

## Adopt A Crop April –June 2004

### Adopt A Crop monitoring is carried out by SAC funded by SEERAD's Advisory Activity in Crop Health

#### Crop monitoring

##### *Spring – early summer 2004*

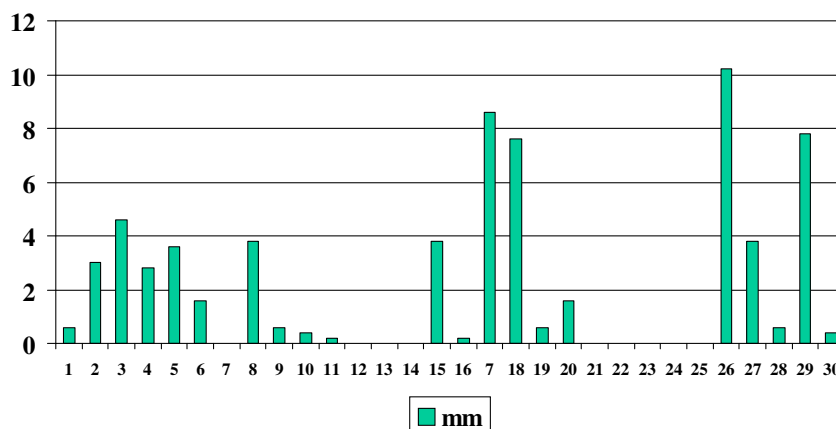
Wet weather in April was followed by a dry more settled spell in May. June rainfall was however higher than average with the majority occurring late in the month when cereal crops were at flag leaf to head emergence growth stages. (See graphs below). Disease pressures in winter wheat and winter barley were high coming out of the winter, and the April weather meant there is potentially a higher risk of eyespot this year in winter wheat

Spring barley was sown in good conditions in March and April. Optic remains one of the most popular varieties, and there were some crops which had very high levels of powdery mildew, suggesting this variety is becoming more susceptible to the disease. The settled spell of weather in May meant the disease was slow to establish on the spring crop, and most growers have managed this disease well. Wet and dull weather in June coincided with spring barley crops at boot stage and the risk of Ramularia leaf spots will be high in the spring crop.

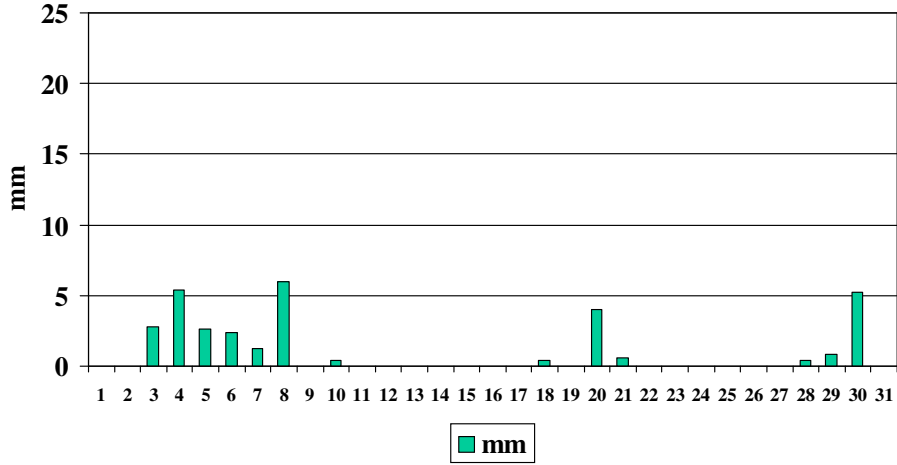
Aphid numbers occasionally achieved treatment thresholds in late June, but periods of heavy rainfall at the end of the month knocked aphids back, coupled with natural control through ladybirds and parasitoid wasps.

Good days for planting potatoes were in short supply in April, so growers who planted earlier in March would have made the best decision. Despite the rain, the blight risk has been low, but reports were starting to appear in late June. Aphid risk has also been low during this period, as a result of wet conditions.

