TECHNICAL NOTE TN731 (Revised) / March 2026

Nitrogen recommendations for cereals, oilseed rape and potatoes

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Summary

- **Nutrient Management Planning Tool (NMPT), a new software tool to be launched during 2026 designed for routine use by Scottish farmers and advisers to plan and manage nutrient use on individual fields will replace www.planet4farmers.co.uk.**
- **New crops have been added to Previous Crop Nitrogen Residue Groups.**
- **A table of expected yield reductions for winter and spring cereals for successive 10 kg reductions in N fertiliser application has been compiled based on N response graphs.**
- **Updates on recommendations for some cereals that include an adjustment for expected yield.**
- **Nitrogen recommendations for potatoes take account of fertiliser prices, length of growing season, variety group, soil N residues and haulm killing.**
- **Careful planning that maximises the efficient use of fertiliser and organic materials can help reduce the amount of N that is lost as nitrate and nitrous oxide (a greenhouse gas).**

Introduction

Most agricultural soils contain too little, naturally occurring plant- available nitrogen (N) to meet the needs of a crop throughout the growing season. Supplementary N applications must be made each year. Applying the correct amount of N at the correct time is an essential feature of good crop management.

The "crop N requirement" is the amount of N that should be applied to give the economic optimum yield. Nitrogen recommendations in this technical note are crop N requirements defined in this way. 'Crop N requirement' should not be confused with total N uptake by the crop or with the total supply of N (including that from the soil) that is needed by the crop. The "crop N requirement" can be met by applying manufactured fertilisers, livestock manures or other organic fertilisers individually or in combination.

Provided there are adequate supplies of water and other nutrients, N usually has a large effect on crop growth, yield, and quality. Applying N normally gives a large increase in yield but applying too much can reduce yield by aggravating problems such as lodging of cereals and foliar diseases. When too much N is applied, a larger proportion is unused by the crop. This is a financial cost and can also increase the risk of nitrate leaching to water and contribute to other environmental problems. Where appropriate, different recommendations are given to achieve crop quality specifications required for different markets.

A table of expected yield reductions for successive 10 kg reductions in N fertiliser application from a recommended rate of 130 kg N for spring barley and 200 kg N for winter cereals have been compiled (see below). In producing and interpreting the table there are several considerations that must be kept in mind.

1. N response graphs are highly variable and differ from site to site and year to year. The variability results from several factors including differences in the amount of N supplied by soil from mineralisation of soil organic matter and the ability of the crop to capture and utilise it. This soil N supply is notoriously difficult to predict with any certainty. As such we must work with 'average' responses when making

N recommendations but accept that there will be an appreciable margin of error.

2. The yield reductions associated with reducing fertiliser applications below the recommended rate depend on the shape of the response curve. In Scottish trials response curves in spring cereals are consistently steeper than in winter cereals and so give a larger reduction in yield for a given reduction in N application. This is highlighted in the table.

Reduction in nitrogen applied (kg/ha) *	Possible effect on yield of winter cereals (t/ha)	Possible effect on yield of spring cereals (t/ha)
-10	-0.05	-0.07
-20	-0.10	-0.15
-30	-0.20	-0.25
-40	-0.30	-0.40
-50	-0.40	-0.55
-60	-0.50	-0.70

* Lower than 200kg/ha N for winter cereals; and 130kg/ha N for spring cereals

With the high value potato crops, growers should continue to apply recommended rates of N to sustain achieving optimum yield and quality. Avoid over applying N as this is wasteful with potential leaching and loss to the atmosphere, leads to excessive haulm growth, potential difficulties with haulm destruction and potential difficulties with delayed skin set and stolon separation.

If growers wish to cut back on fertiliser, there is potentially more scope with P & K especially where soil reserves are high. For simplicity, growers often adopt a single fertiliser programme across fields irrespective of soil analysis results but with pressure from fertiliser costs and environmental pressures, growers should consider tailoring fertiliser to individual field requirements.

Where organic materials are applied full account should be taken of the fertiliser nutrients (including N) to optimise economic performance and to minimise leaching of excess N as nitrate. The amount of N available to the crop in the years following the application of organic materials depends on the type of material applied, the method and timing of application, and the soil category. Information on the N contents of organic materials can be found in FAS Technical Notes TN699 and TN736.

