

Minutes for November 6th 2019

AHDB Potatoes – Crop Protection Treater Group

Chairman – Mark Taplin, Harvest Agronomy

Group technical secretary - Anne Stone, anne.stone@ahdb.org.uk

Meeting 36, Key Topic: Biostimulants

Present

Mark Taplin (chair)	James Lee
Eric Anderson	Paul Overton
Nick Badger	John Sarup
Jeff Beever	Michael Tait
Denis Buckley	David Turner
Craig Chisholm	Graham Tomalin
Andy Evans	Nick Winmill
Paul Goddard	Anne Stone (secretary)
Glyn Harper	

Speakers:

Murray Smedley
Don Pendergrast (UPL)
Jack Hill (Bayer)
David Booty (Omex)
Trevor Smith (Verdesian)

1. **Welcome** from the chairman. Apologies: Amy King, Matthew Back, Chris Allen
2. **Minutes** of the meeting of March 5th were approved.
3. **Matters Arising.** The Calcium Review can be found on the AHDB website at this link: <https://potatoes.ahdb.org.uk/publications/11140047-review-liming-ph-and-common-scab-risk-potatoes>

4. **Sprout suppression update. Glyn Harper (SBCRC)**

DawnFresh say they will submit the data required by CRD for DMN in the second quarter of next year. So DMN approval will not be available for the winter of 2020/21; neither will orange oil or SmartBlock.

A study tour to the Netherlands found excellent sprout suppression by DMN. Ventilation has to be much reduced for success with this suppressant. CO₂ rises and some extraction may be required.

The MRL for CIPC is expected to be set at 4ppm by EFSA, marginal for some stores to achieve. 11 stores, where CIPC had previously been used, had samples tested and one was at 0.36ppm. The MRL will not be set until the start of 2021, which represents a risk for crop entering stores in 2020. Cleaning stores from CIPC will be discussed by the task force.

The new sprout suppressants, spearmint oil and DMN, will only be effective if there is a good concentration in the head space. The store must be totally closed for 48 hours and CO₂ concentration will rise in this period, affecting processing quality.

Questions and comments

Q Does CIPC increase? **Ans.** Its released from the store fabric and will reach equilibrium with the tubers. It will increase in tubers until then.

C We can't decontaminate stores. **Ans** Dust and detritus can be removed, skims don't work. Yes, this represents a major risk to the industry. Much depends on the TMRL. JB comment that there is a future for processing crop, but CIPC should not be used in 2020.

Q who will argue on behalf of UK when setting the TMRL **Ans** EFSA will look at scientific reports.

C There will be a change in contract negotiation.

Comments on MH

Advice is needed on MH application. Sufficient dry weather is needed to apply it and timing is crucial.

There were many questions on application of MH in 2018.

It took much hard work to get the feed restriction re MH lifted. Many thanks to JB and all involved.

5 Classification and regulation of biostimulants. Murray Smedley (presentation available)

6. Don Prendergast: Biostimulants in relation to blight, results of trials at the Eurofins site. Presentation available.

Four products were demonstrated by UPL at the Eurofins site in 2019. The type of products were: biocompetitors, copper, potassium phosphite and elicitors.

Trials in Lancashire with strong pressure from 37_A2 suggested the phosphite product could be of use early in the season, but didn't give strong or lasting control.

An elicitor had some efficacy for Alternaria control

Don's conclusion was that biostimulants are of more value in their ability to increase root growth than as a form of PPP. An oligosaccharide + amino acid increased yield, even more so with phosphite. (Also note the conclusions on the final slide)

7. Biostimulant modes of action of the approved biological pesticide, Serenade *Bacillus amyloliquefaciens*. Jack Hill, Bayer. (presentation available)

Bayer is expecting an on-label approval soon for potatoes. Until now its been an EAMU.

Growth The bacteria grow along with the root, leading to more side branches and root hairs.

Nutrient uptake Enzymes from the bacteria break down organic matter and cellulose, and enable iron to be extracted from the soil. Plants are stimulated to produce organic acids round root hairs.

Trials in Netherlands. 1ha strip trials, 10 with seed, 15 ware and 12 starch crops. Note that in 2018 only 14 of these trials survived. Yield increased 10% with Serenade treatment. Uptake of zinc, iron and manganese increased.

Questions

Q Serenade is applied in the Netherlands in hundreds of litres water per hectare, and in the UK at 50l/ha. Does this difference matter? **Ans.** The bacteria are robust, but higher water volumes are better.

