College of Agriculture, Food and Rural Enterprise | Enniskillen | **Greenmount** | Loughry

Crop Monitor

Issue 1 **Week ending 26th February 2005**

The Crops Team would like to wish all our readers a Happy and Prosperous 2005

Options for patchy crops
We highlight the options for patchy crops and management decisions for crops with fewer plants.

Spring Barley and Spring Oat Recommended List
Which varieties are hot this spring and which are not, options inside.

A guide to mineral deficiencies in cereals
Some crops may suffer from deficiencies, but which one? A step-by-step key inside should help to diagnose the deficiencies in your crops this spring.

Sprayer maintenance
With the spraying season about to start we provide a checklist to ensure a trouble free season.

Beating Black Scurf
Details on soil and seed fungicides options are discussed.

Chitting
We highlight the practicalities and benefits to quality from chitting potato seed.

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Operation Lapwing

Photograph courtesy of Bob Glover and RSPB-images.com

Lapwings nest around mid-March on ground that is bare or has a short sward. Spring cereals, set-aside or newly ploughed land are all contenders as ideal nesting sites. Winter cereals are not usually used as the sward height is too long.

Sadly, the number of lapwing pairs in NI has declined by over two-thirds in the last twenty years to an estimated 1700 pairs. But all is not lost, being aware of your lapwings and taking care when carrying out field operations may help you to keep your nesting lapwing or even attract them back.

This is the second year that the RSPB, in conjunction with the UFU, are running **Operation Lapwing**, a UK-wide initiative to provide farmers with guidance on what they can do to benefit lapwings.

An action plan is outlined on page 2.

Operation Lapwing - five-point action plan

1. Identify at least one field each year that you can manage to help lapwings. Grow a spring cereal or root crop in this field.
2. Choose a large, unenclosed field away from mature hedgerows and woodland.
3. Choose a field that contains or is close to chick feeding sites – wet/ boggy areas, pasture or set-aside.
4. Try to carry out all machinery operations by March 31st, or consider marking nests so you can avoid them. Alternatively completing all operations within 10 days will allow lapwing to re-nest successfully.
5. Create a 1-2 ha fallow nest plot in the centre of the field by ploughing or discing in late February. You may be able to use a set-aside derogation for this work, or enter DARD's Countryside Management Scheme which offers incentives to farms with breeding lapwing.

To promote the work that farmers are doing to benefit lapwings the RSPB are also running the Lapwing Champion Competition. The NI winner will be announced at this year's Balmoral Show, with a chance to go forward to the UK final. The top prize of £1,000, is sponsored by Jordan's.

To receive your lapwing pack or to enter the Lapwing Champion Competition contact the RSPB on 02890 491547 or the UFU on 02890 370222. For further advice on DARD's Countryside Management Scheme, contact your local DARD office.

Options for patchy crops

In contrast to last autumn crops establishment has been variable. Early sown crops are looking well while later sown crops have quite variable establishment. The first assessment necessary before any management decisions are made, is a plant count.

Why should I conduct a plant count?
Plant counts provide an indication of the percentage of seeds sown that have established. Estimating plant establishment encompasses a range of factors, many of which are farm, field and day specific. Therefore a plant count is the only true way of estimating establishment for future years and allowing sowing rates to be more accurately calculated.

How do I assess plant counts?

- Using a 0.5-m stick, walk a "W" path through the field. Stop at two places along each side of the "W" to do a plant/shoot count so that counts are completed in a total of eight places.

- Throw the 0.5 m stick a short distance into the crop. Wherever it lands align the stick so that it runs parallel between two rows of plants. Count the number of plants/shoots along both sides of the stick. This gives the number of plants/shoots per m at that point in the field.

- The distance between rows must be measured before plants/m^2 can be calculated. This should be done several times and the average calculated.

