

Tough decisions ahead

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Roots Sugar beet roundtable

Growing sugar beet has become a whole new ball game without the neonics. CPM sits in on a roundtable discussion with one of the top UK sugar beet growers and his technical advisers and finds out all is not roses, even at the top of the performance ladder.

By Lucy de la Pasture

Sugar beet is a crop that has always demanded close attention to grow well, but Norfolk grower Mark Means has taken that meaning to a whole new level. Like many growers he’s concerned about how farmers are going to feed the world with all the restrictions been forced upon them.

“Have you seen ‘Eureka moments’ from the zoology department at Cambridge University?” he asks as we take our seats in the farm office. “They’ve been looking at the problem and suggest land sparing, where the most productive land is pushed for yield, is better for the environment.

“Then we could be saving land to put into environmental schemes,” he enthuses. “They’re saying that if we put the environment within the crop then we’re doing none of them a good service. It’s not doing the ecosystem any good because we’re still putting agchem nearby. Also the more we mix environmental schemes with highly productive land then we’re reducing the output of the land.”

Obvious passion

Mark’s a grower with an obvious passion for farming and the environment, but what sets him apart is the rare attribute of being able to see the big picture as well as drill into the detail. That’s why in 2018, which was testing in the extreme, his sugar beet achieved 97% of its yield potential in the Beet Yield Challenge.

This season has proved challenging in a very different way. The loss of neonic seed treatments has completely changed the landscape for beet growers who are now facing a new set of challenges.

“We’re never likely to see the high yields of sugar beet again without the neonics,” says Mark. “We’re planning to have beet in the rotation up until 2020, but beyond that is questionable. I can see the cost of spraying it, and the yields that we’re producing, aren’t going to justify growing the crop.

“We’ll be realising about £2/t less from the 2019 crop than in 2018, because of a likely yield reduction plus the increased cost of sprays, spraying and management time without the neonics,” he adds.

If Mark is struggling to see the future for sugar beet on his farm when he’s already unlocking nearly 20% more of the crop’s yield potential than other growers on a similar soil type, that’s a potentially worrying situation, points out BBRO’s Simon Bowen.

In gross margin terms, Mark reckons his ►



Mark Means has an eye for detail and says it’s paying attention to the many small things that makes the difference.

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sugar beet seed



Simon Bowen acknowledges there are many small patches of virus showing in crops, possibly more than is being suggested by the aphid testing from the yellow water pan traps.

▶ sugar beet is coming in at less than his winter wheat, which is a long way from where it sat in the hierarchy a few years ago when sugar beet was leading the gross margins for broadacre crops.

"Much will depend on the new contract price from British Sugar which hasn't been released yet," he adds.

The loss of neonics has undoubtedly made the management more complex

across the whole farm, says Farmacy's Matt Ward, who's responsible for the agronomy on Mark's farm.

"We've had more conversations this year because of the impact the sugar beet has had on the management of the rest of the farm. Sugar beet agronomy has become much more complex but it's not just the beet that needs spraying," he comments.

Virus yellows has been the hot topic since the neonic ban and even though official testing of aphids shows relatively few are actually carrying any virus (0.5%), symptoms are already beginning to show in crops.

Virus patches

"There are many small patches of virus showing in crops, possibly more than is being suggested by the aphid testing from the yellow water pan traps. But we need to acknowledge that we're 'road-testing' a new system and we undoubtedly will learn much from 2019.

"What is clear, is that growers using yellow pan data and basing their decisions entirely on this are exposing themselves to risk as there's no substitute for attending to the detail of looking at each crop and timing sprays according to the levels found in them," says Simon.

Hutchinson's Darryl Shailes agrees, adding that aphids can be easily missed

in crops without an eyeglass or specs, especially if you're of the age where eyesight isn't as sharp as it used to be.

But that's not to say the yellow pan data doesn't have a place, adds Matt. "It's excellent from the point of view that you can't look at all crops all of the time, so it gives a useful indicator of how aphids are building up in the area, so you know when best to go looking for them in the crop."

Marks greatest concern is the effect the return to the blanket application of insecticides will have on the environment and on speeding up the selection for insect resistance, particularly in the pyrethroids.

"There's a lot more management time ▶



Controlling virus yellows has been the hot topic this season and takes up management time as well as the cost of aphid sprays.