This Technical Note can be used along with Nutrient Management Planning Tool (NMPT), a new software tool to be launched during 2026 designed for routine use by Scottish farmers and advisers to plan and manage nutrient use on individual fields and will replace www.planet4farmers.co.uk.

The software provides:

- Field-level nutrient planning and record keeping.
- An Organic Manures Inventory and Storage Requirements module which calculates monthly quantities and the nutrient content of farm manures, and the minimum slurry storage requirement as required for compliance with Nitrate Vulnerable Zone Action Programme (NVZ AP) rules.
- An Organic Manure Storage Capacity module which calculates the storage capacity of existing slurry and solid manure stores based on store dimensions.
- A Livestock Manure N Farm Limit module which calculates the whole-farm manure N capacity, and the current N loading for compliance with this NVZ AP rule.
- A function that calculates the maximum N (Nmax) for individual crop types for compliance with this NVZ AP rule.
- A Farmgate Nutrient Balance that calculates the balance of nitrogen, phosphate and potash coming onto the farm (e.g. in feeds, manufactured and organic fertilisers) and those exported off the farm (e.g. in farm produce).

Recommendations for different crops

To assess the fertiliser N required for each crop in each field, the following factors need to be considered:

Soil category	Table 1
Previous crop	Table 2
Previous grass/clover management	Table 3
Crop to be grown and intended market	Tables 4 to 10
Winter rainfall	Tables 4 to 10

Assessment of soil category

The whole soil profile should be assessed to rooting depth. Where the soil varies and more than one category occurs within a field, it may be practical to alter the rate of fertiliser N to suit the different soil categories. If this is impractical, and the field is to be treated uniformly, you should select the soil category that covers the largest part of the field. The soil category can be identified using Table 1.

Categories of mineral soils can be identified by hand texturing. Take about a dessert spoon of soil. If it is dry, wet it gradually, knead thoroughly between finger and thumb until aggregates are broken down. Enough moisture is needed to hold the soil together and for the soil to exhibit its maximum cohesion. There are two questions to be answered.

Question 1	Is it difficult to roll the moist soil into a ball?
Answer	YES, then the soil type is “Sand”. NO, then ask the second question.

Question 2 Does the moist soil feel smooth and silky as well as gritty?
Answer NO, then the soil type is “Sandy loam”.
YES, then the soil type is “Other mineral soil”.

“Humose” and “Peaty soils” are identified by percent organic matter, which can be confirmed by laboratory analysis.

In mineral soils of low organic matter content, the amount of available N residues is relatively small, whereas in humose and peaty sites low N malting barley is not encouraged as N release occurs late in the season and ends up in the grain.

Table 1. Soil category assessment

Soil category	Description of soil types within category	Properties
Shallow soils	All mineral soils which are less than 40cm deep.	Soils are less able to retain or supply N at depth.
Sands	Soils which are sand and loamy sand textures to a depth of more than 40cm.	Soils have poor water-holding capacity and retain little N.
Sandy loams	Soils which are sandy loam texture to a depth of more than 40cm.	Soils have moderate ability to retain N and allow average rooting depth.
Other mineral soils	Soils with less than 15 percent organic matter that do not fall into the sandy or shallow soil category, i.e. silty and clay soils.	Soils can retain more N than lighter soils and allow rooting to greater depth.
Humose soils	Soils with between 15 and 35 percent organic matter. These soils are darker in colour, stain the fingers black or grey, and have a silky feel.	Soils can retain more N than mineral soils and have higher N mineralisation potential.
Peaty soils	Soils that contain more than 35 percent organic matter.	Soils have very high N mineralisation potential.

N residues from previous crops

The last crop grown has been allocated into one of five Previous Crop Groups. These Groups are numbered 1 to 5 in ascending order of residual available N in the soil following harvest of the previous crop (see Table 2). A green manure crop in arable rotation that is maintained in the ground from 3 to 5.5 months until at least 15 August before destroying has been included in Table 2. Residual available N in the soil following harvest will vary depending on the crop grown. When green cover crops are used between the harvest of one crop and establishing the next the N residue group does not change from the original harvested crop. Residues following cereals are generally lower than those following break crops. The management and performance of the previous crop can have a significant effect on the actual level of N residues. Residues are expected to be lower in a high yielding season or where N application has been less than normal but may be higher than average if the crop has performed badly due to problems such as disease or drought. In tables of N requirements in this Note it is assumed that all previous crops have been managed well and that previous N fertiliser use has been close to the recommended rate, taking account of any use of organic materials. Where there is uncertainty about the amount of residual N in the soil, sampling for Soil Mineral Nitrogen (SMN) may be appropriate e.g. Group 4 and 5. In Group 5, N residues can be very variable. Analysis of the crop debris for total N and C content along with an estimate of the quantity ploughed down is recommended to help predict release of available N for the next crop.