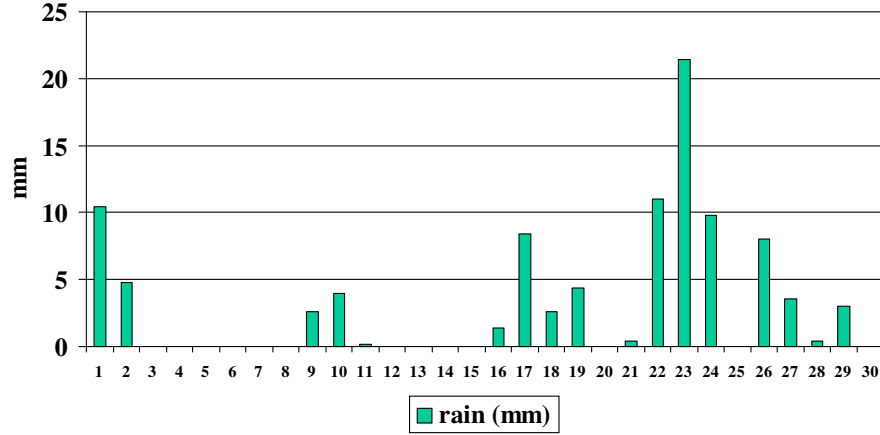
## Gogar Rainfall April mm



# Gogar Rainfall May mm



# Gogar Rainfall June mm



## Unusual outbreaks

### *Cephalosporium leaf stripe*

In June 2004, a grower at Bridge of Earn was concerned about *Cephalosporium* leaf stripe in winter wheat. The grower was concerned because in 1995, he suffered extensive yield loss as result of this problem. In 1995, this grower was growing continuous wheat or set-aside followed by wheat rotations, using minimum tillage with no removal of straw. This agronomic practice suited the heavy land on the farm. As a result of the leaf stripe epidemic, the grower changed his practice to one of ploughing with a cereal break of one to three years on the most affected fields. Fortunately lessons learnt from this 1995 case meant the disease was manageable in subsequent years, but it did not disappear altogether. *Cephalosporium* leaf stripe still develops, but there are early warnings that the problem is on the increase. Following a field visit in June 2004, *Cephalosporium* leaf stripe was detected, but the major issue was takeall. This was a relief to the grower who sees takeall as an easier disease to manage.

In an unrelated case in the Borders, classic *Cephalosporium* leaf stripe symptoms were found in a field. The Borders grower practices a crop rotation comprising wheat, set-aside, wheat and grows mustard on the set-aside. The cultivation method is minimum tillage with straw incorporated into the field. The affected area was a heavy part of a field which occasionally lies wet and which had been difficult to harvest the previous year. *Cephalosporium* leaf stripe symptoms were easily seen, including many small tillers which will have an impact on the yield. Following discussion with the grower, it was decided to continue with the rotation and the field will be set-aside next year and will be sown in wheat in two years using minimum tillage. We will be able to see if this practice leads to a greater problem in the affected area. If the problem increases, the grower will be advised to remove straw and to plough.

If minimum tillage does become a more common practice, this unusual disease may become more common. Where growers find an increase disease symptoms, our advice will be to remove the straw and plough and ensure no volunteers on the set-aside. In the future therefore, if growers do experience these problems, we would hope SEERAD would be sympathetic to allowing growers the option to plough the set-aside to reduce this problem at an early stage of development.



Broad yellow stripes starting at leaf base



Brown staining in nodes



Necrotic stripes alongside yellow stripe



Stunted plants, dead leaves & poor grain fill

Affected wheat plants have broad yellow stripes running down the leaves. Occasionally a smaller necrotic line is also seen. These symptoms are most obvious on the upper leaves of the larger tillers. It is common for the lower leaves of the large tillers and all the leaves of the smaller tillers to be shrivelled. A brown staining can be seen in the nodes when the stems are cut. The roots and stem bases are however clean.

Cephalosporium leaf stripe is a soil borne disease which attacks plants through root damage. Frost heave and slug damage are two main types of damage. Affected plants are mostly seen in wet hollows and the disease is generally worse on heavier land.

In the majority of cases, the disease is no more than a curiosity, but there are cases in Scotland where yield losses can be excessive. These cases tend to be heavy clay continuous wheat fields where the trash is incorporated into the field. This is not surprising given the fungus is a slow growing fungus which carries over in trash. There are usually warning signs of a serious problem developing in a field over 2-3 years. The yield loss is predominately due to excessive number of small tillers which die early, hence having poor grain fill.

A complete break from wheat (and preferably barley, grasses and volunteers) for at least two years and in severe cases three years, is the best way to get disease levels back under control. There is evidence in the USA and also Scotland that a single year is insufficient time to eradicate the problem.

Seed treatments are not known to prevent the problem. This is not surprising for a soilborne disease. Again in the USA there are indications of varietal differences, but there is insufficient information on the susceptibility of UK varieties.

Removing straw, ploughing and, where permitted, burning are the most effective ways to prevent a build up of the problem. Note in a rotation, the literature states that barley may carry the disease over, but symptoms are not obvious in this crop. “

### ***Rape winter stem weevil***

Rape winter stem weevil (*Ceutorhynchus picitarsis*) damage was seen in several winter rape crops in East Lothian in April. The adult weevils will have laid eggs in the autumn and larvae fed within the stem-base over the winter months. The rape winter stem weevil larvae were tunnelling in the stem and crown, destroying the terminal shoot. Less severely attacked plants were stunted, with the production of many lateral shoots at stem extension.

### ***Chironomid midge***

A lettuce grower near Peterhead had an outbreak of a chironomid midge (*Bryophaenocladus furcatus*) on glasshouse lettuce. There was larval mining to the roots and outer leaves.

