



FWAG environmental guidance for potato production



Produced in collaboration with:



Farming &
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Group



FWAG Environmental Guidance for Potato Production

The Water Framework Directive and cross-compliance mean there are now more reasons to ensure your potato production is environmentally sustainable. But there are also sound business benefits for those who work within the new environmental framework. Entry-Level Stewardship offers growers the opportunity to be rewarded for soil and field management that protects or enhances the environment.

What's more, against a backdrop of consumers who are increasingly interested in the source of their food, those who can demonstrate they are working in harmony with the environment may find this offers greater marketing benefits.

The British Potato Council has worked closely with FWAG, LEAF and the NFU to ensure this leaflet gives potato growers the practical guidance they need to realise the opportunities, as well as stay within the limits, of a new environmental framework. It also addresses many of the issues we are developing to ensure the potato industry is well-equipped to face the challenges of the future.

Dr Mike Storey
Research and development director, British Potato Council

An overview from FWAG

We are delighted to be working with the British Potato Council to develop this farm-based guidance.

The guidance includes a self-assessment checklist designed to raise awareness of environmental responsibilities when selecting land and to highlight key resource protection issues associated with potato production.

The Whole Farm Approach

It is important to consider potato fields in relation to the rest of the farm and ideally a Whole Farm Conservation Plan should be prepared to demonstrate that connectivity with the surrounding land is taken into account. Wildlife does not respect field or farm boundaries and care should be taken when managing potato land to plan ahead and leave 'corridors' for wildlife.

Michael Woodhouse
Director of England, FWAG



Grassland

In some parts of the UK semi-improved grassland is an increasingly scarce habitat that is extremely important to a wide range of species and use of such land for potato production should, if possible, be avoided.

Ploughing established permanent pasture or semi-improved grassland will require an *Environmental Impact Assessment* (the UK is committed to retaining its permanent pasture levels under EU legislation).

Uncropped areas

Whether a field has been in permanent pasture or cropped, any uncropped areas can be of high biodiversity value.

In particular aim to maximise the biodiversity potential of:

- Field margins
- Mid-field breaks
- Set-aside

Field Boundaries

The management of field boundaries in all cropping systems can either help or hinder biodiversity. Hedges, walls, ditches and tracks can all provide excellent corridor habitats for wildlife. The wildlife value of these boundary features can be enhanced through ensuring connectivity and extending the area with buffer strips.

A varied cutting pattern for hedges across the farms will give some tall hedges and some shorter. Hedges cut less regularly will ensure spring and summer nesting sites and autumn and winter food sources for birds, mammals and insects. Variety is the best approach.

Archaeology

When selecting land previously unused for potatoes, take care to first check for any important archaeological features and be aware that the land is likely to be cultivated deeper than in previous years. This might disturb something previously undiscovered or cause irreparable damage to an important piece of history. Local Authority archaeologists hold records of all scheduled monuments and will provide advice on potential in-field archaeology. For those considering Environmental Stewardship there are a range of options to protect archaeology under ELS or HLS.

Soil Protection

The management of soils to reduce erosion and run off is a key component of Good Agricultural and Environmental Condition (GAEC) under the Single Payment Scheme (SPS).



For claimants of the SFP – the following timetable for compliance applies:

Before 1st September 2006:

Produce a Soil Protection Review based upon the guidance provided.

In 2007 and subsequent years:

Implement the actions of the Soil Protection Review and update at least once a year.

Soil Protection Review (SPR)

The SPR takes a whole farm approach based upon soil type and land use. The SPR is in a tick box format and is directly linked to the Cross Compliance Guidance for Soil Management. The review process is designed to help identify problems that have occurred and identify issues on a range of soil types so that remedial measures can be adopted in future years.

For further details on cross compliance, please see www.crosscompliance.org.uk or telephone the Technical Enquiry Helpline on **0845 345 1302**.

Agricultural Waste

New waste regulations came into force on 15 May 2006 which prohibit the use of farm tips, place restrictions on the burning of wastes in the open and require growers to abide by a Duty of Care.

