

Crop Monitor

Issue 7

Week ending 26th November 2004

Autumn Pest Management

With winter crops planted our thoughts turn to protecting newly sown crops. A management strategy for winter-sown cereals is discussed below.

Winter wheat harvest results

Although some winter wheat has been planted results from RL variety trials in Northern Ireland are reviewed.

Blight Net

Following a successful season of blight control, the season is reviewed.

Potato Storage

The recent potato storage event is reported, highlighting the main management decisions for this season crop

First Early Potato Variety Trials

The main characteristics of varieties in the first early potato trials are presented.

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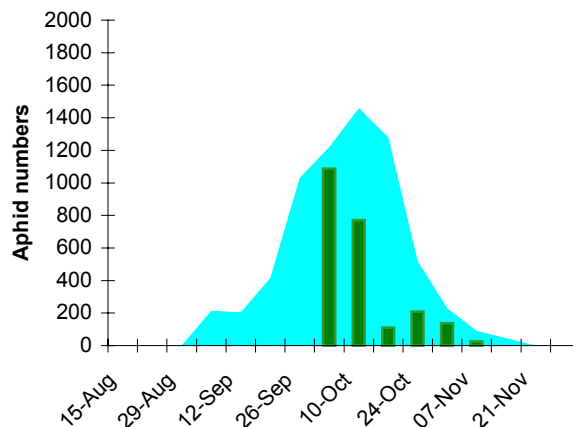
Free test for Spraing

Autumn pest management

Aphids

The cool weather this autumn has had an affect on aphid populations, with a much lower incidence than last year. An aphid trap operated by the Science Service at Newforge Lane provides an indication of the risk to crops by migrating aphids. At this point last year, 1064 aphids per week were trapped, whereas only 111 aphids were trapped this year (See graph below). Weekly updates on migrating aphid numbers can be found on the Rural Portal at www.ruralni.gov.uk.

Aphid Migration 2004



Autumn Pest Management

Barley Yellow Dwarf Virus (BYDV)

Although there may be less risk, growers should still be vigilant especially with crops following grass or “dirty” stubbles.

1. Cereal volunteers, or grass weeds within a field can act as hosts for aphids after stubble destruction. This green bridge should have been destroyed by desiccation with paraquat or glyphosate 7-10 days before ploughing and an interval of at least 14 days allowed before sowing. This type of infection typically causes large discrete patches of severely infected plants.
2. Winged aphids flying from grass or cereal volunteers elsewhere can also introduce the virus into newly emerged crops during the autumn. This is the most common way of BYDV infection.

Infected plants cannot be cured, so control measures must aim to prevent further infections. Control strategies revolve around destruction of the “green bridge” and the use of aphicides, since no winter cereal varieties show significant levels of resistance to BYDV. Seed treatments containing imidacloprid (i.e. Baytan Secur, Raxil Secur and Sibutol Secur) can reduce the need for aphicide sprays.

Crops that emerge before the end of October:

- Spray an approved aphicide at the end of migration (usually around the end of October, but later in mild autumns) to prevent spread of the virus within the crop by the wingless offspring of winged migratory aphids.
- For crops still to be drilled an aphicide approved for BYDV vector control should be applied at the 2-3 leaf growth stage.
- Earlier sown crops may benefit from an extra spray, before the end of aphid migration, if inspection on warm sunny days reveals the presence of aphids.

Crops grown from imidacloprid (Secur)-treated seed:

- Crops sown in the last week of September, or later, at seed rates of at least 125 kg/ha should not need an aphicide spray.
- Crops sown in the middle two weeks of September, at seed rates above 100 kg/ha, should be sprayed at the end of aphid migration.
- Crops sown before the second week in September, or at seed rates below 100 kg/ha, may require a spray before the end of aphid migration as well as one at the end.

Aphicides Approved for Control of BYDV Vectors in Winter Barley and Winter Wheat

Active ingredient	Product
Cypermethrin	Toppel 10
Deltamethrin	Decis
Dimethoate	Rogor L40
Esfenvalerate	Sumi-Alpha
Lambda-cyhalothrin	Hallmark (with Zeon Technology)
Pirimicarb	Aphox
Tau-fluvalinate	Mavrick
Zeta-cypermethrin	Fury 10 EW

Slugs

Due to the unsettled weather, slugs may be a problem in recently drilled crops, especially after grass, potatoes oil seed rape or “dirty” stubbles. The field slug is the worst offender causing hollowed seed or rasping of leaves. Thresholds for treatment occur when 4 slugs can be found under a 150mm square tile prior to drilling or 10% or more plant loss at GS21.

