PCGIN Newsletter - November 2026

Welcome to the PCGIN Newsletter, bringing you news about research on pulse crops funded by Defra, including stakeholder activities and our annual network event.

In this edition, you can read about:

- Registration for the PCGIN Stakeholder Meeting, 4th February 2027
- Industry Stakeholder focus: Senova
- Two of our associated Researchers
- The latest research findings and publications

PCGIN Stakeholder Meeting 2027 - Registration Open

When: Thursday 4th February 2027 (Approximately 10:00-16:30)
Where: John Innes Centre, Norwich Research Park, Norwich, NR4 7UH

Register to attend here: https://jic.link/PCGIN2027_Registration

This ever popular annual event brings together researchers and industry stakeholders in a two-way transfer of knowledge and experience on pulse crops. A mix of seminars and networking opportunities will bring the latest on Defra-funded research, perspectives from industry (pulse breeding, processing, retailing) and invited speakers on current trends (breeding for yield & gene editing TBC).

We are also looking for 5-6 PhD Students or Early Career Researchers to give a short talk on their research. You can express your interest to give a talk during the registration process. The deadline for expressing your interest is 21st December 2026.

Programme updates will be posted on www.pcgin.org under News & Events - Stakeholder Meetings.



Industry spotlight: Senova

Senova is an independent seed marketing and crop development company, with a diverse portfolio backed up by an innovative approach to bringing new varieties to market.

Senova is represented on the PCGIN management team by Alison Barrow, Marketing Manager.

The company has an impressive track record in developing pulse varieties for the UK market, across both winter and spring pea and bean varieties, which are suitable for a range of markets.

In 2016 Senova set up a joint venture UK Pulses, on winter beans with Wherry & Sons. As such, it works closely with the University of Aberystwyth (IBERS), where much of the new breeding work is carried out. Getting optimum performance from field beans (faba beans) is prioritised.

The focus is on producing improved varieties with higher yields, stronger agronomic characteristics and better tolerance to pests and diseases, so that the crop becomes a key component of a sustainable and resilient food system.

This partnership approach with winter beans includes collaboration with BBSRC and engagement with Innovate UK funded initiatives, to drive genetic improvements in a much-needed break crop. Beyond that, there is continuing effort with spring beans, which has been rewarded by the launch of Senova's first new spring bean varieties for some time.

Both yellow and green pea varieties are also part of the company's offer to growers, as interest in protein crops continues to grow and alternatives to imported products are sought for both food and animal feed.

Being part of the PCGIN is essential for Senova, as it provides the pulse crop improvement link for the whole industry, from researchers to breeders to producers and end users. Of particular relevance this year is the climate resilience work being carried out, which aims to identify the genetics behind drought and heat tolerance.

Meet the PCGIN researchers…

Plant Pathologist: Dina Gomez at PGRO



Dina Gomez is a Pathologist at PGRO, working on disease diagnostics and trials in peas and beans since joining the organisation in 2021. Originally from Colombia, her career has spanned agronomy, plant pathology and diagnostic services across multiple crops and countries, including research in South Africa before moving to the UK. A passionate advocate for collaboration, Dina believes that sharing knowledge and learning from one another is key to tackling the increasingly complex disease challenges facing pulse growers.

What first drew you into plant pathology?

Coming from a farming family in Colombia sparked my interest in plant science. During my final university semester, I joined Cenicafé, Colombia's National Coffee Research Centre, where I worked with coffee trees before moving to the Forestry team to diagnose pests and diseases in native trees. I later received a scholarship for an M.Sc. at the University of Pretoria, where working in the lab and in forestry plantations strengthened my passion for plant pathology.



You've worked across different crops, countries and research settings. What has that taught you about solving plant health problems?

Working across different crops, countries and research settings has taught me to look beyond my own area of expertise. Research needs to broaden its perspective by considering field conditions, the environment, industry needs, regulations and consumer expectations. Getting our hands dirty helps us understand how these factors interact and influence pathogen behaviour. For me, research should go beyond publications and generate practical knowledge that can be applied, stand the test of time and help guide the future of the industry.

You've spoken about researchers sometimes working in silos. What could we do better as a community?

