

THE

PULSE

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Roger Vickers
Chief Executive

Through the 1990s, my musical taste was narrowing, dominated by a fascination with Techno music. Searching for alternative stimulation I stumbled on the *Sunday Times* supplement, where weekly, short reviews of new releases from a wide range of genres were published. Rated 1-5, I decided which albums to buy based on their score. Most weeks a new CD arrived, and I went on a musical adventure that lasted until around 2010 when the review system changed. Now, although I have lots of CDs in the loft (who listens to CDs?), my musical preferences cannot be pigeonholed. Around 2007 Robert Wyatt released his album *Comicipera*. I remember the review to this day. Essentially, they outlined the process of initially listening to something with revulsion, progressing through curiosity and emerging into "oh my god this is amazing" and "why isn't all music this good." I have a copy and it is strange and challenging but brilliant!

I wonder if the government's approach to

weaning UK agriculture off subsidies and the BPS scheme is being pursued in the same way as my musical reorientation, only in this situation we are the reviewer and not yet the consumer. The album we have acquired is entitled ELM and in the current situation we appear to have progressed beyond the state of despair or revulsion and are now confused by the lack of detail or even a clear direction of travel but remain curious as to how it will develop - we are inevitably still engaged.

Conceived before the potential food crisis implications that may be building as a consequence of the Russian invasion of Ukraine, the government's agenda is environmental improvement and reducing subsidies to farmers. Understandably unpalatable to most as it will reduce farm business incomes, it is broadly accepted in the mantra of "public money for public goods" but we have not yet progressed through the album of regulatory change to reach a point of understanding, let alone the beginnings of appreciation.

While most are probably long resigned to ultimately operating without subsidy and that the music has changed, it is a significant issue that the music maker, the government, has not yet revealed how they will make ELM hold together. The album has been released before it is complete, it is not even at the first edit, hence the revulsion, doubt, frustration and fear amongst the listeners; why expect anything else? Family and big business futures are at stake here and not just because subsidies are being removed but

because at the same time businesses are not being allowed the freedom to change, as rules of engagement are unknown.

Perhaps it will all work out in the end and we will all be praising the government for taking its time, not yielding to pressure to hastily complete its work of art to popular deadlines, and neatly adapting revisions in response to unexpected political events such as the consequences of war. Perhaps we will bask with reflective contemplation rhetorically asking why isn't all regulation this good?

If it is not too late and those involved in the production of policy are still listening, we can remind them that farmers are part of the solution. Constantly made aware of environmental challenges, sustainability issues, food security and added value benefits, they are ready to act but need to know what they are allowed to do. We might also remind them that many of these concerns could be positively influenced by increased pulse crop production. A light hand in regulation could encourage all of this at minimal cost to the taxpayer and allow farmers to deliver the government's objectives. Please, finish the composition and let's hear the music, no one can love you, 'just as you are'.

www.thetimes.co.uk/article/robert-wyatt-comicipera-3nmn559gcx7

<https://www.youtube.com/watch?v=lymJL6wOkN8>

Roger Vickers, *Chief Executive*

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Diary Dates 2022

- Vining Pea Field Day**
23rd June 2022
Nocton, near Lincoln
- Pulse Field Day**
5th July 2022
Stubton, near Newark
- UK Pea & Bean Conference 2022**
9th November 2022,
Jakemans Stadium,
Boston



Michael Shuldham,
Vice President of Pulses UK



Pulses UK is the trade association which aims to promote the production and consumption of pulses within the UK.

Pulses UK continues to be active promoting pulses to the British public with a growing social media presence as well as attendance at trade shows and school days across the country.

Strong markets surrounded by uncertainty

Drilling of peas and beans was all completed in good time, and crops are generally in good condition. Most were drilled into a good seed bed and despite dry weather after planting May finally brought some rain, meaning most have now had plenty of water. Winter sown beans generally look good with flowering crops showing good yield potential. Spring beans have largely established well, and peas the same although some dryness and pigeon issues are visible in the field. The suggestion at this point would be of at least an average yield, although there will inevitably be some challenge to this in the run up to harvest.

The winter bean area will be up on last year, owing to the good conditions all the way through the autumn to December. Early indications suggest the winter bean area will be circa 65,000 ha. A lack of winter bean crops last year means the majority of that (circa 35,000 ha), has come from certified seed. A more normal winter/spring split puts spring beans at somewhere around 115,000ha, making an expected combined bean area similar to 2021 of 175 to 185,000 ha.

Green pea area is likely to be down, despite optimism last year based on the cost of nitrogen, the impact of which may not be seen until planting 2023. Furthermore, peas weren't following the strong commodity prices seen in other crops when cropping decisions were made. High wheat prices and good autumn drilling conditions means there is a large crop of winter wheat in the ground, this tends to put pressure on harvest times, as peas will be ready to harvest somewhere in the middle of wheat. To benefit from human consumption premiums peas need to be harvested at the right time in order to maintain their colour, and with pressure to get wheat in the shed this may create challenges for some at harvest.

Marowfat contracts seem to have been popular, with contracts being offered at a good level and giving good gross margin opportunity. The security provided by

these contracts and relatively consistent export demand has proved popular with growers. Merchants will soon be looking to next year for pea buy back contracts.

Turbulence continues in the commodity markets and that looks set to stay for various reasons. Ukraine is looking as if it is going to be a long and drawn-out affair as Russian progress in the Donbas is slow. Droughts in India, temperatures in France and rainfall in Canada are pushing the expected wheat harvest tonnages down. Soybean plantings are below last year's levels at this point in the US countered by increased demand, which may put pressure on pulse production to fill the gap domestically. These factors raise concern once again around food security as imports become more difficult and more expensive, which may lead industry to drive investment in UK production and processing facilities for pulses.

Domestically inflation is now soaring, and interest rates are unlikely to have any affect until at least next year. The 'cost of living crisis' looks set to threaten food and farming supply chains and will undoubtedly have an impact on consumer decision making around the food they eat. The challenge lies in promoting pulses for their ability to deliver affordable nutrition to the consumer and responding to this could be the key to their future in our fields and diets.

Spreading supply chain risk



The past few years have presented one crisis after another, from Brexit to the pandemic and most recently, the war in Ukraine all having their own unique knock-on effects on the industry. For international importer, distributor and stockist of pulses, pulse ingredients and birdseed, AGT Poortman, a flexible supply chain has helped the group continue to deliver for its customers. Managing Director Dan Holben explains.

