THE MORLEY FARM

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CEREAL MILDEW TRIALS

Of the recent developments that have taken place in the growing of cereals the most important is the advent of systemic and partially systemic fungicides for the control of cereal mildew. Work on this subject was begun at the Station in 1969 and a report on the first two years' work was given in "*The Morley Farm*" *Vol. 1, No. 5. December, 1970.* The trials were continued in 1971 and the results obtained generally confirm those achieved in the two preceding years.

In 1971 all the commercially available fungicides for control of powdery mildew in cereals were used in a comparative trial on three varieties of spring barley—namely Proctor, Sultan and Julia. *Milstem* was used both as a seed dressing and as a foliar spray while *Calixin*, *Lucel* and *Milfaron* were all applied as foliar sprays in 25 gal of water on 31 May. The chemicals were used at their recommended rates except in the case of Julia as the seed had been dressed with *Milstem* prior to delivery at a rate above that normally used.

In 1971 mildew developed during early to mid-May and at the time of applying the foliar fungicides the lower leaves of both Proctor and Sultan were fairly heavily attacked. However, the top three leaves of the plants, which were at Growth Stage 7, were relatively clean. The development of the disease was less rapid during June than had been anticipated but by the end of the third week of this month moderate to heavy levels had developed on the upper leaves of untreated Proctor and Sultan. The spread of brown rust was also very rapid at this time and by early July very little green leaf was to be found on Proctor and Sultan. The control of mildew achieved by all chemicals was good and it was noticeable that *Milstem* seed dressing had given good control throughout the season while of the foliar sprays *Calixin* was the quickest in action.

Naturally the farmer is primarily concerned with the effect of treatment on yield and in 1971 the use of dressed seed resulted in increases of 2.1, 3.8 and 1.1 cwt on Proctor, Sultan and Julia respectively. *Calixin* increased the yield from Sultan and Julia by 4.2 and 1.7 cwt respectively while the other foliar sprays gave responses only a little below these. The poor response from Proctor is probably due to the fact that as this variety is a late maturing type it suffered more severely from the effects of brown rust in this

particular trial. The yields of both Proctor and Sultan were 7 cwt below that of the less disease susceptible variety Julia.

Results from a time of spraying trial which was adjacent to a field of winter barley also confirm that spraying in the trials referred to above took place after the optimum time. Use of the foliar spray *Calixin* on Proctor in mid-May shortly after mildew was seen in the crop gave a yield increase of 3.4 cwt. When spraying was delayed until 1 June the response was reduced to 2.2 cwt. The material *Trimidal* (EL 273)—which is likely to come on to the market in 1972—gave a slightly better response at the earlier date of application and an equally good response when spraying took place approximately two weeks later. The use of sulphur to control mildew was much less satisfactory than in the drier year of 1970 and only small yield benefits were recorded from this treatment.

The use of *Calixin* on Maris Otter winter barley applied on 14 May when the crop was at Growth Stage 8 and only slightly infected with mildew kept the crop free of disease and resulted in an increase of almost 2 cwt in yield.

In 1971 the use of the seed dressing *Milstem* was the only material to markedly improve grain size of spring barley. However an increase has been observed in other years following either seed or foliar treatment and often occurs where the development or spread of mildew is prevented. This trend was also observed following early application of *Calixin* and *Trimidal* in the spray timing trial referred to above.

Because of the presence of winter barley in the cropping programme at the Station and on surrounding farms earlier mildew infection of spring sown crops is usually experienced than in areas where winter barley is not grown. Over the previous two years the use of foliar sprays soon after mildew is seen to be spreading in the spring crop has given increased crop yield equal to or better than that obtained by using *Milstem* dressed seed. The relative cost of the chemicals for use on spring barley, excluding cost of spraying the foliar materials, are approximately £1·80 for the seed dressing and approximately £1·30 for the foliar spray.

Experience suggests that use of fungicides can give some financial benefit when used on the mildew susceptible varieties. In a disease situation the use of fungicides on the more resistant varieties has also improved yield and given a small return over investment. The following points summarise results to date:

1. Winter barley sown before mid-October is at greater risk from autumn mildew attack than later sown crops and in areas known to suffer cereal mildew the use of a seed dressing is worth considering.
2. Spring sown crops of high susceptibility to mildew e.g. Golden Promise, Zephyr, Sultan and Proctor are very likely to give a worthwhile return on cost of treatment with either a seed dressing or a foliar spray particularly in areas prone

to mildew attack. The yield from these varieties may still be less than that of the more disease resistant varieties such as Julia or Vada hence choice of variety can be of great importance.