## ***Blackgrass***

The number of reports of black-grass infestations has increased in spring 2004, and for the first time we have received reports from North of the Forth, with 5 reports from Fife and three from Perthshire. Further cases have been confirmed from South of the Forth.

In most cases infestations are small, which is of concern because only the most observant farmers and advisers are likely to find plants. Individual plants are difficult to find as the head only just emerges above the cereal crop.

Also of concern is the number of sightings in spring barley. At the farm we have been observing for a number of years, black-grass also appears in spring barley at levels which would be unusual in the area where the weed originated in southern East Anglia. We are unsure why black-grass appears to emerge more frequently in spring crops further north, but may be a feature of cooler/moister springs.

This is of concern because herbicides for control of black-grass in spring barley are very limited. Furthermore, as it is likely that the black-grass is spread by seed, it could come from farms where there is resistance to the only available herbicides. We have sent one such sample to researchers at Rothamsted Research to evaluate whether there is herbicide resistance.

The increased interest in reduced tillage is expected to encourage grass weeds such as black-grass. Not all these sightings are associated with reduced tillage, but clearly some are.

It is difficult to estimate how many farms may be infested with black-grass in Scotland, but we suspect we have had samples or sightings from about 20 so far in 2004. In discussion with colleagues in Northumberland, they also believe sightings are increasing in that county as well as adjoining Border regions.

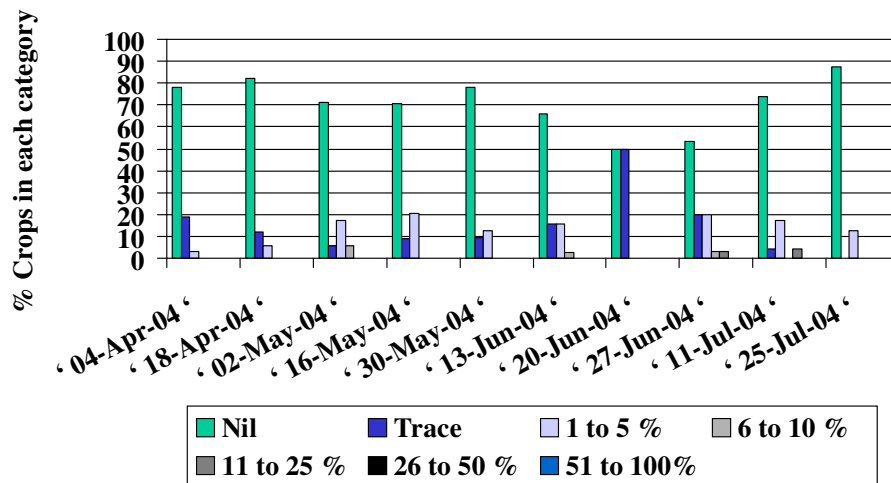
SAC is campaigning within the Crop Protection Report and farmers meetings to make farmers and advisers aware of the potential problem, and we are accepting grass samples for identification. This weed has the potential to dramatically influence Scottish arable farming, both in terms of expense and the amount of herbicide used on Scottish crops.

## Comments on specific crops

### Winter wheat

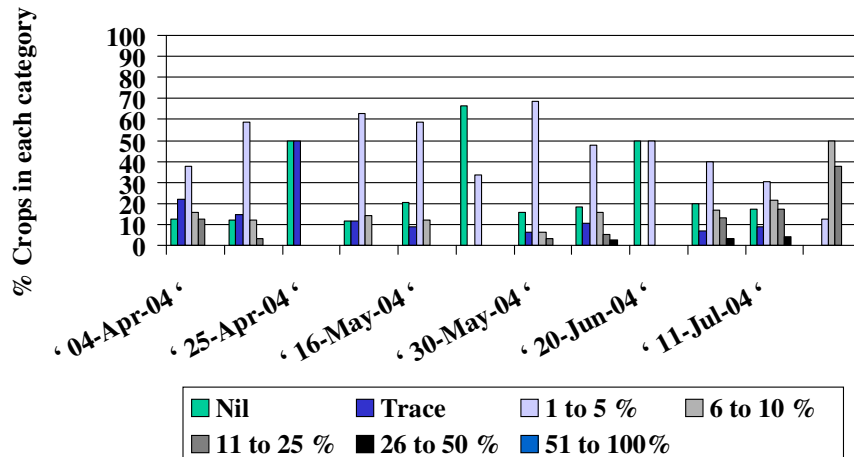
Powdery mildew has been present at moderate levels throughout the season. Growers trying the variety Robigus will however be please with the effective resistance currently seen in this variety.

## Winter wheat powdery mildew



Opus and Bravo have been the key two fungicides to give control, but trials show the strobilurin does contribute to control when applied in a mixture.

