Growing for gold: getting the best out of pulse crops

With pulses garnering more interest across the sector, *CPM* finds out how growers can get the best out of these protein-packed break crops.

By Charlotte Cunningham

On the back of a whole industry shift towards producing more homegrown protein sources, it could be argued that pulses have enjoyed a resurgence in popularity of late.

As well as the opportunity for UK-grown protein, pulses offer significant benefits at a farm level including improved soil health, crop diversification, and when done well – economic profitability. However, successful production requires careful planning and attention to detail.

This is according to Charlotte White, senior research scientist at ADAS. "The main thing is to give pulses the attention they deserve and not just put them in the ground and hope for the best."

As such, Charlotte says starting with drilling into the right conditions is important, as well as maintaining soil health ahead of drilling. "Peas and beans can be sensitive – peas a little more so than beans. What we're finding is crops which are drilled earlier, stay green and grow for longer, tend to have higher yields. So it's about encouraging and prolonging the growing period."

She adds that avoiding stress is key

Award-winning strategy

ADAS' Charlotte White says the top performers in this year's Pulse YEN shared similarities such as wide rotations and optimising beehives in the crops.

too. "I know this is very difficult, but pulses are very sensitive to a lot of heat and drought, especially during flowering. So if you can get in early in the right conditions, then that'll set you off to a good start. Drilling earlier can encourage earlier flowering so that pod set occurs when it's cooler."

It's attention to detail like this that's helping growers reap the rewards of their efforts in the Pulse YEN, explains Charlotte. "This year gave us some really good crops and yields, despite the fact that it was very wet at the beginning of the year with incredibly wet establishment and delayed sowing."

Looking more in depth at this year's data, Charlotte says similarities between the top three yields provide interesting food for thought when it comes to getting the best out of pulse crops. "In the beans, two of the farms had beehives in their crop and none of the others did – which I thought was quite interesting.

"The farms which had the highest yields, had outstandingly tall plants, a high number of pods per shoot and a high number of beans within those pods. They also had a high N offtake."

These top performers also deployed a wide rotation, with a 7-8 year break from the pulses last grown in that field – wider than the recommended five years, notes Charlotte. "The take-home from that is the need to avoid a tight rotation and that spreading pulses out is likely to be beneficial in terms of performance."

BENEFICIAL CONDITIONS

It was a similar story for the pea results, comments Charlotte. "The top three yields had a higher biomass and a high number of peas per pod. Interestingly, in both cases (peas and beans), I think the lower than average temperatures in June and July helped and encouraged flower retention and pod set."

Longer rotations also proved beneficial for pea yields, she adds. "Two out of the three highest yielding crops were on virgin pea land and the other from a field which hadn't grown pulses on it for more than six years."

Building resilience
Kent farmer Richard Budd believes paying attention to break crops to ensure they're a profitable part of the rotation is key to building resilience.

New awards to pique pulse interest

Pulse growers to get more recognition through YEN

In a bid to generate new passion for pulses, the Pulse YEN team introduced three new awards last season.

These were:
- Recognition of the best pea quality
- Yield stability for peas over the past five years
- Yield stability for beans over the past five years

Charlotte says the introduction of these awards comes as a response to feedback from entrants and sponsors to widen the breadth of pulse progress. "We've never had awards for the Pulse YENs until this year. The hope is that these awards will offer farmers external recognition for their achievements in the growth of their crops and their valuable input into the Pulse YEN community."

The awards are intended to support the aims of the Pulse YENs to enhance yields on farm by sharing and collating information on what growers are doing, the conditions they're doing it in, and how this affects crop growth, final yield and quality. "This information is used to enhance our understanding of what's best practice and develop practical options to modify soil and crop management to improve yields on individual farms," notes Charlotte.

Looking at the individual awards in more detail, she explains that the recognition of the best pea quality award highlights the importance of quality and the end market value for peas, acknowledging it's not all about yield. "Therefore, to qualify for this award, there's no minimum yield requirement," explains Charlotte.

"It'll be based on the Askew and Barrett quality analysis of a submitted seed sample. This analysis includes assessment of moisture content, ad-mixture, waste and staining, bleaching, soaking, a cook analysis and a visual score."

The yield stability awards are aimed at learning more about predictability in yields in response to a changing climate and variable market factors, explains Charlotte. "Some perceive that pulse crops have unstable yields compared with other break crops and although there's some debate on this, improving yield stability is in general beneficial, with the caveat that it's stable at a relatively high yield.

"Therefore, the YEN team has decided to recognise this important factor and rather than having the highest yield as an award, we're focusing on high, stable yields."

The yield stability award will be based on participants with entries from the past five years. An entrant must have at least three years of data, but these don't have to be consecutive years.

