Finger on the pulse

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Pulse markets

Pulses are an important source of protein and offer soil enhancing properties, yet they're often considered a niche crop with tricksome yields. But one thing's for sure, the market's pulse is just getting stronger. *CPM* finds out more.

By Melanie Jenkins

Pulses are seen as a minority crop in the UK, with the bean area averaging 146,000ha and the combining pea area averaging 36,000ha in the ten years from 2011 to 2020. But this could be about to change, according to speakers at a BASF webinar held in March, as part of its Pushing Pulse Yields Together campaign.

There's so much scope for growth in the pulse market that the UK could see up to 500,000ha grown in the next 10-15 years, says Lisa Hulshof of BASF.

"From a political viewpoint, the 2030 CO_2 reduction pledge, ELMs, land use efficiency and how these will impact cropping all offer opportunities for pulses," she explains.

Source of protein

"Economically, the high cost of fertiliser and mitigating it could bring pulses to the forefront. We know pulses can improve the yield of the following cereal crop and this can have a knock-on effect on gross margins.

"Socially there are lots of changes," ladds Lisa. "Meat-free alternatives and sustainable sources of protein will be key to promoting sector growth going forward."

According to Roger Vickers of PGRO, the increasing demand for pulse protein is forecast to grow exponentially year-on-year for the foreseeable future. "There are protein extraction plants being built in Europe but unfortunately none in the UK. This means there could be a situation where UK grown pulses have to be exported to Europe, then imported as extracted protein back into the UK, which would be a missed opportunity."

Though the environmental benefits of pulses — in terms of improved soil health — are well-known, they also provide a chance for greater sustainability as a homegrown protein alternative for animal feed, explains Lisa. "This is incredibly important and will drive change.

"There was approximately 170,000t of peas produced in the UK last year but they're becoming increasingly important — not just as a homegrown feed source, but to keep cash in a business and to improve cashflow and profitability," adds Roger.

According to Roger, the deficit in homegrown protein in the UK and Europe is huge. "We import a lot of soya and derivative products. There's a huge ▸

The UK could see its pulse area hit 500,000ha if its growth potential is realised, says Lisa Hulshof.


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The pulses industry has seen a lack of investment in research, both nationally and internationally.

▸ opportunity for the UK to produce more protein locally and offset trade imbalances. This will also help with the negative impacts of deforestation of soya production in South America."

As well as increasing demand for pulses in processed foods, they even have a part to play in replacing plastics, he says. "There are plastic alternatives being developed from pulses that are more biodegradable and environmentally friendly."

Lisa also sees technological improvements driving growth in the pulse market. "We could see new varieties coming through where breeders have utilised gene editing thanks to Brexit. Better understanding the symbiotic relationship between nitrogen-fixing bacteria and pulses could be really important."

The increasing demand for pulse protein is forecast to grow exponentially year-on-year for the foreseeable future.

The deficit in homegrown protein in the UK and Europe is huge, according to Rogers Vickers.

However, legislation could limit opportunities for the pulses market, she says. "The regulatory environment is getting more challenging for all crops. We don't know what chemistry will remain accessible and if there will be any legislation on synthetic fertiliser use."

The reducing armoury of chemicals could be a serious risk to pulse crops, stresses Roger. "We're heading in the direction of having to produce crops with a minimal chemical armoury and so we're having to use the full suite of integrated pest management tools. But this does represent a potential problem in the future should we be left without any chemical interventions."

And there are other challenges to overcome to allow for an increase in the pulse area, says Lisa. "One question growers might ask is whether to grow pulses or oilseed rape," she explains. "We saw an increase in the pulse area as OSR declined, but I don't think it should be an either/or choice, it can be both. Having both in ▸

The UK market largely consists of dried peas and beans.

Research by ADAS found that Signum can increase photosynthesis in the two weeks after flowering, explains Iain Ford.

▸ the rotation, with pulses one in six and OSR one in four, offers a multitude of benefits to a rotation including helping to combat flea beetle."

Roger agrees: "Pulses can be grown in balance with OSR. They encourage and maintain biodiversity in cropping and the environment.

