

# CROP MONITOR

**Issue 3****Week ending 28 January 2006**

**The Crops Team would like to wish all our readers a happy and prosperous 2006**

**IN THIS ISSUE****Pesticide handling areas****Chitting Potatoes****New Entrants Scheme for NI****Pesticide handling areas biobeds**

We provide an outline in the use of biobeds.

**Chitting potatoes**

The practicalities and benefits to quality from chitting potato seed are highlighted.

**Hot boxing**

How healthy are your home saved seed potatoes? Understanding the potential of your seed is the starting point for business management and planning for the season ahead.

**Contact your local Crops Development Advisor today and arrange a check up hot box test at Greenmount Campus.**

**New Entrants Scheme for Northern Ireland**

Are you a young farmer under the age of 40? If you have adequate skills and competences this scheme could help with a farm investment. Details inside.

**Sprayer Operator Competence Training**

As part of cross-compliance, all sprayer operators' certificates of competence will be checked during inspections. Operators born after 31 December 1964 and operators

providing a commercial service (contractors) are required to hold a certificate of competence.

Greenmount Campus offers a full range of courses in pesticide application through the NPTC awarding body. All applicants are required to pass a foundation module, Pa1, mainly based on health and safety and the legal requirements of handling pesticides. This certificate does not constitute a certificate of competence with regard to cross-compliance but must be passed before progressing. Having passed Pa1, the operator must pass the module suitable to the equipment they will be using, normally Pa2 for a hydraulic ground crop sprayer or Pa6 for a knapsack sprayer.

Each module involves a one day training course which is provided free to farmers, growers and their employees. However, each candidate must purchase an NPTC assessment schedule at a cost of £41. This cost covers registration and certification.

Having completed training, the candidate can then apply for assessment when they feel ready. The Pa1 assessment is a computer based multiple-choice test and costs £17.00. The Pa2a and Pa6a are practical one to one assessments, during which they must demonstrate the safe application of pesticide with the equipment supplied and cost £82.05 and £61.63 respectively.

Application forms are available by telephoning Greenmount Campus (028) 9442 6704.

## **Pesticide Handling Areas and Biobeds**

Within the next few weeks, landowners will receive an updated version of the Cross-Compliance Verifiable Standards 2005/06. Statutory Management Requirement (SMR) 10 outlines the main requirements in the use of Plant Protection Products. The following is a brief outline of (SMR) 10, but growers should read the full section in the booklet (also available at [www.dardni.gov.uk](http://www.dardni.gov.uk)).

During on-farm inspections, inspectors will check for:

- **Use of approved products**

These are listed in the current Guide to Approved Pesticides prepared by the Pesticides Safety Directorate and the Health and Safety Executive. The inspectors will check pesticides are used in accordance with the principles of good plant protection practice.

- **Storage of pesticides on farms and holdings**

Stores must:

- Be suitably sited;
- Be of adequate storage;
- Have a suitable entrance/exit;
- Be bunded with 110% of storage capacity;
- Have adequate light and ventilation;
- Be constructed of fire resistant materials;
- Be marked and secure.

- **Washing facilities and storage of clothing**

To ensure that there is adequate provision for the operator to wash, clean down protective clothing and store it away from normal clothing.

- **Keeping of records**

Records are kept for the storage, application and disposal of pesticides for at least three years.

- **Competence of operators**

Operators must be competent. Certain categories of operators (contractors or people born after 31 December 1964) must hold the appropriate Certificate of Competence or work under the direct and personal supervision of a certificate holder.

- **Application equipment**

Equipment must be maintained in good condition, with evidence of calibration provided. Personal Protective Equipment (PPE) and facilities used for cleaning equipment and PPE after use, should be made available to avoid contamination of the environment. Provision should be made for the safe disposal of surplus pesticide and empty containers.

## Biobeds

Traditionally, many growers have filled their sprayer on hard surface areas convenient to water and chemical stores. Due to the nature of concreted areas, the chemical was effectively routed off the yard into a drain and may have found its way into a watercourse, with inevitable consequences. At least 40% of surface water pollution may come from pesticide handling areas. To limit the extent of potential pollution, growers should re-examine their filling area. The Code of Practice for the Safe Use of Pesticides on Farms and Holdings (Defra's Green Code) provides a more detailed examination of pesticide usage on farms.

There are a number of methods to help reduce the risk of chemical pollution from sprayer loading areas.

