

# Rethinking drought management

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SIMON QUINCE

**With early summer record temperatures creating even more challenges for potato growers, new research and product development into heat and drought stress mitigation may offer significant hope for the future. CPM investigates...**

By Rob Jones

**W**ith a high demand for water at critical times of the growing season, potatoes are on the frontline of the increasing threat of heat and drought stress. In fact, according to Niab's Dr Sarah Roberts, while the issue has always been a threat, it's one that's now a more worrying and frequent problem.

“This is partly because of the increasing variability of UK weather, but also because of the regulation around water abstraction,” she explains. “Licences are more difficult to get and when there's a national drought, agriculture is one of the taps that gets turned off first.

“Rain-fed production versus irrigated is roughly a 50:50 split in the UK. A lot of growers don't have irrigation as it's extremely costly from an infrastructure, equipment and fuel-use point of view.”

Heat and drought stress affect potatoes

at two critical times in their development, with the first of these being tuber initiation taking place in the 2-4 week window after emergence, she continues. “High average temperatures, those above 20°C at this time, really affect tuberisation, with night time temperatures being critical. If these are over 20°C, the process will slow down but it'll typically stop above 25°C, although there's some variation in heat tolerance between varieties.

“The next critical period is bulking when yield can be badly affected by heat and drought stress, but quality can be reduced too. When average temperatures exceed 20°C, potatoes reduce the partitioning of resources to the tubers and there's no net growth – tubers or haulm – above 28°C.

“Potato tubers are 80% water so a simple lack of moisture during bulking up will have a significant impact, but so too do variations in

water availability during that time.”

Sarah explains that when a drought breaks, for example, plants will start growing again and this can result in ‘all sorts of weird and wonderful’ tubers. “These are very difficult to market while presenting huge challenges for the processors.”

## ALTERNATIVE APPROACHES

As weather patterns and rainfall become less predictable, it's becoming critical to evaluate ways to mitigate against heat and drought stress, believes Sarah. This involves looking at alternatives such as biological solutions.

“Niab has tested different products during the years, but it's a complex area and most haven't lived up to their hype under trial conditions, possibly as the stress conditions these products were designed to protect against weren't always experienced within the trials.

“It's not impossible that purely rain-fed crops will become increasingly less viable in the future, so heat and drought stress is an important topic to address.”

Dr Christine Jones, crop research scientist at Dyson Farming Research, agrees, although suggests using the right product in the right place can

## Managing blight – views from the field

Dry conditions have kept potato blight risk low in many regions, but how are potato agronomists planning to manage the disease as the season progresses?

According to Agrii's Ed Maule, with mancozeb gone from the toolkit, Lieto (zoxamide+ cymoxanil) has formed the base of late blight programmes in his crops across Norfolk, Suffolk and Essex, with the first spray applied soon after full emergence.

"We'll stick to 7-day spray intervals; we don't extend them because of the aggressive blight strains we're now seeing in the UK," he adds. "We're also using fluazinam again, plus cymoxanil for the kickback, so will be alternating chemistry."

"Then subject to the blight risk, as we go into rapid canopy, we'll look at products like Infinito (fluopicolide+ propamocarb hydrochloride) and Privest (ametoctradin+ potassium phosphonates)."

Cyazofamid (as in Ranman Top) and amisulbrom (as in Shinkon) should provide cover through until stable canopy, when Ed says he'll return to Infinito for systemic and translaminar protection, and Ranman Top for tuber blight protection through until desiccation. Should blight pressure rise, he'll reduce spray intervals to four or five days, with Infinito used earlier in the programme.

While the identification of the EU\_43\_A1 blight strain in neighbouring Suffolk hasn't changed Ed's approach to



### Strategic choices

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managing late blight, he notes the importance of taking care with CAA group actives and OSBPI oxathiapiprolin.

"But products like Previcur Flex (propamocarb



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hydrochloride) – which we can be paired with Zorvec Entecta (oxathiapiprolin+ amisulbrom) – give the flexibility to use Zorvec effectively on our dominant blight strain. The key is making sure we're not relying on products in isolation," raises Ed.

With mancozeb effective against both phytophthora and alternaria, any weaknesses in varietal susceptibility or fungicide programmes against the latter may become more apparent this season, he raises.

"We won't know where the gaps are until we've been through the season, but essentially, the more the crop is stressed, the more likely it is to be affected by alternaria."