Formed in 1950 by Peter Jacobs, AGT Poortman was the London office of Dutch company A Poortman, founded in 1868. Originally, trade was predominantly birdseed for importers and distributors. Back then, when Andrew (son of Peter) joined the business, he noticed a growing demand and need for pulses because of the growing, multi-ethnic population in the UK. Today, AGT Poortman's customers are packers, food manufacturers and wholesalers, generally one step removed from the retailers.

The importation and distribution of beans, lentils, chickpeas and peas supplied by AGT Poortman is seen by many in the food industry as a volatile process carrying inherent risks.

Dan summarises: "Globally, we will look to source the products that work from a quality and sustainability point of view, to match a price point for our customers. We import from multiple sources as to rely on just one origin carries risk.

"In 2010 we became part of AGT Foods and Ingredients who have factories in the key pulse growing regions around the globe, which has helped the business to grow and develop.

"We now have 46 processing plants in key pulse growing regions. So our reach for sourcing and for market intelligence is far greater than what we had before and helps us serve our customers in a much better way.

"AGT Poortman have also been beneficial for AGT Foods and Ingredients. The UK market is very quality conscious, very focused in a different way to the Indian subcontinent for example, which is a huge consumer of pulses. And we've helped assist in evolving those quality requirements by showing the AGT factories what is required to meet the UK's standards."

Exploring closer to home

Importing pulses has long been a necessity for many varieties of beans, due to the UK's temperate maritime climate. But with more UK growers incorporating pulses into their rotation to reap the rewards of their nitrogen-fixing capabilities, Dan reflects that there are more opportunities for growers looking to tap into new export markets.

"We're certainly always interested in exploring new opportunities and new growing regions, especially those closer to home," Dan says. "We do work with UK growers on traditional peas such as marrowfats and fava beans, which we will distribute domestically, but predominantly for the export market.

"Past trials have shown that the UK climate isn't necessarily ideal for growing some of the products that we import from both a yield and quality point of view. As it stands, they haven't produced the results that would allow it to pass entry into the market or perform well on a commercial scale.

Baked beans, Dan admits, are the holy grail of pulses if there was ever a way to successfully source the beans locally, due to it being a store cupboard staple in the UK.

"There is a market here, we love baked beans in this country, it would be very interesting to get the varieties right for both the canning industry and the grower."

Remaining competitive

With European users tending to prefer peas for feed due to their more consistent availability, new markets are emerging for UK pulse exporters.

Brexit was the first in a series of challenges for the industry that has led to international shipping costs soaring. Fuel prices are continuing to rocket under the international sanctions imposed upon Russia, and the impact on top of driver shortages is posing a real threat to the viability of some domestic hauliers and as a result, the continuation of a smooth domestic supply chain. These supply chain issues have contributed to rising food costs in the EU and UK.

"The high shipping costs are there because of supply and demand, and there is just not enough supply of container freight," Dan said.

"We've managed these multiple supply chain issues and risen to the task, I don't think there are any customers that we've let down through this incredibly challenging past couple of years. It might be that we're having to warehouse more inventory to manage it but ultimately, we've maintained the supply chain.

"Our role is de-risking that supply chain for our customers which we do through market intelligence and experience gained over many years in the industry.

"Thanks to our origin sourcing in places like Canada, Turkey and others, we're also able to fill the supply gap caused by the sanctions on Russia and the void left by Ukrainian products that cannot be delivered into market."

Rise in flexitarianism

Despite an influx of challenges lately, an increased public awareness about the role of pulses in a healthy diet has opened up new routes to market for growers in both the UK and abroad, with more consumers opting for a 'flexitarian' diet whereby meat consumption is reduced in part.

AGT Food and Ingredients has recognised the opportunity this presents.

"We have a factory in North Dakota for this, and a supply partner in China, where we produce flours, protein and starches derived from pulses, as well as finished products including texturized pulse protein, *Veggipasta* and *Veggicrumb*, both made 100% from peas.

"There are numerous benefits in multiple food sectors to using these pulse ingredients. One thing that has been consistent between the sectors is the considerable time it takes to go from the initial new product development to seeing a product on the shelf and this has been a sizeable investment for the group.

"It's a really exciting time for our industry. Pulses are sustainable, healthy and nutritious, and in my opinion very tasty. At the moment, they're also very affordable particularly during this cost of living crisis and period of high inflation. They tick every box so we're seeing an increase in demand from consumers and an increase in awareness about how to cook tasty dishes with pulses."



Roger Vickers
Chief Executive

Do legume-based leys have any implications for future pulse cropping?

Those familiar with pulse and vegetable legume cropping will be aware that best practice suggests a rotation of one in six years, meaning five clear cropping years between pulse crops to ensure a minimal build-up of pest and disease pressure in the soil. Where pest and disease pressure is high, an even wider rotation might be recommended. There are no agrochemical seed treatments authorised for use on peas and beans in the UK, so disease avoidance assumes an even more prominent part of crop management strategies.

More recently with the increased use of catch and cover crops, questions were asked about the wisdom of including legumes in such mixtures in rotations that include pulses and vegetable legumes. Work over the past six years at PGRO has largely focused on vining peas and has shown that in general no negative impact has been seen from the inclusion of certain legume species and, in fact, the use of the catch/cover crop has a positive yield benefit on the pea crop.

The caveat to this is that not all legume species have been included in the catch/cover crop studies and while the work has taken place over six years this is still a relatively short space of time.

Questions are now being asked about the use of the Countryside Stewardship grant option for the "two-year sown legume fallow: AB15" and whether the establishment of legume rich swards over a longer period will have a negative impact on future pulse cropping. The obvious concern being that long term presence of legume in the soil may build up pathogen pressure ahead of future commercial pulse cropping.

AB15 must consist of six flowering species and the official advice suggests a mixture "based upon":

- Alsike clover
- Bird's-foot trefoil
- Black medick
- Common vetch
- Lucerne
- Red clover

The mixture is to be sown at 15 to 20kgs/ha as appropriate for the described soil type.

It is also advised that grasses such as cocksfoot, perennial ryegrass or timothy may be included to help smother blackgrass and other competitive grass weeds.

The benefits of this option to the environment are stated as "providing food for farmland wildlife, such as pollen and nectar for pollinators including bumblebees, solitary bees, butterflies and hoverflies. As well as invertebrate chick food for farmland birds around the sown fallow between April and July. It can also be a useful part of a rotation aimed at reducing blackgrass populations."