The main options available to farmers when the regulations take effect (which can be used on their own or in combination) are to:

1. Store waste on-farm for up to 12 months before being taken off-farm.
2. Transport waste off-farm for recycling or disposal at a licensed waste facility. The Recycling Directory website www.wasterecycling.org.uk can help farmers locate nearby waste management facilities, or a local plastics collection scheme may run in your area.
3. Register exemptions with the Environment

Agency to recycle or dispose of their waste on-farm. Farmers have until **15 May 2007** in which to fill in and return the forms for registration. Exemption packs can be obtained from the Environment Agency on **0845 603 3113**.

4. Obtain a waste management licence or a landfill permit. The vast majority of farmers will not require a licence or permit to dispose or to recover waste, unless diversifying away from traditional agriculture into waste management, to run a waste transfer station or a landfill operation, for example.

The Environment Agency has drawn up a number of guidance notes covering the basics of the forthcoming waste controls and the options available to farmers and growers. These are available on the Environment Agency website: www.environment-agency.gov.uk by following the links to the **Agricultural Waste** section.

Waste from store

At various times, growers may have potatoes which need to be moved from store. The waste regulations allow for growers to register an exemption to deposit plant material (e.g. to rot down potatoes), subject to various conditions, at the place of production. These conditions include that:

- any deposit is kept separate from any site where any other plant tissue waste is deposited and there is no more than 250 cubic metres (tonnes) in any one deposit;
- the deposit does not take place on land which is frozen hard or snow covered; waterlogged or flooded; or less than 10 m from a watercourse or 50 m from a spring, well or borehole; and
- the deposit is carried out in accordance with any requirement of the Nitrate Vulnerable Zones Regulations 1998.

This exempt activity must be registered with the Environment Agency.

Environmental Stewardship is designed to encourage farmers and landowners to deliver simple and effective environmental management that goes beyond the Single Payment Scheme.

Each geographical area (Joint Character Area) has a statement of Environmental Objectives, for example:

- Management to maintain and enhance populations of priority species and habitats
- Conservation of archaeological features
- Introduction of measures to prevent soil erosion and reduce diffuse pollution (Resource Protection).

Entry Level Stewardship provides an extensive range of management options that potato producers should look to implement as part of an integrated Whole Farm Conservation Plan.

Producers can accumulate 9 points/ha by the completion of ELS Soil, Nutrient, Manure and Crop protection Management Plans, all of which feature as part of the LEAF Audit and are a requirement of a number of other accreditation schemes.

Adoption of the following ELS Options will not only provide financial rewards for conservation management but also deliver significant environmental benefits and protect historical features.

Details of the environmental priorities in the respective geographical areas are available from: www.defra.gov.uk/erdp/schemes

Entry Level Stewardship Soil Management Plan (SMP)

The Entry Level Stewardship Soil Management Plan involves the completion of a field-by-field assessment across the farm taking into account soil type and slope to determine field risk status. The inherent risk of individual fields is evaluated and management proposals designed to reduce erosion and run-off are implemented. The plan is subject to a regular review and management proposals are revised in the light of experience.

Example:

Field Ref	Characteristics	Management Issues	Management Proposals
Top Meadow	Light erodible sandy soil type	High risk of erosion from bare earth	Improve soil stability through the inclusion of organic matter
	Soil susceptible to surface compaction (capping)	Increased risk of run-off following irrigation	Tied ridges
	Field slopes in direction of stream	Soil/sediment deposition in stream	Establish buffer strips alongside stream margin

The Soil Management Plan features as an option under Entry Level Stewardship and is based upon the area of land excluding unimproved land as identified on the Farm Environmental Record.

EM 1	Soil Management Plan	3 points/ha
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Elements of the SMP can also provide supportive evidence for the completion of the Soil Protection Review.

Example

Issue: Post-harvest potato fields are often at increased risk of soil erosion due to compaction.

Management Proposal:

- If conditions allow, the ground is cultivated to improve infiltration and reduce run-off
- Wherever possible, a green cover crop is established to improve surface stability

Figure 1: Management Options for a farm entering Environmental Stewardship

The farm map below sets out the options farmers may wish to consider when entering Entry Level Stewardship.

