

An overview of plant nutrition in potatoes.

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Recent SAC fertiliser technical notes involving potatoes



- **TN621** Fertiliser recommendations for vegetables, minority arable crops and bulbs (2009)
- **TN622** Optimising the application of bulky organic fertilisers (2010)
- **TN625** Nitrogen recommendations for cereals, oilseed rape and potatoes (2009)
- **TN633** Phosphorus, potassium, sulphur and magnesium recommendations for cereals, oilseed rape and potatoes (2010)

Basis of N recommendations



- the previous crop/grass N residue group;
- anticipated length of growing season;
- intended market; and
- variety group

The length of growing season is the number of days from 50% emergence to haulm death.

N rates & length of growing season (50% emergence to haulm death)



- <60 days (seed & punnets)
- 60-90 days (seed & punnets)
- 60-90 days (ware)
- 90-120 days
- >120 days

Potato variety group

| | | |
|---------|--|--|
| Group 1 | Short haulm longevity (determinate varieties) | Accord, Estima, Maris Bard, Rocket, Premiere |
| Group 2 | Medium haulm longevity (partially determinate varieties) | Atlantic, Lady Rosetta, Marfona, Maris Peer, Nadine, Saxon, Shepody, Wilja |
| Group 3 | Long haulm longevity (Indeterminate varieties) | Maincrop varieties such as Desiree, Maris Piper, Saturna etc |
| Group 4 | Very long haulm longevity | Cara, Markies |

N rates (kg/ha) for 90-120 days



| Variety group | N Res Gp 1 | N Res Gp 2 | N Res Gp 3 | N Res Gp 4 | N Res Gp 5 | N Res Gp 6 |
|---------------|------------|------------|------------|------------|------------|------------|
| 1 | 240 | 230 | 220 | 200 | 170 | 130 |
| 2 | 200 | 190 | 180 | 160 | 130 | 90 |
| 3 | 160 | 150 | 140 | 120 | 90 | 50 |
| 4 | 120 | 110 | 100 | 80 | 50 | 0 |

New P fertiliser recommendations for potatoes



- Recent SAC trials (2000-7) have shown that at upper levels of Medium P soil status and at High P soil status responses to P fertiliser are limited.

Subsequent to RB209 (2000)



- Defra Project PE0108 (2002) Review of the response of potatoes to phosphate
- **Priority 1. Responses to phosphate at ADAS Indices 3 and 4, and SAC high soil P status.**

Phosphate recommendations (kg/ha) for potatoes (TN621 & 633, Table D)



| Anticipated length of growing season and intended market | VL | L | M- | M+ | H |
|--|-----|-----|-----|-----|----|
| <60 days (seed & punnets) & 60-90 days (seed & punnets) | 265 | 225 | 175 | 100 | 50 |
| 60-90 days (ware) & >90 days | 240 | 200 | 150 | 75 | 50 |

Phosphorus is important with regard to water quality



- small increases in concentration can cause eutrophication (nutrient enrichment) of fresh waters.
- The EU *Water Framework Directive* is focussing attention on the need to control eutrophication due to P movement from soils by requiring all surface waters to have good ecological and chemical status by 2015.

Targets in the Lunan Water



Targets for P input reductions

| | | |
|------------------------------------|------------|------------------|
| Loch total P concentration | 70 | µg P/L |
| Good Status total P conc. | 27 | µg P/L |
| Total load reduction needed | 366 | kgTP/year |

Equivalent to:

tonnes of soil ~360 tonnes

(septic tanks with P filter ~120 households)