The payments for this scheme are generous and it is understandably receiving significant interest, but farmers are also asking questions about what impact of actions today that might have on their future ability to farm profitably and sustainably.

There are common diseases for all legumes and yet the impact or transferability of any one soil-borne pathogen between them is little studied or understood. The position of the agronomist, therefore, has to be precautionary. The species which are considered by PGRO to have the most potential to convey a risk to future pulse cropping are red clover and common vetch (foot rot pathogens and stem and bulb nematodes being the principal concerns).

Options for adaptation of AB15 seem to exist. The mixture may be adapted by lowering species content and it is also apparent that the total quantity of flowering plants in the mixture may be reduced by the inclusion of prescribed grasses.

For those wishing to minimise the potential risk of legume disease build up but are also keen to take advantage of the stewardship scheme, one approach might be to minimise the content of common vetch and red clover and maximise the opportunity to include grasses or alternative flowering perennials to make good the seeding rate.

It should also be recognised that there are several options within the Countryside Stewardship scheme that offer a similar payment but do not require the use of legumes as flowering plants.

Record keeping is crucial to ensure Countryside Stewardship scheme payments are realised and advice and guidance on options for species inclusion should be sought from your advisor to ensure compliance.

Official Countryside Stewardship advice concerning AB15 can be found here:

www.gov.uk/countryside-stewardship-grants/two-year-sown-legume-fallow-ab15

Reports on PGRO's cover and catch crop work can be found here:

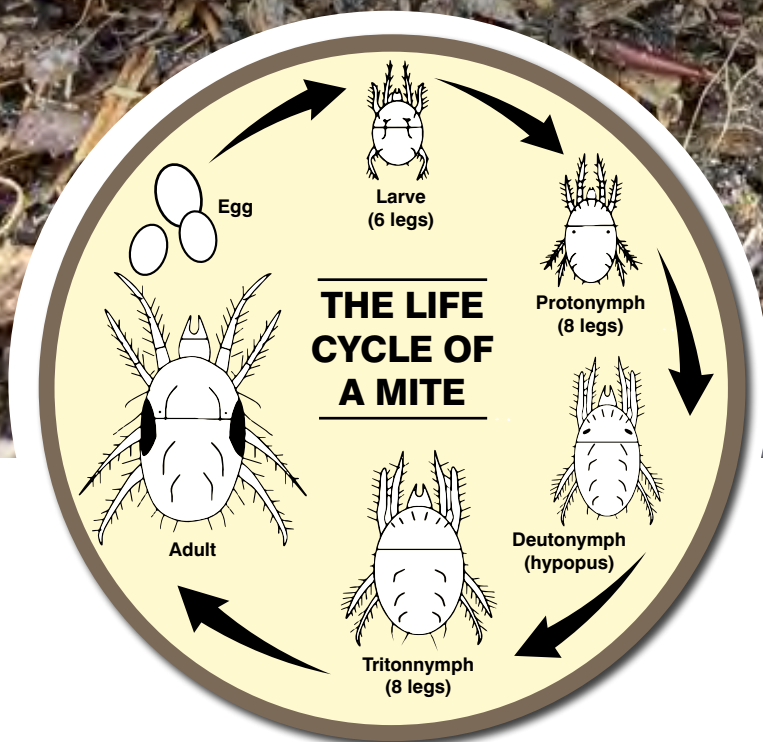
www.pgro.org/research-publications/

Watch out for **grain mites** in stored grains and pulses

Research



Michael Carpenter
Technical Director
at Kelvin Cave Limited



Livestock and arable producers who are storing feeds on their farms have been advised to keep an eye open for grain mites. The mites can affect pulses as well as grains at moisture contents of more than about 13%, whether dried or stored as a moist feed.

Known to thrive in warm and humid conditions, the mites have become increasingly widespread in recent years, particularly following a succession of mild winters. A few cases have also been seen in high dry matter wholecrops, including beans.

The mites are soft-bodied and wingless, pale, pearly or greyish-white in colour, and have clawed legs which vary in colour from pale yellow to reddish-brown.

A unique characteristic is that in their first larval stage they have six legs, but following a moult into the nymphal stage they have eight legs, like the adult. Mature male grain mites measure 0.33-0.43mm, with the larger females measuring up to 0.66mm.

In order to move between food sources, the juvenile mite can also change into another distinct form known as a hypous where the body hardens and develops suckers, allowing it to attach itself to insects and other animals.

Dependent on temperature and humidity, the lifecycle can vary from 9-28 days with females able to lay up to 800 eggs. Populations can, therefore, rapidly increase and a large infestation can appear like a covering of creamy-grey moving dust.

A distinctive, musty odour is also evident when infestations are heavy.

However, infestations may initially be hard to spot as the mites are most active just below the surface of the stored feed. In this case, heat may be the first indicator that they are present.