In terms of control, drilling cereals to 40mm will provide some control as will a good consolidated seedbed, which helps to reduce slug movement. Chemical control measures include methiocarb (e.g. Draza slug pellets) or metaldehyde based products. When using chemical control measures, consider using metaldehyde-based products, which are much less damaging to slug predators than methiocarb.

Autumn weed control

Autumn herbicide programmes based on residual herbicides such as diflufenican (DFF) and pendimethalin (PDM) affect many weeds up to the 2-3 leaf stage and meadow grass to 2-leaves, and will prevent further emergence of many weeds during the autumn. IPU based products will help to control weeds at more advanced stages and annual meadow grass.

From now on if conditions are reasonable, chickweed, pansy, dead-nettles and common field speedwell, along with cleavers will emerge throughout the late autumn and early spring. Broad-leaved weeds emerging now, are unlikely to be competitive in the crop until the spring. If one of the products above has been used for grass control, they will also control many of the broad – leaved weeds. If the crop is open, especially in wheat, a follow up herbicide especially for cleavers may be needed to control a spring flush. If there are no grass weeds within the crop, waiting until the spring may be more cost effective.

Annual meadow grass is the key weed to control in the autumn.

Wild Oats

Wild oats emerge both in the autumn and in the spring. It is generally only worthwhile treating them with a specific herbicide in the spring when both emergence flushes are present. However, where wild oats are through in high numbers (>20 m²) in early sown crops or are large (2 tillers or more) then it may be worth putting on a treatment. Where wild oat populations are low, IPU and chlorotoluron do have some effect when plants are small, otherwise a treatment can wait until the spring. Herbicides suitable for wild oat control include Cheetah s (fenoxaprop-p-ethyl) or Topik (clodinafop), which can be used on wheat, and Tigress Ultra or Corniche (fenoxaprop-p-ethyl + diclofop) can be used in wheat and barley. Grasp (tralkoxydim) and Dagger (imazamethabenz) can also be used in wheat or barley.

Winter Oats

There is a limited range of herbicides available for post-emergence weed control in winter oats. Lexus Class offers the broadest spectrum of control, and is the only product for suppressing seedling annual meadow-grass, chickweed, mayweeds, speedwells, cleavers and many other broad-leaved weeds. It can be used until the 31st December, but can yellow lush crops if sharp frosts follow. The crop recovers, but care should be taken. Other options include Mecoprop-p and Quantum (tibenuron).

Winter wheat variety trials, 2004

The Recommended List winter wheat trials in 2004 have produced some interesting results. Trials at Limavady, Downpatrick and Crossnacreevy were harvested in difficult conditions that led to problems with sprouting and ear diseases. Yields in the treated trials at Crossnacreevy and Downpatrick exceeded 11 t/ha for most varieties, whilst at Limavady yields were lower but were greater than 10 t/ha in most cases.

Recommended varieties

Of the five recommended varieties, **Richmond** was highest yielding (average yield of 11.7 t/ha) and its performance was notably consistent across all sites. The yields of the remaining four were more variable from site to site. **Napier** appears to have recovered some form since last year. **Claire's** yields were similar to its long-term mean. **Einstein** out-performed **Claire** (11.2 compared to 11.0 t/ha, respectively), although its yields were down slightly when compared to its long-term mean. **Deben** was disappointing this year, particularly at Limavady, where its yield was only 8.9 t/ha in treated plots (only 87% of treated controls). In untreated plots at the same site it yielded only 6.9 t/ha.

Candidate varieties

Robigus produced the highest yield of all the varieties tested in 2004 (12.5 t/ha at Downpatrick) and was consistently high across sites. **Smuggler** also yielded consistently well. Both these varieties excelled in untreated trials, yielding over 90 % of the treated controls. **Cordiale** performed well, but data are from one site only. In untreated trials the remaining candidates out-yielded the controls. **Exsept** was most notable, with **Istabraq** and **Nijinsky** also performing well without treatment.