Q If the sprayer has been used for sulphonylureas it'll be dirtier than one used for a trial. **Ans** Residues in equipment shouldn't matter, the bacteria are robust.

Q do the bacteria feed on sucrose? **Ans** Yes.

Q Have you found why the effect didn't occur in all the Dutch cases. **Ans** We don't know.

8.David Booty. Biostimulants in relation to nutrition. (Presentation available)

Omex has been selling biostimulants for 20 years. It sells humic and flavic acids, seaweed, amino acids, phosphites and *Bacillus amyloliquefaciens*. Not mycorrhizal products as their storage and application is difficult.

Evaluation is by root growth studies, pot trials, field plots, growers' own trials and metadata analysis. We required industry benchmark tests for stimulation of root growth. Mung bean is used for a root bioassay since it has a known root growth response curve.

A root growth study was undertaken using CT scanning at Nottingham University, which showed more tuberization at ti after use of phosphites.

The main benefit of biostimulants occur when plants are stressed, so trials are best conducted in growers' field. One example was in Scotland with high FLN pressure (see slide)

Bacterial biostimulants are more effective in warm soils and where organic matter is low. They tend to work better in Bacillus + nutrient formulations.

Information is lacking on targeting the right biostimulant to the right growth stage.

David advised growers to source from a supplier who tests content and purity.

In summary, the main benefits are on

Early root growth

Stress relief

Nutrient uptake.

Questions

Q How do you know that the effect isn't simply nutritional? **Ans** The Omex studies compared with crops receiving the same nutrition.

Q Does the Bacillus enable nutrients to enter plants roots? **Ans** Yes.

Q Are humic and flavic acids low molecular weight materials which can enhance uptake of N and other nutrients? **Ans** benefit is seen on low OM soils or in hydroponics, not in UK arable soils. The acids form complexes with nutrients and enhance uptake.

9. Phosphites, one class of biostimulants. Trevor Smith(Verdesian Life Sciences) (presentation available)

It will be slow for new biostimulant regulations to come in; at least July 2022 and suspect later.

An increase in the MRL for fosetyl is expected from EFSA, which will allow increased use of phosphites. The quality of different phosphites varies.

Work at Kiel University indicated one possible mode of action of phosphites. They stimulate , production of nitrate reductase, which improves nutrient use efficiency. The work is being continued at the University of Nottingham.

This mode of action is consistent with results of unreplicated demonstration plots in 2017 showing increases over the control in uptake of several minerals when a phosphite, Phorce, was applied at each of three stages (to tubers, at planting and at ti) at 2l/ha.

Replicated trials by CMI found significant increase in yield from application of Nutri-Phite, another phosphite product. (The rates, variety and dates of this work were unclear)

Questions

Q Louise Cooke at Afbi and separate work from Scandinavia showed phosphite activity against late blight. **Ans** Trevor found very little effect of phosphites at the rates used for stimulant effect. **Ans** from Murray Smedley There are effects, but to show CRD that the product is a biostimulant rather than a PPP the product is dilute and used early in crop life.

Q where is your phosphite sourced? **Ans** Verdesian starts with phosphorous acid and manufactures in the UK. Some companies use recycled acid from the electronic industry, but this may contain heavy metals.

Q Would it help to have Defra regulation of biostimulants? **Ans** Defra probably don't want to place regulatory obstacles, but such obstacles would help the legitimate biostimulant industry develop.

Requests

Can we have replicated field trials? **Ans.**Murray Smedley said some data is available

AHDB should state that regulation is required, it shouldn't be a Wild West.

Graham Bannister asked for speakers on the topic, for grower/industry meetings.

10.Examining biostimulant product information, in the light of presentation.

Omitted due to shortage of time.

11.Getting the message across, what should AHDB potatoes do regarding biostimulants?

The Treater Group asked if AHDB could produce a literature review of research on biostimulants in potatoes. Joe Martin said he would see if this is possible.

13.AOB Eric Anderson raised the topic of virus in seed stocks. There has been a substantial increase in seed downgraded due to virus, especially after field generation 5. Of English seed 25% of downgraded stocks were virus related. Aphid control is becoming more difficult with Biscaya lost. Movento is not to be used on flowering crops.

Results from the growing on test can be different from those of the PCR test.

Discussion followed on virus testing and control, leading to the decision regarding the next meeting topic.

12.Subject and date for next meeting Control of virus in seed potatoes 4.3.20.