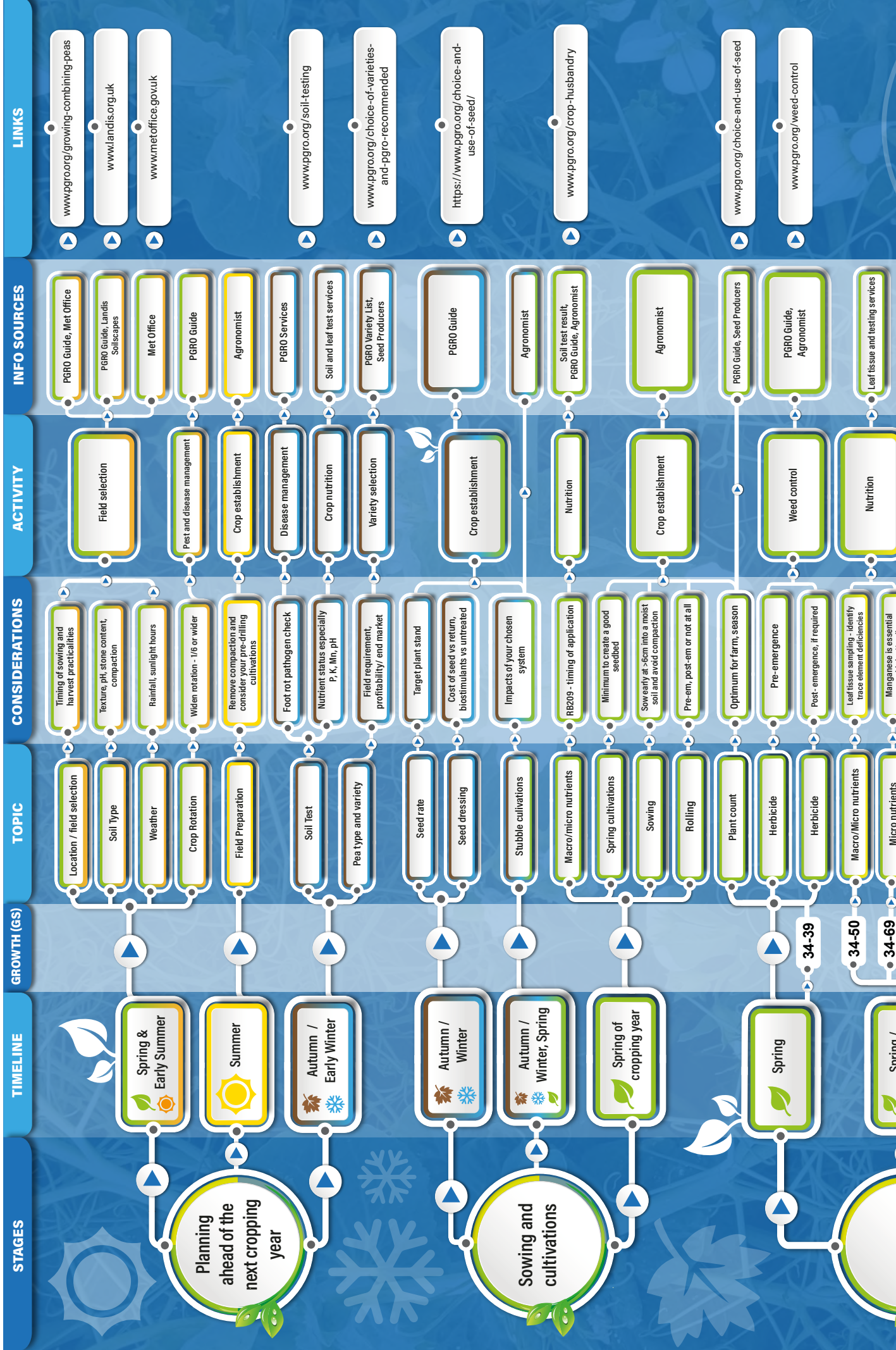
In terms of losses in feed value, mite-infested cereals and forages can still be safely fed, but heating is a sign of energy loss and the heat and moisture produced may provide a favourable environment for secondary spoilage from yeasts and moulds. Timely treatment is therefore advised.

The most effective treatment is to disturb the surface of the stored crop, exposing the mite population and dusting with Diature (food-grade diatomaceous earth). This consists of fossilised exoskeletons of microscopic organisms called diatoms. The sharp edges kill the mites by lacerating their soft outer shell and dehydrating them. The treatment should be repeated daily until mite activity has ceased.

For more information on preservation methods for grains and pulses, please call Michael Carpenter, Technical Director, Kelvin Cave Ltd, on 07817 977701.



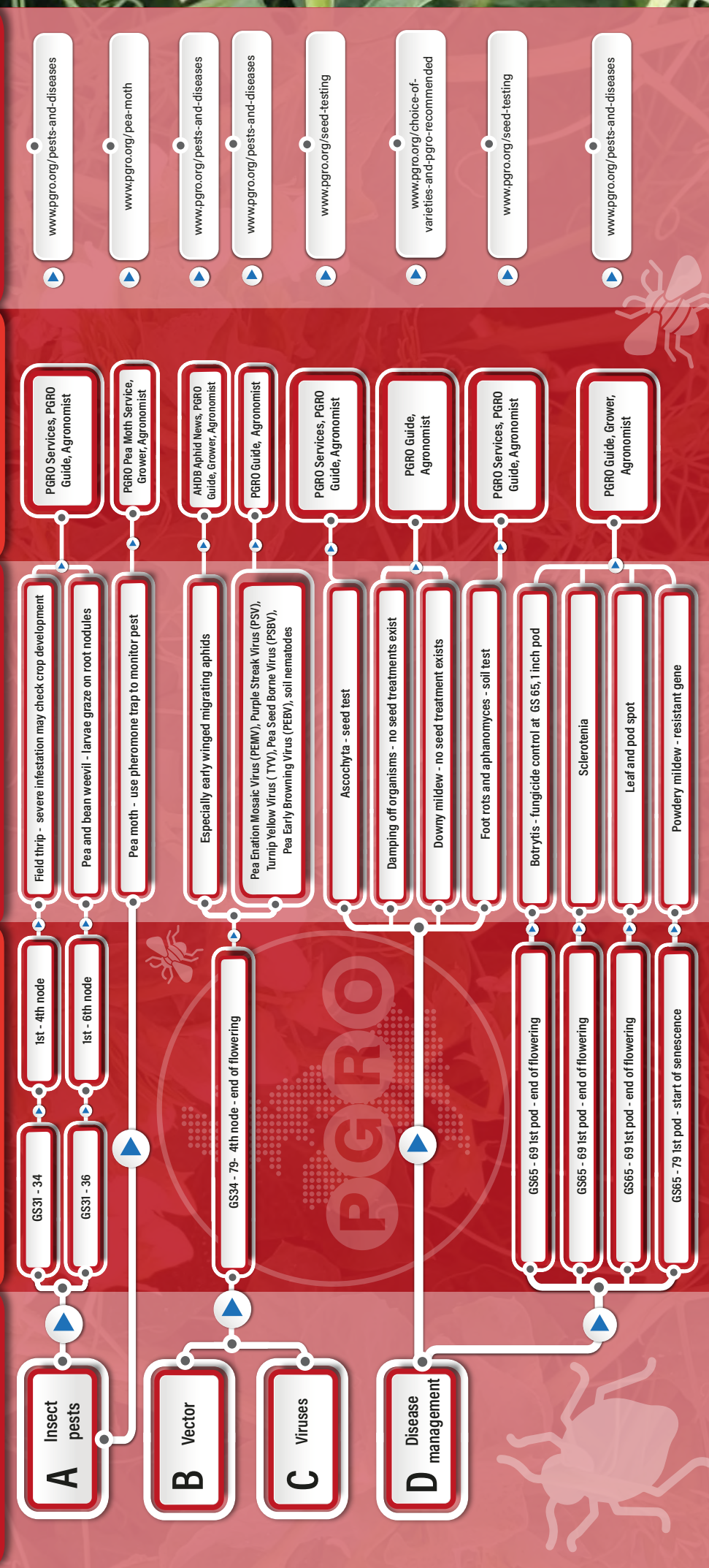
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- www.pgro.org/downloads/TU01-ManganeseDeficiencyMarShp03.pdf
- www.pgro.org/weed-control
- www.pgro.org/harvesting-drying-and-storage/