Table 2. Previous Crop Nitrogen Residue Groups in ascending order of residual available N in the soil following harvest

Group	Previous Crop
1	spring barley, spring oats, spring rye, spring wheat, spring triticale, winter barley, winter oats, winter rye, winter wheat, winter triticale, whole crop cereals, spring cereals (undersown), carrots, swedes shopping, turnips, linseed, bulb onions, salad onions, asparagus, radish, sweetcorn, narcissus, tulip, miscanthus, swedes/turnips (stock feed), parsnips, willow, coriander, mint, sunflowers, ryegrass grown for seed.
2	forage maize, forage swedes (roots lifted), forage turnips (roots lifted), forage rape, kale cut, winter oilseed rape, spring oilseed rape, hemp, lupins, courgette, pumpkin, wild rocket, beetroot, parsnips, peas. market pick peas, potato variety group 1, potato variety group 2, potato variety group 3, potato variety group 4, gooseberries, blackberries, loganberries, blackcurrants, redcurrants, blueberries, tayberries, strawberries, raspberries.
3	Fodder beet, sugar beet, winter beans, spring beans, broad beans, dwarf beans, runner beans, lupins, leeks, baby leaf lettuce, rhubarb, uncropped or fallow, other.
4	forage turnips grazed, kale grazed, forage swedes (grazed), chicory pure stand.
5*	hybrid brassicas, brussels sprouts, cabbage, calabrese, cauliflower, celery self-blanching, grass.
* N residues can be variable in this group. Analysis of the crop debris for total N and C content prior to ploughing down is recommended to help predict release of available N for the next crop.	

N residues from previous grass/clover swards

Nitrogen fertiliser and manure use in the last 2 years of the grassland, and grazing management during the months immediately prior to ploughing out grassland will have a significant effect on the level of N residues. Managements of the previous grass/clover sward have been allocated into one of five Groups. These Groups are numbered 2 to 6 in ascending order of residual available N in the soil prior to establishing of the following crop (see Table 3). Groups 2 to 5 have the same N residues as Groups 2 to 5 in the Previous Crop Groups (Table 2), whereas Group 6 has a higher residue of available N. N residues can be very variable in Groups 5 and 6.

Table 3. Previous Grass/Clover Nitrogen Residue Groups in ascending order of residual available N in the soil prior to establishing of the next crop

Group	Previous Grass/Clover management
2	1–2-year low N* leys and not grazed within 2 months of establishing the next crop
3	1–2-year low N leys and grazed within 2 months of establishing the next crop 1–2-year high N leys* and not grazed within 2 months of establishing the next crop
4	1–2-year high N leys and grazed within 2 months of establishing the next crop 3–5-year low N leys and not grazed within 2 months of establishing the next crop
5	3–5-year high N leys and not grazed within 2 months of establishing the next crop 3–5-year low N leys and grazed within 2 months of establishing the next crop Permanent grass, high N, not grazed within 2 months of establishing the next crop
6	3–5-year high N leys and grazed within 2 months of establishing the next crop Permanent grass, high N, grazed within 2 months of establishing the next crop

* Low N: less than 150kg/ha/year fertiliser N used on average in last 2 years.
High N: more than 150kg/ha/year fertiliser N used on average in last 2 years, or high clover.

Winter rainfall

The drier the winter and the greater the soil capacity to hold water, the smaller the proportion of N from crop residues that will be washed out of the soil before crop growth starts in the spring. If winter rainfall between 1 October and 1 March is more than 450mm (18 inches) then standard N recommendations should be adjusted by additional N to crops in N residue Groups 2 to 6 depending on soil type according to the information in the crop Tables 4 to 10.