Financial reward for conservation management:

- £30/ha by scoring 30 points/ha across whole farm
- Broad range of point scoring options
- 5 year scheme

Buffering options

Land under cross compliance requirements in England requires a 2m uncultivated strip from the centre of a hedge or watercourse (or 1m from the top of the bank) but often it is wiser to leave at least two metres from the edge of the hedge itself.

Wider field margins offer better protection for boundary features and can be included as part of your set-aside requirement (6-10 metres alongside hedges, watercourses or woodland) or as options in Environmental Stewardship.

Key areas for protection:

- Watercourses
- Woodland margins
- Ancient hedgerows
- Permanent set aside

Uncropped field corners present an excellent opportunity to support biodiversity in parts of the field that are not likely to produce an economic return.

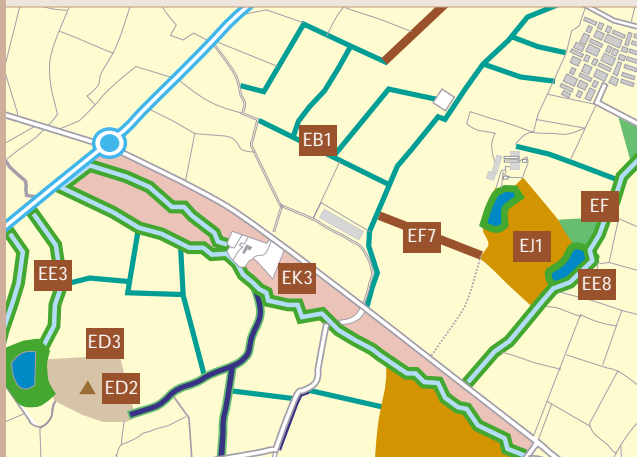


Figure 1: ELS Management Options Key:

- EB1: Hedgerow management
- ED2: Take archaeological features currently on cultivated land out of cultivation
- ED3: Reduce cultivation depth on land where there are archaeological features
- EE3: Buffer strips on cultivated land
- EE8: Buffering in-field ponds in improved permanent pasture and arable land
- EF1: Field corner management
- EF7: Beetle banks
- EJ1: Management of high erosion risk cultivated land

Within the potato crop, opportunities for biodiversity tend to be limited, however in all fields, well-managed field margins and headlands can deliver significant support to biodiversity.

Once the land has been selected, risks assessed and measures put in place, it is equally important to ensure support for biodiversity in the growing crop.

Nutrients

Making sure that all nutrients are placed on the crop, at the right time, will ensure that highest economic value and least negative environmental impact occurs. Plan manure and fertiliser use to match crop requirements and keep records of all applications. The nutrient and manure management planning options feature in the Entry Level Scheme:

EM 2	Nutrient Management Plan	2 points/ha
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EM 3	Manure Management Plan	2 points/ha
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Pesticides

Clean crops are vital for modern production but

- The decision to apply pesticides should always take into account the presence of any vulnerable species in the vicinity of the crop

The completion of a Crop Protection Management Plan as part of the Voluntary Initiative qualifies for points in the Entry Level Scheme. For further information, contact: www.voluntaryinitiative.org.uk

EM 4	Crop Protection Management Plan	2 points/ha
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Farmers and land managers can gain 9 points through completing the Management Plans, which includes nutrient, manure, crop and soil as part of the LEAF Audit.

Water

Irrigation is a key component in the production of most potato crops and care should be taken to ensure water is used efficiently and does not have an adverse environmental impact.

Key considerations:

- Apply water according to crop need using a recognised irrigation schedule.
- Avoid over applications that may contribute to excessive run-off and soil erosion.



pesticides should only be applied to the cropped area.

Key considerations:

- Herbicide use on field margins should be avoided
- Target the use of insecticides and fungicides to reflect pest and disease risk
- Manage rotations to reduce reliance upon nematicides
- The decision to apply pesticides should always take into account the presence of any vulnerable species in the vicinity of the crop

- Consider the impact on biodiversity through the removal of excessive water from rivers and catchment ponds.
- Buffer in-field ponds and watercourses
- (ELS Option EE7/8 provides 400 points/ha for the buffering of ponds)



Zonal Habitat Creation:

It is helpful to think of a potato store as having a series of zones radiating outwards that can provide very rich habitats and microhabitats for different species. (see Figure 2).