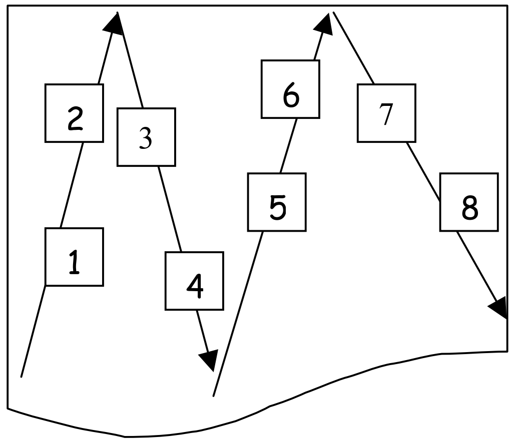
- Calculate the average number of plants/shoots per m using the formula:

$$\textbf{Average plants/shoots per m} = \frac{\textbf{total number of plants counted in 8 places in field}}{\textbf{8}}$$

- Calculate the plant/shoot population (plants/shoots per m^2) using the formula:

$$\textbf{Plant/shoot population (plants/shoots per m}^2\textbf{)} = \frac{\textbf{average plants/shoots per m x 100}}{\textbf{the distance between rows (in cm)}}$$

Example and recommended action



Plant/shoot counts were taken at eight points in a field of October-sown wheat (as illustrated above). The results are summarised in the table below.

Sampling Point	Plants/m	Shoots/m
1	21	86
2	18	92
3	19	88
4	16	79
5	22	99
7	14	81
8	20	85
Average	**Total/8 = 16.3**	**Total/8 = 76.3**

Distance between rows = 12 cm

$$\text{Average plants/m}^2 = \frac{\text{average plants/m x 100}}{12} = \frac{16.3 \text{ x } 100}{12} = 136$$

$$\text{Average shoots/m}^2 = \frac{\text{average shoots/m x 100}}{12} = \frac{76.3 \text{ x } 100}{12} = 636$$

The plant population in this crop is higher than the target population(Table 1). The crop is deemed to be at moderate risk of lodging later in the season and a plant growth regulator will be required at early stem extension (GS 30-31) (Table 2).

Although the plant population is higher than the target the shoot population is well below 1000 shoots/m^2. The first nitrogen dressing should therefore be made during late tillering (before GS 30). This early application will encourage survival of tillers without unduly increasing lodging risk.

What are the optimum plant populations?

Table one highlights the target plant populations for winter wheat depending on the sowing date. Wheat plants can produce over 20 tillers/plant particularly when sown early and this accounts for the low target plant population for early sown crops.

Table 1: Target Plant populations in spring for winter wheat crops

Target plant populations in spring for winter wheat crops	
Sowing date	**Target population in spring (plants/m^2)**
Early September	40
Late September – early October	60
Remainder of October	90
Early November	120
Late November	150

What do I do once I have a plant count?

Various management guidelines are highlighted in Table 2 depending on your plant population. Plant and shoot populations should also influence your spring management of the crop.

Table 2: Benchmarks and action points for winter wheat crops

Benchmarks for winter wheat plant and shoot populations in February/March	
Benchmark	**Action**
30 or less plants/m^2	**Plough the crop down and resow with a spring cereal crop if the plant population is lower than 30 plants/m^2.** This option should be seriously considered particularly if the crop was late sown, the plants are unevenly distributed in the field or if the crop has suffered from soil structural problems that are likely to be remedied by ploughing e.g. surface capping.
30 or more plants/m^2	**Winter wheat has the capacity to produce high numbers of tillers per plant.** If a crop is thin but the plants are fairly evenly distributed and there are no obvious soil structural problems the crop may still yield well even at such a low population, particularly if sown early. Nitrogen at 40 kg/ha applied at early tillering, will encourage tillering and is certainly less costly than resowing with a spring barley crop. Provided weather improves, shoots produced now may give a satisfactory return compared to the cost of resowing.
120 plants/m^2	**Consider not applying chlormequat if the plant population is below 120 plants/m^2.** The crop is likely to have developed a strong root system that will greatly reduce the risk of lodging later in the season, provided root development is not impeded by soil structural problems.
200 plants/m^2	**Apply chlormequat at early stem extension (GS 30-31) if the plant population is above 200 plants/m^2.** The root system is likely to be underdeveloped placing the crop at greater risk of lodging.
1000 shoots/m^2	**Apply 40 kg N/ha during late tillering (normally mid March) if the shoot population is below 1000 shoots/m^2.** This early dose of N will encourage tiller survival. **If the shoot population is above 1000 shoots/m^2** N should be delayed until the start of stem extension (GS 30-31), which normally occurs in late March/early April. Earlier applications in thick crops encourage excess tillers to survive making the crop more susceptible to lodging.

