

“ Growers are a lot more open to using them and see them as a valuable part of the programme. ”

# Building biostimulation

## Biostimulant survey

With the landscape of agriculture changing vastly over recent years, *CPM* explores the place for biostimulants in a new era of farming.

By Charlotte Cunningham

**When you think about biostimulants as being any substance, other than fertilisers, that can be applied to crops or seed to enhance growth, then they've been around for as long as some of our *CPM* readers...**

But despite their long heritage and varying forms over that time, it's perhaps only more recently that their true benefits are being realised.

Dr Tom McCabe, lecturer at the University of Dublin, has a long history of research into biostimulants and has noticed a change in attitudes over that time.

"There's definitely been a sharp rise in interest in biostimulants over the past decade, specifically the last five years," he says. "There are a lot more products in the market which helps, but I also think there's a lot more space in the market due to less fungicide options, the increased price of fertiliser, and also the changing environmental pressures which has meant many have relooked at their strategy when it comes to conventional crop inputs."

Stuart Sutherland, technical manager at Interagro concurs and adds: "There has definitely been a shift in mentalities over the

past few years as a more regenerative approach has taken centre stage. With this putting a bigger emphasis on soil health, biostimulants naturally find themselves a place here too."

### Traction continues

With this in mind, it comes as no surprise that in a recent survey carried out by *CPM* and Interagro, 69% of growers revealed they're already using them on farm, with a further 20% set to try them for the first time this year. Of those growers, 81% said they're applying them to winter cereals, 45% to spring cereals and others using them across an array of crops including legumes, fruit, vegetables and potatoes.

Among the growers already using them is Matt Fuller, arable and trials manager at Heathcote Farms, Bedfordshire.

Day-to-day, Matt is responsible for operations like drilling and spraying, and also does the in-house agronomy for the 1000ha of cropping — 500ha of which is milling wheat and the rest made up of winter barley, oilseed rape, winter beans, spring beans and spring peas.

Matt's views on biostimulants as part of the management plan are representative of more than half (52%) of growers who see them as being complementary to other inputs.

However, he also goes as far as saying they're a primary focus for him year-on-year.

"We've been using biostimulants for quite a while now and use them for a range of reasons," he explains. "We take the view that the use of biostimulants helps to keep the plant as healthy and stress-free as possible. In doing so, the hope is that it'll lead to crops which are better able to utilise inputs and nutrition, and also by being healthier, they should be able to fend off disease and other stress factors more easily."

In a bid to better understand the full

potential of biostimulants, Matt — like 27% of other growers in the survey — has conducted numerous trials on farm using different products, at different timings and under different conditions. "There are a lot of biostimulants coming into the market at the moment. With less chemistry available, there's a big gap in the market that these products are filling. However, there's not a lot of independent data out there and available, so by trialling them ourselves it helps us to make a more informed decision about what the best products are and where to place them and in what situations."

For Matt, these trials have included a mixture of small plot, tramline and half field-scale trials to ensure the results are representative of the claimed benefits of biostimulants. "Small plots are good, but they can hide the field effect, so by doing it over a larger area we tend to get a better representation."

Based on what he's found, Matt is now using biostimulants every year. "We're on quite heavy soils here and certainly on our winter cereals we'll do an application in the autumn to try and push rooting as much as ►



*Success with using biostimulants all comes down to optimising the right product at the right time, says Stuart Sutherland.*



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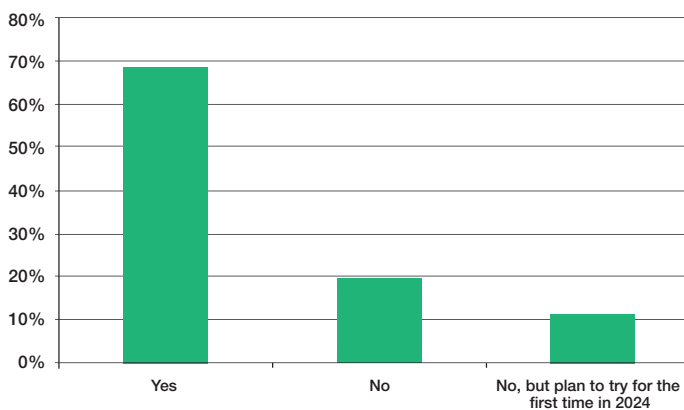
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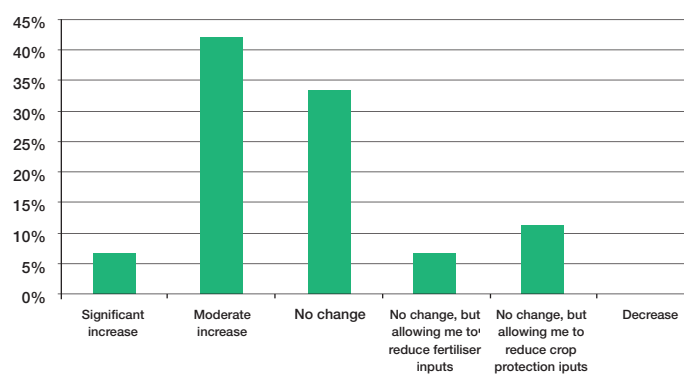