Zone One

The store and immediate environs are of relatively limited value for biodiversity as hygiene is imperative. The location of the store and aspect will determine what specific opportunities are available.

Zone Two

The non-productive land between the sterile area and agricultural land offers potential for a diverse range of habitats.

Try to incorporate some of these habitats:

- Dense scrub
- Open scrub
- Species-rich grassland
- Small ponds or field “scrapes”
- Small areas of woodland

Zone Three

It is important to link habitats around the store with more productive land across the farm.

Aim to maximise the use of:

- Tracks
- Ditches
- Hedges
- Shelterbelts
- Orchards

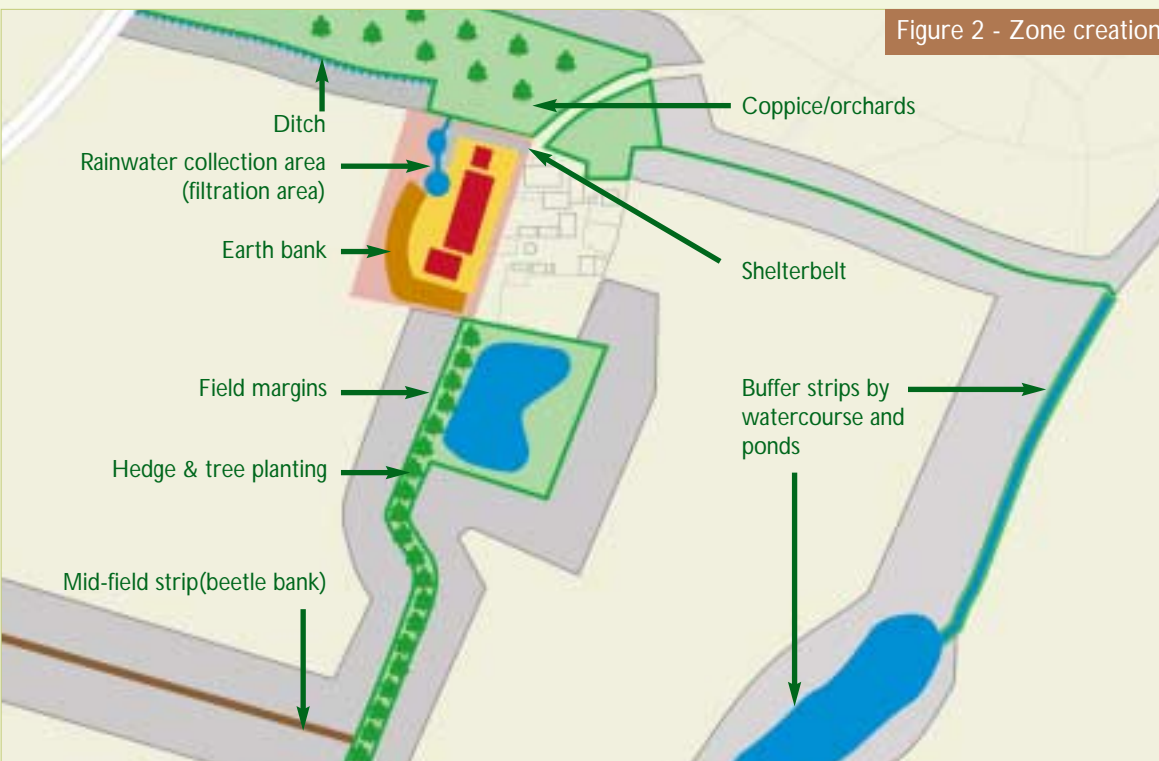
Zone Four

Wildlife Corridors linked to the wider countryside and managed under Environmental Stewardship Schemes.