3. The use of a seed dressing, although more expensive in terms of chemical cost, does avoid the need for additional field work later in the season should mildew develop. However if reliance is placed on a spray treatment the decision as to its use can be delayed.
4. Where a foliar spray is to be used it is best applied before the crop is heavily affected. The suspect crop should be watched closely during the spring particularly if the weather is warm, dry and relatively humid, so that treatment can be applied in good time. In most years the development of mildew is likely to occur at some time from mid-May to early June.

CEREAL TRIALS 1971

Winter Wheat, Variety and Nitrogen Manuring

The 1971 trial compared the two new varieties Maris Nimrod and Maris Huntsman, together with Maris Beacon, Maris Ranger, Joss Cambier, Cama and Cappelle. Because of recent interest in mixtures of wheat, a 50:50 mixture of Maris Ranger and Maris Beacon, chosen for its suitability for biscuit making, was also grown.

No fertiliser was given in the seedbed after potatoes but nitrogen was applied as a top dressing in late April so that each variety was tested at 40, 60 and 80 units.

Mildew was the most prominent disease in the trial with all varieties showing some degree of infection. Cama, Joss Cambier and Maris Ranger were the most heavily infected while Maris Nimrod and Maris Huntsman remained relatively free of the disease until quite late in the season when a very low level of infection occurred. There was very little yellow rust present but slight infection was noted on Maris Beacon and Joss Cambier.

The highest yields per acre were given by Maris Nimrod (46.5 cwt) and Maris Huntsman (44.0 cwt). Maris Beacon and Maris Ranger yielded a little below these while the mixture gave an overall yield similar to that from Maris Beacon. Of the other varieties Joss Cambier (36.8 cwt) and Cama (36.3 cwt) gave much poorer yields than in previous years and were outyielded by Cappelle (39.4 cwt).

Responses to nitrogen tended to be variable. Maris Nimrod and Maris Huntsman responded well up to 80 units of nitrogen and together averaged 48.9 cwt per acre while Maris Ranger needed only 40 units for its maximum yield. On average over all varieties, 80 units proved to be the most profitable level.

Winter v. Spring Barley and Nitrogen Manuring

The comparison between Maris Otter drilled in the autumn and in the early spring, Sultan drilled in early and late spring and Julia drilled in late spring completed its third and final year in 1971. The preceding crop was spring barley and early autumn cultivations and ploughing enabled the first sowing of Maris Otter to take place on 29 September. Wet soil conditions delayed sowing in the spring until 23 March and the final sowing took place three weeks later on 14 April.

The trends in crop yield followed the pattern of those of the two preceding years but differences between treatments were greater. All crops received three levels of spring nitrogen, namely 40, 60 and 80 units applied as a top-dressing in early May.

The autumn sown Maris Otter remained relatively free of mildew and brown rust until June when disease levels built up. The crop however yielded well and averaged 38.1 cwt of grain with a maximum yield of 41.0 cwt from the plots receiving 80 units of nitrogen. By way of contrast Sultan became heavily infected with mildew and brown rust by the end of June and premature senescence occurred. Yields from this variety were very disappointing, particularly from the April sowing which suffered most from foliar disease attack. There was no response to the higher levels of nitrogen which caused some lodging and the early and later sowings gave 21.4 cwt and 13.9 cwt respectively with 40 units of nitrogen. Julia proved more tolerant to the disease situation and gave a yield of 27.6 cwt when April sown and receiving 60 units of nitrogen.

The growing of spring barley in the presence of a winter sown crop gives rise to the optimum conditions for foliar disease attack and the early occurrence of mildew followed by severe incidence of brown rust was undoubtedly largely responsible for the very low yields recorded from the disease susceptible variety Sultan.

The results over three years emphasize the yield benefit which can be achieved from a winter sown crop at Morley and this has been supported by farm experience. However, where the drilling of Maris Otter has been delayed until the spring its yield has been lower but has equalled or proved slightly better than that of Sultan sown at the same time.

The trial series has also demonstrated the good disease tolerance of the variety Julia and its ability to yield well under adverse conditions. In areas where winter barley is not widely grown it can be argued that because of a changed foliar disease environment the yield from spring sown varieties will be much better than that recorded in this series of trials.

The effect of time of sowing and manuring on grain size and nitrogen content is also being studied and when these studies are complete the results will be made available.