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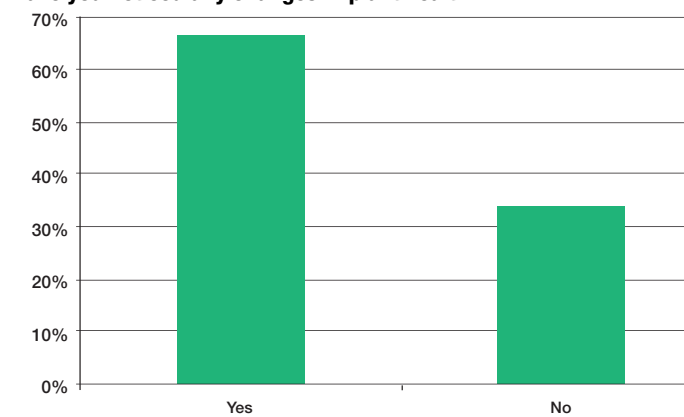
## Are you currently using biostimulants on your farm?



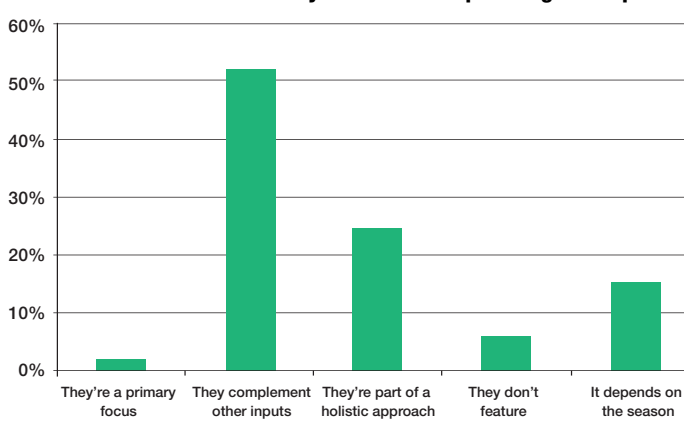
## Have you observed noticeable improvements to crop yields since using biostimulants?



## Have you noticed any changes in plant health?



## How do biostimulants fit into your overall crop management plan?



► possible. We'll then do something similar in the early spring and then later on in that season — around fungicide timings — we'll use them again, but the specific product will vary depending on the crop, the conditions and forecast.

"One of the problems we've found is with beans — they can get really stressed out. Particularly during the flowering stage, we're tending to get extreme heat and you physically watch them shut down. So it's all about trying to mitigate that as much as possible and if crops have a big root zone and they're healthy because of biostimulants, then they're an incredibly valuable addition. In fact, in some years our spring cereals our biostimulant/nutrition spend has been higher than our fungicide spend, particularly if it's

been a dry year."

So what exactly are the benefits of biostimulants? Stuart says with the right product, there could be a multitude of advantages.

This sentiment was echoed within the survey, with 66% of growers stating that they've seen positive changes to plant health where biostimulants have been used, including better stress tolerance (49%), improved rooting (47%) and higher nutrient uptake and use efficiency (36%). "Better stress tolerance would be in my top reasons as far as the benefits of biostimulants," says Tom. "More tolerant plants are likely to be a result of better rooting too, so it's all linked. But just how much this can be improved will vary on the product."

Correct use has the potential

## Picking a product

While 64% of growers said they don't have a specific preference when it comes to products, there are a range of options on the market and selecting the best tool for the job is going to align with success rates, says Stuart.

Matt adds that this is why he employs a range of products within his programme with one of them being Interagro's Bridgeway.

Bridgeway is an amino acid and peptide biostimulant designed to help nourish and protect crops by stimulating root and shoot growth, and by firing up the plant's natural defences, explains Stuart. "Feeding a crop Bridgeway early in the growing season has proven to be the ideal timing to build stronger more resourceful plants that are better able to capture water and nutrients and puts crops in the best position to cope/recover from a stress situation — something that might be really beneficial in what is proving to be a challenging season."

Interagro's biostimulant seed treatment, Newton, may also find favour with growers re-drilling

winter cropping area or thinking about how they can best prime spring seed. "Newton's unique in its action because of the signalling peptides which play a fundamental role in the regulation of growth and development and crucially, lead to faster seed germination and emergence," explains Stuart. "This year, getting crops up and away in the best health possible is going to be vital."

"Another benefit of Newton is that it's non-microbial, so the shelf life is long, and therefore you can leave it on seed without the worry of it decaying like a microbial seed treatment would do. The benefit of this is that it makes application more practical for growers."

"Similarly, Bridgeway also mixes really well — it's been on the market for six or seven years now and we've never had any issues. What's more, we've accumulated a huge wealth of data over this time which repeatedly proves the benefits of Bridgeway. It's all about using the right product at the right time when it comes to getting the best from biostimulants."



for yield increases too, with 42% of growers noting that they've seen a moderate increase on their own farms as a result of using biostimulants. However, 33% said they noticed no change at all, so why such a discrepancy?