Backing beet again

Lincs sugar beet grower Charles Roe has opted for variety BTS 1140 this year, lured by the offer of 7% higher yield over two of last year's top picks on the RL.

Overseeing 243ha near Horncastle, with his father John, Charles has grown sugar beet for many years on the farm's mostly sandy clay loams, but with a recent lengthy break from the crop due to building levels of weed beet.

The crop returned to the rotation for the 2018-19 campaign and he opted to split his 30ha area between three varieties —

BTS 3325, Haydn and Firefly. With individual varieties outclassed relatively quickly as the remarkable improvement in sugar beet yield potential continues, the farm has revised its variety line-up this year.

Charles believes yield is king when selecting a sugar beet variety and at 104.9% of mean adjusted tonnes, BTS 1140 offers a massive 7% increase over BBRO Recommended List control varieties Haydn and Firefly, which it has now replaced.

"When you are looking at the RL, I can't get

excited about differences of 1-2%, but anything over 5% I see as significant and that's why we went with BTS 1140 this year," he explains.

Both BTS 1140 (4.7) and BTS 3325 (5.3) have sound rust resistance scores, which was also a factor in selecting the two varieties that make up his beet area this season. He thinks this will become increasingly important in the future as fungicides are threatened with withdrawal.

"At present, most late-lifted crops will receive two fungicides as standard, so while we have the tools, diseases such as rust are manageable," he adds.

His only concern with BTS 1140 is its bolting resistance, particularly after his experience with weed beet, which the farm has worked hard to eradicate. But the crop was established in early April, so bolters won't be a problem this year, he says.

Establishment has been good this spring, with the farm placing a 37% liquid nitrogen solution with the seed for the first time to give the crop an early boost.



Charles Roe has recently returned sugar beet to the rotation after a 10-year break due to weed beet problems.

"It's a bit of a look-see. With the lack of a neonic seed treatment, I was conscious we needed to get the crop up and away and to the 12-leaf stage — when the crop is less susceptible to virus yellows infection — as quickly as possible.

"We're pleased with how the crop looks now and it was meeting in the rows by early June," he adds.

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Matt Ward says that the increased management requirement of sugar beet this season has had an impact on the other crops on the farm.

► involved now we're having to deal with insect pests. Looking forward to the autumn, we're likely to see prophylactic spraying of pyrethroids for BYDV which can really hurt cereal crops. But we don't want to drive resistance and it will be so wrong for the environment to overuse insecticides and there'll be a knock-on effect to other crops," he says.

In sugar beet the advice from BBRO has been to avoid using pyrethroids on sugar beet altogether which has left growers with one approved insecticide, Teppeki (flonicamid), which can only be applied once and Biscaya (thiacloprid) on an emergency approval, which can be applied twice.

"Even Biscaya isn't great on predators. Teppeki is kinder, so we went Teppeki first then Biscaya on our crops," says Mark.

Matt agrees, adding that Biscaya has helped the situation this season. He also points out that there's no guarantee it will be available again next year as its use is currently under an emergency approval which will lapse.

Looking forward, the impact of virus yellows isn't going to ease, with plant breeders still five years away from breeding tolerance into new varieties.

"Trials do however indicate some very useful varieties in the pipeline. However, it's also likely that virus yellows will be more of a problem next season than this, unless there's another Beast from the East around the corner," says Simon.

"But virus control isn't the only reason the neonics are being sorely missed on farm", says Mark. "We're also seeing plant

loss without them this year."

"On these soils we've got soil complex issues that we've previously taken for granted when we had the neonics," confirms Matt.

"This year sugar beet was drilled at the normal time but weeds just kept on coming and the crop didn't get away very quickly due to flea beetle, a pest that wouldn't have been an issue with neonic seed treatments," explains Mark.

Phytotoxic effect

"They've been knocking the crop and every time a herbicide has been applied, the spray's getting into the leaf where there's damage and checking the crop. Normally any phytotoxic effect from herbicides would be quite benign, but the constant insect nibbling has amplified the effect and we've been seeing leaf distortions after spraying this year."

Matt comments that rainfall has come at very fortuitous times this season, which has helped the crop get over these setbacks.

Going back a stage, Mark believes that getting the seed establishment right means getting the soil right in the first place. In 2018 he achieved a plant population of 105,300 plants/ha in spite of the drought, which is all down to careful soil management, he says.

