British Beet BBRO Research Organisation

Advisory Bulletin

Issued: 27th April 2020

IN BRIEF

- Conditions remain very dry, creating a challenge for germination and seedling development. Variable and two-stage emergence are apparent in several crops.
- Many crops have had their first T1 post-emergence herbicide application although weed germination has also been slow in the dry conditions. Careful monitoring of crop and weed growth stages required for both remaining T1 and T2 applications as conditions are heightening the risk of herbicide damage. Careful selection of actives, rates and adjuvant use is necessary.
- The BBRO aphid monitoring programme has been up and running for two weeks. Information from this can be found at https://plus.bbro.co.uk/on-farm/member-area/. This is showing that aphids are flying and being recorded in sugar beet crops. Threshold has been reached in a small number of crops, even though beet are only at the 2-4-leaf stage.
- Options for the use of Biscaya (EA), Teppeki and Insyst (EA) as foliar insecticides are available this season. Programmes should commence as soon as the threshold of 1 green wingless aphid per 4 plants has been reached.
- Make sure crops have their full nitrogen requirement once the crop is fully emerged and beginning to develop. Make sure applications are made ahead of any forecast rain to ensure rapid growth is supported thereafter.

ADVISORY

Aphid control

- The BBRO aphid monitoring and yellow water pan network and information can be found at https://plus.bbro.co.uk/on-farm/member-area/
- Each site will show the presence or absence of green wingless aphids and whether the threshold has been exceeded at the site. **This is not your on-farm threshold for spraying, you must check your own crops individually.** This may be especially important this season and the early flight of aphids may mean an extended period in which crops need protection and therefore a number of sprays required. Do not use up applications unnecessarily or use pyrethroid sprays for aphid control.

Pic 1: A number of green wingless aphids found. Photo courtesy of Adam Peck (British Sugar)

- It is important to know where to find green wingless aphids as very often, they are not evenly distributed across a field. When checking for aphids in crops, check sheltered field margins, especially leeward of shelter belts and the leeward side of any hills as well as in hollows. This is where aphids can often be found in greater numbers. Additionally, if there is oilseed rape grown in close proximity, check in areas of the field nearest to this as this crop may be a local source of aphids. There are already reports of aphids flying, so it is important to monitor aphid numbers in your crops to ensure that you plan insecticide applications most effectively.
- It is imperative that all foliar insecticides are applied at the threshold of 1 wingless aphid per 4 four plants up to the 12-leaf stage.
- Evidence indicated that very young plants are highly susceptible to virus transmission, so an early application of foliar insecticide may be required. 2020 insecticides options include **Biscaya, Tepekki and Insyst.**
- Alternating insecticides with different modes of action is a recognised anti-resistance strategy and Biscaya/Insyst must be used in alternation with insecticides of a different mode of action, giving consideration to the overall treatment programme on the crop against a range of pests.

Pic 2: Winged aphid producing 2 green wingless offspring. Photo Courtesy of Martyn Cox, Blackthorn Arable Photography.

- The advice is to begin with a neonic – either Biscaya or Insyst – then switch to Teppeki for the second spray and back to a neonic for the third. If a fourth spray is needed, it will have to be another neonic, which is not ideal, but the only option.
- Make sure you follow the label and EA conditions regarding water volumes.
- Avoid applying insecticides with herbicides, especially at low water volumes.
- If adding an adjuvant with the insecticide, check all labels carefully for details.

Dry conditions: seed germination and development

Dry conditions are resulting in variable germination and emergence. Check seed below ground for signs of the seed case cracking and germination. Seed which has not germinated can be checked by removing them from the soil and placing in moist tissue paper. Germination will usually occur in a couple of days. Remember that the early growth of different varieties may vary.
There are several reports of a reddening coloration on the stems of emerged seedlings. This is not unusual and is in part genetic but also due to the production of natural anthocyanin pigments. It has been shown that this can occur more under very bright sunny conditions and is a form of defence against the detrimental effects of excess light on photosynthesis.

Despite the dry conditions, the roots of emerged seedlings have an incredible ability to find soil moisture and proliferate. Moisture may be found many centimetres below the seed. Once these roots become established, leaf growth will accelerate.

Pic 3: Red pigmentation on stems and Pic 4: root proliferation in moist soil zone of a very light sandy loam field.

Post- emergence herbicides

As crops emerge, careful monitoring of beet and weed growth stages, alongside weather conditions, is required. This attention to detail will ensure the best possible control whilst minimising the risk of any physical impact on crop growth. Minimum beet growth stages for different products range from: no restrictions, expanded cotyledons, 1st pair of true leaves at least 1cm long to 1st pair of true leaves fully expanded. Paying attention to these will minimise any checks on your crops. **See our Brilliant Basic message** https://bbro.co.uk/on-farm/brilliant-basics/

Target early emerging weeds such as knotgrass, ivy-leaved speedwell, charlock and runch as soon as possible, as some of these weeds (when developed beyond the cotyledon/early true leaf stage) can become difficult to control.

Remember that any product containing desmedipham has a final use on farm date of 01.07.20. (if bought and already on farm) Where desmedipham is not being used, more crop monitoring will be required. Adjust the rates and active ingredient choice according to weeds present, weather conditions and the effect of previous sprays. Do not assume that the rate of phenmedipham selected will be equivalent to the rate of desmedipham + phenmedipham in formulated mixes. You will potentially require more phenmedipham.