Winter cereals (Tables 4 and 5)

Autumn nitrogen is NOT generally recommended, as profitable responses are not normally attained, and the practice will increase N losses to watercourses. There is a possible N requirement in some winter barley that has been direct drilled, established following minimum cultivation, or established after ploughing down large quantities of straw e.g., after carrots.

Spring N is best applied as a split dressing. In general, a 33%/67% (one-two thirds) split between the start of spring growth and growth stage 30-31 is recommended. A 20/80 split will improve bread- making quality and help to prevent lodging, a 50/50 split will help to reduce grain N% for malting or distilling. For wheat grown for bread-making/milling the additional 40 kg/ha, as shown in Table 4, should be applied either as a solid fertiliser as soon as the flag leaf has fully emerged, or as a foliar spray at the milky ripe stage to increase grain protein. These adjustments in timing should be used in conjunction with adjustments in the amount of N applied.

Farm N strategies for wheat can be assessed periodically using information on grain protein concentration. Grain protein at the economic optimum rate of N is about 11% (1.9% N) for feed wheat and 12% (2.1% N) for bread-making wheat.

The N requirements of winter triticale are the same as those of wheat in most situations. Hence N recommendations should be calculated as for feed wheat, including the adjustment for yield potential, with the following exceptions:

- If the variety chosen is known to have a high lodging risk, the total N rate should be reduced by 40 kg N/ha.
- If the grain price is expected to be significantly below that which would be received for wheat, N rates should be reduced accordingly.

A whole crop winter rye yield of 30t/ha would be equivalent to the winter barley base yield of 6.5 t/ha which would now be considered a poor crop of winter barley and likewise whole-crop rye. Whole crop rye grown for AD is accurately weighed into AD plants. Additionally 2.5 kg N/ha may be justified for every tonne that the expected whole crop rye yield exceeds 35 t/ha (at 35% dry matter), where farm average yield is supported by evidence of yields previously achieved by that crop.

Spring cereals (Tables 6, 7 and 8)

Nitrogen recommendations for spring barley planned for low N malting should be reduced by 20kg N/ha. Nitrogen recommendations should be reduced for crops which are sown ten days or more after the optimum sowing period. Pressure of spring work and adverse weather can often account for delays more than ten days. In these circumstances the N recommendation should be reduced for crops which are sown ten days or more after the optimum sowing period by approximately 1.5 kg/ha/day for each day of delay for feed or high N malting and 2.25 kg/ha/day for low N malting.

For crops sown up to the beginning of April apply half fertiliser N to seedbed and half at 2-3 leaf stage for low N malting and start of tillering for feed and High N malting crops. From beginning of April onwards, all may be applied to seedbed. Incorporation in the seed bed or combine drilling reduces the risk of poor N uptake in dry spring weather.

A table has been included to highlight the increased importance of growing spring oats. Recent research has shown that the lower N requirement of spring oats compared to barley is associated with a greater uptake of soil N and a smaller residue of nitrate left at harvest. Combine drilling is recommended for early sown crops and crops grown in high soil pH (>6.4). Combine drilling of urea is NOT recommended as close contact with germinating seed can be damaging. Combine-drilled fertiliser should be limited to 150 kg/ha N + K_2O on sands and sandy loams.

Winter oilseed rape (Table 9)

It is important to sow oilseed rape early to achieve sufficient plant size to withstand winter conditions. Sowing date is particularly important in Scotland, and the end of August is recognised as the latest advisable sowing date for most areas. Winter barley is generally the most suitable crop for entry of winter oilseed rape in Scotland, although in some areas and in earlier seasons spring barley may be harvested early enough to provide a suitable entry. Autumn sown rape can produce about 20-25 t/ha fresh material by December, and seedbed/autumn application of N is recommended following crops/grass in N residue groups 1, 2 and 3. N top dressing in spring is best split, applying half at the start of spring growth and half prior to stem elongation.

Spring oilseed rape (Table 10)

Spring sown crops generally utilise soil N more efficiently than winter crops. Their requirement for N coincides with the normal period of soil N release in May and June whereas winter crops require N when the soil is still too cold for soil N release in March.