Organic manures in the autumn play a key role in his strategy to make soils more resilient on the farm. He ploughs or cultivates in the autumn for near-seedbed conditions and says the organic matter in the soil acts as a glue which means the soil doesn't break the soils down too much over the winter. Soil damage is further minimised by using CTF and careful adjustment of tyre pressures, a point of detail that's often compromised when beet



Mark applies liquid UAN before spring cultivations, so it mixes in the top 5-7.5cm of the soil, putting some N above and some below the seed.



The loss of the neonic seed treatments hasn't done beneficial insects any favours.

is drilled by contractor due to their road travel between field work, he points out.

"Investing in muck is investing in the land, which ultimately makes the soil more resilient to weather and market forces because it's still possible to produce yield and quality crops," he says.

"When you cultivate to get a seedbed in the spring, do the minimum you can and then go as slow as you have to with the beet drill. This enables you to cut the seed in and put it into moisture, giving the drill the chance to actually firm the seed up behind the groove.

"The aim is to get even establishment and you have to slow the drill down to get this. We don't go above 7km/h and may drop the speed to as low as 5km/h if needed. Moisture is the important factor and you're relying on the operators to play it by ear in the field — we change the drilling depth in response to the changes in moisture which can happen during the day," he says.

"There's a debate as to whether a 'mountain top' or a valley is the best place to plant the seed, but I prefer the valley," says Mark. "The seed is placed nearer to moisture as the undisturbed soil has the biggest water holding capacity. It can then chit more easily because water is available."

Simon says the whole purpose of BYC was to get growers to think about every aspect of growing the crop because sugar beet was often viewed as the poor relation to other crops in the rotation. "We wanted to show that tailoring inputs and management to individual fields, which doesn't always equate to cost, can help realise the potential of the crop.



Darryl Shailes says the objective when using fungicides is to keep the foliar solar panel going for as long as possible.

"Mark's sugar beet management demonstrates what's possible. 50-60% of the yield potential is determined before the crop is even put in the ground and last season, he was only 4t/ha off the crop's full potential.

"The condition of the soil also has a big influence on late season campaigning. In the right conditions, crops can put on a lot of yield in late season. If you have the resilience in the soil to manage later lifting, then you can take advantage of this," he adds.

Mark and Matt have in-crop conversations around cultivations for the following crop and are keen to point out that there is no blueprint, the system is tailored for each field and the conditions, year by year.

"One of the reasons we've moved to more independent thought on cultivations

and timing is that agronomists see a huge acreage of crops and different machinery, so they're well placed to advise. The whole point is in the discussion. We don't want to do something that didn't work for someone else in similar circumstances. It's an important rule of business not to make the mistake yourself but to learn from other peoples," Mark comments.

Universal decision

With variety decisions soon to be made about next year's crops, there's a universal belief around the table that other traits, not just yield, will assume more importance than before, mirroring the change that has already occurred in the cereal sector where septoria resistance is being utilised as a management tool.

Fungicide decisions are already adapted according to each variety on the farm, says Matt. "We tend to use Escolta (cyproconazole+ trifloxystrobin) as the first spray when disease is first seen in the crop, followed by Rubric (epoxiconazole) three to four weeks later. The change over the past few years is that we've narrowed the gap between these two sprays.

"Last year there was a yield response to a third fungicide and this timing gives a lot more opportunity for tweaking the dose of fungicide," he adds.

Daryl adds that cyproconazole is the best choice where rust is the problem and epoxiconazole to target cercospora, which last year came in very late. "The objective is to keep the foliar solar panel going for as long as possible while using a mixture of different fungicide groups."

"Varieties need to be actively growing at

harvest so that the crop keeps taking moisture out of the soil, which is especially important when the crops is lifted later in the campaign," suggests Simon.

Mark looks at the growth habit of varieties, matching the more erect types with their greater capacity for light interception for later lifting and the more competitive, prostrate types for early harvesting. Bolting is also a key consideration with drilling 10-15 March, and he also favours a variety with a high sugar content as this equates to less lorry loads.

But the key to success always comes back to getting the crop quickly away, with the goal of attaining a plant with a degree of mature plant resistance before the aphid vectors of Virus Yellows reach their peak activity, he highlights.

"Perhaps it's time for the RL to look at publishing a vigour score for the different sugar beet varieties as it would be a great help in teasing out the differences between them in terms of early season growth." ■



Brown rust has been the biggest disease threat to sugar beet crops in the past few seasons.

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