Magnesium Fertiliser in the Rotation

The two long-term magnesium trials were cropped with cereals for a second year to test the residual effects of magnesium fertiliser applied to the root crops grown in 1969. On the site where the cereals followed sugar beet, there appeared to be little residual response in either the winter wheat in 1970 or the winter barley in 1971.

On the second site, where two winter wheat crops have followed potatoes, yield increases of up to 2·5 cwt were recorded when 100 units of magnesium had been given to the potato crop. Where only 50 units had been applied there were no such increases.

From the yield data taken over all three years it is clear that the major benefits from improving soil magnesium levels are obtained from the root crops. The fact that there was little response to residual magnesium in the first wheat crop after potatoes—even at the 100 units of Mg level—is a little surprising, particularly when the level of response in the second crop was sufficiently large to reach statistical significance. This apparent anomaly has also been recorded on other similar experimental sites.

Fertiliser Placement and Rate of Application for Spring Barley

Spring cereal yields at Morley during the past two years have tended to be disappointingly low despite the generous use of fertiliser. It was thought that a better response might be obtained from combine drilling and a trial was begun in 1971, using Sultan spring barley, to investigate this possibility. The newly introduced Nordsten "Combi-matic" drill was used, in the trial. This machine has fertiliser injecting tines spaced between every two 5 inch seed coulters. Fertilisers to give 40 and 60 units of nitrogen, in combination with 0,20,30 or 45 units of phosphate and potash were compared either broadcast or injected.

Yields as a whole were low due to early infection with mildew and brown rust, and no one treatment was outstandingly better than any other. Where nitrogen only was applied, 40 units proved adequate and there was no difference between broadcasting and injecting. When the fertiliser was broadcast, the addition of phosphorus and potash had no effect on yield, but when it was injected, 30 units of each nutrient did increase yields slightly although the extra grain was insufficient to cover the cost of the fertiliser used.

From this first year's results it would appear that the method of fertiliser application made little difference to final yield under conditions in which yield potential was limited by disease rather than any nutrient deficiency. The trial site carried sugar beet in 1971 and subsequent soil analysis showed that there were sufficient residues of phosphate and potash to supply the needs of a succeeding cereal crop. In previous years 45 units of phosphate and potash have been applied to all spring cereals to rectify the low level of nutrients, particularly of phosphate, in the soil, but these are now much higher and savings may be made by reducing or eliminating applications of these elements to cereals following crops which have received generous applications of phosphate and potash.

Spring Wheat, Sowing Date, Seed Rate and Nitrogen

The effect of seed rate and nitrogen on yields of Kolibri spring wheat drilled both early and late was again studied in 1971. The trial followed sugar beet and drilling took place on 23 March and 14 April, on both occasions into relatively good seedbeds.

The overall effect of late drilling was to reduce the yield from 29.7 cwt to 25.0 cwt per acre. This result is in general agreement with 1969, the first year of the trial. In 1970 the early sowing appeared to have been handicapped by the rather wet and cold seedbed into which it was drilled and the later sowing yielded only 0.5 cwt less.

As in previous years, late sowing produced fewer tillers than the early sowing and although nitrogen tended to increase tillering this could not fully compensate for the delay in drilling.

Response to nitrogen was a little lower in 1971 than in other years of the trial. At the lowest seed rate the crop responded up to 90 units, particularly where late drilling took place, but overall 60 units proved optimum. It should be stressed that protein content can be important for Kolibri as this variety can sometimes be sold at a premium for bread making. It may well pay therefore to use a full 90 units even though in this trial the extra nitrogen only produced a further marginal increase in yield.

The effect of seed rate has been similar in all years of the trial. Provided optimum nitrogen is applied, then 140 lb of seed per acre is adequate for early drilling. For later drilling a slightly higher rate (173 lb) would probably prove to be the most profitable.

Intensive Spring Wheat

Over the past five years the national cereal acreage has remained relatively constant following a period of rapid expansion during the preceding ten years. Inevitably a high frequency of cereal cropping is being practised in some areas and the growing of long runs of barley and to a lesser extent wheat is not uncommon. The intensive spring wheat trial at Morley forms part of a national trial series which is co-ordinated by the A.D.A.S. These trials are designed to study the effect of growing long runs of cereals on crop yield, incidences of cereal pests and diseases, weeds and soil characteristics. The trial on the farm completed its third harvest year in 1971 and allowed comparisons in crop growth and yield to be made between the first, second and third successive crops of Kolibri spring wheat following a two year break of potatoes. Prior to the two break crops of potatoes one area of land in the trial grew spring wheat for the fourth successive year. For each phase of the cropping sequence the wheat received differential levels of nitrogen equivalent to 40, 70, 100 and 130 units. In each case the first 40 units was

worked into the seedbed while the balance was given as a top-dressing shortly after brairding.