The minimum average yield for qualifying for the award is based on the average yield of the farm being greater than 30% of the yield potential. Yield stability will then be calculated looking at the average yield during these years, then calculating the average percentage deviation from the average yield.

The entrant with the lowest deviation from the average yield and therefore the most stable yield will be selected to receive the award.

The YEN team is also considering launching a percentage of potential yield award for Harvest 2025. "Additionally, there are several farmers who've been part of the pea and bean YENs for multiple years, seeking to improve their crop performance and supporting the YEN community. We'd like to recognise these farmers, share what they've learnt and what they gain from being part of the YEN."

Want ANSWERS on how to grow better bean crops?

A new initiative hoping to boost bean production in the UK by determining definitive best practice has been launched, which looks set to help overcome issues with inconsistencies.

The project – named ANSWERS or 'Alleviating Nutritional Stress for Wider Environmental Rewards in Sustainable UK protein crop production' – comes as a result of the uptake of growing beans having been curtailed by the perception that they're unreliable, explains Roger Vickers, PGRO's chief executive.

"While there are scientific publications which clearly demonstrate across north-west Europe that beans are no more unreliable than other spring sown crops, the perception is real and impactful," he says. "The current recommendations in RB209 haven't changed in decades and it's not at all clear from where the recommendations originated.

"Seeing this as a possible weakness in the agronomic approach to bean cropping, we're embarking on a study that aims to establish new best practices and recommendations," he says.

ANSWERS will bring together PGRO, NPZ (LSPB), Yara, and the University of Lincoln, alongside real field-scale trials, to develop practical nutrient plans to enhance nodule activity and nitrogen fixation, productivity, yield stability, protein content and climate resilience.

The goal is to optimise the on-farm yield and quality of faba bean as an alternative UK-produced protein source – to directly influence an improvement in productivity, sustainability, the environmental impact of farming, progression towards net zero emissions and help create resilient food supply chains, concludes Roger.

Early drilling advantages
Drilling pulses earlier can encourage flowering so pod set occurs when it's cooler.

> *"More farms getting involved with YEN will only help to strengthen national pulse performance."*

Among those growers who've reaped the rewards of careful cultivations is Richard Budd. Richard heads up Stevens Farm (Hawkhurst), a Kent-based father and son arable and fruit operation spanning 1500ha across a variety of soil types – from heavy clay to sand.

The arable rotation typically comprises winter wheat, winter barley, winter beans, oilseed rape and spring oats, and to get the best out of these crops, Richard says he's been a part of YEN for the past eight years. "We initially became involved because it was a good metric to understand more about what our crops were doing – you won't find an analysis service like it.

"It also allows you to nationally benchmark, so you can then compare and understand other places around the country; what people are doing, what's working and what's not. That network and knowledge exchange is invaluable. Yes, winning the awards is nice, but you can't put a value on all of the information you glean every year."

As such, Richard says he's more interested in learning about what went wrong in his crops over what went right – and with his beans, it's been about uncovering what leads to inconsistencies in production. "The trouble with beans is when you go online and look up how to grow them – specifically what beans require and respond to, for example – it's pretty much a blank piece of paper.

"So for me, the idea of being involved with Bean YEN was to allow that piece of paper to start being filled in and create a blueprint of how to grow the crop so going forward, our yields would be more consistent."

BUMPER PERFORMANCE

Looking at the impact this has had on his crops, Richard says he achieved over 9t/ha in some fields this year; the farm's crop average sits around 5.5t/ha. "I'm not sure quite what went right and I'm still trying to work it out," he laughs. "We had the most awful start to the spring ever – it rained ridiculously hard."

Conditions continued until the end of March leaving crops covered in chocolate spot and looking rather 'sad for themselves', he continues. "But when it did finally start drying up, they just grew – I've never known a crop like it."

Reflecting on why this could have occured, Richard says the cooler, damp summer helped to keep crops greener for longer. "Pollination of the crop was amazing this year too. We always put bees in our crops which I think helps, and this year it seems to have extended that assistance even further.

"Plants also podded more but consistently from top to bottom. I still don't quite know why that was, but we're trying to work that out at the moment – with the help of YEN – so we can replicate it again this year."

Moving forward, Richard believes more farms getting involved with YEN will only help to strengthen national pulse performance. "The more people involved in YEN the better, in terms of getting a bigger data set so we can understand the trends and enable us to grow consistently better crops.

"I believe views towards break crops need to change. At Stevens Farms we put as much effort into growing our break crops to ensure they contribute a healthy net margin. I don't want my business reliant on just wheat to bring home the profit – it's far too risky, particularly as our climate changes and we have to adapt and derisk our operation. In my opinion, the best way to build resilience is to have crops contributing to the pot across the rotation," he concludes.