## Winter wheat Septoria tritici



## **Pests**

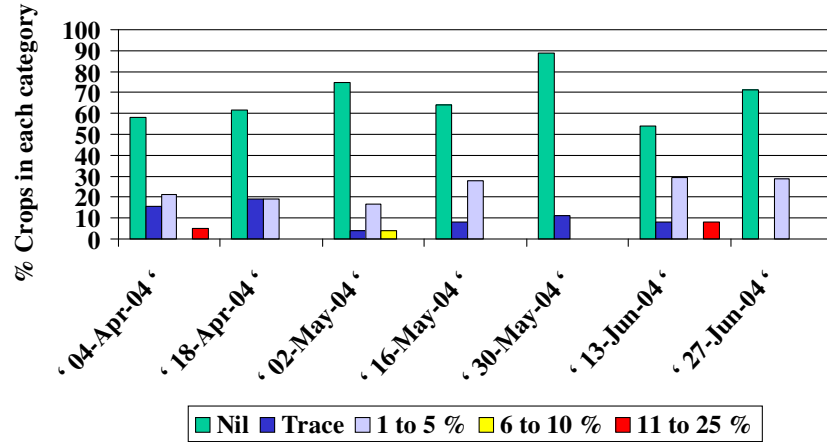
Aphids were common on the heads of crops but the weather and natural enemies kept numbers below treatment thresholds in most cases.

Some alarm was caused by a significant amount of cereal leaf beetle larval feeding on leaves, but damage was mainly to the lower leaves rather than the flag leaf.

## Winter barley

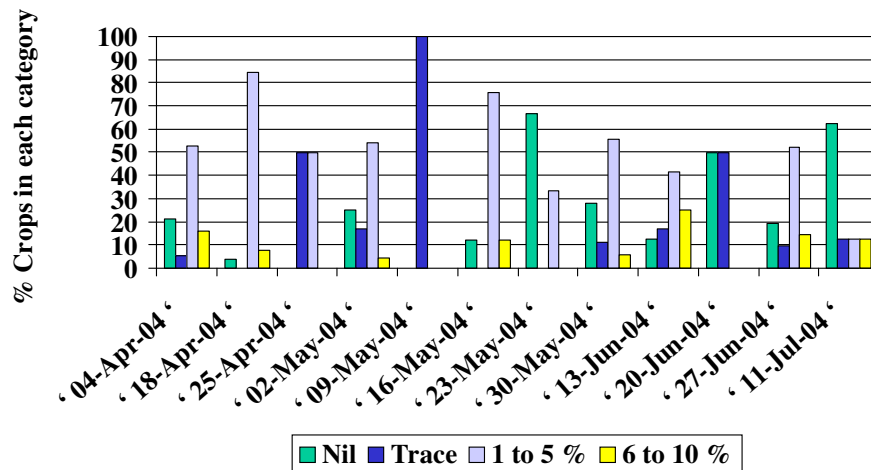
Powdery mildew levels have been higher this season compared to last year. Levels dropped during the development of the upper leaves in May, but the disease developed further in June.

### Winter barley Powdery mildew



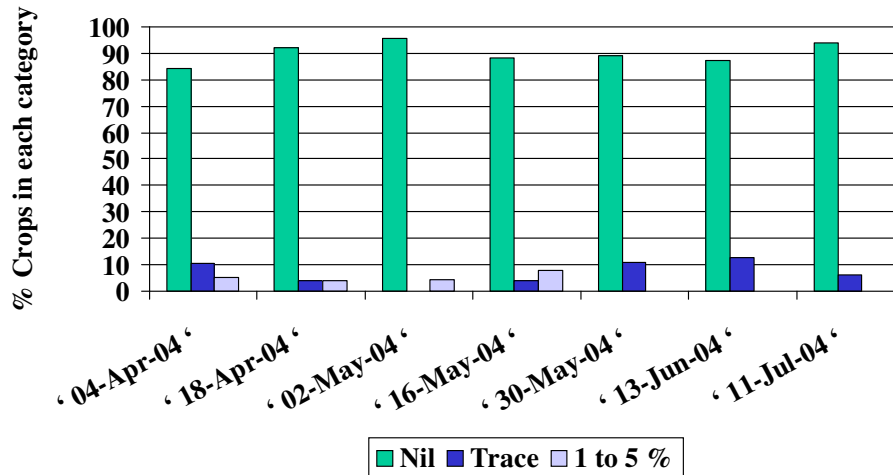
Rhynchosporium remains the key disease in winter barley. The dry weather in May only delayed development of the disease for a short period and the disease increased during the wet June weather. strobilurin fungicides achieved good control.

### Winter barley Rhynchosporium



Net blotch levels remained low, suggesting no issues as far as resistance to strobilurin fungicides.