As such, he says he'll focus on keeping crop nutrition well-managed to improve overall resilience, and integrating alternaria-specific (in potatoes) products such as Caligula (fluopyram+ prothioconazole) into overall strategies.

At Pickenham on the Brecklands of south west Norfolk, VCS Potatoes' Graham Tomalin says his fungicide programmes commence with fluazinam plus cymoxanil, before bringing in a systemic product such as Infinito as canopies start to expand more quickly.

Mindful of the late blight strains present in the UK, developing an anti-resistance strategy is now an essential part of Graham's approach to blight control. He says key to this will be ensuring appropriate use is made of the range of blight fungicide chemistry currently available.

"We have to get away from 'there's resistance to this, don't use it'; it happened with metalaxyl and then fluazinam. We can't do that anymore, we have to use the chemistry that's available, but use it with the right partners so there's an anti-resistance strategy within each application and over the whole programme," he explains.

Graham believes there's sufficient chemistry available to protect crops, but up to the point of a major outbreak. "It'd be challenging to remain within the FRAC guidelines if we had a significant blight outbreak early in the crop. Up to that point we'd be fine, but if we have to try and cure that outbreak, then we'll find it more difficult. We'll quite quickly run out of options."

► deliver significant benefits. "It's a long process though, and you're probably not going to see results from a stress reduction product when it's tested in a year with ideal growing conditions.

"It's also important to remember not all biostimulants are the same; we have to learn how best to use the individual options. The more scientific information there is behind them, the better the understanding we have and the more we're able to use them effectively."

## GROUNDING IN EVIDENCE

With product Status (MTU+ pidolic acid) from Intracrop, for example, much work has been carried out to understand its chemistry and how it works, providing a solid starting point

for how best to use it, she says.

"The challenging 2025 potato growing season, characterised by multiple heatwaves, high transpiration rates and lack of rainfall, created the ideal conditions to look at this in greater detail. We chose two trials sites – one on irrigated heathland with the variety Elland, and one on siltland with Caledonian Rose.

"Mid-season stress caused the untreated plots to stall on the irrigated heathland site with no further increase in tuber weight. However, the Status-treated plots maintained bulking, resulting in a 26% yield uplift, from 66t/ha to 83t/ha freshweight."

Christine adds that at the siltland site, early-season stress limited total yield potential across the board, but the treated ►



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## Performance under pressure

Dr Christine Jones says trials involving Status (MTU+ pidolic acid) have delivered impressive results, despite challenging seasonal conditions.

plots still delivered 45t/ha compared with 32t/ha for the untreated plots, representing a 41% increase in final yield.

"These were impressive results in a very challenging season so we're repeating the trials this year at the same sites. With it shaping up to be another high stress year, we're hoping to get even

greater insight into its use and benefits."

Simon Quince, farm manager at P. J. Lee and Sons in Ely, Cambridgeshire, says one of the biggest challenges the business now faces comes from increasing variable weather. With more than 5000ha of cropping across different soil types, prolonged drought followed by intense rainfall causes significant problems throughout the diverse rotation of sugar beet, maize, wheat and vegetables, including 500ha of potatoes, he says.

## VULNERABLE CROP

"It's definitely getting worse, with potatoes being one of the most susceptible crops to the changes, particularly as we're aiming for a high-end quality crop that we can store safely though until late spring the following year.

"Although we're in the driest part of the country, we're able to irrigate about 75% of the potato area, but the main problem we have is fluctuations in temperature – particularly between night and day."

Simon highlights that one night at the end of May this year, the temperature fell to -10°C. "That can cause havoc with plants at that stage. The drier springs are also adding to the problem,

especially as we have restrictions on the water we can abstract for irrigation."

Status was first used in the farm's sugar beet in 2022 but proved so successful that it was quickly adopted for the farm's potatoes, where Simon suggests it's delivered a 'massive difference'. "It's helped to negate the effects on the crop of the different stresses we experience and allows them to recover quickly and keep growing. We apply it with the first blight spray to get the rooting developing early on and have definitely seen improvements in tuber survival.

"Tuber numbers are higher and more consistent than they used to be, and uniformity of the crop has increased as successive stresses are having less of an effect. We're hanging on to those better quality early tubers without secondary ones coming in; so more tubers per plant, and greater uniformity of size too."

The return on investment (ROI) is also impressive, says Simon. "Even at the current low prices for potatoes, you only have to see a 150kg/ha yield improvement for it to be cost effective. The price of the treatment is so low relatively, that it only has to work on 50% of the crop for it to deliver a benefit on the bottom line." ●



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