultivation experiment, where the oats shed badly before they could be cut. It was possible to combine the cereal plots at a high moisture content, since the running-out time between the plots allowed the combine to be kept busy without producing too great a bulk of grain for drying. The yields were corrected to a standard moisture content of 15 per cent. A very large proportion of the cereal plots were cut by combine, and it is hoped that by the 1957 harvest all plots, including the Classical plots on Broadbalk and Hoosfield, will be dealt with in this manner.

On Broadbalk field the wild oats were hand-pulled on two occasions, and the field appeared to be clear. However, when threshing took place there were a few wild oat seeds in the wheat. On Hoosfield, where wild oats have been extremely bad for the past few years, all the plots were hand-pulled once, and the worst of them twice. The drilling on Hoosfield was delayed until 3 April to get an initial germination of wild oat seeds which were destroyed in subsequent cultivations. This weed was also hand-pulled from the Exhaustion Land.

The beans on the experimental plots ripened very slowly, and to get the ground cleared while weather and soil conditions were good

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they were harvested before they were really fit, thus having a very high moisture content. The yields were corrected to a standard moisture content. The combine dealt with these conditions very well.

On some of the potato experiments a larger amount of soil than usual adhered to the tubers at lifting time, but a dirt tare was taken from a sample bag from each plot.

Towards the end of the sugar-beet harvest the soil conditions were bad, and the tops and loose leaves which had to be weighed became wet and muddy. Throughout this operation the soil stuck firmly to the roots, which had to be scraped clean individually.

The mangolds on Barnfield had an unhappy year. The plots receiving sulphate of ammonia were given a heavy dressing of calcium carbonate in spring to correct the acidity, and this involved going over the ground several times with the tractor and drill. The ground was then worked to remove wheel marks before drilling. These operations took place in late March and early April, and resulted in a loss of moisture and a rather poorer tilth. Unfortunately two months of dry weather followed, so that there was insufficient moisture for a reasonable germination, and the plant was very thin and gappy on these and certain other plots. When rain came early in June the balance of the seeds germinated, but weed seeds germinated more rapidly, and singling would have been impossible. It was therefore decided to fallow all plots except those carrying a reasonable proportion of early germinated plants. In effect, this meant leaving only the two dunged strips and the plots receiving nitrate of soda.

The mangolds on these plots made good growth throughout the summer, and the roots were bigger than for several years.

Cropping and Rotations

Of the total of 442 acres farmed 74 were under permanent grass, 129 under short-term leys and clovers and 239 under arable crops. The latter consisted of 95 acres of wheat, 26 acres of barley, 22 acres of oats, 29 acres of beans, 28 acres of potatoes and 11 acres of kale, mangolds and sugar beet.

Because of the constant necessity of providing sites for cereal experiments on land free of weed and disease, the revision of the cropping programme mentioned last year has been continued. The acreage of barley and wheat was reduced by a further 30 acres and that under beans very nearly doubled. The oat acreage has been increased more than twofold, while 8 acres of land maintained in a state of low phosphate and potash fertility were fallowed. One field of 15 acres which had borne its fair share of cereal crops was undersown with a normal seeds mixture, and another of 12 acres was sown down in the spring to cocksfoot and lucerne drilled in alternate rows. It is hoped that this latter type of ley, which allows of some cultivation in the early spring and after each cut, will help to solve the problem of resting a field from the normal arable crops while also ridding it of wild oats and other arable weeds. Should it prove successful, the acreage will be extended in future years.

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Control of Weeds, Pests and Diseases

The peculiar weather conditions of 1956 brought out special problems on the incidence and control of weeds, pests and diseases.

Weeds

Some areas of land infested with couch grass (*Agropyrum repens*) were sprayed with TCA at 40 lb./acre split into two doses, and on the whole satisfactory results were obtained. When the application was made in the spring after the hard February frosts, some damage occurred to the following crops of potatoes and lucerne. This is probably explained by the fact that the material had not been washed down owing to the dry spring, since in past years no such damage has occurred.