What do I do with areas that did not establish?
In low lying fields or areas that flooded, some crops have failed to emerge. When ground conditions improve in the spring one option is to sow the poorer areas with spring barley. The spring barley will ripen at approximately the same time as the wheat and will not affect harvest. When applying pesticides during the season, ensure that the label requirements apply equally to winter wheat as spring barley. If your crop is destined for seed or growing to specific customers requirements this would not be an option.

Spring Cereals Recommended List 2005

The DARD Cereal Variety Recommended List booklet for 2005 will be available shortly. It contains information on spring and winter cereal varieties based on results from HGCA and DARD funded trials in the last 5 years. Below are some details of the spring cereal varieties on the 2005 Recommended List for Northern Ireland.

		Yield - % of Treated controls	
Spring Barley (100%=6.50t/ha)		**Treated**	**Untreated**
G	Cocktail	105	90
G	Kirsty	104	93
G	Static	102	93
G	Riviera	101	92
S	Annabell	104	90
P	Westminster	112	105
P	Wicket	107	91
P	Doyen	106	99
P	Beryllium	105	91
O	Cellar	98	89
Spring Oats (100%= 5.61t/ha)		**Treated**	**Untreated**
G	Emotion	108	94
G	Firth	103	94

G, General recommendation, P, Provisional recommendation, S, Specific Recommendation

Spring barley:
Of the 9 spring barley varieties recommended, **Cocktail** and **Kirsty**, with very high yields, are newly promoted to join **Static** and **Riviera** as fully recommended varieties. **Cocktail** has average specific weight and grain size, short straw with low straw yields and good disease resistance. **Kirsty**'s grain is very small with average specific weight. It has medium length straw with high straw yields but quite poor resistance to leaf blotch. **Annabell** continues to be specially recommended for use with careful disease control because of its poor resistance to leaf blotch.
New on the list are **Westminster** and **Wicket** – both provisionally recommended for the first time. Both give very high treated and untreated yields and provide good resistance to leaf blotch. **Westminster** has average grain size with average specific weight and medium length straw with high straw yields. **Wicket**'s grain is large with low specific weight and its short straw gives low straw yields. **Doyen** and **Beryllium** remain provisionally recommended for a second year. **Beryllium** is the only variety that tends to ripen late. All other recommended varieties are intermediate to ripen. **Cellar** has become outclassed.
Seed of many of the Recommended varieties is produced locally. **Supplies of the newer recommendations may be in shorter supply than established varieties so early booking is advised.**

Spring oats:
Once again, only 2 **spring oat** varieties are on the Recommended List. **Firth** remains fully recommended and **Emotion** is now fully recommended for the first year. Both varieties produce large grains with specific weights greater than 52 kg/hl. **Firth** has a high kernel content and quite good resistance to mildew. **Emotion** has average kernel content and quite poor resistance to mildew. Both have average resistance to *Septoria avenae*. Seed of both varieties should be available locally.

A guide to mineral deficiencies in cereals

When crops do not receive enough of a nutrient to satisfy their needs, they grow poorly and develop an abnormal appearance. Symptoms of deficiency or excess are more visible on leaves but may occur on any part of the plant, including the stem or roots. Symptoms of a particular deficiency are generally typical for a given nutrient and as with any problem, correct diagnosis is the first step to its correction. However, first consider the possibility that the symptoms were produced by insects, nematodes, disease or mechanical injury. When symptoms are found on a single plant, they are usually caused by one of these agents. Symptoms caused by nutritional disorders usually occur on several plants over a broad area related to a soil or management pattern. Any diagnosis based on visual symptoms should be regarded as preliminary. A deficiency must be confirmed using soil and/or plant tests. Remember that many deficiencies could be affected by soil pH, which should be maintained at 6.5-7. A key for wheat barley and oats is outlined below to help diagnosis any specific nutritional problems.

Boron (B), chlorine (Cl), Iron (Fe), and Molybdenum (Mo) deficiencies have not produced significant effects on UK and Ireland Cereal yields.