Nijinsky and **Istabraq** did not fulfil the high expectations raised by their treated yields in 2003. Sprouting of the grain is a possible explanation for the disappointing yields due to the exceptionally wet weather towards the end of this growing season. Counts of sprouted grain at harvest ranged from 0 – 7 % in all varieties except **Nijinsky** in which values of 16, 16 and 8 % were recorded for Crossnacreevy, Downpatrick and Limavady, respectively. This suggests that, in the case of **Nijinsky**, sprouting may have caused the disappointing yields.

Yields (% of the control varieties) of winter wheat varieties in 2004 in Northern Ireland. Data are from treated (in bold) and untreated (in italics) plots.

	Mean 2004		Crossnacreevy		Limavady		Downpatrick	
Mean of controls (Claire, Consort, Malacca, Option, Tanker) (t/ha at 15% mc)	10.89	<i>8.04</i>	11.46	<i>8.04</i>	10.24	<i>6.89</i>	10.99	<i>8.16</i>
Recommended varieties								
Richmond	107	<i>109</i>	108	<i>111</i>	107	<i>104</i>	106	<i>113</i>
Napier	105	<i>104</i>	102	<i>98</i>	109	<i>117</i>	104	<i>114</i>
Einstein	103	<i>109</i>	101	<i>112</i>	108	<i>102</i>	100	<i>112</i>
Claire	101	<i>109</i>	100	<i>108</i>	104	<i>105</i>	100	<i>99</i>
Deben	97	<i>104</i>	100	<i>105</i>	87	<i>98</i>	102	<i>107</i>
Candidate varieties								
Robigus	110	<i>122</i>	107	<i>121</i>	109	<i>118</i>	113	<i>128</i>
Cordiale	108	-	-	-	110	-	-	-
Smuggler	106	<i>122</i>	100	<i>11</i>	108	<i>135</i>	111	<i>121</i>
Welford	103	-	-	-	104	-	-	-
Dickson	101	<i>103</i>	99	<i>105</i>	101	<i>102</i>	103	<i>102</i>
Gladiator	101	-	-	-	102	-	-	-
Exsept	101	<i>117</i>	97	<i>113</i>	-	<i>117</i>	103	<i>120</i>

Istabraq	100	110	96	106	102	114	101	111
Nijinsky	100	106	99	103	105	111	95	104

Summary

Richmond performed best of the recommended varieties in both untreated and treated trials and was consistent across sites. **Robigus** out-yielded **Richmond** in both treated and untreated trials, and **Cordiale** produced excellent yields in the one trial in which it was included. **Smuggler** stood out in the untreated trials and performed at a similar level to the recommended varieties in the treated trials. Elevated levels of sprouting in **Nijinsky** may have been responsible for the disappointing yields of this variety.

Blight-net

Blight-Net and Blightline have now finished for the 2004 season. This year Blight-Net was updated and expanded adding 4 new fully automated weather stations to our existing 5 sites capturing blight risk data across Northern Ireland. Blight incidence was low with 27 samples from outbreaks positively identified at the Disease Control Laboratory, Applied Plant Science Division (APSD) at Newforge Lane in comparison to 46 in 2003. Early planted crops got off to a blight-free start in the cool dry weather with the first Smith Period recorded at Greenmount Campus over 22-23 June compared with 16-17 May in 2003. Blight pressure remained high during July with very high risk conditions prevailing for much of August and early September. The last outbreak was reported on 8 September and the potential for of tuber blight development must not be ignored, particularly in view of the very wet weather in August. Tuber blight may not be noticed for several weeks after infection and often becomes evident at two or three weeks after store loading.

Drying tubers at harvest and keeping them dry and cool will minimise the risk of disease spread during handling. Avoid grading blighted stocks going into store unless soft rotting becomes a problem. If you intend warming the crop prior to grading at the point of sale, take care to avoid condensation because some tubers may start to break down and spread disease across the grader.

Primary aims for successful storage

Potato harvesting was completed by 14 October and the ambient store at Greenmount Campus is now full of potatoes, including all of the varieties grown for the Agronomy of Ware Potatoes project.. At present graded tubers of specific varieties are being dispatched for the fresh and processing markets.

Over the past week there has been a sharp drop in soil temperature and extra attention must be given to prevent bruising through the use of fall breakers and avoidance of large drops into trailers and boxes. On the positive side, full use should be made of colder night air (within 4°C of crop temperature) to cool any ambient stored crops, which were harvested earlier in the season.