There was an unusually bad infestation of cleavers (*Galium aparine*), chickweed (*Stellaria media*) and of redshank (*Poligonum persicaria*) in many of the fields sown to cereals. As these weeds are resistant to hormone weed-killers, a much larger area than usual had to be sprayed with DNOC. This was applied at high volume (90 gal./acre) when the crop was in the three-leaf stage, a much earlier stage than usual for spraying, and the weeds were still seedlings. Excellent results were obtained, but unfortunately at a later date a crop of creeping thistle (*Circium arvense*) appeared which, in some cases, necessitated spraying with MCPA.

DNBP (ammonium salt) was used to control an extremely heavy infestation of redshank (*Poligonum persicaria*) in a field of spring beans. This material is not recommended for use on spring-sown beans, and the striking success achieved was attributed to the fact that, owing to the drought, the bean plants were in a short, hard stage of growth at the time of spraying. After the heavy rain early in June a second heavy infestation of the same weed occurred again; this could only be dealt with by the routine inter-row cultivations, which, of course, did not destroy the weeds in the rows.

A small area of kale was sprayed with "Dipakal" to see its effect on the weeds and the crop. However, weather conditions were very unsuitable and the results inconclusive.

Weeds in potatoes and other root crops were kept under control easily in the early part of the season, but the heavy rain during the summer encouraged rapid germination and growth of weeds, which under the prevailing conditions were difficult to control, so that much hand hoeing was required.

Pests

On an old arable field which had been dunged and planted with potatoes it was observed that nearly every "seed" tuber was being attacked by wireworms soon after planting. As a precautionary measure the field was sprayed with aldrin, and although it is impossible to know how the attack might have developed had the spraying not been done, the result was a crop quite free from wireworm damage.

Three separate areas of kale were sown during the spring drought, and with the help of a γ-BHC seed dressing, and spraying with

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miscible DDT against flea beetles, a satisfactory plant was obtained in all areas.

Both spring beans and lucerne were fairly severely attacked by the pea and bean weevil (*Sitona lineata*) and had to be sprayed with miscible DDT. The attack on beans was particularly persistent even to a fairly forward stage of growth, and one area had to be sprayed as late as early June.

All spring beans were sprayed with "Metasystox" against a possible infestation of black fly (*Aphis fabae*). Weather conditions were against a bad outbreak, and fortunately none occurred.

In a large patch in a field sown to a lucerne–cocksfoot ley, lucerne plants several inches tall were seen to be dying off. Investigation showed that the damage was caused by millepedes (*Blaniulus guttulatus*), against which no treatment is effective.

Diseases

In the cereal crops one area was badly attacked by take-all (*Ophiobolus graminis*), while eyespot (*Cercosporella herpotrichoides*) occurred in varying degrees of intensity over much of the farm. With the longer rotation now being used it is hoped that the intensity of eyespot will diminish. Much of the lodging of the corn this year was, in part at least, due to the elements. Loose smut (*Ustilago nuda*) was very prevalent in the Herta barley, while the spring oats were badly attacked by the frit fly (*Oscinella frit*) in spring and when in ear.

Despite preventive sprayings of the potato crops against late blight (*Phytophthora infestans*), the disease spread rapidly in late August and September, but fortunately few of the tubers were damaged.

Crops

Wheat

The favourable autumn enabled the planned acreage of winter wheat to be sown. Of the 70 acres, 26 were sown to Heine's VII, 8 to Banco and 19 to Cappelle, with smaller areas of Yeoman and Squarehead's Master 13/4. All the varieties withstood the hard weather in February very satisfactorily, and no patching was needed. Twenty-six acres of Koga II, our standard spring variety, were sown, and one piece, with a yield of 43 cwt./acre, out-yielded both Heine's VII (28–35 cwt./acre) and Banco (26–32 cwt./acre). Most of the wheats stood well considering the season; Koga II was outstandingly good. Heine's VII leaned badly but did not go flat, but the Yeoman and the Squarehead's Master in Broadbalk were badly laid. A lot of wheat sprouted in the ear, and this, and the combining at a high moisture content, greatly reduced the germination of the crops grown for seed. The few plots which were cut by binder sprouted badly in the shocks.