I really value seeing students take placements in industry and research organisations, as it opens their perspective to the challenges and needs beyond their own area of expertise. I think we can all benefit from this approach. Sometimes, our own egos and the pressure to publish and gain recognition get in the way of sharing knowledge and learning from others. Bringing researchers and industry closer together would help us build on each other's work, avoid duplication and ensure research has a real impact through practical, applicable outcomes.

What do you see as the biggest priorities for researchers over the next few years?

I think we need different areas of expertise working together, from addressing growers' immediate concerns to building a bigger picture of virus problems in peas. We already have aphid-monitoring tools and studies identifying viruses in pea crops, so the priority is to connect existing knowledge and make these tools work in unison. A focused working group bringing together plant pathologists, virologists, entomologists, agronomists and seed growers could combine field observations, molecular diagnostics and seed testing to better understand seasonal risks, identify knowledge gaps and provide practical advice on virus prevention and management.

What is the most rewarding part of your role at PGRO?

What I find most rewarding is how different each season can be; it keeps me on my toes. I enjoy studying pathogen behaviour in the field, lab and glasshouse, from variety pathogenicity tests that help breeders and farmers make informed variety choices to seeing how temperature, drought and other environmental conditions influence disease development. It makes integrated disease management tangible and every season a new opportunity to learn.

If you could bring together one new collaboration or working group across the pulse sector, what would it focus on?

I would like to see more collaboration across the pulse sector to address major plant health challenges, including pea bruchid, emerging virus problems and soil-borne pathogens. These challenges affect crop quality, market opportunities and production, so we need researchers, growers and industry working more closely together to connect existing knowledge, understand problems from different perspectives and focus research on what is really needed in the field. At PGRO, we have a good opportunity to help bridge research and practical needs in the pulse sector.

Postdoctoral Researcher: Rosanne Maguire at the John Innes Centre

Rosanne is a Postdoc in Janneke Balk's group. Her current research focuses on searching for resistance to pea enation mosaic virus (PEMV), combining plant

pathology, genetics and high-throughput screening approaches to identify sources of resistance for future breeding. Alongside her work in crop science, she has contributed to research exploring the environmental, agricultural and societal opportunities associated with increasing the production and consumption of UK-grown pulses.



Tell us a little about your current research and what makes this pathosystem particularly interesting.

PEMV is an important viral disease of pea. One thing that makes PEMV particularly interesting is that disease develops through the interaction of two different, interdependent viruses, making it more complex than many other plant viral diseases. We're using an Agrobacterium-based inoculation method to screen a large pea diversity panel for resistance.

The method bypasses the need for aphids to transmit the virus or using mechanical inoculation with large quantities of inoculum. This makes it easier to carry out larger, standardised screens across diverse germplasm. We're effectively delivering viruses directly into plants with bacteria carrying viral constructs and then monitoring disease development over several weeks, which can feel a little like science-fiction at times.



What impact could this work have for pea breeders and growers?

Viruses can have a major impact on pea production by reducing plant vigour and yield, and they can spread rapidly through crops via aphids. Our screening approach allows us to evaluate a large and diverse collection of pea germplasm efficiently, increasing the chances of discovering useful genetic variation. If robust resistance can be identified and validated, these traits could eventually be incorporated into new varieties, giving breeders additional options for improving crop resilience and providing growers with peas that are better able to cope with virus pressure for more reliable yields.

One of the strengths of PCGIN is access to diverse genetic resources. What has been the most interesting aspect of working with the pea diversity panel?
For me, screening over 200 accessions in the PCGIN panel has been one of the most exciting aspects of the project. It has really highlighted the value of diverse and wild genetic resources for uncovering novel traits that may no longer be present in modern breeding material. It has also been interesting to see how accessions vary not only in symptom development, but also in plant architecture, growth habit and overall appearance, demonstrating the remarkable diversity present within pea.



What are the next big questions you're hoping to answer?
We're now beginning to connect the disease screening results with genetic data to understand variation in susceptibility. The aim is to identify regions of the pea genome associated with resistance to PEMV, which could provide useful targets for future breeding efforts. I'm also excited to explore whether the Agro-inoculation method we've developed can be applied more broadly to other aphid-transmitted viruses. If so, it could provide a valuable tool for studying and screening resistance to multiple viral diseases in pulses.