‘Staying Ahead with Potatoes’, a major storage event was held on 12 August at the Abbey Farm Greenmount Campus. The advice on storage given by our guest speaker Bob Pringle will be all the more relevant after what is turning out to be a wet late season. His top tips for storage as outlined on the day are presented in the remainder of this section. .

It is vital to remove as much soil as possible during harvest or during grading into store. The use of Dalhman, or axial rollers, can reduce the soil content in crops lifted from wet soils. In dry lifting conditions, the rollers should be removed or covered to prevent skin damage, , or use harvesters without these rollers instead. An alternative is to harvest into trailers and separate into store. If the cleaning machinery is smearing the crop with soil, it is better to stop the cleaning, ventilate the

crop with high volumes of air, then put the partially dried crop over a cleaner to get rid of the remaining soil.

With the crop relatively free from soil, the next target is to remove moisture on the crop and in the adhering soil. Until this is removed, the store will remain a dank and very humid place. A dry, slightly dusty tuber, free from any moisture is the objective. While dust is a problem, it can be viewed as a good problem! In contrast wet potatoes are a recipe for rotting and disease.

During the first few days after harvest, potatoes give off a large amount of respiration heat, especially with early harvested potatoes. This poses a real danger to the early stored crop. If this heat is not immediately removed by ventilation, the heat warms the air between the tubers, which rises and condenses on the cooler potatoes above. This condensation can be avoided by constant running of positive ventilation during the first week in store.

This respiration heat can be turned from a problem to a benefit by using it to positively ventilate the crop over this period. In grain drying we use heat to speed drying of the crop. This naturally produced heat will do the same job and increase the rate of drying over these first few days.

Types of ventilation system

Bulk stored potatoes are relatively easy to ventilate positively, so long as soil has been removed. Boxes are only easy to ventilate if they are square, so that they fit together closely, and if they are designed for the positive ventilation to be used. If boxes are all different types and distorted into diamond shapes, no positive ventilation system is going to work well. Wind can be used to dry such boxes in an open sided barn in 2-4 days so long as spaces are left between the columns of boxes. If new harvested boxes of potatoes are put into a closed building, the space ventilation system will eventually dry them, albeit slowly.

Positive ventilation systems prevent condensation forming on potatoes in the first few days after harvest, they help dry crops rapidly and they can be used to recirculate air through the crop to rapidly reduce any temperature differentials that might result in condensation in potatoes. Stores with positive ventilation fitted permanently are simple to keep free of moisture and if condensation does occur for any reason, re-drying is rapid.

Space ventilation

Space ventilation systems are cheaper than positive ventilation systems and are reasonably effective when potatoes are large in size. It suits ware crop storage where stores hold a single variety, which can be built into a series of walls across the store when loading. This maximises the airflow through the pallet apertures during the loading period. In seed stores where boxes are loaded in rows of a single variety, ventilation of the potatoes in the full boxes is poor during the critical first few days of storage.

First Early Potato variety trial 2004

First early potato varieties were included in a DARD trial in 2004 on a farm just south of Comber on the shores of Strangford Lough. The varieties were lifted on three occasions and quality characteristics associated with boiling, crisping and chipping were assessed following each lift.

The varieties included in the trial, along with the control varieties: Home Guard and British Queen, were:

Accord

Available in Northern Ireland through MBM, it is claimed that this variety has performed consistently well in the early areas of Cornwall and other areas of England. White-skinned and cream-fleshed, it has been included recently in DARD trials in 1999, 2000 and 2002.

Lady Christl

Bred in the Netherlands by Meijer Research and available in Northern Ireland through MBM, Lady Christl is considered suitable for table use. It has yellow flesh and is in this trial series for the first time.

Lady Felicia

Bred in the Netherlands by Meijer Research and available in Northern Ireland through MBM, Lady Felicia is considered suitable for table use. It has yellow flesh and was first included in the DARD trial in 2002.

Maris Peer

Introduced in 1962, a second early variety which produces very even small to medium-sized tubers suitable for salad pre-packs. It was first included in 2002 in this trial series at the request of pre-packers.

Premiere

Bred in the Netherlands by Brands and available in Northern Ireland through Agrico, Premiere is being advocated for early season processing. It has been included in this trial series in 2000 and 2002.