PEST / DISEASE CATEGORY **TOPIC** **CONSIDERATIONS** **INFO SOURCES** **LINKS**



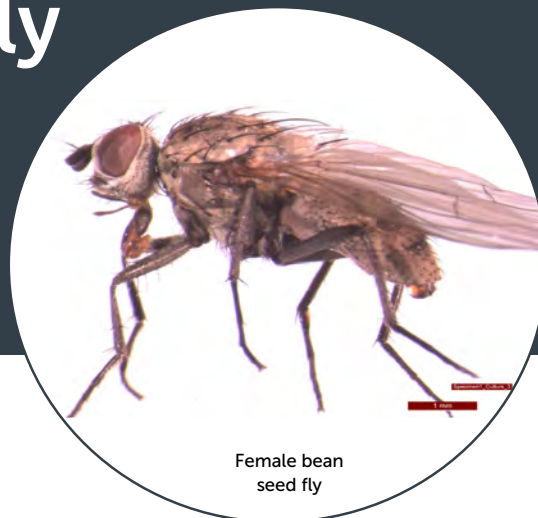


Becca McGowan

PhD Student, University of
Warwick

Creating an integrated pest management strategy for the bean seed fly

An update on findings from a PGRO funded PhD project



Female bean
seed fly

The bean seed fly is becoming an increasing problem for UK growers as there is a lack of effective insecticides to manage the pest. The larvae (maggots) of bean seed fly feed on germinating and newly emerging seedlings. Have you ever experienced patchiness in emergence in your crop? Or, observed 'baldheadedness' in your beans? These could be symptoms of larval feeding by bean seed fly.

The bean seed fly is a generalist, meaning it will feed on a variety of plant species. However, growers of vining peas and salad onions seem to be reporting the most damage. Historically, bean seed fly damage has been reduced by insecticides. Now, an alternative more integrated strategy is required, which is the basis of my PhD project. I aim to contribute towards an integrated pest management strategy to reduce crop and economic losses caused by the bean seed fly. To do this, I have been:

1. Assessing cultural and interference strategies for preventing bean seed fly damage
2. Evaluating methods of monitoring the bean seed fly
3. Developing a forecast to predict the spring emergence of the bean seed fly

Preventing bean seed fly damage

The bean seed fly is attracted to lay eggs in areas of high organic matter such as compost and crop residues. When soil is cultivated, chemicals associated with the organic matter are released into the air. These chemicals can attract bean seed fly to lay their eggs. If bean seed fly are attracted to lay eggs in a crop, placing a fine mesh netting over the newly sown seeds may prevent bean seed fly from laying eggs in the surrounding soil. We designed a field trial to investigate the timing of cultivation and covering of the crop in relation to the sowing date.

In 2021 we conducted a field trial on vining peas to answer these questions. We had six cultivation and three crop covering treatments. Plots were cultivated on the day of sowing or from one to 21 days prior to sowing. For plots that were cultivated on the day of sowing, they were covered with fine mesh netting on the day of sowing, the day after sowing or not covered at all. Assessments included counting the number of plants which emerged, the seeds with larval tunnelling and the seeds containing larvae.

The field trial took place at Warwick Crop Centre, Wellesbourne and unfortunately, we had the lowest numbers of bean seed fly for over nine years! Whilst we had no statistically significant results, there were some

trends in the third replication of the trial.

With decreasing time between cultivation and sowing, we found a small downwards trend in the number of plants that emerged. We found that higher numbers of plants emerged in the plots that were covered than in the plots left uncovered. In the hope of having a larger bean seed fly infestation, we are repeating the trial this year.

Monitoring the bean seed fly

Regular monitoring of a pest species is encouraged as part of an integrated pest management strategy. Regular monitoring can indicate when intervention is required to prevent infestation or reduce pest numbers. The pattern of bean seed fly activity can be monitored using blue sticky traps. We wanted to know if lures can make blue sticky traps more effective at trapping bean seed fly.

I placed blue sticky traps in different locations at Warwick Crop Centre. Half of the traps had lures attached. I collected and replaced the traps once a week for four weeks. I found that blue sticky traps with a lure attached caught almost three times more bean seed fly than those without a lure.



The field trial

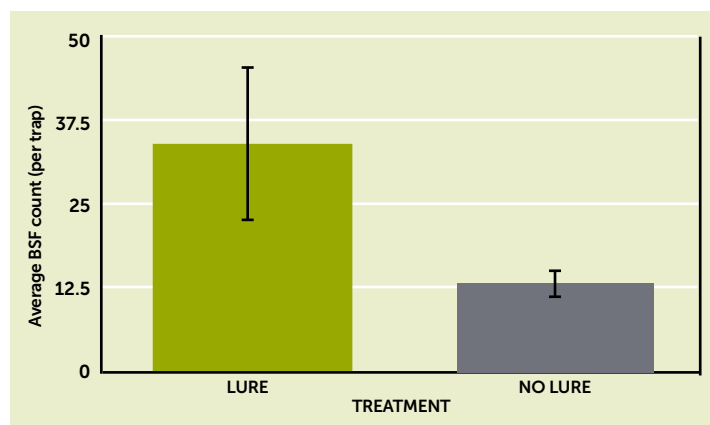


Figure 1. Mean number of bean seed flies caught on traps with or without a lure attached. Own data.

One problem with sticky traps is that they capture a variety of insect species, some of which look very similar to bean seed fly. Going forwards I am going to see whether the addition of a lure or placing the trap at a certain height or orientation makes it more selective for bean seed fly.

Predicting the spring emergence

The bean seed fly presents the most problems for growers when it emerges in large numbers in spring. Crop damage could be reduced or prevented by sowing at a time to avoid this peak in emergence.

