

BBRO Advisory Bulletin No.7 - Week Ending 23rd June 2017

General Crop Update

Many crops have continued to grow away from the slow and uneven start to the season and are now meeting across the rows. The 21st June was the longest day of the year and having a full canopy at this point is clearly advantageous in terms of optimizing light interception. However, crops with poor and variable plant populations are typical of the season and yield potential will be reduced in these situations. Later emerging crops and plants have developed rapidly in the warm conditions and are 'closing the gap' on earlier developed crops. Unfortunately, the range of different growth stages has made it difficult to time herbicides and there is a bit more herbicide damage showing in crops than normal.

Whilst the warm weather has encouraged some good growth, the recent high temperatures have taken its toll on many crops, especially those on lighter soil types, with increasing levels of wilting occurring as the day progresses. Estimates of soil moisture deficits (SMD) put values above critical values (see below) Plants are recovering overnight but rain is urgently required.



Wilting crop on sandy loam at midday on 20 June 2017.

A table of critical soil moisture deficits is shown below. This is based on extensive trial work over many seasons and soil types. If the deficit rises above these values, the crop stops growing at the full potential rate.

Month	Coarse sand	Loamy sandy	Sandy loam
June	25	30	35
July	35	40	50
August	50	60	75
September	65	75	125

Foliar Feeds

There may be a temptation to apply foliar feeds to crops under stress. In most instances, this will have limited effect, especially if crops are wilting and suffering from moisture stress, as leaves will not be able to take up and utilise nutrients effectively.

An effective treatment, especially in younger crops may be to apply some **manganese and magnesium** to crops once there has been some rain. Following rain, the resumption of growth will be rapid and demand for these nutrients is usually high. Foliar application of nutrients has been shown to assist with leaf growth and function in these situations.

Irrigation

Less than 5% of the UK crop is irrigated and when the demand for irrigation on other crops such as potatoes and carrots is also very high, sugar beet inevitably is a lower priority. However, it is estimated that on average 10% of potential beet yield is lost to drought stress in the UK .

Typically, plants with 75-100% full canopies will use between 2mm per day on dull days to more than 6 mm per day on bright sunny days. Over the last seven days this will result in deficits of >40mm.

Based on average rainfall figures for June many crops will be currently running a deficit well in-excess of 60/70 mm and would clearly benefit from irrigation if available.

If you can irrigate beet, aim to maintain the SMD at below the limiting deficit. **Target an application of 25-30mm. This has been shown to produce an extra 2.5t/ha.**

Please be aware that the figures quoted above are all averages and if you intend to irrigate it is recommended that the actual soil moisture content is measured, or that you keep a water balance sheet which can monitor specific crops. This is especially important in July and August when rainfall tends to be very localised.

Improving the moisture retentive properties of soils can of course be achieved by use of manures and cover crops and it is possible to see the positive effect of this in crops in dry periods when land, with and without manures and cover crops, can be compared. It has been estimated that by raising the organic matter content of soil by 1% can potentially result in the soil holding an extra 20,000 gallons/acre or 225,000 litres/ha.

No till and minimum till systems have also been shown to improve soil water content. Some recent work in Europe showed that water content (% volume) was increased by 5% in min-till and 3.5% reduced-till compared to conventional plough-based system. We are currently following some different tillage systems on our BBRO Demonstration farms and we are assessing any impacts of these on drought susceptibility in this dry period as well as following through to final yield. Watch this space.

The other factor impacting on drought susceptibility is soil compaction. The impact on compacted soil, both at shallow and depth, can have a significant effect in periods of drought. Just look at how quickly crops have wilted on headland areas or where old wheelings have been left across fields this season. It may not all be due to compaction, but areas of wilting are worth investigating to see if there is an underlying compaction problem that needs addressing ahead of the next crop.

Weed beet & bolters

Weed beet and bolters are now showing in crops. Remember that one weed beet per square meter can reduce yield by 11% and on average, 1,500 viable weed beet seeds are produced per weed beet plant. Action to remove weed beet is therefore always warranted.

If the weed beet is still pre-flowering or in open flower, they can be pulled easily from moist soils with the root broken off and left on top of the canopy to wither. As time goes on, it will be important to check whether flowering has finished on the older flowers. Once it has, rogued plants will need to be removed from the field. If you want further information on the growth stages of weed beet and control options, visit the BBRO website and click on 'Publications – Reference Book – Weed Beet'

In a few fields, there is still time to get a hoe through the last drilled beet. A-hoes will be best as there is more room for leaf canopy to flow through the hoe. You may need to remove row guards.

Weed wiping is another option worth considering, however there are some key points to take into consideration.

- The best control will come from wiping the crop in opposite directions to ensure a good coverage of chemical.
- Beware of wiping crops where bolters have roots of a harvestable size, particularly if the field is scheduled to be harvested early, as there is a risk of harvesting rotten roots which could spoil the sample or even lead to load rejection. Low levels of rotten roots can be picked out over a table on loading but obviously not where a self-propelled cleaner loader is being used.
- Beware of dripping chemical - regularly adjust the wick to ensure settings are appropriate for the prevailing conditions.

- Where seed has set, there is the risk of treated seeds flicking onto healthy plants causing herbicide damage as they do so.
- Make sure the glyphosate product being used has approval for use through a week wiper.

Cutting is also a useful technique to reduce seed return where populations of weed beet are very high (>10,000/ha). Three cuts are usually required at approximately fortnightly intervals to get the best control.

Foliar diseases

The first rust pustules have been recorded in several commercial beet crops and cercospora leaf spot has been identified in red beet in Cambridgeshire. This is incredibly early, so please monitor crops for further signs of foliar disease and apply an appropriate fungicide programme at disease onset (products are listed in the 2017 Reference Book). However, if applying fungicides, ensure the crop is at full canopy expansion and is not wilting under the current hot conditions.

Further cases of downy mildew have been reported, but only in susceptible varieties. The current hot dry conditions will help prevent further secondary spread.

Pests and insect monitoring

At present, the worst of the leaf miner attack appears to be confined to north Lincolnshire and little new activity has been recorded over the last few days, presumably as we are between the first and second generations. Again, please monitor crops, especially in this area for signs of fresh egg laying; Hallmark Zeon has approval for their control.

Aphid numbers appear to have peaked at most sites and with many crops beyond the 12-leaf stage, they should not cause problems regarding virus infection. However, the first virus yellows infected plant was recorded at the BBRO demonstration site at Rougham on the 16th June.

BCN

It may be worth having a closer look at any patches of poor canopy growth at this stage of the season to check for the white females of the beet cyst nematode which may be visible of the root systems on infected crops. There is nothing that can be done to treat for BCN in this crop, but consider marking the area for identification later and soil testing to confirm BCN levels. This will help you decide whether tolerant varieties should be grown in these areas in the future.



Caution: *this information is based on results of experiments and experience but cannot constitute a recommendation.*

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