Management of the First Early Potato variety trial in 2004

Planting Date	31 March 2004
Herbicide	Gramoxone and Lexone
Blight & Aphid Control	Merlin x 4 sprays, Invader x 2 sprays and Shirlan x 1 spray
Harvest Dates	
Lift 1	14 June 2004 (75 days after planting)
Lift 2	29 June 2004 (90 days after planting)
Lift 3	20 August 2004 (142 days after planting)

Highlights of the behaviour of the varieties in the 2004 trial

Accord

- Early bulking
- Tends to produce growth cracks and greens
- Cream-fleshed, mealy at 3rd lift
- Suitable for crisping

British Queen – 2E

- Produced many small tubers
- Cream-fleshed, mealy at 3rd lift
- Can produce fibres
- High dry matters at 1st and 3rd lifts
- Some potential for chipping or crisping

Home Guard

- Low yields at 3rd lift
- Produced many defects at 2nd and 3rd lifts, mainly misshapen tubers
- Yellow flesh at 1st lift but cream at 2nd and 3rd
- Produced sweet flavour at 1st lift but not at 2nd or 3rd
- Mealy at 3rd lift
- High dry matters at all lifts
- Chips discoloured, crisps were dark and severe after cooking blackening at the 2nd and 3rd lifts

Lady Christl

- Early bulking, produced many small tubers
- Very yellow flesh, non-mealy
- Pronounced sweet flavour at the 1st and 2nd lifts but not at the 3rd
- Low dry matters at all lifts
- No potential for chipping or crisping

Maris Peer – 2E

- Slow bulking, low yields at 3rd lift
- Few defects
- White-fleshed
- Little potential for chipping or crisping

Lady Felicia

- Produced many tubers, growth cracks were numerous at the 2nd lift
- Very yellow flesh, non-mealy
- Low dry matters at all lifts
- Produced sweet flavour at 1st lift which was less noticeable at 2nd or 3rd
- Potential for chipping and crisping

Premiere

- Early bulking, produced many small tubers
- Became more yellow-fleshed and mealy at later lifts
- Quite high dry matters
- Little potential for chipping or crisping

Full details of the characteristics of the varieties based on trials conducted over a period of years will be available shortly in a DARD booklet.

Further information on individual varieties can be obtained from:

Mrs Carol Hall, Plant Testing Station, Crossnacreevy, BELFAST, BT6 9SH,

Phone: 028-9054-8000 Fax: 028-9054-8001

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Spraing

Nematodes of the species *Trichodorus* and *Paratrichodorus* often referred to as 'stubby root' nematodes are found in light sandy soils and are known vectors of **tobacco rattle virus** (TRV) that results in a range of symptoms collectively referred to as **spraing**.

Symptoms

Typical symptoms range from single or concentric arcs, through to streaks and wavy lines to circles of brown corky tissue in the tuber flesh. Spraing does not usually cause a reduction in yield, but it can seriously affect the marketability of the crop, particularly in processing varieties including Navan, Yukon Gold and Pentland Dell, which are highly susceptible.

These free-living nematodes live in the soil travelling around within soil water films. Tobacco rattle virus is transmitted to the host through injection of saliva into the cell contents during feeding of both adult and juvenile nematodes. Control measures are restricted to variety choice and or the use of nematicides.

A Free soil-sampling test for detecting spraing is now being offered by DARD. Best results are obtained by sampling soils from October until March (inclusive). Fields should be sub divided into units no greater than 4 ha (10 acres); subdivision may also be necessary to take account of differences in soil type and previous cropping history. A field plan should be submitted with the soil sample clearly illustrating any divisions. Cores of soil at least 2.5 cm across and 20-25 cm (8-10") deep should be taken at random in a "W" configuration to provide about 1 kg soil in total.

Clean the sampling tool between sampling different fields or parts of fields. Place the soil from each sampling unit into a heavy gauge polythene bag and secure the bag with a tie to prevent cross-contamination. Record details relevant to the sample on the bag. Note; nematodes are very fragile; rough handling of soil during sampling and transportation may jeopardise the results of the test. **Contact your local Development Adviser for further information.**

Always consult your buyer protocols before using any chemical

All previous editions of Crop Monitor and Crop Management Notes are available on-line at [www.ruralni.gov.uk /crops](http://www.ruralni.gov.uk/crops).

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