- **Portable bund** - A portable bund made from a non-absorbent material can be used to trap spills and splashes. The bund can then be washed down and drained into the sprayer.
- **Grass and soil** - A handling area of grass reinforced with a grid or gravel is suitable for filling, mixing and sprayer maintenance.
- **Offset grass/soil disposal area** - The handling area is drained to a sump from which the liquid is trickle-irrigated on to a grass/soil surface.
- **Offset biobed** - The handling area is drained to a biobed via a sump from which the liquid is trickle-irrigated on to the biobed surface.
- **Drive over biobed** - A biobed with a metal grid support frame allows the liquid to drain straight through to the biobed.
- **Fully contained System** - A system with a sump and tank for storage of all waste water which is collected by a waste disposal contractor.

In this article we will concentrate on 'Drive Over biobeds'. The biobed consists of three basic components:

1. An area on which the sprayer stands which collects all spilt or drained liquids;
2. Storage and Biobed system to handle all these collected liquids;
3. Distribution system for treated liquids from the Biobed.

## What is a Biobed?

A Biobed is a pit in the ground containing a mixture of straw, soil and compost, which is turfed over and contained in an impervious liner. Research has shown that biobeds are very effective at locking up and degrading pesticide residues which can arise from drips and spillages when filling sprayers.

The two basic systems are:

- A **driver-over** system where all liquids fall directly onto the Biobed (Figure 1);
- An **offset system** where all liquids are intercepted and then directed to a Biobed.

### **What does a Biobed contain?**

A Biobed consists of a 50% mixture of straw, 25% topsoil and 25% peat-free compost, turfed over.

The mixture should be allowed to mature for 6-8 weeks before placing into the lined pit. Heavy clays, with poor drainage characteristics should be avoided. Loamy soils (which are easily mixed) with a low compaction potential are more suited. Alternatively, a soil area that is “biologically active” (that is, free from compaction, showing good rooting with a good ecosystem and turfed over) is suitable, provided there are no drainpipes etc. present.

### **What system should I use?**

The first decision is to determine what the Biobed will be used for.

If the intention is to handle and mix pesticides **ONLY**, then drainage from the area may be direct to soil, if deemed to be in a non-vulnerable location with regard to groundwaters and surface waters.

Where the intention is to handle and mix pesticides **AND** wash down the sprayer prior to liquid disposal, then all discharges must be contained, as any washings and cleaning that do not take place in the crop are regarded as disposal. They may then be:

1. Collected and held, prior to bioremediation treatment, with disposal to an area of land which may require a Groundwater Authorisation or consented discharge.
2. Collected and held, prior to disposal, through an authorised waste disposal contractor.
3. Collected and held, prior to chemical treatment, with disposal to an area of land under a Groundwater Authorisation or to a consented discharge.

Points 1 & 2 generally involve considerable cost, particularly where intensive sprayer use is practised or where large volumes of water enter the system.

Where possible, the system should be designed to minimise the amount of rainfall that enters the Biobed system.

A steel grid is necessary for a drive-over system to prevent compaction factors affecting the performance of the Biobed, which must be designed to support the gross weight of the vehicle,

while allowing for a safe working environment. The drive over grid should not accept any liquids other than those vertically above it.

### **What size should the Biobed be?**

Research to date suggests that activity is most effective with Biobeds 0.8-1.0m deep. United Kingdom trials have suggested that a ratio of 1m<sup>2</sup> loading area to 0.6m<sup>2</sup> of Biobed were sufficient, but there could be potential from a 1:1 ratio between the loading area and the Biobed.