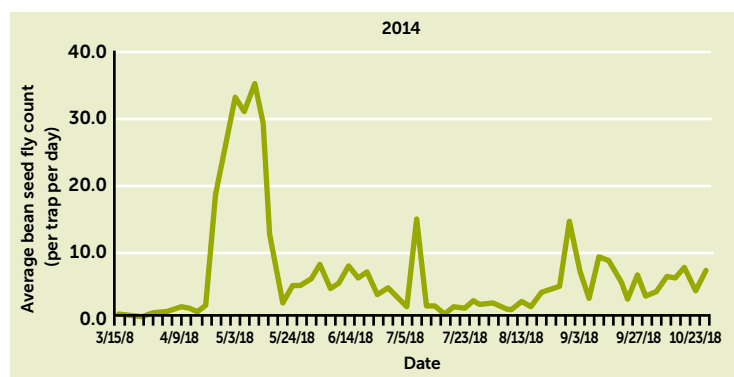


Figure 2. Mean number of bean seed flies captured by water traps at Warwick Crop Centre in 2014. Warwick Crop Centre data.

The development of the bean seed fly is influenced by the temperature of its surroundings. Using five years' worth of water trap data from Warwick Crop Centre, we have shown that we can predict the spring emergence of the bean seed fly using the accumulation of day degrees above a base temperature of 3.9°C (Broatch *et al.*, 2006). For example, the model predicts that 50% of the spring generation will have emerged once 313 day degrees have been accumulated from 1st January.

Proportion of Spring generation to emerge (%)	Accumulated day-degrees
10	178
25	241
50	313
75	384
90	442
100	523

Before starting the PhD, we did not know what the bean seed fly did over the winter. Similar species such as the cabbage root fly avoid cold temperatures by entering diapause, similar to hibernation, over the winter. To increase the accuracy of our predictions we need to know more about the bean seed flies overwintering strategy. I'm currently carrying out experiments to understand this better. This information will be used to increase the accuracy of the forecast.

An integrated pest management strategy

I have really enjoyed the past two and a half years of researching the bean seed fly. We have shown that there is potential for cultural strategies to reduce damage, that lures can attract more bean seed flies to a trap and that their spring emergence can be forecast. I am excited to learn more in the next year and a half!

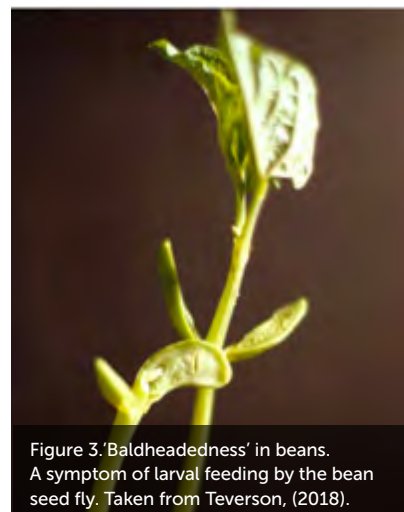


Figure 3: Baldheadedness' in beans. A symptom of larval feeding by the bean seed fly. Taken from Teverson, (2018).

Research

Broatch, J.S., Dosdall, L.M., Clayton, G.W., Harker, K.N., Yang, R.-C., 2006. Using Degree-Day and Logistic Models to Predict Emergence Patterns and Seasonal Flights of the Cabbage Maggot and Seed Corn Maggot (Diptera: Anthomyiidae) in Canola. *Environ. Entomol.* 35, 1166–1177. <https://doi.org/10.1093/ee/35.5.1166>

Teverson, D., 2018. Crop Walkers' Guide: Pea & Bean. AHDB, Kenilworth, Warwickshire, UK.

Winter beans back in favour after 30-year break

With sky-rocketing fertiliser prices, bumper oilseed rape values, and new environmental policies filtering down from Whitehall, arable farmers face a tough task deciding on their future rotations. For Roger Wilson of Lower Odd Farm, near Malmesbury, spreading risk is a priority. Last autumn he returned to growing winter beans for the first time in 30 years.

Roger farms in partnership with his brother Peter and is supported by his son William, who has recently graduated from Harper Adams University. Truly a family-run enterprise, Roger's late father started in 1953 a few miles from where the farm is now based while Roger took over operations in 1996.

Now a mixed arable and beef finishing unit across 250ha, the rotation incorporates 77ha of winter wheat, 35ha of winter barley, 27ha of spring oats, 25ha spring barley, 30ha spring beans and now, after a 30-year break, 16ha of winter beans. Roger and his team also do a small amount of contracting work and share farm arable land with a neighbour.

The pivotal decision to return to winter beans came after working with an agronomist who had shared positive results experienced by other growers.

"I think the real reason to go back to winter beans was because spring bean yields can fluctuate enormously," says Roger. "Last year, our best field was our latest sown one on quite good ground.

"So, from that point of view, people are often keen to plant things early, but from our experience that isn't necessarily the right thing to do. It's not the first time we've had our best yields from our later-sown fields. But also, on our lighter lands, spring beans will give up the ghost when it gets dry.

"When we've got our winter beans on quite dry land, we're hoping that they've put some pretty good roots down and that they might just stand up to a dry time better than spring beans."

Direct drilling

Following a successful direct drill demonstration, the farm purchased the Claydon machine in time to plant on 16 October.

"We aimed to plant at 25 plants/m² and they were up within three weeks. I'm not sure they've really stopped growing thanks to a mild winter and relatively dry conditions.

"The secret is just waiting until conditions are right. A lot of people around here couldn't get on with it because they were going on in the wrong conditions, the ground was still too wet. Timing is everything as they say."

The new drill has allowed the team to be able to plant at a greater depth in what are extremely variable soil types, ranging from Cotswolds brash to some very heavy clays.

Roger says: "We decided that when we did go down the route of direct drilling winter beans, we would do it with a Claydon, because most of our straw is baled, and there could also be a little bit of compaction. Due to our huge variation in soil types we needed something that would cope with everything.

"Our agronomist said for a long time that the best way to establish winter beans in particular is with a Claydon and some of his other clients have got one. So, he sees what they have been able to achieve."

Challenging conditions

Combined with increasingly heavy rainfall in recent years, conditions can be challenging in this region.



Roger Wilson and son William

"The weather fascinates me and it varies significantly. We recorded 8mm this morning yet my brother, who only lives two miles away, recorded 2mm. It just shows how localised the storms and showers are."