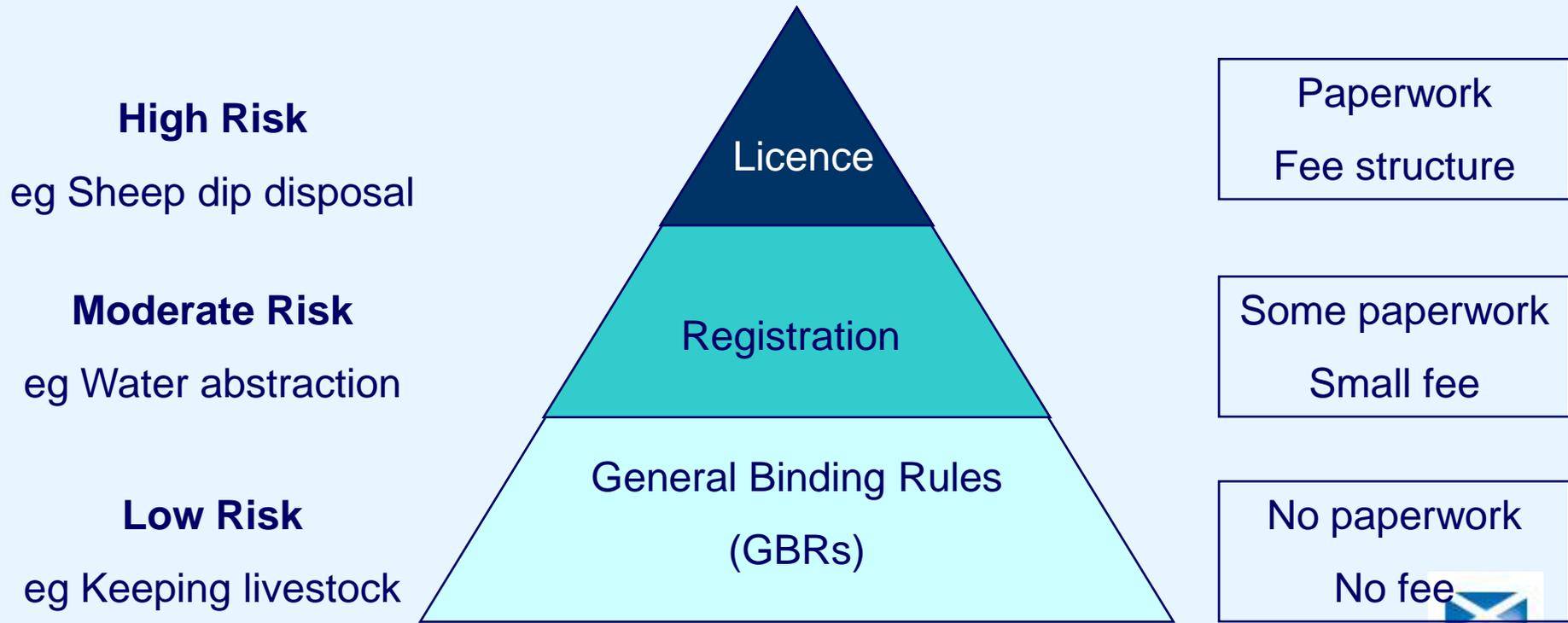


Dr Andy Vinten, MLURI

General Binding Rules - GBRs



- SEPA's risk-based hierarchy



Consequences



- GAEC – *impact on Single Farm Payment*
- General Binding Rules – *potential prosecution*

General Binding Rules



- GBR 20 - “ensure that land is cultivated in a way that minimises the risk of pollution to the water environment”

Grassed Headlands



Potash recommendations (kg/ha) for potatoes (TN621 & 633, Table D)



| Anticipated length of growing season and intended market | VL | L | M- | M+ | H |
|--|-----|-----|-----|-----|-----|
| <60 days (seed & punnets) & 60-90 days (seed & punnets) | 200 | 160 | 110 | 110 | 60 |
| 60-90 days (ware) & >90 days | 240 | 200 | 150 | 150 | 100 |

Nutrient Removal in Potato Tubers

| Yield t/ha | N | P₂O₅ kg/ha | K₂O |
|-----------------------|----------|---|-----------------------|
| 1 | 3 | 1 | 5.8 |
| 50 | 150 | 50 | 290 |
| Yield t/ha | S | Ca kg/ha | Mg |
| 1 | 0.3 | 0.2 | 0.2 |
| 50 | 15 | 10 | 10 |

Potato Council Agronomy Research Project 2011



- **Title: Potash offtake and crop requirement**
- **Researchers: ADAS, SAC and PDA**
- **Output:** The report will make proposals for future industry-standard recommendations (where there is appropriate robust information), and for future field-based or other research where information gaps are identified.