### **How much does a Biobed cost?**

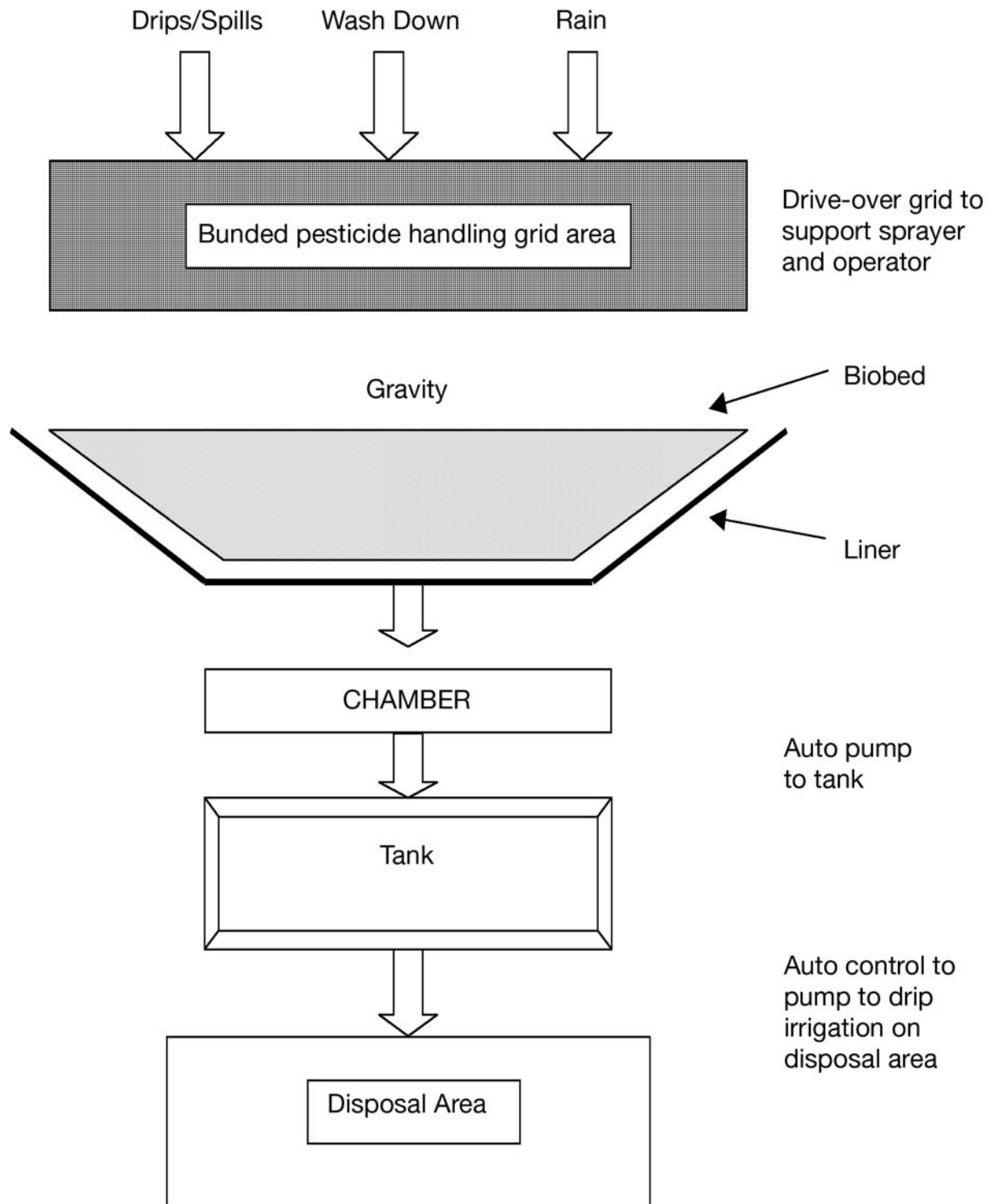
Costs will depend on the site and type of Biobed used. However as a guide, the price of some components are outlined below.

Bunded loading area, with drain and trap – concrete	£40-50 per m <sup>2</sup>
Small pump chambers	£250 each
Pumps	£60 each
Electrical supply, time switches etc	£350 per site
Liner and membrane 5 x 4m, nominal Biobed with drain	£800
1.5m <sup>3</sup> plastic water storage tank	£650-1500
Drive over grid suited to self propelled 24m sprayer	£90 per m <sup>2</sup>
Drip irrigation – Biobed distribution and disposal area	£300

## What regulations should I adhere to and where do I get more advice?

Before building a Biobed farmers should seek advice from the Environment and Heritage Service ([www.ehsni.gov.uk](http://www.ehsni.gov.uk)).

**Figure 1. Typical schematic diagram of DRIVE OVER system**



## **Chitting – An opportunity for improving quality**

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 early 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.

Altering the **physiological age** of seed tubers by controlled sprouting provides an 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 duller days of May or June.

**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 3mm long 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 need to be set up on 1 March. This assumes an average daily temperature of 10°C, accumulating 264 day degrees, 44 days x (10°C – 4°C).

### **Pregerm System**

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 six 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 125kg of seed. This promotes the growth of short robust sprouts approximately 1cm 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.

### **Mini-chitting**

This system of seed preparation aims to produce seed tubers with sprouts no more than 2mm 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 1-2mm 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 prior to receipt of new seed.
- 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.

## New Entrants Scheme for Northern Ireland

### Scheme Outline

Young farmers represent a key factor in the development of rural areas and DARD considers support to this category of farmers a priority. Consequently, this Scheme provides aid to facilitate the establishment of young farmers (under 40 years old) who possess adequate skills and competence and are setting up as head of the holding for the first time.

