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## Rothamsted Report for 1938

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### Barley

#### Rothamsted Research

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The weight of 1,000 corns varies from season to season, but it has not been possible to identify the weather factors responsible for the change. At Woburn rainfall above the average in January, February and March tends to depress the 1,000 corn weight, but no relation can be traced with rainfall in other months nor with temperature after April, nor is there any consistent relation between 1,000 corn weight and nitrogen content.

The bushel weight also varies with the season, but there is no tendency for it to fall even when the yields of the plots are falling. For Hoosfield it has averaged 53 lb. and as the specific gravity of the grain is 1.3 the volume of solid barley in the bushel is 51 per cent. and the volume of air space is 49 per cent.

#### CONFERENCE ON MALTING BARLEY

The fifth Conference on the growing of malting barley was held on November 29th, 1938. Samples were sent in by growers from all the important barley growing districts, accompanied by full agricultural details.

The procedure differed somewhat from that of previous years in that growers were requested to send in at least two samples, one of their better, and the others of their poorer quality barley, though still of malting standard. The samples thus represented better than in previous years the whole crop of the grower.

The samples were graded by an expert committee of valuers, and displayed at the Conference to provide the basis of a discussion of the technical problems of barley growing. Six classes were distinguished graded II to VII, there being none up to grade I standard. Grades II and III were pale ale barleys, grades IV to VI mild ale barleys and grade VII feeding quality. The price range between the grades varied from two to four shillings per quarter. Among the 240 samples sent in there were some 65 pairs of samples and of these only 5 of the samples classed by the growers as inferior were given better grading by the valuers. The average difference between the better and the inferior samples was nearly three-quarters of a grade.

This year the lowest malting grade (Grade VI) was assigned about 60 per cent. of the value of the highest (Grade I). In 1937 the relative value had been 75 per cent. and in 1936 and 1935 50 per cent.

Yields were high, but values were low, and the cash returns per acre were about 30 per cent. lower than last year when the crop was a much smaller one.

Sowing conditions were good and nearly all growers reported sowing in February or the first two weeks of March, i.e. about a month earlier than last year. Good growing conditions followed and the harvest weather was good, all conditions being favourable for a heavy crop.

The 201 samples reaching malting standard were divided as follows :—

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TABLE X

District	Grade						Total	Mean Grade
	I	II	III	IV	V	VI		
Norfolk .. ..			1	3	15	14	33	5.27
Suffolk .. ..		1	3	4	9	13	30	5.00
Essex .. ..			1	2	3	3	9	4.89
Kent .. ..		8	4	3	3	3	21	3.48
Yorks, Lincs and Notts .. ..					2	31	33	5.94
E. Midlands .. ..			1	2	6	11	20	5.35
South .. ..			1	1	13	19	34	5.47
West .. ..			1	1	7	12	21	5.43
Total .. ..		9	12	16	58	106	201	5.19
Percentage .. ..		4.5	6.0	8.0	28.9	52.7		
1937 Percentage	5.6	15.6	22.9	30.7	19.9	5.2		
1936 Percentage	2.5	2.9	7.6	19.9	46.6	20.6		

So far as the samples sent in were representative of their districts there is a marked effect of locality in the grading results. As last year the Kent barleys were well above the average in quality and those from Essex and Suffolk were better than the average. Those from Norfolk, E. Midlands, West and South, were slightly worse than the average, while as last year the barleys from Yorks and Lincs were well below the average.

The distribution of the grades showed many more samples in the lower grades than in 1936 or 1937.

The estimates of yield for the various districts were :—

TABLE XI

Average yield, bushels per acre

By Districts				By Grades (All Districts)		
					Spring Sown	Autumn Sown
Norfolk .. ..	..	..	47			
Suffolk .. ..	..	..	43			
Essex .. ..	..	..	47	II, III	48	47
Kent .. ..	..	..	55	IV ..	52	46
Yorkshire, Lincs, etc. ..	..	..	40	V ..	44	53
E. Midlands .. ..	..	..	41	VI ..	41	49
South .. ..	..	..	39	Mean 1938	43	50
West .. ..	..	..	44	Mean 1937	34	33
1938 Mean .. ..	..	..	44			
1938 Min. of Agric. ..	..	..	36			
1937 Mean .. ..	..	..	34			
1937 Min. of Agric. ..	..	..	28			

The mean yields of the samples were, as last year, considerably higher than the Ministry of Agriculture estimates. As before, this was not due to optimistic estimates by the growers since there were 64 samples giving actual (threshed) yields as well as estimated yields and the average difference was over 2 bushels in favour of the actual yield.