The PLANET Project



- Managed by ADAS with Defra/EA/DARDNI funding
 - PLANET v1 (2005)
 - PLANET v2 (2008)
 - PLANET v3 and (PLANET Scotland funded by Scottish Government) (October 2010)
 - Registration and download
<http://www.planet4farmers.co.uk>



- Decision support system for nutrient management on farms in Scotland

Planning
Land
Application of
Nutrients for
Efficiency and the
environment
T

What will PLANET Scotland do?



- Field-level nutrient and lime recommendations based on new SAC technical notes
- Field-level records to meet NVZ compliance requirements
- Farm Gate Nutrient Balance (NPK)
- Library of range of key reference documents

PLANET Scotland helpline



- Combined helpline will continue to be based at ADAS Gleadthorpe
- Queries received via the web, email or telephone contact
- Simple queries dealt with by trained ADAS reception staff
- Nutrient management queries (Scotland) to duty SAC staff

- **Downloading a Field Data file for PLANET from Rural Payments Online (RPO) – Agent guidance**



- Login to Rural Payments Online (www.ruralpaymentsonline.com)
- Select a Client
- Select 'Download Field Data for PLANET':

The screenshot shows the website's header with the Scottish Government logo and the text 'The Scottish Government Rural Payments Online'. The date 'Thursday, October 21, 2010' is displayed. A search box on the right contains the text 'Main Location Code', 'Business Ref', and 'Business Name'. Below the header is a navigation menu with links: Home, Login Details, Applications, Scheme Guidance, Help, Contact Us, Site Map, and Logout. On the right side of the navigation menu, it says 'Rural Payments Online Helpdesk 0845 601 7597'. The main content area is divided into three sections: 'Applications' with links for 'Rural Development Contracts - Rural Priorities', 'Scottish Beef Calf Scheme', and 'Single Application Form (SAF) inc. LMO/LMCMS/RP (2009)'; 'Other Useful Links' with links for 'Entitlements Details', 'Agent Mandate Form (PDF)', 'Agent Mandate Form Q&A (PDF)', 'Download Field Data For PLANET' (highlighted with a red arrow), and 'Previous Schemes'; and a 'Welcome to Rural Payments Online' section containing 'You last logged in at:' and 'You are logged in as:'. A 'Latest News' section is also visible at the bottom of the main content area.

- **Save the file** in a location where you will be able to find it when importing it into the PLANET application.
- **IMPORTANT** - do not edit the file in any way. Any required changes to your information should be made using the PLANET application once the file has been uploaded.





Uploading the Field Data file into PLANET

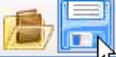
- Open PLANET application
- Create a new farm file or open an existing one
- Select Location – Scotland
- Click ‘OK’



If you have created a new farm file, you are required to fill in Farm Name and Farm STD Code before saving:

PLANET - Farm and Field Details

File View Tools Library Tutorials Help








Farm Details

Farm name:
 Farmer's name:

Farm address:
 Business name:

Postcode:
 Business Ref. Number (BRN):

CPH number:
 Telephone:

Farm STD code:
 Mobile:

Farm average annual rainfall (mm):
 Email:

Total farm area (ha):

Average altitude (m):

Field Details

| Field name | LPID number | Other ref | Field area (ha) | Cropped area (ha) | Manure non-spreading area (ha) | Soil type | NVZ Action Programme |
|------------|-------------|-----------|-----------------|-------------------|--------------------------------|-----------|----------------------|
| * | | | | | | | |



Select 'Data Import and Export'

Select 'Import'

Select 'Next'

The screenshot shows the PLANET - Farm and Field Details application. The main window has a menu bar (File, View, Tools, Library, Tutorials, Help) and a toolbar with various icons. The 'Farm Details' section contains the following fields:

- Farm name: TEST1
- Farm address: [Empty]
- Postcode: [Empty]
- CPH number: [Empty]
- Farm STD code: 01875
- Farm average annual rainfall (mm): 587

The 'Field Details' section is partially visible, showing a table with columns for 'Field name' and 'LPID n'. A table row is visible with an asterisk in the first column.