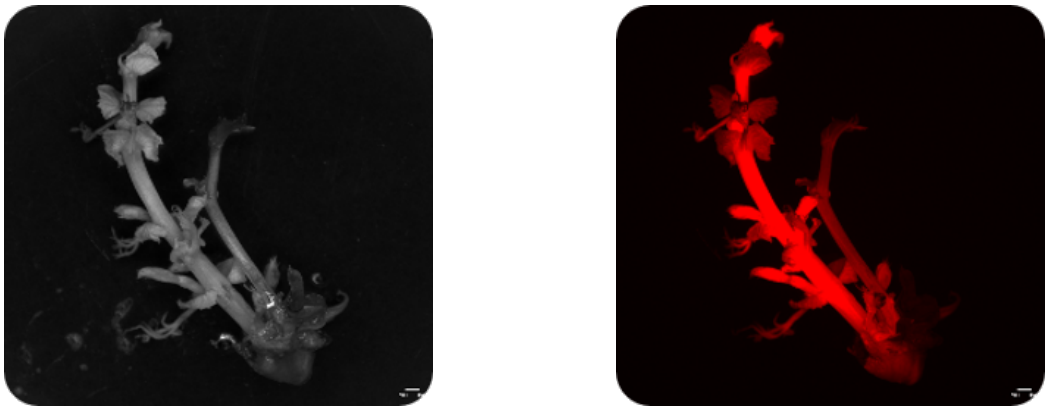
What are you most looking forward to working on in the future?
While I'm excited to continue developing the virus work, I'm also looking forward to exploring the recently curated PCGIN *Phaseolus* collection at JIC. I've had a long-standing interest in UK pulse crops and previously worked on research spanning bean breeding, as well as grower and consumer uptake of UK-grown *Phaseolus* beans. It's a crop I've always enjoyed working with, so having the opportunity to return to it from a new angle is something I'm really looking forward to.

Research Updates

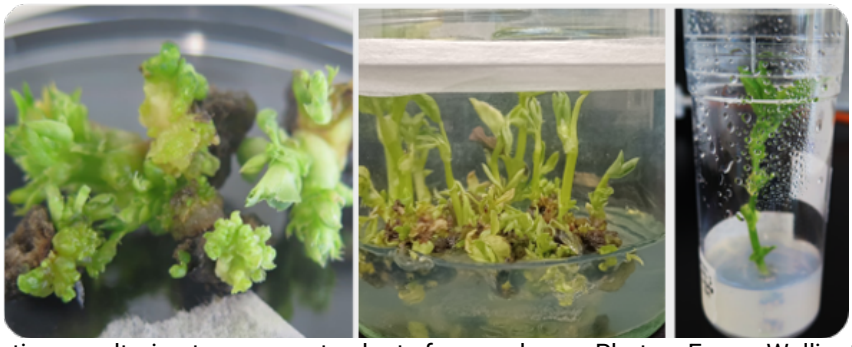
Pea and faba bean transformation methods (Milestone 27)

Gene editing will be an important breeding tool of the future, with both England and the EU having approved slightly different, but mostly overlapping, versions of the legal framework for using this technique. To make a small specific change in a plant's DNA, first the instruments for doing so need to be introduced in a seed embryo. A pair of molecular scissors and short guides to help find the specific DNA sequence are introduced by a process called "transformation". This is easier in some plant species than in others for reasons that are not understood. Legumes are, unfortunately, particularly recalcitrant to transformation. However, progress has been made. For pea, reports of

successful transformation go back to 1997 but it is time-consuming and one needs plenty of luck. Recently, standardisation and optimisation of protocols of transformation has been achieved by different laboratories, e.g. Alex Germain in France, Lars Ostergaard's group in Oxford and by the JIC transformation platform, all working together to improve the efficiency. For faba bean, there are thus far no reproducible reports of transformation, but tissue culturing of embryos to regenerate plants has been streamlined by Emma Wallington's team at NIAB, Cambridge.



Pea: red fluorescence indicates successful transformation. Gene editing was also shown by sequence analysis. Photos: Neil McKenzie (JIC).



Faba bean: tissue culturing to regenerate plants from embryos. Photos: Emma Wallington (Niab).