The crop immediately following potatoes gave no response to nitrogen in excess of 40 units and at this rate of manuring yielded 31.4 cwt per acre. However the second and third successive wheat crops did benefit from additional nitrogen but even when an optimum of 100 units was applied the respective crop yields were reduced to 26.1 and 22.5 cwt. The fourth successive crop yielded rather better than the third but was less responsive to nitrogen and gave a maximum yield of 23.8 cwt per acre where 70 units of nitrogen had been applied.

The disappointing yields given by the second and subsequent successive crops may be due in some part to a greater incidence of eyespot and take-all fungus attack. The presence of these diseases became more apparent as the crop matured and premature ripening of some ears was seen. Earlier in the season all plots in this trial had looked particularly strong and free of weeds, and bearing this in mind the final yields were disappointing. Results from this and similar trials at Bridget's E.H.F. and Gleadthorpe E.H.F., suggest that the yield from spring wheat grown continuously is not likely to prove satisfactory.

Where successive runs of cereals form a basic part of the general farming pattern, spring barley or winter wheat are likely to be more successful for the yields from these crops have been better maintained at other centres after a drop in the second and third years.

Winter Beans, Seed Rate, Phosphate and Potash Manuring

A comparison of seed rates and fertiliser levels for winter beans completed a second year in 1971. In both years yield responses were influenced far more by seed rate than by fertiliser. A seed rate of at least 2 cwt was found to be necessary for maximum yields, and in 1970 when poor emergence resulted in low plant populations, 2·5 cwt proved to be optimum. Provided seed rates of this order were used then there was no necessity for applications of either phosphate or potash at Morley. Where lower seed rates were tested (1·5 cwt) yields were improved with up to 60 units each of phosphate and potash but the extra "grain" was insufficient to cover the cost of the fertiliser used.

The crop yield recorded in both years was disappointing. Plant establishment and growth in 1971 was very good indeed but a cold spell during early flowering resulted in negligible insect activity and a poor pod set. Later flowering and pod set however was good and what appeared an extremely poor yielding crop in early July in fact gave a final yield of 18.1 cwt. The crop was not severely attacked by chocolate spot and leaf loss due to this disease was much less than that experienced in other parts of East Anglia. In view of the relatively low yield achieved the results of the trial can only be viewed with reservation.

BEEF CATTLE

Finishing Beef Cattle

A trial, run in conjunction with the Meat Research Institute, involved the feeding of differing levels of concentrates to yearling beef cattle. The concentrates were fed to supplement the feeding of arable by-products based on sugar beet tops and potatoes. The main object of the trial was to provide Friesian carcases of similar age but with differing degrees of fatness. These carcases were assessed by the Meat Research Institute to determine the effect of degree of finish on meat quality. The feeding of varying levels of concentrate and the slaughter of the cattle at similar ages and dates provided additional information on the effect of level of concentrate supplementation on the rate of live weight gain and finish.

Twenty-four yearling Friesian steers were allocated in late November to four feeding regimes and each animal was fed individually. The rations fed were based on 35 lb sugar beet tops and 12, 10, 8 or 6 lb of concentrates per head per day. The sugar beet tops were replaced by potatoes after Christmas and in early February each level of concentrate was raised by 2 lb per head per day. The concentrate mix was made up of $8\frac{1}{2}$ parts barley, $8\frac{1}{2}$ parts dry beet pulp, 3 parts protein cake plus minerals and vitamins.

The performance data of the cattle are given in the tables below. Animals were sold in groups of four over a six week period commencing on 9 March and were selected for slaughter on the basis of age and degree of finish so that each group contained a range of finish from poor to relatively good.