Consider the establishment of:

- Buffer strips adjacent to watercourses and ponds
- Field margins and uncropped field corners
- Mid-field grass strips or beetlebanks
- Areas planted to pollen and nectar flower mixture

Figure 2 - Zone creation



KEY

- Store and grading buildings
- Zone 1: Sterile zone to meet hygiene requirements
- Zone 2: Non-productive area between sterile zone and agricultural land
- Zone 3: Habitat links across the farm
- Zone 4: Wildlife corridors linked to wider countryside (initiated & managed under Environmental Stewardship)

Area	Species Record	Existing Habitat	Proposed Habitat Development	Review
Zone 1	Mice	None – Sterile Area	N/A	Continue to manage area through recognised pest control and the use of natural predators
Zone 2	Barn Owl Bats	Dense grass field margin providing food source	Create field scrape to catch roof water and yard run-off	Consider owl boxes located in appropriate areas of the farm to encourage owls to nest on the farm.
	Wild flowers Insects	Earthbank providing nectar source		Contact your local FWAG adviser for suitable seed mixtures.
Zone 3	Aquatic mammals	Field drainage ditches	Manage under ELS option (EB6)	Ensure ditch maintenance is carried out sympathetically and dredgings are deposited in line with Cross Compliance regulations
	Fish	Field pond	Buffer pond under ELS option (EE8)	Review the need for a Pond Restoration Plan
	Birds	Shelterbelt Farm orchard	Manage under ELS option (EB1)	Complete farm hedge survey, devise restoration and replanting programme
Zone 4	Field mammals	Hedges Field Margins	Utilise set aside to extend existing margins	Invite local wildlife Trust to carry out a small mammal survey.
	Aquatic mammals	Ditches and drainage channels	Manage under ELS option (EB6)	Invite local Wildlife Trust to conduct species survey
	Birds	Hedges and trees Field stubbles	Buffer margins in arable fields under ELS option (EE3). Leave rotational area of overwinter stubbles as part of a ELS option replanting programme	Consider using BTO to carry out a bird survey on the farm

Use of water

Large buildings offer a great opportunity to incorporate water features in the surrounding vicinity. Water collected from roof space and concrete aprons can be utilised to serve several ecological purposes (see figure 3):

Water can be channelled and piped so that it goes through a preferably complex series of ditches, streams, pools, settling areas and wetlands.

- Shallow water with long interfaces between aquatic and terrestrial systems produces ideal habitat
- Appropriate bankside vegetation can be introduced or developed through natural regeneration to provide rich habitat for insects such as dragonflies, butterflies and moths
- These 'water corridors' are also attractive to birds (swallows and house martins) and bats (pipistrelle, greater horseshoe)

Starting from new

Consideration should be given to biodiversity when planning the construction and extension of potato stores:

- Spoil can be utilised to create warm, sheltered south-facing banks where grasses and pollen/nectar sources can flourish
- More shaded banked areas are suitable for different plants (producing seed for winter feed and cover for birds and small mammals against predators)
- Vertical banks can be built to house solitary bees and other insects that will burrow into the earth face

Building these features next to areas of scrub, woodland or hedges provides increased biodiversity over similar habitats in isolation. See figures 4 and 5.