Much of the grain is rather small and thin, and badly discoloured, and will need careful cleaning before sale.

Barley

The acreage under this crop was reduced to 35. Proctor is now the main variety grown, though there was a small acreage under

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Herta. Plumage Archer is now grown only on Hoosfield and in certain other small experimental areas. In general, yields, averaging 25–28 cwt./acre, were disappointing, though mean yields of up to 40 cwt./acre were obtained from some experiments. Several areas were lodged, but the combine-harvesters were able to deal with lodged crops very satisfactorily. Some sprouting in the ear took place, and though it was not so bad as with wheat, the quality of the grain is poor. The barley crop came into ear this year much earlier than usual, probably as a result of the dry spring.

Oats

There was a considerable increase in the acreage under this crop, and 15 acres were undersown. Sun II, which has consistently outyielded its sister variety Blenda, is now our standard variety, though in a variety trial this year it took fourth place. There was a bad attack of frit fly, both in the early stage of growth and when the crop was in ear. The dry spring also played its part in reducing the yield, which averaged only 20 cwt./acre. There was a lot of sprouting in the ear before cutting, and on the small area cut by binder the sprouting in the shocks was extremely bad. The grain is therefore of poor quality.

Beans

Only a small acreage of winter beans was sown, but that of spring beans was increased to 25 acres. The crop made a slow start, but the wet weather during the summer seemed to suit the crop, which yielded an average of 25 cwt./acre. The crop grew very tall and remained green much longer than usual. Although cutting was delayed until well into October, there were still some green leaves. The combine-harvester dealt well with the crop, although the moisture content was well over 30 per cent; but drying took a long time.

A preventive spraying against black fly was given and no attack developed. Yellow leafroll of beans was seen in the crop, and in some areas up to 4 per cent of the crop was affected. It is not known what effect this disease has on the yield of the crop.

The first of a series of experiments comparing the yields and susceptibility to damage and disease of winter and spring beans was carried out at Rothamsted and Woburn. The winter beans were damaged somewhat by the hard frosts, but very few plants were killed.

Potatoes

Twenty-eight acres were devoted to this crop—about the maximum that can be harvested satisfactorily. After a slow start in the dry spring the crop made rapid growth throughout the summer. The main variety grown was Majestic, which yielded 12–14 tons/acre. The King Edwards yielded 10 tons/acre (approximately) and were sprayed on three occasions against late blight. Ulster Supreme was grown for the first time; it yielded excellently (14 tons/acre), and cooks well. However, it appeared very susceptible to late blight and does not seem to keep well. A further acreage of this variety will be grown in 1957. The tubers of all varieties were of good size

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and shape, and free from damage, except for some split tubers in the Majestics.

On all areas the haulm was burnt off by sulphuric acid or sodium arsenite some time before lifting. On some areas where there was a lot of chickweed the sodium arsenite killed off the potato haulm and bleached the leaves of the chickweed. The plants did not appear to be killed, and at lifting time the weed was almost as much trouble as if no haulm killing had been done.

Although weather conditions at lifting time were favourable, in many places the soil was wet and stuck badly to the tubers.

Kale

Both marrow-stem and thousand-head varieties were grown. Growth in the early spring was very slow, but flea beetle damage was prevented by a γ-BHC seed treatment and by spraying with miscible DDT. Throughout the summer the crop made very rapid growth and soon smothered the weeds. The yield is estimated at about 30 tons/acre.