"They're environmentally sound and sustainable," he adds. "They don't require nitrogen fertiliser, enhance soil fertility and enable a sustainable rotation."

But some growers may have found they don't get the yield they expected from pulses, adds Lisa. "Notoriously pulses have been weaker in yield performance, but Defra data shows they follow similar yield trends to other crops, which indicates that potential is limited more by weather and environmental factors rather than crop species or variety."

Huge opportunity

There's also the issue of variable quality, says Roger. "This is an issue for some markets. Though the feed market is less fussy about quality, the human consumption and export markets require good quality year-on-year."

A further issue for the industry has been a lack of investment in research, both nationally and internationally, he adds. "Worldwide $175m is invested in research annually, compared to billions of dollars in other crops."

Roger sees this as a huge opportunity for further development in pulse crops. "The potential is enormous and increased investment could see dramatic improvements."

Though the UK market largely consists of dried peas and beans, he sees further opportunities developing for growing lupins, Phaseolus beans and potentially chickpeas and lentils.

Good establishment allows the crop to achieve the optimum plants/m² and obtain the biggest rooting system possible.

Though Lisa admits that 500,000ha of pulses by 2030 is an ambitious estimate, it's an increase she believes is achievable. "But what is key is sustainable growth. I hope those choosing to go into pulses do it as part of a long-term rotation." ■

Pushing the pulse

If lower than expected yields and inconsistent quality have put growers off pulses, what can they do to help improve these and take advantage of growing market opportunities? According to Iain Ford of BASF, there are four focus areas to pay attention to in the growing season.

"We've been working with ADAS over the past couple of years to look at the key components of pulse yields in more detail and how the physiological effects of fungicides, such as Signum (boscalid+ pyraclostrobin) can improve yields," he explains.

The first focus area is on cultivations, rooting and establishment, he says. "Our studies have shown that, unusually, it's both the number of seeds/m² and seed weight which have a significant impact on bean yield," says Iain.

Good establishment allows the crop to achieve the optimum plants/m² and obtain the biggest rooting system possible to maximise moisture and nutrient uptake, and to reduce stress.

"Soil compaction can reduce yield by up to 40% and an ADAS study showed that a poor rooting system can double the number of days spring beans will suffer from drought stress — from 40% to 80% of days during the key pod development and seed filling months of July and August.

"Major and minor nutrients are also important for final yield, so getting these right during early development is key."

The second focus area is weed competition, he says. "Pulses are poor competitors against weeds when getting established, so tackling weeds by using a pre-emergence herbicide is critical because post-emergence options are currently limited to bentazone."

Once the crop is up and away, it's a case of keeping the canopy clean and disease free, adds Iain. "Diseased leaves have a much lower photosynthetic capacity. So having a good fungicide programme is important as it can help to keep leaves free of disease.

"Research by ADAS found that Signum can increase photosynthesis in the two weeks after flowering," he explains. "This is known to be an important period for seed and pod survival."

The final focus area is on maintaining green leaf area for as long as possible. "The seed weight is related to maintaining high levels of photosynthesis right through the seed filling period, and YEN results have shown a significant impact on yield from fungicide use — particularly in relation to the number of applications," says Iain. "Analysis of the data has shown a 0.6t/ha increase in yield per application of fungicide."

ADAS bean physiology trials of Signum have also looked to understand the physiological and disease control-related yield effect of fungicides applied at different growth stages, he explains.

"Trials in 2020 and 2021 looked at single applications, very early at the start of flowering, mid-flowering and at the end of flowering.

"We saw significant influence from Signum on disease control, photosynthesis, GAI, seeds/m², thousand seed weight and yield. Even though the crops gave high untreated yields with a mean of 5t/ha, the application of Signum still provided a significant yield increase; early application at the start of flowering achieved 5.1t/ha, the mid-flowering application achieved an average of 5.6t/ha and application at the end saw 5.7t/ha achieved.

"It was clear to see that the physiological effects that Signum can have on the crop, over and above disease control, can lead to increased yield" he concludes.