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PRG Topical Tips 2 2024: Planting to emergence

The season so far

1. The wet weather has continued, which has been enough to delay land work for other crops.
2. Water tables are high and soils at depths of 20-25 cm are cold and wet.
3. The winter has been mild, and the data suggest that the winter has been between 1-1.5 °C warmer than the long-term average; the second warmest February on record. This has been enough to trigger the derogation for seed treatment on sugar beet.
4. Rothamsted Insect Survey is estimating that the first aphid flights will be 7-14 days earlier than average in Scotland and 14-21 days earlier in England. Be conscious of this when considering seed for 2025.
5. The forecast for the remainder of March and early April is not encouraging.
6. Land is beginning to dry as the daylight hours lengthen, with slight increase in temperatures and additional effects from the wind.
7. This is still only helping with shallow drilling operations and there remain unforeseen wet holes in most fields.
8. Cultivation strategies will be key.

The importance of this period

1. Crop potential is set by the seed and the early environment.
2. Good conditions at planting can contribute to:
 - Rapid and uniform emergence
 - Uniform crop development
 - Low risk of tuber diseases and stem canker.
3. Based on the above, patience with potato cultivations will be crucial.
4. Land is slowly drying but mainly in the top 5-10 cm; below this it is wet, and soil will need moving, but working 'top down' so that the drying process penetrates the entire profile of soil that you will be working. Avoid producing clods that dry out.
5. Ploughing on some fields is producing shiny plough furrows that are a sure sign it is too wet. Some fields are ploughing well, although this is the best land.
6. Good root mass development and penetration will be hugely beneficial for the crop.
7. Many factors can adversely affect the growing crop, but a well-established crop is likely to be more resilient to extremes of conditions. Rapid full ground cover will negate expensive herbicide programmes.

Nutrition

1. Soil applied nutrients need to be applied at planting at the latest, to be available for root uptake.
2. The optimum rate of nitrogen application is important for a high rate of tuber bulking but excessive rates of application can delay tuber production and result in excessive haulm production.
3. Top dressings, even in a liquid form are inefficient (on the majority of soils, 1 cm of rain / irrigation when the soil is already at field capacity, will move nitrate only 2 cm down the soil profile).

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4. Placement of a proportion of fertilisers (particularly phosphate) may be beneficial but remember that:
 - Roots proliferate where there are high concentrations of nutrients, which could restrict the volume of soil available for uptake of water.
 - Fertilisers with a high salt value, placed in high concentrations can give a chemical “burn” to developing roots and stolons.
 - Placement needs to be 2 cm away from the developing tuber.
5. Consult your soil analysis and PRG models and calculate what is required. Applications of phosphorus and potassium on rented land are likely to differ from that on owned ground. The table below indicates offtake amounts.

	Crop yield	N	P ₂ O ₅	K ₂ O	MgO	CaO	S
Nutrient offtake (kg / tonne)		3	0.9	5.8	0.2	0.2	0.3
Seed crop	30 t / ha	90	27	174	6	6	9
Ware crop	50 t / ha	150	45	290	10	10	15
High yield	70 t / ha	210	63	406	14	14	21

6. Sulphur is important but applying potassium sulphate or ammonium sulphate to supply potassium and nitrogen will probably apply sufficient sulphur, while decomposition of organic matter can add to soil residual sulphur.
 - Sulphur requirement should be calculated in relation to nitrogen requirement, with a ratio of 11:1 to 14:1 parts of nitrogen : sulphur required (total availability, i.e. soil + applied).
 - Where sulphur deficiency occurs, responses to 25 kg ha⁻¹ SO₃ is have been shown.
 - To be effective, sulphur needs to be in the sulphate form (elemental sulphur is likely to take too long to become available) and affects on common scab reduction are unlikely.

Seed

1. Handle and store your seed well, as it may be a late planting season for some cultivars.
2. Seed treatments may be necessary if they have not already been applied by your seed supplier.
3. If seed treatments have not been applied, they may be self-application or applied by an approved contractor but good coverage of seed is important. Below is a list of products.

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Seed treatment summary

PRODUCT	ACTIVE	RATE/ T	Water Vol	MAPP No.	COMMENTS
MAXIM 100FS	Fludioxonil	250ml	2.0 lt/T	15683	Apply with a roller table with rotating arm. Expiry – 15.12.27. BS, SS, BD
RhiNo DSG	Flutolanil	2.0 kg	N/A	19730	New formulation. Apply on planter. Expiry 31.08.26 BS
RhiNo DS	Flutolanil	2.0 kg	N/A	12763	Old formulation. Apply on planter. Expiry – 31.08.26. BS
RhiNo	Flutolanil	200ml	2.0 L/t	14311	Suspension concentrate. Expiry – 31.08.26. BS
Honesty	Fluxapyroxad + Sherrif	200ml	2-2.4 L/t	19666	Suspension concentrate. Full available 2024. BS. Reduction only BD, SP, DR, & G
Gavel **	Imazalil	150 ml	2.0 L/t	17586	Soluble concentrate; Expiry – 30.06.27. SS; SP; G; DR
Storite Excel **	Thiabendazole	80 ml/T	2.0 L/t	12705	Suspension Concentrate. Expiry - 9.9.99 SS; G; SP; DR

** Product can be mixed to create the **old Storite Super** but be cautious as they are not very physically compatible. Consider application by direct injection or pre-heat the water tank and the products mix better with warm water.