Feed Group concentrate lb/day	Initial Live Wt. 23 Nov (lb)	Final Live Wt. (lb)	Days to Slaughter	Daily Live Wt. gain (lb)
12–14	773	1094	128	2.51
10–12	741	1077	134	2.50
8–10	753	1019	128	2.06
6–8	688	926	131	1.80

Feed Group concentrate lb/day	Carcass Wt. (lb)	K.O.%	Carcass Score 1–7	F.M.C. Grading						
				A+	A	A−	B+	B	B−	C
12–14	599	54.7	4.7	—	1	3	1	1	—	—
10–12	594	53.7	4.3	—	1	1	3	1	—	—
8–10	541	53.1	2.9	—	—	—	1	3	2	—
6–8	485	52.4	1.7	—	—	—	—	1	2	3

The highest rate of concentrate feed gave no real improvement in terms of live weight gain or finish over that achieved by feeding 2 lb less. The two lowest feed groups performed less well and finish was poor particularly where only 6–8 lb concentrate had been fed. Since slaughter date was largely predetermined by the condition of the more forward cattle those on the lowest level of concentrate went forward for slaughter earlier than would have been commercial practice. Because the groups had different initial weights and fatness, comparisons in performance of the groups must be viewed with caution.

If the concentrate feed is costed at £30 per ton, potatoes at £6 per ton and the animal valued at £13 per live cwt the margin over feed cost during the finishing period for the four groups was £8·3, £12·2, £8·7 and £8·3 for the highest to lowest feed groups respectively.

The results of this feed study emphasise that the profit margin can be considerably reduced by both over or under feeding of expensive concentrates to Friesian cattle. This type of animal in an 18 month beef system is probably less likely to give a better finished carcass following increased feeding of concentrates than a beef cross and the conclusions reached may not be so applicable to beef cross animals.

The results of the first winter and summer performance of autumn born Friesian steers from the final intake of the trial comparing the feeding of three levels of silage and concentrates to cattle 3 to 6 months of age were presented in "*The Morley Farm*" *Vol. 1. No. 5. December 1970.* These cattle formed part of the trial described above but treatments fed during the final period of finish were allocated so that all groups were finished in similar manner.

The treatment rations were fed during the animals' first winter in yards from approximately three months of age to turn out in the spring. The treatments provided for $\frac{2}{3}$, $\frac{1}{2}$ and $\frac{1}{3}$ of the dry matter intake of the animal to be fed as concentrates while the balance was fed as pea haulm silage. In all years cattle receiving the high concentrate ration made the best live weight gains before turn out. During the summer however these animals did not gain weight as fast as those in the other two groups and when finally yarded differences in live weight were comparatively small.

During the finishing period of the final intake of cattle the group previously fed the smallest amount of concentrates, and which had made the best progress at grass, maintained a high rate of weight gain. This group averaged 2.33 lb per head per day while in the yard to give an overall daily live weight gain from 3 months of age of 2.00 lb per head. The daily rate of live weight gain in yards for the groups previously on the moderate and high rates of concentrate feed were 2.26 and 2.18 lb per head to give average rates of gain from 3 months of 1.87 and 1.85 lb per head per day.

The results from this trial series show that good quality bulk food can be fed liberally to young stock without greatly affecting

their overall performance and can thus be used to reduce feed costs and margin over feed costs. It should however be remembered that the feeding of substantial weights of silage to young stock is likely to incur additional labour and demand a high standard of stockmanship to ensure the best results.

N.I.A.B. CROP VARIETY TESTING SCHEME

Winter Wheat

The trial was drilled in early November, and despite very wet weather experienced before and during emergence, establishment was satisfactory. There was negligible winter damage.

Mildew appeared early in the season and soon built up in some varieties. Levels of just over 25% were recorded on Cappelle-Desprez and West Desprez, and much higher levels on Armentieres, Cama, Joss Cambier and Maris Ranger. Infection remained low on Maris Widgeon and Maris Nimrod; low levels were also recorded on the previously resistant Maris Huntsman and Maris Templar.

Yellow rust was confined to a small primary focus on Joss Cambier, and the hot dry July did not encourage further spread. One result of this weather pattern, however, was the appearance of brown rust, a rare occurrence on winter wheat. Several varieties were infected at a generally low level, although it did reach 5% on Cama and Maris Nimrod. Moderate levels of loose smut were recorded on Cappelle-Desprez and Maris Ranger.

All varieties stood well and maturity was relatively early, but wet weather delayed harvesting until 25 August. For the first time for several years the average yield from the trial was over 2 tons per acre, with the two controls Cappelle-Desprez and Maris Ranger giving respective yields of 40 and 43 cwt. Maris Templar and Maris Nimrod were the highest yielding varieties, each producing just under 50 cwt, 20% above the control mean. These two varieties were well ahead of all others, the closest to them being Maris Huntsman and Benno with yields of 44 cwt. Joss Cambier yielded 43 cwt, which was 3% above the control mean, and Cama at 41 cwt was only marginally above Cappelle-Desprez. Armentieres, Maris Widgeon, Tommy and West Desprez were all below Cappelle-Desprez in yield.