Sugar beet and mangolds

Owing to the heavy labour demands of these crops their acreage was kept to a minimum, and they were grown only on experimental areas. Reference has already been made to the mangolds in Barnfield. The early-sown sugar beet carried quite an even plant, but in the later-sown areas the plant was uneven owing to irregular germination. Good growth was maintained during the summer. Yields were well above average (up to 20 tons/acre), and the sugar content for most of the crop averaged about 17 per cent. There was, however, a big drop in the sugar content of the last two truckloads, which were lifted in the latter half of December and which were sent to other factories. These had a sugar content of 15 per cent.

Grassland

Some of the grass fields were given an early top dressing of nitrogen to produce early growth, and many of the other fields were given a complete fertilizer dressing in the spring. However, the cold, dry weather throughout March and April severely retarded growth. There was no spring flush, and the cattle were not turned out from the yards until 8 May. There was just sufficient grass to keep the stock going throughout the dry May, and the heavy rain early in June came just in time to avoid the necessity of having to open one of the hay fields for grazing. During the rest of the year grass was abundant.

At the end of May the hay crops looked very light, but rapid growth took place after the rain in June. Cutting was delayed by the bad weather, and much of the crop became rather stemmy. Most of it was cut in July, but bad weather during the making caused severe leaching and bleaching on some areas. No crop was lost, and considering the weather conditions, the hay was saved in surprisingly good condition.

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Livestock

Cattle

At the beginning of the winter there was a large stock of hay and straw and also grain seconds from the 1954 and 1955 harvests. Fifty-two crossbred Hereford cattle, purchased in the late autumn, were put into a temporary open yard adjoining the straw stacks to utilize these materials and to make dung. Other cattle were yarded in the late autumn, and all came through the winter well. Because of the shortage of keep they were not turned out until early May, but they subsequently did well on the abundant grass. They have been sold regularly since May, off the grass, and altogether 76 have been sold. The few remaining at the end of the year have again been yarded, but should be cleared within a few weeks.

A preliminary tuberculin test was carried out in late autumn, and as soon as all the reactors are disposed of a bunch of attested cattle will be purchased to graze down the rough grass and the lucerne–cocksfoot sward. It is hoped to qualify for the Attested Herds Scheme during 1957.

Sheep

The Scotch Half-bred ewe flock was mated to Suffolk rams, and most of the lambs have been retained for grazing experimental field plots at Rothamsted and Woburn in 1957. From the 73 ewes put to the tup 122 lambs were reared, of which 38 have been sold fat.

During the year there were several cases of worrying by dogs, some sheep being killed and many others being so badly mauled that they had to be slaughtered. Careful consideration will have to be given to the question whether the keeping of sheep is justified in an area where dogs abound.

Implements

Because of the restriction on capital expenditure the purchase of new implements and equipment was kept as low as possible. One of the old vaporizing-oil tractors was exchanged for a diesel-engined tractor of the type on which we have standardized, and a second Land-Rover with metal top was bought. A few small pieces of equipment were also purchased, including a fitter's hearth and a set of mounted zig-zag harrows.

Grain-drying and Storage Plant

The 50-hole platform drier was installed in 1952 to deal with a 6-ft. combine-harvester. Now that the combine strength has been increased to two 10-ft. machines it has not sufficient capacity to deal with their output in a wet season. Various other types of drier have been examined, and the advice of many experts has been sought.

In 1955 it was decided to use radially ventilated bins for drying and square galvanized metal bins for storage. It was hoped that all the preparatory work and the erection could be done by the regular farm staff during the summer of 1956 and the plant would

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be ready for the 1956 harvest. However, pressure of other work prevented this being done, and work did not commence until 1 August 1956. But since no harvest work could be started that month, good progress was made, and the storage bins were erected in time to hold the corn dried on the platform drier. Eight storage bins, each holding about 20 tons of wheat, have been put up, followed by 4 circular expanded-metal drying bins, each holding 11 tons. It is hoped that the moisture extraction rate will be in the order of 1½–2 per cent/day. It is proposed to use the fan and heater of the platform drier, which are capable of ventilating two bins at a time. The top conveyor is of the endless-belt type, while a jog-trough conveyor is being used for the emptying of the bins. No pre-cleaning will be done at the start, as it is hoped that this may be unnecessary. The existing aspirator and sieve type of cleaner will be used to clean the grain before bagging off for sale. A plant of this size should be able to handle comfortably the output of our two 10-ft. combine-harvesters, one of which will spend much of its time cutting the produce of experimental plots.