# Winter barley Net blotch



## Pests

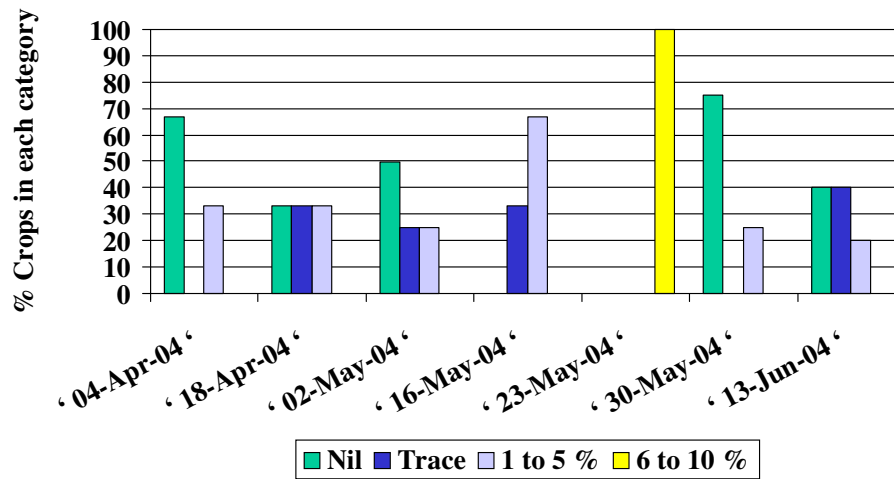
Aphids were common on the heads of crops but the weather and natural enemies kept numbers below treatment thresholds in most cases.

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## Winter oats

Powdery mildew remained the most common disease in winter oats, and highest levels were seen in late May.

# Winter oats powdery mildew



## Triticale

Yellow rust as reported in some commercial crops this season.

## Potatoes

Despite the wet weather in June, night temperatures were too cold to trigger high-risk blight periods. No outbreaks of blight were reported in this quarter. There were however nine cases reported in July at time of writing this report.

### Summary High Risk Periods in May

High Risk conditions for potato blight were recorded at Carlisle on 7 and 8 May. A Near miss was also recorded in Midlothian on 8 and Auchincruive on the 13th May. The Lothians and Northumberland are currently in the middle of a High Risk Period (31 May).

Area	High Risk (May)	Near miss (May)
Ayrshire	-	13
Carlisle	7,8	
Lothians	-	8,13
Northumberland coast	-	13-
Perthshire	-	-
Fife	-	-

### Summary High Risk Periods in June

No high-risk periods have been recorded, but near misses were reported in Fife on 16, 22 and 26 June. Earlier near misses were reported on 7 June in Northumberland and a near miss in Fife and Lothians on 8 June. A High Risk Blight Period was recorded at Dumfries on 8 and 9 June. Remember that when crops are irrigated they automatically become high risk.

Area	High Risk (June)	Near miss (June)
Ayrshire	-	-
Lothians	-	8
Northumberland coast	-	7
Perthshire	-	-
Fife	-	8,16,22,26

### Summary High Risk Periods in July

There are outbreaks of blight across the eastern side of Scotland from Black Isle to the Borders. Most have been minor, but conditions in late July have been ideal for blight development.

Area	<b>High Risk (July)</b>	Near miss (July)
Ayrshire	29,30,31	-
Lothians	28,29,30,31	-
Northumberland coast	28,29,30,31	20
Perthshire	29,30,31	-
Fife	29,30,31	-

- no data

### Summary High Risk Periods in August

Blight is widespread in the east and High Risk conditions continued over a sustained period of time in August.

Area	<b>High Risk (August)</b>	Near miss (August)
Ayrshire	-	-
Lothians	1,2,3,4,5,7,8,9,10,11,12,15,17,18	-
Northumberland coast	2,3,4,5,6,7,8,9,10,11,12,15,17,18,19	1,14
Perthshire	2,3,4,5,6,7,8,9,10,11,12,17,18,19	-
Fife	2,3,4,5,6,7,8,9,10,11,12,16,17,18	14

Reports of blackleg have been low, but the disease was picked up in monitored crops. This is not surprising given the wet soil conditions in June.

#### **Pests**

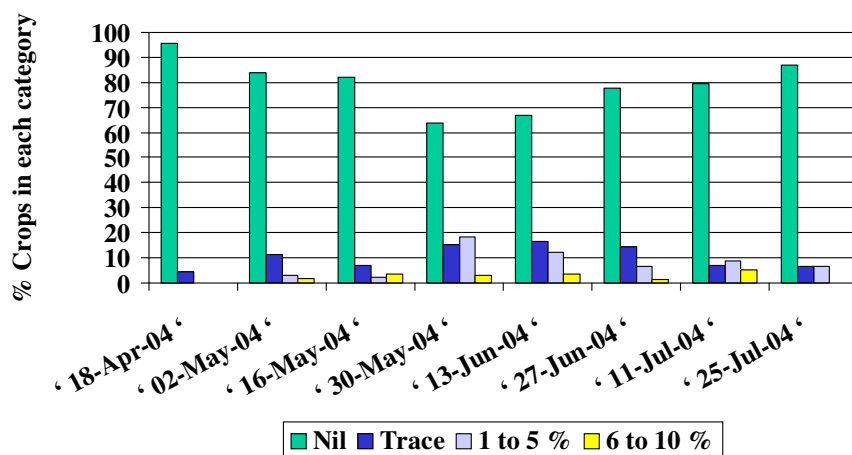
Both peach-potato aphids (*Myzus persicae*) and potato aphids (*Macrosiphum euphorbiae*) were been caught in the Scottish Network of aphid suction traps in May. Growers were advised to check seed potato crops for signs of aphid colonisation. They were also advised not to apply aphicides as an insurance treatment. Wet weather later in June meant there were few major problems with aphids in potato crops up to the end of June.