SS – Silver scurf; **BS** – Black scurf; **SP** – Skin Spot; **DR** – Dry Rot; **G** - Gangrene

4. Due to seed shortages, there will be some poor seed on the market and some growers will have made the decision to use home saved seed. Assess quality and health:
 - Have you applied MH?
 - What is the virus level? Check cultivar susceptibility.
 - What is the disease loading?
 - Powdery scab and common scab on seed present less of a risk than does soil inoculum.
 - The presents of dry rot, gangrene or soft rots represents a high risk.
5. Consider your 2025 seed plans as seed availability could be difficult in terms of health and obtainability.

Planting

1. Ideal planting conditions are a temperature at seed depth of 8 °C and moist (not wet) soil.
2. Planting in cold, wet conditions can result in a long delay till emergence and increased risk of development of tuber rotting diseases and stem canker.
3. However, research for the PRG has indicated no detriment of planting when temperatures 6°C and rising, provided that other conditions are good.
4. In the PRG experiments, delaying planting beyond mid-May resulted in a risk in reduced yield due to a shorter duration of bulking; late planting also increases the risk of sensitive stages of crop development (tuber formation and development) occurring during periods of high temperature.

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5. It can be expected that some crops will be planted after mid-May this season; these need to be the second earlies / quicker maturing varieties that require a shorter growing season.
6. Try to ensure that the seed tuber is not significantly warmer than the soil you are planting into. This could shock the tuber. Some cultivars such as "Sagitta" can suffer from little potato disorder under these conditions.
7. Fields will have been allocated cultivars and the lighter fields will be suitable to plant first. However, try to plant the late maturing cultivars / indeterminate cultivars first, as they need the full growing season. If seed has been split graded into large and small fractions, large seed will be more robust and less likely to suffer detrimental effects in less than ideal planting conditions.

Planting to emergence period

Pre-emergence herbicides

1. Most growers will have a basic plan from experience as there will be a known weed spectrum on the land being cropped.
2. Based on current circumstances, there is likely to be sufficient moisture for residual herbicides to work, which is another reason to avoid drying the soil excessively.
3. Metribuzin, acifluorfen, metolachlor and pendimethalin are mainstays of different programmes. Remember pendimethalin needs to be applied a good week prior to emergence to negate any phytotoxic effect to the emerging plant.
4. If there is a history of grass weeds the addition of flufenacet ("Artist") is beneficial.
5. If the time and opportunity allows, use glyphosate on stubble where there is a flush of difficult grass weeds.
6. Other residual products to improve control of cleavers, among other weeds, are clomazone and prosulfocarb.
7. Contact products, providing there is negligible emergence, are carfentrazone-ethyl ("Shark") and pyraflufen-ethyl ("Gozai"). Remember to record "Gozaï" if you are planning to use it as a desiccant.

Soil moisture

1. After a somewhat wet winter it may appear unlikely that a lack of moisture will be a problem early in the season.
2. However, cultivation operations can dry soil in the upper part of the ridge.
3. The initial roots form from stem nodes between the seed tuber and soil surface and thus in the upper part of the ridge.
4. Dry soil at the beginning of crop growth can restrict root growth and nutrient uptake and may also limit stolon formation and thus the number of tubers produced.
5. Monitoring of soil moisture in the root zone should begin soon after planting and preparation made to begin irrigating early in the season if this should be necessary.
6. If only the upper part of the ridge is dry, the amount of irrigation required to correct it will be low and this may be achieved more easily with drip than overhead irrigation.
7. If soil is dry in the early part of the season, waiting for the "scab irrigation" period to begin irrigating can compromise crop performance.
8. Ensure all the equipment has been adequately serviced, all the pipes lay flat and machines will reach the fields that need to be irrigated.

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Further information can be found on the PRG website.

PRG website / Planting and harvesting / Planting (for general information and links on planting).

PRG website / Nutrition / Principles of nutrient applications / Applications to soil (for information on salt index of fertilisers). Also pages relating to application of individual macro-nutrients, including sulphur.

PRG website / Soil moisture (for information and links on early availability of water).

N.B. Use the link below for current access to the PRG website (It may be necessary to use Ctrl + click to work the link). Contact Dyson Farming Research with any questions or for further information.

[Potato Review Group | Green Crop Information](#)