



IN BRIEF

- Crops are making good progress with plenty of soil moisture and warmth to drive rapid canopy growth. Many crops are growing away from earlier checks on growth; some of which were caused by herbicide damage.
- The extended drilling period is still reflected in a wide range of growth stages. Don't assume all crops are at the same stage, check each crop and variety individually.
- Sporadic reports of pest and bird damage. Now is the time to check for leaf miner activity in crops.
- Many crops are now in their final stage of weed control programme. Potato volunteers are growing rapidly so don't miss the 'window' to control these. Weed beet are also developing quickly.
- Hoeing has been completed or is underway in most crops. Remember it is important to hit weed beet early when hoeing to maximise the level of control.
- Some crops are receiving foliar feeds. Be clear on what nutrients you are targeting.



ADVISORY

Plant populations

- Remember that the crop is referred to as established once it has reached the six-leaf stage. The target population in **100,000 established plants/ha**. This is a crucial driver of yield in sugar beet and knowing this value for your crops will provide an important basis for understanding yield performance. For crops on 50cm rows, count the number of plants in 20m of row at several locations across the field. An average of 100 plants per 20m equates to 100,000/ha. For crops on 45cm rows, count the number of plants in 22m of row at several locations across the field. An average of 90 plants per 22m equates to 100,000/ha.
- Investigate reasons for poor establishment where this figure falls below 70%. Record this information to help decide on seed rate requirements in future years.

Weed control

Key points to consider for safer weed control:-

- When using adjuvants observe the guidelines on temperatures, not just at spraying but for four hours either side of application. **If in any doubt spray in the evening or early morning.**
- Remember there is a difference between mineral oils and vegetable oils with respect to crop safety, the mineral oils will be harsher on both the crop and the weeds.
- Check manufacturers labels and technical information for **ALL** products included within a tank mix to ensure there is support, especially for complicated mixes.
- Spray intervals need to be considered carefully where crops are stressed from the recent weather conditions or from other factors such as nutrient deficiencies and bird damage.
- Beet crops will be sensitive to herbicide damage following periods of rapid growth this is not only at the cotyledon/first true leaf stage but also at the two to four leaf stage.

Black-grass control

Black-grass continues to emerge and in Suffolk on mid-April drilling sites it is now at the 2 to 3 leaf stage, but growth stages vary across the beet growing region.

- Do not tank mix blackgrass control products with herbicides being used for annual broad-leaved weed control
- Consider the use of a water conditioner in hard water areas
- Ensure that black-grass is actively growing before using graminicides – remember that post emergence ethofumesate containing products will have some effect on black-grass and this may reduce the level of control required from a graminicide
- Where spray applications are being made to black-grass that is tillering or where beet canopies may be preventing spray penetration onto the black-grass, then water volumes need to be kept up
- Ideally try to control black-grass as early as possible

Weed beet

Weed beet are also beginning to show in the more forward crops and are now, or very soon will be, at a stage where they can be hoed. Hoeing can reduce weed beet populations in the crop by up to 80%, but to be effective it should be done before the beet have 4 true leaves, after which point they can ‘ride around’ the hoe blade and re-set. Sharp L-blades are best at this stage for their cutting action.

Volunteer Potatoes

Volunteer potatoes are now growing rapidly in many sugar beet crops and need controlling to avoid yield suppression, as well as removing a potential source of aphids, virus and potato blight, and the production of daughter tubers. Use of clopyralid in herbicide programmes can provide effective control. Clopyralid will also help control some perennial weeds such as creeping and sow thistle, and suppress black bindweed. For control of potato volunteers two applications are recommended, the first when volunteers are between 5 and 10 cm tall, the second when the volunteers are between 10 and 20 cm tall. Typically, the second application is 7-14 days after the first. **Make sure you check and comply with specific product label recommendations.**

Pests

There are limited reports of leaf miner eggs being found, so now is the time to assess crops closely. Seed treatments should remain effective in the treatment of leaf miners providing up to 10 weeks protection from emergence. Earlier drilled crops may be coming towards the end of this protected period so check these crops as a priority for any early signs of larval activity and leaf mining. BBRO trial work has showed potential yield reductions where populations remained untreated once the initial protection for seed treatments has elapsed.

The threshold for treatment is where the number of eggs and larvae exceed the square of the number of true leaves. For example, a plant with four true leaves would need a population of 16 or more eggs and larvae to warrant treatment and a crop with six true leaves would need a population of 36 or more eggs and larvae. Control is more effective at the early egg hatch stage when larvae are exposed on the leaf surface and before they mine into the leaf, so timing is critical. If you decide to treat crops,

the only product with specific approval for foliar application for leaf miner is Hallmark Zeon and whilst the level of control was not as high as some other pesticides in BBRO trials, it still gave protection against yield loss. At recommended rates, there is a maximum of 2 applications that can be made to sugar beet for leaf miner control. Ensure you use sufficient water to get canopy penetration.



Leaf miner eggs (left) and active larval leaf mining (right)

Crop Nutrition and foliar feeds.