Growers suspecting trace element deficiency should concentrate diagnosis and testing on Manganese (Mn) (Sulphur (S), Copper (Cu), Magnesium (Mg), and Zinc (Zn)

Wheat
Wheat does not readily develop symptoms with changes in nutrient supply. Frequently the only sign of a disorder are unthriftiness, lack of vigour, and slowness of development. Distinct symptoms are only associated with severe nutritional disorders. The following key should help to identify deficiencies in wheat.

A1. Symptoms appear first on fully expanded leaves or are more severe on older leaves. **Go to B**

A2. Symptoms appear firstly on still expanding leaves or are more severe on younger leaves. **Go to C**
B1. Symptoms begin at the leaf tip and advance towards the base; effects usually generalised. **Go to E**

B2. Symptoms appear in the mid-section of the leaf; effects initially localised but can spread over whole leaf. **Go to F**

C1. Youngest leaves pale green, yellow or white. **Go to D**

D1. Symptoms general over the whole leaf; necrotic tissue rare; leaves not limp or wilted. **Go to G**

D2. Symptoms localised on the leaf; necrotic tissue common; leaves often limp or wilted. **Go to H**

E1. Plant pale green with oldest leaves pale yellow turning pale brown; tillering very reduced; stems spindly **NITROGEN DEFICIENCY**

E2. Plant dark green, often developing red or purple colours; oldest leaves dark yellow to orange turning brown when dead **PHOSPHORUS DEFICIENCY**

E3. Plant pale green; often limp or wilted appearance; oldest leaves with bright yellow margins turning pale or dark brown **POTASSIUM DEFICIENCY**

F1. Plant yellow to pale green; yellow interveinal chlorosis turning to pale brown necrotic lesions on the middle of leaves; dark brown leaf tips on oldest leaves **MAGNESIUM DEFICIENCY**

F2. Plant green, very stunted; localised chlorosis turning to pale brown necrotic lesions between the margin and mid-vein in the mid section of middle and older leaves; necrotic lesions join together and the mid-vein dies; tiller may die before heads emerge **ZINC DEFICIENCY**

G1. Veins never prominent even in early stages **SULPHUR DEFICIENCY**

H1. Leaf tip wilts, turns yellow then dies and turns dark brown; margins rolled inwards, twisted tightly; heads often white or set no grain **COPPER DEFICIENCY**

H2. Whole plant limp or wilted; youngest leaves often die before emerging fully; older leaves green, wilted with white interveinal flecks **MANGANESE DEFICIENCY**

Barley

A1. Symptoms appear firstly on fully expanded leaves or are more severe on older leaves. **Go to B**

A2. Symptoms appear firstly on fully expanded leaves or are more severe on older leaves. **Go to C**

B1. Plant pale green or green-yellow; usually no purple colours. **Go to D**

B2. Plant dark green, with purple colours; yellow-purple leaf tip chlorosis advances towards the base followed by dark brown necrosis. **PHOSPHORUS DEFICIENCY**

C1. Plants pale green to yellow; necrotic lesions very rare; plants usually not limp or wilted. **Go to F**

C2. Plants pale to dark green; necrotic lesions often occur on leaves; stems and leaves sometimes wilted. **Go to G**

D1. Symptoms more severe on margins; dark brown lesions often occur. **Go to E**

D2. Symptoms general over the whole leaf; beginning at the leaf tip as pale yellow chlorosis and extending rapidly; leaf dies and turns pale brown. **NITROGEN DEFICIENCY**

E1. Pale yellow marginal chlorosis followed by grey to brown necrosis advances from the leaf tip to the base; dark brown lesions occur in chlorotic tissue. **POTASSIUM DEFICIENCY**

E2. Linear grey to dark brown lesions develop at or near the margin towards the middle of the leaf; yellow chlorosis and brown necrosis extending outwards to affect the whole leaf. **MAGNESIUM DEFICIENCY**

F1. General pale yellow chlorosis; veins never prominent. **SULPHUR DEFICIENCY**

G1. Symptoms usually localised on the leaf tip **GO TO H**

G2. Symptoms more severe in the basal half of the leaf but may spread to the tip. **GO TO I**

