HOUSE OF COMMONS

Science, Innovation and Technology Committee

Oral evidence: Innovation and global food security, HC 1245

Tuesday 19 May 2026

Ordered by the House of Commons to be published on 19 May 2026.

Watch the meeting

Members present: Dame Chi Onwurah (Chair); George Freeman; Dr Allison Gardner; Kit Malthouse; Dr Lauren Sullivan; Freddie van Mierlo; Daniel Zeichner.

Questions 141 - 251

Witnesses

I: Ben Crowther, Chief Technical Officer and Co-Founder, LettUs Grow; Dr Cara Griffiths, Co-Founder and Chief Scientific Officer, SugaROx; Charles Veys, CEO & Founder, Fotenix; and Ross Haffenden, Chief Commercial Officer, OptiGene.

II: Rory Hornby, Chief Operating Officer and Co-Founder, ALORA; Duncan Ribbons, Chief Legal Officer, Tropic; and Dr Rhian Hayward MBE, Chief Executive Officer, AberInnovation.

Examination of witnesses

Witnesses: Ben Crowther, Dr Cara Griffiths, Charles Veys and Ross Haffenden.

Q141 **Chair:** Good morning, and welcome to today's meeting of the Science, Innovation and Technology Committee. This is the third session of our inquiry into innovation and global food security, and what contribution can British science make to food security here and globally.

Today we hear directly from UK-based agri-tech SMEs. We will explore the innovations that they are developing to support global food security, their experience in scaling, accessing investment and navigating the UK start-up and regulatory landscape, and how the UK ranks globally as a place to innovate in agri-tech.

We are very fortunate to have been joined, for our first panel, by excellent examples of UK innovation and start-up, so I will kick off the proceedings by asking each of you, starting with Charles Veys, to explain briefly what your company does, the problem it is trying to solve, and how this will help to address global food security.

Charles Veys: I am here representing Fotenix. We spun out of the University of Manchester in 2018, and we focus on embedding scouting intelligence within greenhouses. We build machines that run up and down greenhouses across the UK, California, parts of Europe, and even Brazil, recently. We focus on detecting problems in crops before they are visible, significantly reducing the time to detect a problem, and allowing growers to act with targeted resource, with dwindling labour and input budget and costs. The big focus for us is to be able to embed this capability with growers, to enable trust in AI and technology. That is something that has to be earned over time, and it is quite technically difficult in an area with a shortage of capital expenditure and increasing energy prices, where the budgets for adopting such a technology may currently be allocated to ensuring that they cover the unexpected costs we have seen over the last year.

Ben Crowther: I am here representing LettUs Grow. We are an aeroponic irrigation provider for the large industrial greenhouse industry globally. Effectively, we are really good at watering plants. That is the simple, succinct version. We irrigate plant roots with a mist, which improves root zone oxygenation and root health, and therefore reduces susceptibility to disease and increases growth rates and annual yields. It makes farmers more profitable and resilient, and enables more food to be grown in indoor settings and industrial greenhouses, which allows you to grow crops in places where you might not otherwise, because it is not profitable, or because of climatic conditions. There is a huge growth in greenhouse growing because of our change in climate.

We have installations as far away as Canada and India, where growers are trying to solve one problem or another to enable them to grow food

for their local market, rather than to export it a long distance like 70% of our fresh produce.

Q142 **Chair:** Thank you very much. That is fascinating.

Dr Griffiths: Hello, I am Cara. I am here representing SugaROx, which is a joint venture spin-out company between Rothamsted Research and the University of Oxford; we spun out in 2021. We create next-generation agricultural biostimulants. We harness what the plant already knows—its own metabolism. We look at key metabolic regulators and design agrichemical products around the uplift of these particular metabolic processes.

Our technology is novel because it is a natural compound for which we just provide a carrier, allowing the sort of plant leaf penetration that you would not get ordinarily. Our technology fits in with existing agricultural programmes, so we are not asking farmers to do anything new—just to supercharge their existing crop inputs by the addition of these metabolic regulators. Through our technology, we can reduce the amount of nitrogen used on farms, and increase yield as well as yield quality. We have field trials in the UK, the European Union, Brazil, the US and India.

Ross Haffenden: I am representing OptiGene. We are a 30-year-old molecular diagnostic company, working across multiple sectors, all in the "One Health" policy, from animal through to ag—plant health and crop health, etc. On the technology we use and the problems that we solve, we are a molecular diagnostic company, detecting DNA and RNA of pathogens directly in the crop or plant. We aim to give farmers the tool directly, on site, to detect pathogens—diseases—in real time, presymptomatically, so that they can take the earliest of decisions. This is not an estimate; it is looking at the DNA of the pathogen within the crop—wheat, for example. Then they can determine what input or protection product they need to use.