Once again Kent, which produced the best samples, also gave the highest mean yield; the remaining districts were close to the average yield.

The mean yield of the autumn sown barleys was above that of the spring sown, though they showed no marked superiority in quality.

TABLE XII

Grade	<i>Spring Sown</i>		<i>Autumn Sown</i>	
	Number	Percentage	Number	Percentage
II, III ..	17	9.7	4	16.0
IV ..	12	6.8	4	16.0
V ..	51	29.0	7	28.0
VI ..	96	54.5	10	40.0
Total ..	176	100.0	25	100.0

The distribution of the grades was very similar for spring and autumn sown barleys with the possible exception that the autumn sown samples had a slightly bigger percentage in grades II, III and IV and somewhat less in grade VI the mean difference being less than half a grade.

The sequence of cropping had but little effect except that after seeds the quality of the barley was somewhat inferior and also the yield was lower.

TABLE XIII

*Effect of previous crop on yield and grading*  
*Average yield in bushels per acre*

Grade	Corn		Beet or Mangolds		Kale or Turnips		Seeds	
	No.	Average yield	No.	Average yield	No.	Average yield	No.	Average yield
II, III ..	14	51	4	40	1	50	—	—
IV ..	7	56	7	47	1	50	—	—
V ..	22	43	23	47	1	48	5	41
VI ..	48	42	19	42	9	40	13	38
Total ..	91	45	53	45	12	42	18	39

No barleys sown after the middle of March fell into grades II or III. There seemed to be little difference between the quality of barleys sown in February and those sown in the first two weeks of March, with the exception that a few more of the earlier sown barleys fell into grades II and III.

Sowing had been much earlier in 1938 than in 1937, but in spite of that the grading was generally not as good.



TABLE XIV  
*Time of Spring Sowing*

Grade	February	March 1st-14th	March 15th-28th	After March 28th
II, III .. ..	11	6	—	—
IV .. ..	3	7	2	—
V .. ..	24	22	5	—
VI .. ..	33	37	22	4
Total 1938 ..	71	72	29	4
Per cent. 1938 ..	40.3	40.9	16.5	2.3
Per cent. 1937 ..	3.2	7.5	16.0	73.2

The manuring of the samples was generally similar to that reported in previous years.

TABLE XV  
*Manuring*

Grade	No Manure	Artificial only	Organic manures	Organic and Artificial
II, III .. ..	1	12	2	6
IV .. ..	2	5	4	5
V .. ..	8	20	10	19
VI .. ..	12	48	22	24
Total .. ..	23	85	38	54
Per cent. 1938 ..	11.5	42.5	19.0	27.0
Per cent. 1937 ..	8.0	52.0	23.0	17.0

The newer concentrated compound fertilizers had been used for about one third of the 139 samples grown with artificial fertilizers.

For the remaining samples some nitrogen was almost always included in the dressing even when the barley followed sheep or ploughed-in tops: the average dressing was 20 lb. nitrogen per acre, slightly less than the equivalent of 1 cwt. sulphate of ammonia per acre.

In 1938 out of some 240 samples, only 27 cases of lodging were reported, nearly all of them very slight. This was practically the same as last year and only about half of that reported in 1936.

### SUGAR BEET

This season 1938 was one of the most unfortunate for beet growers since 1927. Although the year started well with a dry spring and excellent conditions for working the land, the dry weather lasted too long, with the result that germination was irregular and much beet was sown too late. In the Eastern Counties severe summer drought followed with bad attacks of aphid, and really good growing conditions did not set in till late August, when the plant failed to make much use of them.

The effects of manures in this dry and unfavourable season are compared below with their average performance over the previous four years. The main fertilizer effects averaged over all soils are given in Table XVI.