Poor emergence of some crops was put down to free-living nematodes (mainly *Longidorus* spp) feeding on the sprouts.

## Spring barley

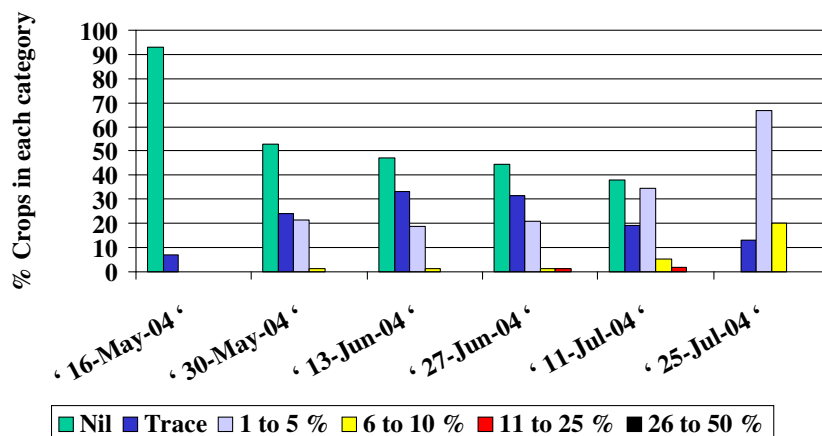
Although many varieties have effective resistance via the mlo gene, the most popular variety Optic is susceptible. Levels on this variety were higher at the start of the season than they have been for several years. The mildew specific fungicides Flexity and Fortress achieved good results when applied as protectant fungicides, but there are suggestions that strobilurin resistance is now widespread.

## Spring barley Powdery mildew



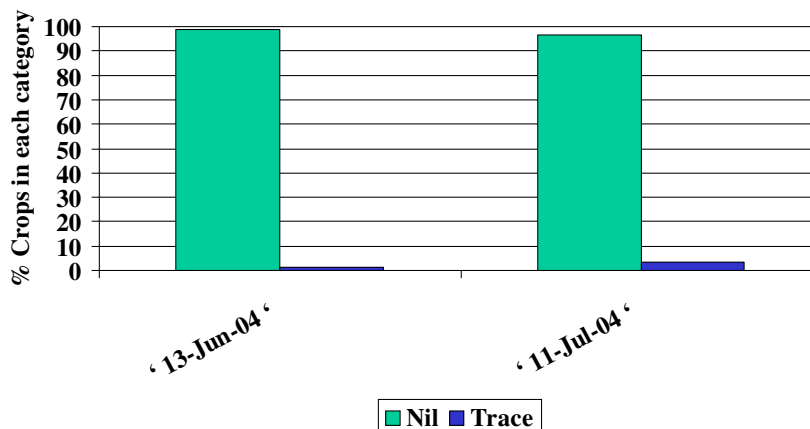
Rhynchosporium was slow to develop at the start of the season. This is a reflection of the dry spell of weather in May. The disease developed later once the wet weather returned, primarily as a result of plenty of disease on the winter crop ready to infect the spring crop.

## Spring barley Rhynchosporium



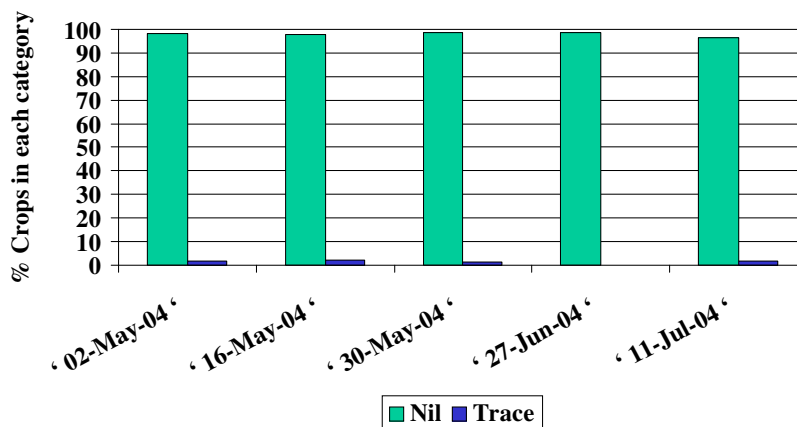
Brown rust is usually rare, but dry warm spells of weather in late Jun have encouraged the disease.