H1. Stems very short; crowded leaves; yellow chlorosis between the mid-vein and margin in the tip half of younger leaves followed by grey necrosis; leaf tip dies; bud leaves often torn with dead brown tips. **BORON DEFICIENCY**

H2. Stems short; the tips of the youngest leaves wilt, turn yellow then pale brown to grey, twist tightly; older leaves remain dark green. **COPPER DEFICIENCY**

I1. Plants appear wilted; grey to white flecks in the basal third of the youngest leaves followed by dark brown mottling; young leaves or shoots may die before fully emerged. **MANGANESE DEFICIENCY**

I2. Yellow chlorosis between the margins and mid-vein in the mid section of the leaf followed by linear, grey or dark brown lesions **ZINC DEFICIENCY**

Once a problem has been identified what do you do? A summary of what analysis is required and remedial treatments if a deficiency is confirmed is outlined in Table 3 below

Treatments for mineral deficiencies

	Sulphur	Manganese	Magnesium	Copper	Zinc
Predisposing factors	• Well drained sandy soils, shallow soils and where organic manure is not applied regularly	• Organic or peaty soils with pH over 6 • Sandy soils with pH over 6.5 • Poor root development, fluffy seedbeds, drought • Oats more susceptible that wheat, and wheat more susceptible that barley	• Sandy soils • Mg index less than 1 • Very low or very high pH (very acid or alkaline conditions)	• Sands, chalks, and shallow soils • Low pH (acid conditions)	• Alkaline soils with pH over 6.5 • High P index • High organic matter content • Sandy soils
Soil Analysis	No	No	Yes	Yes	Yes
Plant Analysis	Leaf and Grain	Yes	Yes	Yes	Yes
Treatment to soil	10-20kg/ha sulphur as water soluble sulphate fertiliser	Soil applied treatments generally ineffective. Manganese seed dressings can be used followed up by foliar sprays	Kieserite calcined magnesite or, if soil also acid, magnesium limestone	Soil dressing of copper oxychloride or copper sulphate prior to sowing, if deficiency already identified. Effective for several years	Possible option but not normally advised.
Foliar Sprays	Elemental sulphur in early spring for winter sown crops	Manganese sulphate or proprietary inorganic/chelated product.	Epsom salts or proprietary inorganic/chelated magnesium product in spring	Copper oxychloride or proprietary inorganic/chelated copper product at mid tillering	Zinc sulphate or proprietary inorganic/chelated product at late tillering
Timing	Early spring during late tillering (GS 25-30)	Apply in spring from mid tillering (GS24) to ear emergence (GS 59). More than one application may be necessary	As soon as possible if symptoms persist.	Late tillering (GS 27-30)	End of tillering (GS 25-30)

Sprayer Maintenance

The need for well maintained sprayer equipment is not only a legal requirement but will ultimately save money by applying pesticides more efficiently onto your crops thereby reducing disease, pest or weeds levels. Before the spraying season begins we have highlighted the areas that growers should check. However, growers should always consult the operator's manual for their own sprayer.

Is the sprayer mechanically safe?

- Are all the guards present and in good conditions?
- Are all the controls such as master on/off working properly?
- Check the framework/chassis/boom for cracks, bends, breaks and corrosion
- If trailed, are tyres, wheels and brakes in good condition?

Is the sprayer working properly?

- Are all the components in good condition?
- Check that all the hoses and connectors are not worn or cracked and do not leak under pressure.
- Does the pressure regulator work properly and is the pressure gauge providing accurate readings?
- Ensure that the chemical induction system is working properly and is free from leaks.

Is the boom and its components in good condition?

- Check the boom for overall alignment, pitch, yaw and roll movement. Make sure that the break away system is working properly.
- Check that all the nozzles are in good condition, and the spray/distribution pattern is visually correct.
- Carry out a calibration check on a sample of nozzles across the boom. If outputs are not within acceptable limits the full set of nozzles should be replaced.

As part of the Voluntary Initiative growers are encouraged to have their sprayer tested. In Northern Ireland, Tom Merron from Portaferry and Kenny Dunn from Londonderry are both providing a sprayer testing service. For their details contact UFU HQ on 0289 0370 222

Pest control in Spring Barley

Barley Yellow Dwarf Virus (BYDV) is a widespread disease that can seriously reduce the yield of cereal crops. The disease affects late sown spring crops with a frequency of approximately one in every to seasons, and was found to reduce spring barley yields by as much as 1.3t/ha.