PGRO's Descriptive List helped Roger and William decide on the variety Vespa, as a result of its yield performance, while PGRO trials testing the performance of crop protection products have helped them find different products at a time when more and more fungicides are being withdrawn from the market.

Roger says: "We look at PGRO's trial results for fungicides as they were trialling these products long before we were obliged to use them. Hopefully, beans will be a low input crop.

"We envisage using two fungicides on winter beans but usually with spring beans, we try to go with just one if we can. But then if they look full of promise, I won't mind spraying a little bit more on them.

Changes to growing pulses

Roger recalls that the reason for moving on from winter beans 30 years ago was down to poor yields.

We ploughed them in, as you did back then, which meant a very rough surface which made any crop treatments difficult. They grew very tall but the yield was barely a tonne an acre, they were all stem and very few pods.

"We've also grown peas, but harvesting issues brought that to a head. Ironically, where we've got the winter beans this time

was where we had the last peas 15 years ago. They didn't yield very well – they all went flat and the field became full of blackgrass. It took a while to get rid of that. Now we're very much in control.

"At the time we had a contractor for harvesting and he was getting to a stage where he wouldn't chop the straw because of stones, so that came to a natural end. That's when we switched to beans which are later to harvest but are far more straightforward, especially since we now own our combine which Will drives."

"Perhaps we should be growing peas again," Roger jokes.

Pivotal in the rotation

Like many growers, Roger decided to stop growing oilseed rape two years ago due to the damage caused by cabbage stem flea beetle, and it prompted him to look for an alternative break crop – but in this case, beans weren't the first choice.

"We actually replaced rape with spring oats," he said. "This year, we've got over 40 hectares of beans of one sort or another so it's a very important break crop for us.

"We don't grow second wheats and we haven't done for a long time so a true break crop is pivotal to our rotation.

"We know where our beans will be next year but I think we will see how harvest goes and then decide where we are. We'll probably split it between winter and spring varieties again because next year, all the beans will be on lighter land. We won't risk it all on one or the other – we'd rather spread the potential risk."

Destined for animal feed

Roger hopes the winter beans will also be less prone to bruchid beetle which, since stopping spraying for the insect, has left him with a heap of beans many of which are full of holes that are inevitably destined for the animal feed market.

"Come harvest if they are a good-looking sample then we will keep them separate, but ultimately, the beans usually go to Avara Foods in Hereford for chicken feed.

"We have in the past sent them to Eastern Counties for pet food, but you need a bit of luck to get them right for human consumption. Timing is so difficult with bruchid beetle and we asked ourselves, do we really want to be spraying insecticides? We decided that no, we don't.

"For the second year we didn't spray for weevil either, however when you have a field full of notched beans you've just got to hold your nerve.

"If they're growing fast enough then they'll grow away from it, and I don't think it had any effect on the yield. If you knew that applying an insecticide would control them you wouldn't mind but when you're so uncertain, for us it's not worth the risk environmentally."

Straightforward to harvest

In Roger's experience, beans can also be more flexible in terms of the timing of harvesting when compared to peas.

"We've got around 150ha of winter wheat to harvest this year, including with our neighbour's, so hopefully we get that crop and the spring barley in the store before we do the winter beans.

"Last year, we harvested our neighbour's winter beans at almost the same time as the spring ones. Although they won't wait forever, they'll hang on which gives you a bit of flexibility for harvest as it doesn't actually matter if you don't cut them for a couple of days, unlike peas.

"When you've got the equipment to do something, you can do it at the right time rather than when the contractor is available."



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Nico Vela
PGRO Technical Officer



Phil Howell
Head of Breeding NIAB

Evaluating lentil suitability for UK production

PGRO and NIAB have recently conducted variety screening trials in lentils in order to determine varieties that may be suitable for the UK and to build knowledge and understanding of how lentils can be effectively grown here. The trials have identified key criteria in determining a variety's suitability, which includes crop competitiveness/ground cover, earliness and evenness of maturity in addition to yield potential.

What are the benefits of growing lentils?

- Excellent potential as a pulse crop in an organic arable system
- Potentially high returns in the food market
- Easier to establish and hardier than you may have been led to believe
- Relatively tolerant of drought
- Late drilling option
- Harvest date similar to spring beans

In our trials, lentils were straightforward to grow. Drilled into warming soil in April, they were quick to establish and would not be delayed by dry seed beds. Significantly hastened by warm weather, lentils began to flower in June with an abundance of small white and purple flowers. Pods were numerous and extremely well camouflaged against the backdrop of the plant itself. As September approached, pods were maturing, often well ahead of the plant itself and seldom at an even rate. Eventually it became apparent that the crop would have to be harvested whilst the majority of the plants were yet to mature. Although disconcerting to watch an unripened crop hurtle into the combine, few problems were encountered. The majority of pods threshed, leaving only a few to survive passage through the combine. These few, however, were quick to volunteer.

Trials in 2020 demonstrated that lentils could potentially yield over 4 t/ha and produce a good quality sample, but only in a low weed pressure situation, otherwise yields would range from 0.15-1 t/ha.

Sounds alright so far. So, what are the drawbacks? Weeds.

There are three currently approved herbicides for use on lentils in the UK. Glyphosate can be used pre-planting only. Laser (cycloxydim) has an EAMU for controlling grassweeds. Spotlight Plus (carfentrazone-ethyl) may be used to desiccate seed crops (EAMU). There are no chemical options for controlling broad-leaved weeds. Additionally, overseas research has demonstrated that lentils are highly sensitive to herbicides, often variety dependent, which somewhat dampens the prospect of their integration in the UK. This coupled with the fact that lentils are not

What disadvantages do lentils have?

- Lack of approved pesticides
- Uncompetitive against weeds
- Susceptible to root rot pathogens already well established in the UK
- Low to the ground at harvest

very competitive means that weed control is the greatest challenge when growing lentils in the UK.

Weed pressure may be contested by the use of primary IPM measures (i.e. preparation of stale seed beds, inversion strategies, dense planting, mechanical weeding etc). However, there is no research available to date that describes their effectiveness for lentils in the UK.

A trial conducted by PGRO in 2021 had a particularly severe weed burden. The trial area was hand weeded, weekly, over the course of eight weeks, achieving what would be described as "adequate" weed control. Without hand weeding, the crop would have certainly become overwhelmed and lost.