Heat and drought tolerance in faba bean (Milestone 28)

Climate projections generated by the Met Office (Milestones 7 and 63) suggest that the current main UK growing area of faba bean will suffer a higher frequency of dry and hot conditions in spring and summer. The temperature thresholds are known to be detrimental to seed set and thus yield. In addition to moving faba bean cultivation North wards, PCGIN research is also screening for variation in drought and heat tolerance in a genetically diverse population of faba bean. This summer, data on foliage coverage, leaf surface temperature, plant height (nodes), stem width, root depth and adventitious epicotyl roots has been collected for 6-7 week-old seedlings under normal (well-watered) and drought conditions (20% soil moisture). In addition, flower development and fertility has been studied in mature plants. The data are currently being analysed but genetic variation in the measured traits is already evident, including plasticity of roots to grow deeper under drought conditions.

Variation in root architecture in pea (Milestone 34)

The root architecture of plants influences the uptake of water and nutrients and also helps anchor the root and support 'standability' of the shoot. Variation in root architecture is thought to be correlated with tolerance to drought or lodging. Researchers at JIC with the help of IBERS in Aberystwyth have carried out a screen to map diversity in root architecture in more than 200 pea varieties. This was done under controlled (indoor) conditions at 28 days. By this stage, root network depth varied from 40 to 100 cm depth and the roots were widely branched. The imaging of the roots has been completed, as well as dry mass measurements. Analysis is ongoing, including comparison with the drought experimental data from IBERS (Milestone 20, May Newsletter). However, an interesting finding can already be shared, namely that the shoot-root dry mass ratio has decreased as peas were domesticated. Cultivars (and landraces) have relatively more root mass than shoot mass, and may have been selected for better anchoring and/or standability.

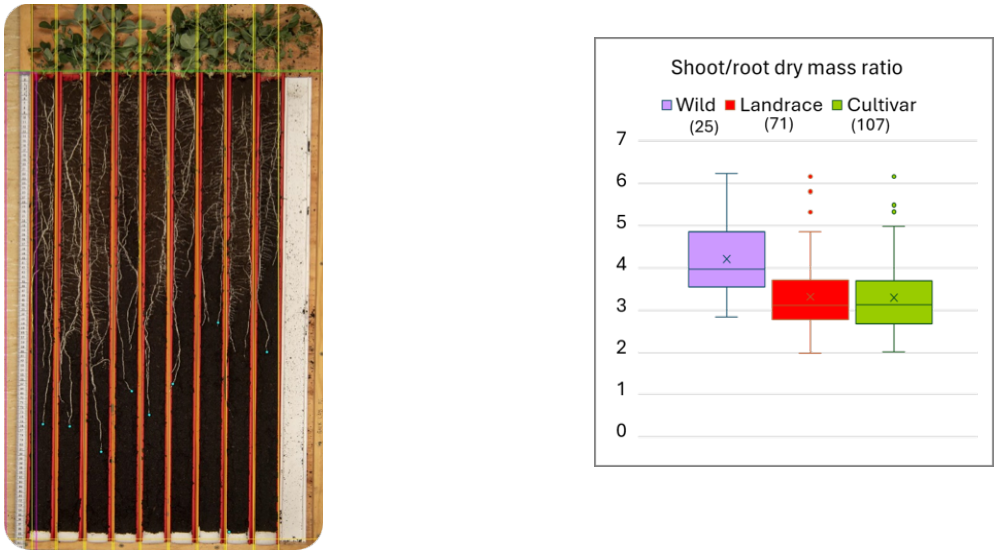


Figure: image analysis of the root architecture of pea seedlings. Photo: Elaine Farrow (JIC).

New Publications



Ellis N, Hofer J, Ambrose M, Kite G, Steuernagel B, Paajanen P, Rayner T, Deng S, Wouters RHM, Vikeli E, Horler RSP, Jiang M, Feng C, Cheng S, Domoney C, Chayut N. (2026) Mapped deletions in a publicly available Fast Neutron mutant collection for gene identification in pea. *BMC Plant Biology*,**26**:763.
DOI: 10.1186/s12870-026-08508-8

Warsame AO, & Balk J. (2026) Nutritional quality traits in pea seed: Current knowledge and opportunities for genetic improvement. *Annals of Applied Biology*, **189**(2), e70145.
DOI: 10.1111/aab.70145

Further Reading

Bornhofen, E., Mouritzen, T.W., Alves, S. *et al.* (2026) Dissecting the genetic basis of yield stability in faba bean by multi-environment analysis. *Genome Biology,* **27:**231.
DOI: 10.1186/s13059-026-04181-0

All publications on PCGIN research can be found on our website.

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