"When we've tested biostimulants on a large field-scale, that's where we see the biggest difference, and if growers have been testing in small plots or tramlines, then that might be why improvements haven't been as widely noticed," explains Stuart. "But it's also about what situation and circumstances you apply biostimulants to and matching products with the expectation. They can help lift and improve yield in tricky situations, but it's not a silver bullet and that's really important to remember."

Tom adds that it's also important to take note of the inherent genetic yield potential of crops and take this into consideration when drawing conclusions on the impact of a biostimulant. "Particularly with cereals, they genetically can have a lot of resilience and a high yield potential which growers really have to keep sight of — you can often achieve this with a very good crop management programme, making it more difficult to see big differences with biostimulants. The challenge with biostimulants is that it often becomes very specific to the individual farm and even crop, so it's all a case of thinking about where they can fit within the programme to enhance performance."

"It's possible to get yield increases, but it can be difficult to achieve this consistently. But where you're likely to see the best results is in those more stressed seasons."

Improving quality with biostimulants is another claimed benefit, with 38% stating they've noted an uplift. "As we grow milling wheat, quality is really important, and we've seen more reliable quality results where biostimulants have been used," says Matt.

Stuart adds that a similar result,

and a positive influence on quality, has also been seen in Interagro's own trials.

As well as improvements to crops above the surface, there's evidence to show biostimulants can improve activity underground, too — specifically microbial activity and nutrient cycling — though 70% of growers said this isn't something they've noticed themselves on farm. "This is something that can be quite tricky to measure and get meaningful results, but we're actually going to be doing some glasshouse work this season," explains Stuart. "We know that we can show an improvement in root mass and root length, which ultimately means we're improving the rhizosphere. Within the rhizosphere and the root mass there's a huge uplift in microbial activity. But what we want to test is how much of an uplift in the quality of the microbial activity — so we'll be investigating that further this year."

## Application techniques

In terms of application, the majority of growers (89%) revealed they make use of foliar sprays and a further 33% said they use seed treatments. The type of product will impact target growth stages and optimum timings, with 54% of growers noting that they aim for the vegetative stage.

"For us, it's not one position or application is best. We use everything from seed treatments and foliar applications just to target plants the best we can through the season," says Matt.

With the majority (70%) of those using a biostimulant already stating they believe biostimulants complement or enhance other inputs, Stuart adds that the success of this all comes down to optimising application timings.

"In cereals, for me T0 is a key timing," explains Stuart. "We've tested our own product Bridgeway quite a lot in field trials and what we tend to see is that you get a yield response at this timing as well as the ability for plants to fend off disease better

when overall crop health is improved. We've also seen evidence in a range of varieties that it reduces the incidence of disease — compared with when it wasn't used. So by getting it in the programme early on, the benefits could be vast.

"This reduction of the incidence of disease is further realised when followed up with a second or third spray. When you have a particularly high stress or high disease pressure year, this could prove really beneficial and could translate to a yield benefit at harvest."

One particular place Interagro trials have found biostimulants like Bridgeway and Zonda fit well is alongside an ethephon-based PGR in spring barley, explains Stuart. "We've seen that in several years' worth of trials, these biostimulants can safen the application. You still see the PGR effect, but it seems to add the ability to reduce brackling in barley. Reducing this means if you get a later harvest, your quality isn't going to be diminished, for example."

Of course, there's then the question of monitoring this to see if there's a return on investment. "If you're using a seed treatment like our product Newton, a really basic way of measuring the difference on farm is to do some early digs and look at the rooting," says Stuart.

"When you get to T0, it's not quite as easy to do this without damaging crops, but you can do things like look at Brix levels or send away leaf samples to see if you've improved nutrient uptake with a biostimulant."

Looking to the season ahead,



*Matt Fuller believes the use of biostimulants helps keep his 1000ha of crops as healthy and resilient as possible.*

with many growers still trying to recuperate from a washout autumn, how might biostimulants be beneficial?

Matt is planning to continue his usual approach of including them across the programme but says biostimulants could be an even bigger aid this season. "The main challenge for us at the moment is our wheat and barley crops have very poor, shallow rooting because of the winter we've just come through. They've not really pushed their roots further down into the soil profile."

"The concern with this is that if it suddenly turns dry, as we've seen in previous years, crops are going to get quite stressed and nutrient uptake will be depleted. This will then have a big knock-on effect on yield."

"Tiller retention is going to be vital this year, so if we can get early applications of biostimulants on it's going to give the crops the best chance of taking up as much nitrogen as possible when we get to that point." ■

## Winner announcement

Congratulations to prize winner Matt Fuller who responded to the *CPM*/Interagro survey and provided insight on his biostimulant use. Matt won an iPhone worth £999.

Matt was chosen having completed the tie-breaker question, explaining that to

achieve the most from biostimulants, he recommends using a programme from sowing to harvest and to not just fit products in at any timing. He also said to look closely at the product dose.

To engage with future surveys, visit the *CPM* website and sign up to the newsletter.