There are also very few other pesticides available to use on lentils which are predominantly biological products. PGRO has also confirmed that lentils are



susceptible to the well-established strains of root rot pathogens present in the UK, having identified infection by *Aphanomyces euteiches*

and *Fusarium culmorum*. Botrytis pod rot was also recorded but was of little concern in 2021.

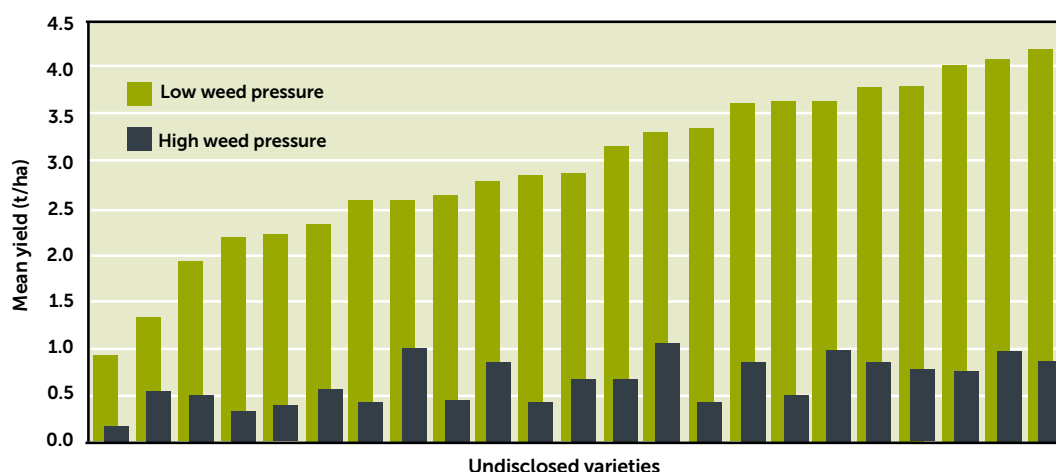
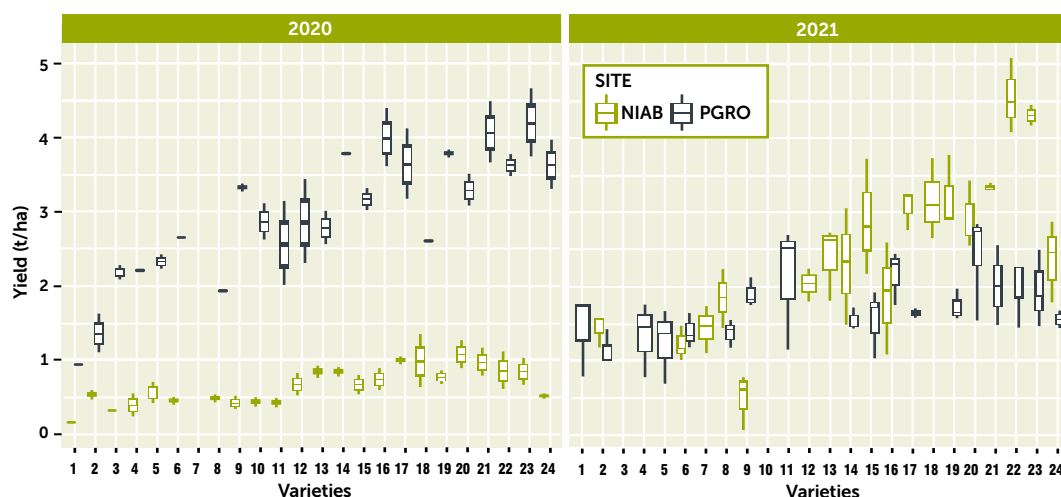


Figure 1: Average lentils yields from trials conducted in 2020 under low weed pressure (green) and high weed pressure (blue) situations.

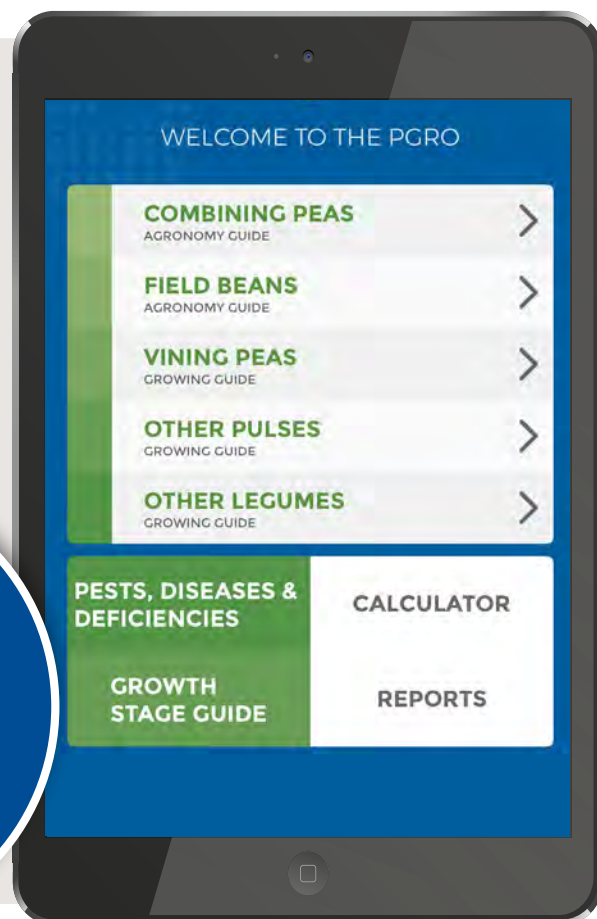


PGRO Agronomy App tool

The PGRO Pea & Bean App, an agronomy assistant in your pocket. Providing up to date technical backup as well as the DL variety guides and an interactive pest and disease reporting tool via your smartphone or tablet.



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Growers of peas and beans qualify for membership of PGRO by virtue of the small voluntary levy on produce sold through the merchant trade. Grower membership of PGRO means that advice from the PGRO team is only a phone call away. There are also these other benefits:

- Full access to the PGRO website (www.pgro.org) and to all the updates, technical information and associated services provided there. Telephone and farm visit support is also available.
- PGRO is accessible for two-way communication via social media on Twitter @pgroresearch.
- PGRO Crop Updates are emailed throughout the growing season to highlight topical issues.
- Pulse Market Updates are published and circulated on a monthly basis to registered members along with the Pulse Magazine in spring, summer and winter.



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