## Spring barley brown rust



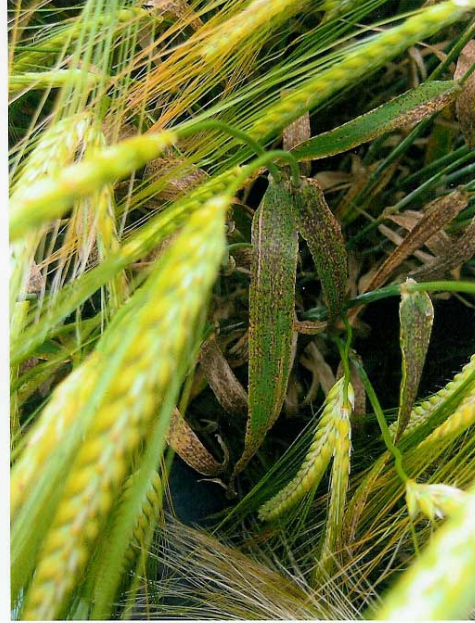
Net blotch levels were low in the spring crop.

## Spring barley Net blotch



## Ramularia

Weather conditions for Ramularia and barley leaf spots were ideal in June and July. Wet overcast weather followed by sunny spells resulted in high levels of the disease in winter barley in early July. High levels were seen in the spring barley crop in late July. Where corrective measures were not taken, loss in yield and quality is expected to be high.



## **Pests**

Although there was a high risk forecast for leatherjacket damage to spring barley this season, few serious problems were reported, and where insecticides were used control was good.

Most crops outgrew the threat from aphids on the heads.

Cereal leaf beetle grubs caused some visually striking damage to the leaves but not enough to warrant intervention with an insecticide.

## **Brome-Grasses**

In part due to difficult weather conditions at time of potential herbicide treatment and possibly due to increased reduced tillage systems, infestations of sterile brome have increased in season 2002/3.

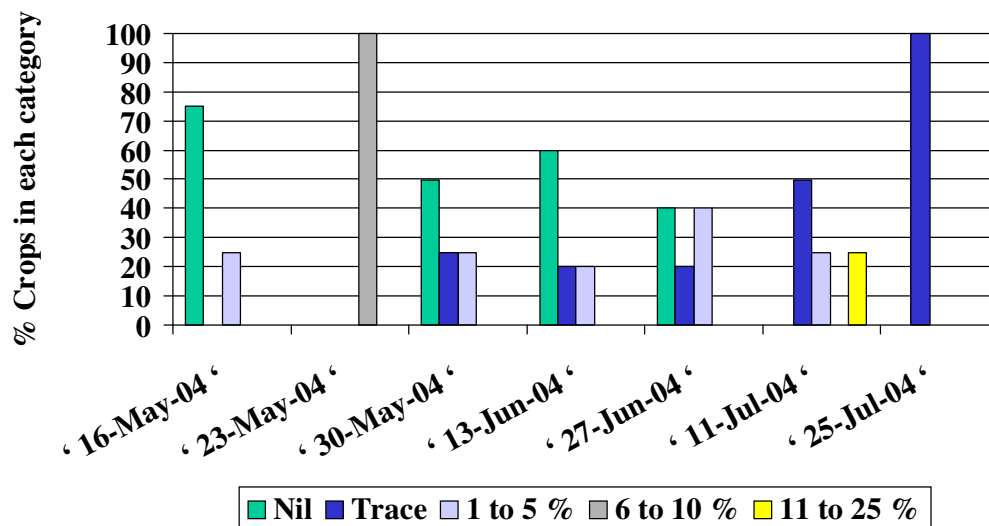
More unusually have been increases in soft-brome, which also appears in spring barley (in which there is no herbicidal remedy), and sightings of meadow-brome plus one case of rye-brome from the Borders. We have never previously recorded rye-brome in our advisory records.

Meadow-brome is also rare in Scotland, and we suspect such infestations may be seed-borne.

### Spring oats

Powdery mildew was the most common disease in spring oats with higher levels seen in June and July.