The 'Data Import and Export' wizard is open, displaying the PLANET logo and the following text:

This wizard allows data for selected fields (e.g. field records or nutrient application plan) to be exported in a form that can be used in a spreadsheet for further manipulation

Data can also be imported into PLANET provided they have been formatted to be compatible with the way that data are held in PLANET. The following data can be imported into PLANET (Scotland):

Key farm details, and the field LPID (Land Parcel Identification Number) and area for all fields on your farm that are held by Rural Payments On-line (RPO).

- To import these data for your farm you will first need to download the data from the RPO website as a .csv file.
- Then follow the steps in this wizard to import these data into PLANET.
- After the import process has been completed, you may need to enter other information for each field (e.g. your name for the field). If you are importing data to a farm file that has some field details already entered, you may also need to edit the field details information.
- Click on the Help button below, and go to page 11 for further guidance.

Please select

Export Import

Buttons at the bottom: Help, Cancel, < Back, Next >, Exit



You should now review and edit the data as appropriate

PLANET - Farm and Field Details

File View Tools Library Tutorials Help

Farm Details

Farm name:
 Farm address:
 Postcode:
 CPH number:
 Farm STD code: 01875 (Tranent)
 Farm average annual rainfall (mm): 587

Farmer's name:
 Business name:
 Business Ref. Number (BRN):
 Telephone:
 Mobile:
 Email: davie@...
 Total farm area (ha):
 Average altitude (m):

Field Details

| Field name | LPID number | Other ref | Field area (ha) | Cropped area (ha) | Manure non-spreading area (ha) | Soil type | NVZ Action Programme |
|------------|----------------|-----------|-----------------|-------------------|--------------------------------|-----------|----------------------|
| * | | | | | | | |
| ▶ 9 | NM/45334/66294 | | 11.60 | 11.60 | | ! | ! |
| 8 | NM/45163/66523 | | 4.58 | 4.58 | | ! | ! |
| 7 | NM/44914/66100 | | 161.32 | 161.32 | | ! | ! |
| 6 | NM/44659/66921 | | 1.86 | 1.86 | | ! | ! |
| 5 | NM/44603/66840 | | 1.85 | 1.85 | | ! | ! |



Help/Support

If you encounter any problems when downloading the Field Data file for PLANET from Rural Payments Online (RPO), please contact the RPO Helpdesk:

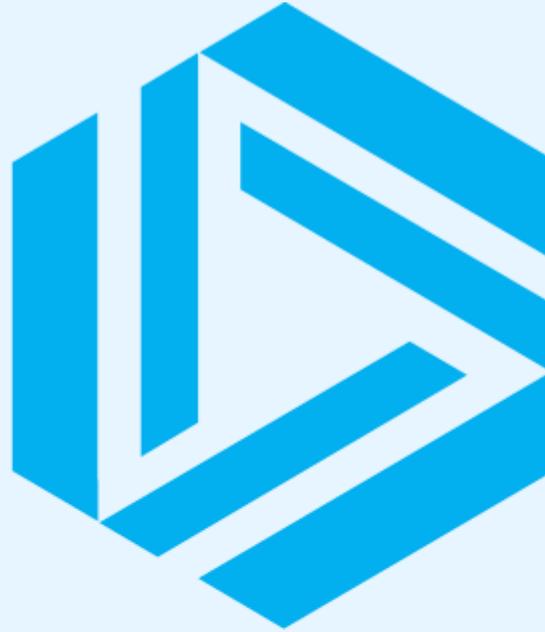
Tel: 0845 601 7597

Email: ruralpaymentsonline@scotland.gsi.gov.uk

If you encounter any issues using the PLANET application, you should contact the PLANET helpline:

Tel: 08456 023 864





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