How do I reduce the risk of BYDV in spring barley?

The incidence of BYDV was considerably lower in March sown barley (0.2-1.5% of tillers with symptoms) than in April sown barley (1.5-5.3% of tillers with symptoms).

Should I use an aphicide seed dressing or aphicide sprays?

Trials by Teagasc found that the seed treatment imidacloprid (Raxil-Secur) was less effective in controlling BYDV that aphicide sprays. Over three years trials it was found that a single aphicide at GS14 was found to contribute 77% of the reduction in virus symptoms obtained by applying multiple aphicide treatments.

Are aphids a problem later in the season?

Yield losses to aphid feeding can occur following ear emergence. Examining the ears of barley and applying an aphicide if aphid numbers are high can control this damage.

POTATOES

Beating Black scurf

Black scurf caused by the fungus *Rhizoctonia solani* can damage pre-emergence stem growth, delay tuber initiation and lead to malformation and loss of tuber quality. The disease is both seed and soil borne. Black scurf is often visible on seed tubers and seed borne infection is well controlled by the application of fungicides to clean seed tubers.

Seed borne treatment

Field trials carried out by George Little and Louise Cooke (Applied Plant Science Division, DARD) have shown that under Northern Ireland conditions Rhino, Rhizolex, Rhizolex Flowable and Monceren IM seed treatments are very effective at reducing black scurf . These seed treatments applied to severely-infected stocks of cvs Arran Banner and Kerr's Pink were equally effective at reducing black scurf on progeny tubers.

Treatments also reduced silver scurf; Rhino and Monceren IM were more effective than Rizolex formulations (as expected, since Rizolex is specifically effective against black scurf). Treatments also increased yield in terms of both number and weight of tubers. The flowable formulations (Rhino and Rizolex Flowable) gave the greatest benefit in terms of tuber weights, while the dust formulations (Monceren IM and Rizolex dust) gave the greatest increases in tuber numbers, particularly in the seed fraction.

The percentage of misshapen tubers was also reduced by all fungicide treatments. All fungicides reduced the cover with silver scurf on cv. Arran Banner, but on cv. Kerr's Pink only Rhino and Monceren IM were significantly better than the untreated control.

Soil borne inoculum is a particular risk to producers of small/punnet potatoes with set skins. The black fungal resting bodies or scurfs usually form within 7-10 days after defoliation and can render what appeared an apparently clean crop, almost valueless as such crops have few alternative outlets because of their small size. Diseases with seed and soil borne inoculum are particularly difficult to control, and it must be recognised that infected seed leads to infected soil. Increasing the proportion of infected arable land will restrict the ability of growers to meet the quality needs of consumers and consequently reduce the demand for and value of both ware and seed.

As with all fungicides, treatment requires justification. **Growers planning to plant home saved seed should contact their Crops Development Adviser to have a sample Hot Box tested and assessed for skin blemishing diseases. The results will provide the necessary justification for treatment satisfying quality assurance scheme standards.**

Tubers must be dormant at the time of fungicide application, to prevent sprout damage.

Soil borne treatment

Amistar (azoxystrobin) has recently been granted full label approval against black scurf adding to its SOLA for black dot. Amistar can be applied at a rate of 6l/ha across the field and then immediately incorporated to a depth of 15-20 cm prior to planting. Alternatively it can be applied in-furrow during planting a 3l/ha but specialist application equipment is required. With guidelines issued by the Fungicide Resistance Action Group (FRAG-UK) in mind, it is important that growers include any Amistar treatment in the advised maximum number of fungicide applications (6 per crop).

Chitting – an opportunity for improving quality

Late harvests, low dry matter, poor fry colour and skin quality are serious issues facing potato growers in Northern Ireland. Late harvesting can results in poor ground conditions and low soil temperatures increase the threat of bruising, additionally extending the interval from tuber initiation until harvest increases the risk of skin blemishing diseases detrimental to skin quality.