Below is a list of the actives available for weed control in beet crops this season:

Active	Product (examples)	Residual	Contact	Pre-	Post-	Strengths
ethofumasate	Efeckt Oblix 500	yes	yes	yes	yes	cleavers, knotgrass, bindweed
lenacil	Venzar 500SC	yes			yes	Brassicas, bindweed, knotgrass
metamitron	Goltix 70SC Bettix Flo	yes	yes	yes	yes	Mayweeds, knotgrass, AMG, fat-hen, annual nettle
chloradizon	Pyramin DF	yes		yes		
phenmedipham	Betasana SC Beetup Flo		yes		yes	Bindweed, charlock, ivy-leaved speedwell
desmedipham (in mixes with other actives)	Betasana Trio Betanal maxxPro Beetup compact		yes		yes	Useful in dry/cold conditions
trisulfuron-methyl	Debut Shiro		yes		yes	Brassicas, fool's parsley, cleavers. mayweeds
clopyralid	Dow Shield Vivendi 200		yes		yes	Volunteer potatoes, thistles, mayweeds
Quinmerac (in mixes with other actives)	Goltix Titan Tanaris	yes				Cleavers, speedwell, fool's parsley
Dimethenamid-P	Tanaris	yes			yes	Cleavers, poppy, cranesbill, fool's parsley

CONVISO ® SMART system herbicides (foramsulfuron & thiencarbazone-methyl) are also options for weed control in 2020. These form part of a separate approach to weed control in beet involving specific herbicide tolerant varieties and have several very specific conditions and recommendations associated with their use. Contact the manufacturer (Bayer/KWS) or your supplier for further information.

Herbicides & weather conditions

Product labels carry extensive information about the effect weather can have on crop tolerance and the reality is that if you follow all of these, you may never find a window to apply the herbicide at the right crop and weed growth stage! It is a case of weighing up the risks. Experience tell us that high temperatures, particularly when the night temperature is still quite low and there is a large temperature range experienced by plants across 24 hours, increases the sensitivity of the plant canopy. High light intensity, especially high UV levels are also important factors and usually occur 'hand in hand' with bright warm days.

Be particularly careful with the use of adjuvants such as oil. Firstly, it is important to check there is approval for use on beet but also check temperature, crop growth stage and rate of use information. Again, any crops under stress will be more susceptible to this.

Nutrition

Remember to **apply any outstanding nitrogen fertiliser once the crop is fully emerged to ensure there is enough nitrogen for early leaf growth. Do not delay with this, as this can compromise early canopy development.**

Don't delay in applying this in dry conditions. Prilled nitrogen may take longer than liquid forms to become available. Remember to tailor your total nitrogen to the soil nitrogen supply index, especially where organic manures and/or cover crops have been grown. Recommendations are as follows:

Nitrogen index 0 & 1:	120 kgN/ha
Nitrogen index 2:	100 kgN/ha
Nitrogen index 3:	80 kgN/ha
Nitrogen index 4:	40 kgN/ha

When crops begin to grow rapidly (especially following rain) do not forget to apply foliar manganese. This will help early leaf growth. If crops are stressed especially in warm and dry conditions, be wary of adding manganese and nitrogen in with the herbicide as this can be cause a check in growth.

Bird Damage

Remember to get your bird protection measures out. The dry conditions are resulting in bird damage, especially with the lack of other food sources. The usual suspects are skylark, partridge and pigeon. The fleshy cotyledons are often targeted as a rich source of nutrients and moisture in dry conditions. In most cases, plants are able to recover, as long as they don't lose their growing point. It has been suggested that placing water trays in field can help reduce bird damage to crops but we have no specific evidence of this. It may of course encourage more birds and other animals!

Pic 5: Don't forget other forms of crop protection, birds can also damage young beet.

EVENTS

2nd May 2020 Join the BBRO on twitter @onlineagshow for a fun packed day of virtual fun! #GreatestAgShows

BeetField20 – Virtually Live! 6th – 10th July
Watch-out for our programme of short presentations being released as of the 6th July, culminating with a live webinar with Prof Mark Stevens, Dr Simon Bowen and the wider BBRO team on Friday 10th July – all streamed directly to a screen near you!

Monday 6th July: RL 2021 varieties and Conviso technology
Presented by Mike May (RL Board Chairman) and Daniel Godsmark (BBRO)
Tuesday 7th July: Varietal traits: Pest & disease resistance and drought tolerance
Presented by Dr Alistair Wright (BBRO) and Georgina Barratt (PhD student with University of Nottingham)
Wednesday 8th July: Soil Management; variable drilling, drill testing results and nutrition
Presented by Dr Simon Bowen (BBRO) and Stephen Aldis (BBRO)
Thursday 9th July: Putting the ABC (Aphids-Beneficials-Control) into IPM
Presented by: Prof Mark Stevens (BBRO)
Friday 10th July: Beeting Change with BBRO
Join us via our website link to speak to the team and hear growers' questions.

CONTACTS

British Beet Research Organisation, Innovation Centre, Norwich Research Park, Colney Lane, Norwich, NR4 7GJ
Dr Mark Stevens mark.stevens@bbro.co.uk 07712 822194
Dr Simon Bowen simon.bowen@bbro.co.uk 07718 422717
Stephen Aldis stephen.aldis@bbro.co.uk 07867 141705
General Enquiries info@bbro.co.uk

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