Don't delay with getting your nitrogen on crops. Crops are developing canopies rapidly. Sufficient nitrogen is essential for early leaf canopy development.

The rapid early leaf growth of some crops can result in deficiency in nutrients. This is more frequent on light soils especially in dry conditions as well as in poorly consolidated and cloddy seedbeds. Symptoms can be seen as early as the 2-4 leaf stage. Manganese deficiency tends to be common at this early stage and the symptoms are initially, often just a pale colouration to the young leaves. The more typical yellow speckling (see photo) tends to develop as leaves expand further and symptoms



can be transient and may disappear after rain or when growth slows. However, it is worthwhile applying manganese to **rapidly growing crops**, especially those on lighter soils or in rapidly drying conditions, to help canopy establishment. Most recommended rates will give between 0.5-1 kg of manganese per hectare which will be sufficient for crops. Follow up applications are worth considering, especially in high risk soils and/or where symptoms continue to show.

Where crops are growing rapidly and are either stressed or suffering from herbicide damage, the use of foliar bio-stimulants and other broad spectrum foliar feeds is practiced by some growers. There are a large number of products available and there is no doubt that in some situations there are genuine responses to these products. However, it is not possible to predict where responses are more likely and **BBRO does not have consistent data to support routine use.**

If you are looking to use foliar feeds be clear on what the product contains in terms of nutrients and bio-stimulants. Products may contain just one or two nutrients/bio-stimulants and others a complex mix of nutrients and bio-stimulants. This can influence the cost considerably. Use the chart below to help you understand what constitutes different ‘types’ of foliar feeds.

Always aim to apply a foliar feed to a crop with both sufficient and active canopy growth, as most products require active uptake by the leaves. This is especially relevant if applying to herbicide damaged or stressed crops. An actively growing 6-8 leaf stage crop is likely to respond better than a damaged 4-6 leaf stage crop. Where a product contains nitrogen, follow recommendations carefully, especially water volumes and avoid spraying in hot sunny conditions to minimise the risk of scorch. As a general guide, crops can't take up more than 8-10 kg/ha of nutrients through their foliage in a single application so a ‘little and often’ approach is often the most likely to produce a response.

Foliar feed ‘type’	Typical content	Foliar feeding comment
Macro -nutrients analysis usually as % (w/w or w/v)	nitrogen, phosphate, potash, magnesium, sulphur	Can help relieve deficiencies and/ or where root activity is compromised by pest or poor soil conditions. Inclusion of nitrogen may ‘green-up’ crop but this may not always give a root yield response.
Micro/trace elements analysis usually as mg/kg (w/w or w/v)	Usually chelated forms of manganese, zinc, iron, boron, copper, cobalt, & molybdenum	Typically, manganese and boron are the more common in sugar beet.
Bio-stimulant- non- microbial	Seaweed extracts Phosphites Chitin/chitosan derivatives Amino-acids (protein hydrolysates) Humic substances	A wide range of products are available some just as a single constituent, others as a mix. Limited data on efficacy on sugar beet. Don’t assume results on other crops will translate into responses in sugar beet *
Bio-stimulants - microbial	Plant growth promoting bacteria (PGRP) Arbuscular mycorrhizal fungi (AMF)	Relatively newcomers to the market so limited data available for sugar beet *

*BBRO trials are currently assessing many of these products. Visit one of the BBRO Demonstration Farms during the season to get the latest information.

Aphid Survey – results from week 4.

- Winged aphid numbers are now starting to increase especially at Barrow and Battisford, Suffolk and Swayfield, Lincs.
- There are no reports of wingless aphids in crops and seed treatments should still be effective.
- Real time qPCR lab testing of all the aphids caught this week has found Beet Mild Yellowing Virus in 11 *Myzus persicae* aphids with 4 at Barrow, 4 at Battisford and 1 each at the Wingfield, Tinwell and Swayfield sites. This year we are using a new diagnostic test working with the aphids fresh (rather than frozen), this test is more sensitive to low virus levels. We will continue to validate this season and monitor levels of virus in treated and untreated crops
- Silver Y moth activity is increasing, so please keep an eye on this pest and report any eggs or caterpillars.
- Leaf miners are also being seen in several locations too.



EVENTS

Join the BBRO at Cereals, 13th June, NFU Stand, 10:30 – 11:30 to hear more about the Beet Yield Challenge the four finalists for 2017-18. We are still looking for entrants for this year, so please check out our website for this year's growers report and the application form <https://bbro.co.uk/on-farm/beet-yield-challenge/>

Summer Events

21st June BBRO will be supporting the Morley Innovation Day, (Morley Farms, Wymondham). For further details please see <http://tmaf.co.uk/wp-content/uploads/2018/04/Morley-A4-Open-Day-leaflet-4-18.pdf>.

Plans are proceeding for the BBRO Summer Open Days, with lots of opportunities to see our trials in progress, speak directly to the research team and view the RL varieties for 2019.

BEET 2018

3rd July @ Swanton Morley
5th July @ Bracebridge



BBRO's targeted approach to sugar beet growing



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