The existing platform drier will be removed from its present position and re-erected adjoining the new plant so that the one fan and heater can be used for either the drying silos or the platform drier. The latter drier will be very useful in dealing with small quantities of grain which cannot be so conveniently handled by the ventilated bins.

Estate Work

Some progress was made in the early months of 1956 with the clearing of the derelict apple orchard in Whittlocks field which was purchased in 1955. The work was very tedious because of the miles of supporting wire to which the cordon trees are fastened. A grant under the Marginal Production Scheme has been secured for this work, and it is hoped to make better progress in the early months of 1957.

A large part of Knott Wood, which was replanted in 1940, was cleared of coppice and weeds during the winter of 1955–56, and probably no further treatment will be needed until a first thinning takes place about five years hence.

An inspection of all our woods was made by the Forestry Commission during the year. Their recommendations involve the clearing and replanting of some areas, patching others and a considerable amount of thinning. This work will be undertaken, but must be spread over several years, since only a small amount of time each winter can be spent on the woodlands.

Purchase of Land

During the year three areas of land adjoining our southern boundary were purchased, rounding off our property on this side. The two pieces under grass, totalling 22 acres, have been rented by us for many years but were potential building sites. One piece was purchased as building land, but planning permission having been refused for the larger piece, this, together with Geescroft wilderness (3 acres), was bought at agricultural values.

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Staff

B. Weston retired from the post of Field Superintendent on 31 December 1956. J. M. Bidgood has been appointed to the vacant post, which in future will be known as that of Chief Recorder.

Woburn

The work of the Woburn Farm is directed and managed by the staff of the Rothamsted Farm. The field experiments are planned by the Field Plots Committee, while the day-to-day planning is done by the bailiff at Woburn.

The effects on crops of the appalling weather of 1956 were similar to, though perhaps not so severe as, those at Rothamsted. For cereals it was a disappointing year, but it suited potatoes and sugar beet. In addition, serious damage was caused by birds to some crops.

The Effect of Weather on Crops

The mild autumn of 1955 enabled the winter ploughing, which included a piece of grassland on the heavy soil, to be completed before the end of the year.

In January 1956 the weather was very changeable, and a severe spell of frost lasted throughout most of February. After the land had dried out in March a long spell of fine weather enabled the spring corn and beans to be sown reasonably early and under good conditions. The continuation of the dry spell throughout April facilitated the preparation of the ground for, and the planting of, the potatoes and sugar beet. The dry spell continued throughout most of May, and it was accompanied by cold winds. Germination of root crops was delayed and growth was retarded on all crops. There was a very sharp frost in mid-May which caused considerable damage to several areas of early potatoes, and early sown maincrops were also damaged. The leaves of the spring beans also suffered damage. The total rainfall for the four months February–May was only just over 3 inches, less than half the normal.

Throughout June, July and August the weather was very wet. Early in June all crops made a spurt of growth, and a second germination occurred of all root crops and small seeds. Good growth was maintained throughout July, especially by potatoes and sugar beet. The cereal crops came into ear earlier than usual and when the straw was rather short. Despite this, ripening started later than usual and was a very slow process.

The heaviest rainfall of the year was experienced in August when 4·19 inches was spread over 22 days. The start of harvesting was consequently delayed. Only one field of barley was badly laid, and this had to be cut with a mower.

All the barley crops ripened very unevenly, and the grain was badly discoloured and of very uneven quality. Spring wheat was very slow to ripen, and quite a lot of sprouting took place in the ears of the standing crops. The spring beans looked as though they would never ripen and were not cut until the third week of October.

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