Winter Barley

The nine varieties in the trial were drilled in mid-October, with good subsequent establishment. Slight frost damage occurred on Maris Otter but damage on the other varieties was negligible. Mildew infection built up rapidly in the spring, and reached moderate to severe levels in some varieties with a maximum level of 75% on Senta. Brown rust was first seen in the autumn, and light infections were noted in early spring. An increase in this disease occurred during May, and it reached a level of 10% on Maris Otter. This variety also suffered a moderate infection of *Rhynchosporium* but this disease was negligible on all other varieties.

Harvesting took place on 2 August, by which time most varieties were well brackled but without serious lodging. There was noticeable loss of ears in some 6 row varieties, and both Senta and Mirra were below the Marris Otter yield of 33 cwt. The very stiff Astrix, however, was 6% above.

Winter Oats

The trial consisted of the same 5 varieties as in the previous season, and was drilled on 6 October. Very strong autumn growth was made, and the crop eventually became very long in the straw with the three Welsh varieties at least 5 ft tall. There was much more mildew than in previous seasons, with infection levels up to 50% on Maris Quest and Maris Osprey.

A heavy rainstorm when the crop was almost ripe caused severe lodging in Peniarth, Padarn and Pendrwm with moderate lodging in Maris Quest and Maris Osprey. Yields were good, with Maris Quest, Peniarth and Pendrwm all producing 42 cwt. Maris Osprey was 2 cwt above this.

Spring Wheat

The trial of 15 varieties was drilled on 23 March, and established well after a slow start. Mildew infection built up rapidly during June, reaching severe levels on Rothwell Sprite and Troll. Kolibri and Kleiber, previously resistant, suffered serious levels of the disease. Sappo remained free, and only low levels were recorded on several varieties which included Maris Dove, Maris Halberd and Tilly. Yellow rust was more serious than in the winter crop, especially on Janus where the level of infection reached 25%.

Yields were generally good for spring wheat, although Kolibri was low at just under 30 cwt. Rothwell Sprite, the other control, gave just over 32 cwt. The highest yield came from Sappo, which at 42 cwt was 35% above the mean of the two controls. Maris Halberd and Maris Dove were both just below the 2 ton level, and other varieties yielding 35 cwt or over were Sovereign, Rask, Maris Butler, Cardinal and Tilly. Kleiber gave a disappointing yield of just over 31 cwt.

Spring Barley

With the large number of varieties being entered for Statutory testing it was necessary to have separate Main and Statutory trials and a trial of all Recommended varieties was also grown. Drilling took place in late March and there was good establishment in all trials. Mildew infection was first seen unusually early, with moderate infections on some varieties before ear emergence. By late June infection had reached the 50% level on Proctor, Zephyr and Sultan,

but from early July onwards the mildew was displaced by a startling rise in the level of brown rust. All varieties suffered at least moderate levels. Julia, Lofa Abed and Vada suffered less than most, while the heaviest infections occurred on Midas, Sultan and Feronia. In these latter three varieties there was almost complete destruction of the foliage, with heavy infections on the awns.

There was a wide range in yields of varieties, with yields obviously greatly affected by the brown rust. In the trial of Recommended varieties, Proctor produced 26 cwt to the acre, with Sultan and Midas more than 5% below. Lofa Abed was top yielder at 36 cwt, and Berac, Julia and Vada were all around the 32 cwt level. Gerkra and Hassan each yielded about 30 cwt. In the Main trial Proctor again gave 26 cwt with Zephyr 3 cwt higher. Mazurka was the highest yielder with 34 cwt, and Julia, Universe and Wing were all well over 30 cwt. Sultan and Midas both gave yields 2 cwt below that of Proctor.

Spring Oats

This trial was drilled in late March. Mildew infection first occurred at an early stage of growth and soon reached high levels on several varieties, with over 50% on Astor and Selma. Yields from the two controls Astor and Condor, were low at around 26 cwt, and Selma was slightly below this. Mostyn was over 30% higher with a yield of 35 cwt, while AJB 4/51/B1 was even higher at 42 cwt. Leanda gave a yield of 29 cwt, some 10% above the controls.

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