Figure 3 - Use of water



Figure 4 - Shaded banks

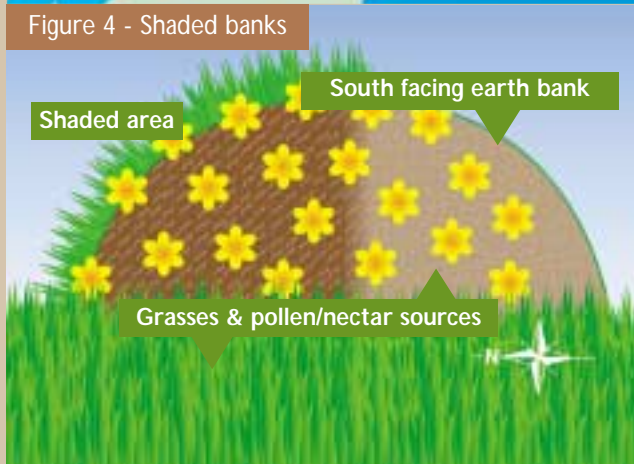
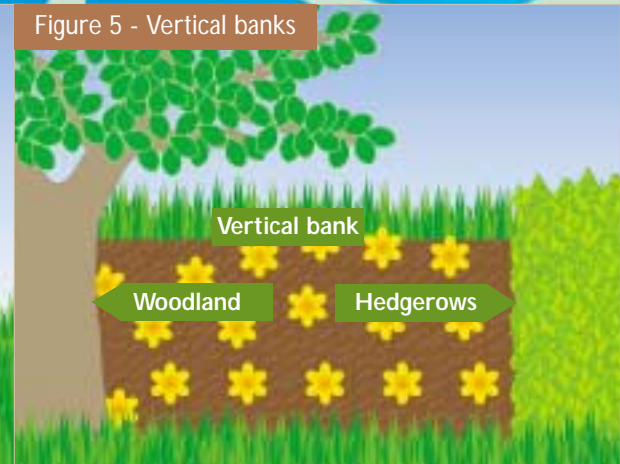


Figure 5 - Vertical banks



Subject	Delete as appropriate	Response	Action
General			
Does a Whole Farm Conservation Plan cover the fields growing potatoes?	YES/NO	NO	Contact your local FWAG office. Contact details can be found at: www.fwag.org.uk or tel: 02476 696 699
Does an Environmental Audit (e.g. LEAF Audit) cover the business growing the potatoes?	YES/NO	NO	Liaise with customers to determine their requirements. Contact LEAF to seek further information on LEAF Audit and LEAF Marque. LEAF can be contacted at: www.leafuk.org or at the office on: 02476 413 911
Land Selection			
Are you planning to grow potatoes on any permanent or semi-improved grassland?	YES/NO	YES	Reassess land base to identify alternative fields.
Have you undertaken an Environmental Impact Assessment?	YES/NO	NO	Contact Defra (RPA) for details and record EIA details at: www.crosscompliance.org.uk
Do you have a record of the priority species in the area?	YES/NO	NO	Contact Defra (Natural England). Request Joint Character Area for your area.
Are any measures in place to protect these species through habitat management?	YES/NO	NO	Prepare a Farm Conservation Plan. Contact FWAG on: info@fwag.org.uk
Do you have a record of the archaeology in the area?	YES/NO	NO	Contact local Historic Environmental Service (County Council).
Are any measures in place to protect archaeological features?	YES/NO	NO	Prepare a preservation plan – consider options under Environmental Stewardship Schemes.
Are any of the fields at risk from erosion (including wind erosion) or generating run-off?	YES/NO	YES	Produce a Field Risk Assessment as part of a Soil Management Plan.
Are there any Management Proposals designed to reduce the impact from erosion and run-off risk?	YES/NO	YES	List and record on a field plan/farm map. Review the proposals annually in the light of experience.
Are there any uncropped parts of the fields?	YES/NO	YES	Protect these areas from crop inputs and vehicle use.
Production Considerations			
Are all manures applied as part of a recognised farm plan?	YES/NO	NO	Prepare a Manure Management Plan.
Are all fertilizers applied as part of a recognised farm plan prepared by a FACTS accredited Adviser?	YES/NO	NO	Prepare a Nutrient Management Plan.
Are waste potatoes deposited on farm?	YES/NO	YES	Apply to the EA for exemption. Visit: www.environment-agency.gov.uk
Does the farm have a Crop Protection Management Plan prepared by a BASIS accredited Adviser?	YES/NO	YES	Contact the CPA Voluntary Initiative www.voluntaryinitiative.org.uk
If abstracting water, have you prepared an environmental assessment of the abstraction zone?	YES/NO	NO	Contact FWAG for details on how to prepare a plan.
Is water extracted from a source identified as a Groundwater Protection Zone?	YES/NO	YES	Prepare an abstraction statement and Water Management Plan.

*This guide has been sponsored by funding from
'The England Catchment Sensitive Farming Delivery
Initiative (ECSFDI)'*
www.defra.gov.uk/farm/environment/water/csf

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