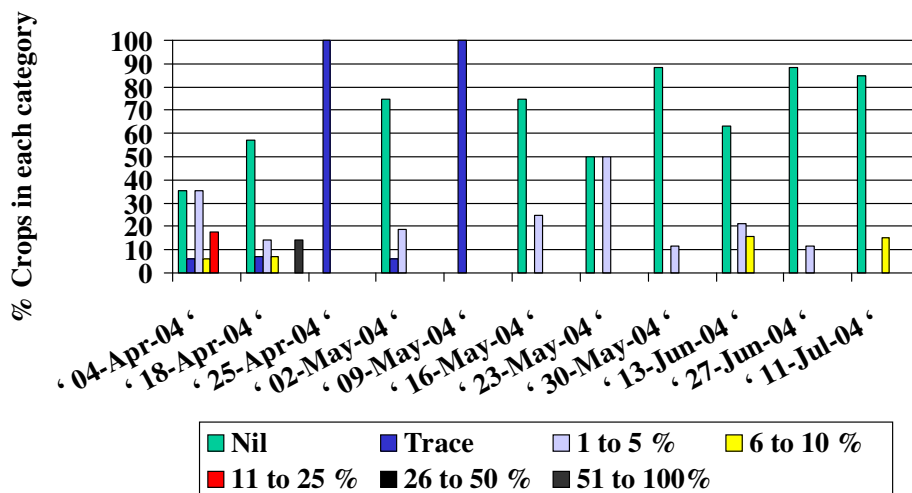
## Spring oats powdery mildew



## Winter oilseed rape

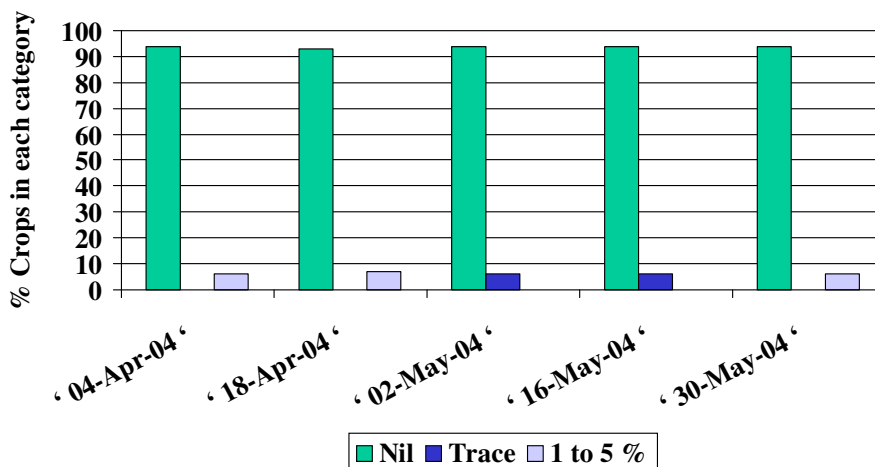
Light leaf spot levels were higher in the North of Scotland. In the south, levels were low. The dry autumn conditions experienced in the south may be the key reason for this low infection in the south.

# Winter oilseed rape Light leaf spot



Downy mildew levels were low during this monitoring period. The disease is however not damaging at this time.

# Winter oilseed rape Downy mildew



## Pests

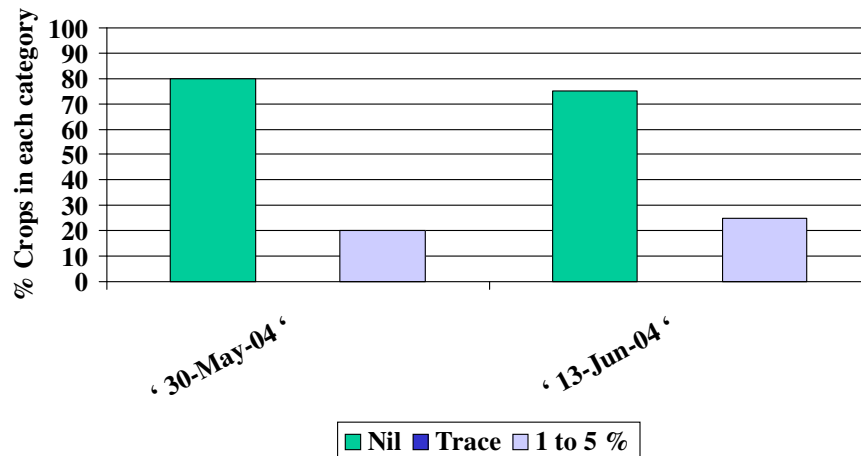
Damage caused by rape winter stem weevil (*Ceutorhynchus piciparsis*) damage was seen in several winter rape crops in East Lothian in April. The rape winter stem weevil larvae were tunnelling in the stem and crown, destroying the terminal shoot. Less severely attacked plants were stunted, with the production of many lateral shoots at stem extension.

Pollen beetle numbers were higher than usual on winter rape crops, but usually still below the 15 per plant threshold to justify an insecticide treatment. Some backward crops did require an insecticide however, as the threshold for these crops is 5 beetles per plant.

## Spring oilseed rape

Downy mildew levels were low during crop emergence.

# Spring oilseed rape Downy mildew



## Pests

Flea beetle damage to crops at emergence was common.

Pollen beetle migration from the winter to the spring crop at the end of flowering led to many spring crops requiring an insecticide treatment at green-yellow bud.

## ***Peas & Beans***

Pea and bean weevil damage was common this season. Wet weather at flowering did mean a potential high risk from botrytis and chocolate spot, but no major problems have been reported.

## ***Swedes***

### **Pests**

Many crops not covered by mesh suffered from being sown into dry soil conditions and flea beetle damage to the emerging cotyledons. Several crops (fodder and shopping swedes) had to be ploughed in.

These uncovered crops also suffered from cabbage root fly attack, and no action is possible due to the revocation of any suitable insecticide treatment.

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