Potatoes (Table 11)

Nitrogen increases haulm growth and persistence. The increase in haulm growth is accompanied by delayed tuber initiation and growth. The main benefit of high N is the greater length of the tuber bulking period, linked to improved haulm persistence. Only moderate amounts of N are required for maximum bulking rates up to the normal 'burning off' dates for specialist seed and punnet production. Nitrogen usually increases tuber yield more than tuber number; hence average tuber size is increased as is the proportion of 'ware' in the crop. For these reasons the amount of N recommended increases as the expected burning off date is delayed.

Whilst flailing is taking over as a rapid way of haulm killing, following the loss of diquat for haulm destruction, there will be occasions when alternative (but much slower) desiccant-only approaches will have to be used. If harvest is to be achieved within acceptable time frames, careful consideration of N use is required. Exceeding the recommended rate should be avoided, especially if wet weather may preclude flailing as a haulm destruction option.

The previous crop/grass N residue group should be used together with the anticipated length of growing season, intended market and variety group to determine the appropriate range of N rates. The length of growing season is the number of days from 50% emergence to haulm death. Recommendations are for optimum growing conditions. Soil compaction, PCNs or free- living nematodes have the potential to reduce root growth. No adjustment is required for irrigated crops. Irrigation should be applied according to a recognised scheduling system, which minimises the risk of returning soil to field capacity and triggering leaching.

In the past, split application of N has been considered of benefit for ware crops grown on sands, sandy loam, and shallow soils, or carried out for practical reasons to speed up planting. However, recent trials suggest that there is no advantage to a split application of N to potatoes compared with all N applied at planting. If application is considered post-planting, it should be completed no later than tuber initiation. Typically, one half to two-thirds of the N recommendation would be applied in the seedbed and the remainder no later than tuber initiation. It should be remembered also that in unirrigated crops, during dry weather topdressings of N will take longer to reach the roots.

Table 4. Winter wheat and winter triticale: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Sands and shallow soils	220	210	200	180	150	110
Sandy loams and other mineral soils	200	190	180	160	130	90
Humose soils	140	130	120	100	70	30
Peaty soils	80	70	60	40	10	0
Adjustments:						
Milling varieties	+40	+40	+40	+40	+40	+40
Yield adjustment*						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

* An additional 20kg/ha may be justified for every tonne that the expected winter wheat and winter triticale yield exceeds 8t/ha and is permitted in NVZs where farm average yield is supported by evidence of yields previously achieved by that crop.

Table 5. Winter barley, winter oats and winter rye: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Sands and shallow soils	200	190	180	170	140	100
Sandy loams and other mineral soils	180	170	160	140	110	70
Humose soils	120	110	100	80	50	10
Peaty soils	80	70	60	40	10	0
Adjustments:						
Malt for distilling	-50	-50	-50	-50	-50	-50
Malt for brewing	-30	-30	-30-	30	-30	-30
Yield adjustment*						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

* An additional 15kg/ha may be justified for every tonne that the expected winter barley yield exceeds 6.5t/ha; and where the expected winter oats yield exceeds 6.0t/ha;
An additional 2.5 kg N/ha may be justified for every tonne that the expected whole crop winter rye yield exceeds 35 t/ha (at 35% dry matter).
These additions are permitted in NVZs where farm average yield is supported by evidence of yields previously achieved by that crop.

Table 6. Spring wheat: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Sands and shallow soils	170	160	150	130	100	60
Sandy loams and other mineral soils	150	140	130	110	80	40
Humose soils	100	90	80	60	30	0
Peaty soils	70	60	50	30	0	0
Adjustments:						
Milling varieties	+40	+40	+40	+40	+40	+40
Undersown crop	-25	-25	-25	-25	-25	-25
Yield adjustment*						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

* An additional 20kg/ha may be justified for every tonne that the expected spring wheat yield exceeds 7.0t/ha. This addition is permitted in NVZs where farm average yield is supported by evidence of yields previously achieved by that crop.

Table 7. Spring barley: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Sands and shallow soils	150	140	130	110	80	40
Sandy loams and other mineral soils	130	120	110	90	60	20
Humose soils	80	70	60	40	10	0
Peaty soils	50	40	30	10	0	0
Adjustments:						
High N grain distilling / malting	+15	+15	+15	+15	+15	+15
Malting (low N)	-20	-20	-20	*	*	*
Undersown crop	-25	-25	-25	-25	-25	-25
Yield adjustment**						
Delayed sowing – Reduce by 1.5 kg/ha/day for each day of delay after 10 days after your optimum sowing period						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

* Avoid growing low N malting barley after crops in groups 4 – 6 and humose/peaty soils that leave high N residues.
** An additional 15kg/ha may be justified for every tonne that the expected spring barley yield exceeds 5.5t/ha. This addition is permitted in NVZs where farm average yield is supported by evidence of yields previously achieved by that crop.