The assistance, in the form of an interest rate subsidy, is for an **agricultural** purpose on the holding for which the loan is obtained, with a view to promoting additional farm investment which will generate new activities or add value to existing activities.

Applicants are required to submit a business development plan, including a specific project proposal, and a personal development plan indicating how competence requirements will be met (if unable to demonstrate adequate skills and competence at the outset) when seeking the loan.

Successful applicants who can satisfy all the eligibility requirements will receive aid payable (in arrears) over a maximum of five years. Aid received must not be used for capital payments. It must only be used to offset the interest paid on the loan linked to the business plan.

The Scheme opened on Monday 6 June 2005 and will close for applications on **Thursday 5 June 2008** or when all available funds have been committed, whichever is sooner. Only one application per farm business will be accepted.

### ELIGIBILITY CRITERIA

#### Ownership

Applicants under 40 years of age (confirmed by original birth certificate) at the time of making the application for aid;

Applicants who have been established as head of holding for the first time, during the 12 month period prior to the date of initial application form, NES 2,(confirmed by evidence such as a letter from solicitor /accountant/bank or if tenant, a written lease agreement).

The Department may in certain circumstances subject the business to a separation test including:

- Legal status;
- Economic structure;
- Commercial management;
- Operational management.

## **Viability**

The holding must be viable or applicants will be required to submit a business development plan, including financial estimates for the proposed project, which shall make the holding viable within five years after entry into the Scheme.

## **Occupational skills and competences**

Applicants must;

- hold a minimum of a National Vocational Qualification (NVQ) Level 2 in Agriculture or subject deemed closely related by the Department; or
- demonstrate five years of practical agricultural experience and submit a personal development plan, including an objective to achieve an appropriate NVQ Level 2 or higher qualification in Agriculture or subject deemed closely related by the Department within three years after entry into the Scheme;
- have completed a minimum of four modules/courses of the Department's Good Farming Practice Programme and/or Environmental Training Programme; or
- submit a personal development plan including an objective to complete at least four modules/courses of the Department's Good Farming Practice and/or Environmental Training Programme within three years after entry into the Scheme;
- have membership of a Quality Assurance Scheme deemed relevant by the Department to the proposed project; or
- submit a personal development plan including an objective to obtain membership of a relevant Quality Assurance Scheme within three years after entry into the Scheme.

## **Business Project**

Applicants must submit a business plan detailing the project for which the capital loan is to be obtained. To qualify for this Scheme the loan must:

- be used for an agricultural purpose; and
- generate new activities or add value to existing activities.

This loan does not cover the purchase of land, Single Farm Payment Entitlements and/or farm machinery to be used for contracting activities.

Any changes to the original approved business plan must be notified in writing and approved by both the Department and the lending institution.

## **Scheme Requirements**

Applicants must open a separate account in a lending institution held solely to service the project for which the grant has been approved.

Applicants must keep a copy of all relevant records for a period of ten years from the date of the final payment under this scheme.

Applicants must comply with animal health and welfare legislation and retain copies of the Codes of Good Agricultural and Environmental Conditions.

Successful applicants must give an undertaking to pursue the objectives of the approved business and personal development plans.

### **Aid Available**

Financial assistance will take the form of an interest rate subsidy on loans taken out in pursuance of an agreed project, as detailed in the applicant's business plan. The maximum amount of aid available is £17,000 and the maximum duration of subsidised interest payment is five years. There is no restriction on the amount of loan or on the term of the loan.

**The applicant and their lending institution will determine this.**

**The interest rate for which subsidy is payable is capped at 3.5% above the Bank of England Base Rate. Applicants who agree a fixed rate of interest with their Lending Institution should be aware that in the event of the Bank of England Base Rate plus the 3.5 % being less than the amount agreed under a fixed term rate, the Department will only pay the lesser.**

**Applicants who secure loans above the capped rate are liable for the excess interest payment.**

### **Further Information**

Further information in relation to this Scheme may be obtained from DARD offices

OR

Grants and Subsidies (Payments) Branch, Orchard House, 40 Foyle Street, Derry/Londonderry.  
BT48 6AT **Tel: (028) 7131 9900.**

The Department's website address is [www.dardni.gov.uk](http://www.dardni.gov.uk).

Scheme documents will be made available in alternative formats on request, for example, Braille, large print, audio cassette, minority ethnic languages.

Please contact Grants and Subsidies Payments Branch, Orchard House, 40 Foyle Street, Derry/Londonderry, BT48 6AT.

## Readership survey

Many thanks for your replies to the reader survey. We will take all your comments onboard to help improve Crop Monitor for the future. If anyone has not yet replied we would still be very grateful for any feedback you provide.

## 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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