Altering the **physiological age** of seed tubers by controlled sprouting provides the opportunity to promote earlier crop emergence, tuber initiation and bulking. Encouraging early emergence with the aim of producing good canopy cover by mid June will extend the growing season, in the early part of the year when light quality and intensity are high. This increases the potential for light entering the leaves to be converted into plant dry matter and partitioned into tubers. The quality of light in the brightest August is seldom as intense as that in the dullest days of May or June.

The objective for successful crop management should be to produce an efficient canopy as soon as practicably possible in the spring and maintain it for as long as possible in line with the intended burn off or harvest date.

Promoting emergence also leads to earlier senescence and harvesting. Recent research has shown that crops, which have senesced naturally at the time of intended desiccation, have 'matured' naturally and have set skins and stable sugar levels. This is of relevance to many of the late season processing varieties such as cv. Navan, which have late foliage maturity. When crops destined for the processing market are harvested 'immature' their sugars are readily broken down to glucose and fructose. These are known as reducing sugars and once heated turn brown resulting in unacceptably dark fry colour.

Marketable Yield

The major impact of chitting is producing an acceptable yield of quality tubers which can be harvested earlier in the season. This provides options in planning for harvest at the beginning of the growing season and a means of advancing the average harvest date with advantages to tuber appearance, processing quality and crop value.

Maincrop seed potatoes should be set up to sprout 4-8 weeks prior to planting depending on variety and target market.

Chitting – the practicalities

Physiological age measures the 'ageing', of seed during chitting and is determined by the cumulative number of day degrees above 4°C following dormancy break. Dormancy is considered to be broken when the sprout has grown greater than 3 mm in the eye.

The aim in chitting late maincrop varieties such as cv. Navan would be to accumulate 250-300 day degrees prior to planting. Working back from a target planting date of, for example, 20 April and allowing seven days for dormancy to break, seed would to be set up on 1st March. This would assume an average daily temperature of 10° C, would accumulate 264 day degrees, that is, 44 days x (10 °C – 4 °C).

Traditional sprouting trays remain labour intensive and difficult to incorporate into mechanical planting systems without damaging sprouts. At Greenmount Campus we chit maincrop potatoes using the Pregerm system where seed is placed into a flat net bag rather than a tray. Each Pregerm bag is divided into 6 long pockets that stop the bag bulging at the bottom and maintain its wide flat shape. This ensures that the layer of potatoes in the bag is relatively thin and that light and air can penetrate to all tubers. Each bag typically holds 125 kgs of seed. This promotes the growth of short robust sprouts approximately 1 cm in length capable of withstanding the mechanics of the cup planter. This is achieved by chitting in a cool, well ventilated store with both natural and artificial light. Daily day degree accumulation averages approximately 4-6°C during March and April resulting in relatively slow sprout growth.

The Pregerm system will be set up at Greenmount for sprouting cv. Cultra at the end of February. Any grower wishing to see the system in operation should contact Stephen Bell to arrange a visit.

Mini-chitting

This system of seed preparation aims to produce seed tubers with sprouts no more than 2 mm long and requires access to a refrigerated store. Seed is stored at 3-4 °C until close to the intended planting date. The refrigeration unit is then turned off for 7-10 days to allow chitting to occur.

During this period, ventilation should continue to avoid temperature gradients within the boxes, and the temperature should not be allowed to rise above 8 °C. Any build up of heat or moisture in the centre of boxes will encourage the growth of longer weak sprouts which are vulnerable to being knocked off at planting.

Once sprouts of 1-2 mm have formed evenly, the seed should be cooled down again to 3-4 °C to prevent further sprout growth up to planting. Mini-chitting, while not having the benefits of earlier harvesting associated with pre-sprouted seed does produce a crop that emerges quickly and evenly.

Checklist

- Ensure the chitting area has been thoroughly cleaned.
- Immediately following inspection of seed on receipt, carefully empty seed tubers into chitting container.
- Maintain the chitting house temperature around 8 – 10 °C for up to seven days and provide good ventilation to cure any wounds.
- After curing reduce the temperature to around 5 °C or less until the start of the chitting period but maintain good ventilation.
- Adjust temperature to accumulate the required day degrees.
- Watch out for aphids – if present they may feed on sprouts and transmit viruses.

Carefully check seed and remove any diseased tubers immediately before planting.

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.

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