Table 8. Spring oats, spring rye and spring triticale: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Sands and shallow soils	120	110	100	80	50	20
Sandy loams and other mineral soils	100	90	80	60	30	20
Humose soils	50	40	30	20	20	0
Peaty soils	20	20	20	0	0	0
Adjustments:						
Undersown crop	-25	-25	-25	-25	-25	-25
Yield adjustment*						
Delayed sowing – Reduce by 1.5 kg/ha/day for each day of delay after 10 days after your optimum sowing period						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

* An additional 15kg/ha may be justified for every tonne that the expected spring oat yield exceeds 5.0t/ha and where the expected spring triticale yield exceeds 6.0t/ha. These additions are permitted in NVZs where farm average yield is supported by evidence of yields previously achieved by that crop.

Table 9. Winter oilseed rape: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Autumn seedbed:						
All soils	30	20	10	0	0	0
Spring:						
All mineral soils	200	190	180	140	110	70
Humose soils	120	110	100	80	50	10
Peaty soils	80	70	60	40	0	0
Adjustments:						
Yield adjustment*						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

* Up to an additional 30kg/ha may be justified in spring if the expected yield is over 4.0t/ha and is permitted in NVZs where farm average yield is supported by evidence of yields previously achieved by that crop. This adjustment should be used with caution because applying too much early nitrogen to crops with large canopies can increase lodging and may reduce yield.

Table 10. Spring oilseed rape: N recommendations in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
All mineral soils	100	90	80	60	30	0
Humose soils	50	40	30	10	0	0
Peaty soils	20	10	0	0	0	0
Adjustments:						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

Table 11. Potatoes: N recommendations in kg/ha

Length of growing season	Variety group[1]	Previous crop or grass N Residue Group 1	2	3	4	5	6
< 60 days (seed & punnets)	1	80	70	60	40	0	0
	2	60	50	40	20	0	0
	3	40	30	20	0	0	0
	4	N/A	N/A	N/A	N/A	N/A	N/A
60-90 days (seed & punnets)	1	100	90	80	60	30	0
	2	80	70	60	40	0	0
	3	60	50	40	20	0	0
	4	50	40	30	0	0	0
60-90 days (ware)	1	200	190	180	160	130	90
	2	150	140	130	110	80	40
	3	120	110	100	80	50	0
	4	80	70	60	40	0	0
90-120 days	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
> 120 days	1	N/A	N/A	N/A	N/A	N/A	N/A
	2	220	210	200	180	150	110
	3	180	170	160	150	110	70
	4	140	130	120	100	70	30
Adjustments:							
Winter rainfall (1 Oct – 1 Mar)							
More than 450mm (18 inches)							
Sands, sandy loams, shallow soils		0	+10	+20	+20	+20	+20
All other soils		0	+10	+10	+10	+10	+10

[1]Variety group (for other varieties consult RB209, 2020):

- **1 – short haulm longevity (determinate varieties) – e.g. Accord, Estima, Maris Bard, Rocket, Premiere**
- **2 – medium haulm longevity (partially determinate varieties) – e.g. Atlantic, Lady Rosetta, Marfona, Maris Peer, Nadine, Saxon, Shepody, Wilja.**
- **3 – long haulm longevity (indeterminate varieties) - e.g. Maincrop varieties such as Desiree, Fianna, Hermes, King Edward, Maris Piper, Rooster, Russet Burbank, Pentland Dell, Pentland Squire, Saturna**
- **4 – very long haulm longevity – e.g., Cara, Markies**

Table 12. Potatoes: Winter rainfall N adjustments in kg/ha

Previous crop or grass N group (Table 2 or 3)	1	2	3	4	5	6
Adjustments:						
Winter rainfall (1 Oct – 1 Mar)						
More than 450mm (18 inches)						
Sands, sandy loams, shallow soils	0	+10	+20	+20	+20	+20
All other soils	0	+10	+10	+10	+10	+10

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