Q143 **Chair:** Thank you very much. That is a fantastic range of different innovations and technologies. I am very impressed that you are joining us this morning. We will examine some of the detail of the challenges and opportunities you face, but, in a couple of words, what are the key strengths or challenges in the wider agri-tech ecosystem for small and medium-sized enterprises in the UK? If you can do that in one sentence, we will go into more detail later.

Charles Veys: In one sentence, the strength and challenge is probably to do with the difference where we have world-leading research organisations but are yet to have world-leading start-up organisations. Fixing that gap will be pretty crucial to enabling us to be a global player on the ag-tech stage.

Q144 **Chair:** Thank you very much. Excellent—very concise.

Ben Crowther: I agree with Charles about the UK being a great ecosystem for starting a business. I think the greatest challenge we see

within ag-tech is, as the phrase is, crossing the chasm—going from even large-scale R&D to first commercial adoption, especially in ag-tech where there are low margins and the appetite for risk is inherently very low. I believe that greater support in that area would help UK ag-tech businesses to succeed.

Dr Griffiths: I echo my fellow panel members on strengths and weaknesses. I highlight the strength of fundamental science in the UK. We are world leading in that regard. Scaling up is a really big challenge, but the biggest challenge for me outside scaling is the regulatory framework.

Ross Haffenden: A strength for us is that we have quite a lot of legacy technology that can be useful for ag-tech. It is not just start-ups that we need to rely on; it is also legacy companies like OptiGene, for instance. The biggest challenge for us is route to market—the commercial models that enable farmers and growers to adopt this technology.

Q145 **Chair:** Can you say a bit more about what you mean by legacy systems? Is that a challenge or an opportunity?

Ross Haffenden: It is an opportunity. We may be fixated on start-ups and new technology but there is a lot of existing technology in other sectors that can be utilised faster in this sector.

Chair: Okay. We look forward to hearing a little more about that.

Q146 **George Freeman:** Good morning all. It is great to have four such brilliant companies. The world needs you. We have to double global food production in 30 years if we want to avoid mass famines.

We are an incredible R&D powerhouse. My question is about the funding ecosystem, public and private. How would each of you describe, at an international conference, the UK's funding landscape? On the public side, do you know how much the Government invests every year in agri R&D? When I launched the strategy, I found out. It was about half a billion pounds a year in 32 different pots that no one really knew about. So how would you describe the public funding, and, as you go upstream, how would you describe Innovate UK? I worry that it operates under a mandate of, "We only invest where there is market failure," which means you have to prove market failure and we go through endless paperwork.

Then there is pull. How strongly is the agricultural sector in this country investing in productivity, and in the very things you need? I am keen to give you a chance to say, in short, pithy answers, as if you were at a global conference and in the pub afterwards, how you would honestly describe the UK landscape—public through to private.

Charles Veys: On the public funding stage I think we are often in awe of our international collaborators. That is a nice position to be in. On the private funding it is the opposite way round. There is a real shortage of private funding and ag-specific investors that know it. We have really

good things from the British Business Bank, like EIS funding, but that often operates under VC funds with different timelines and expectations.

Q147 **Chair:** EIS—for those who may not know all the acronyms.

Charles Veys: EIS and SEIS funds.

George Freeman: Enterprise investment scheme.

Chair: Some people may not know all the acronyms.

Charles Veys: Yes, in terms of tax incentive. The early stage is great but the chasm is quite high for scaling up. We have a great environment and, with the way we are built, we are quite good at feeding other companies, particularly the Bay Area, with really good start-ups that have been well funded under Innovate UK and then go and sell to a company over there. It is something that we need to keep an eye on if we want to scale up.

Q148 **George Freeman:** It sounds familiar.

Ben Crowther: I echo what Charles said. To keep it really short, private funding is extremely conservative. If you went to the States, you would generally add a zero to a company valuation and things would move five times faster, and you would get a funding round done much more quickly, whereas UK private investors are quite conservative. That is what you see when you look at the larger funding rounds, although some of that is changing in AI, at the moment, which is good. There is that big gap, and that is where you end up either raising money from the US, after all the great tax incentives around SEIS, etc, or being acquired by US companies. Then you get that IP drain and the tax incentives are lost, and other people take advantage of it.

On public funding, I think Innovate UK does a very good job. It is somewhat opaque and it is hard to know what funding streams are coming online when. The application process for a smaller, nimble business, and a start-up, can be quite slow. On the whole I think it is pretty good, and it is there and available, which is needed and appreciated.

Dr Griffiths: Starting with public funding, I think we are quite good with it—especially the farming innovation programme. My company has been quite successful in getting several grants from the farming innovation programme. It has led us to meet other businesses, monitoring officers and people at Innovate UK, who help us and tell us what new funding streams are going to come through. I find the farming innovation programme in particular extremely good.

The combined investor partnerships that are offered are also extremely useful, although it would be nice if they were a little larger in their investment, when you are looking at backing up private capital. The biggest issue with private capital in the UK is that it is not patient. We need patient investment for agri-tech. We have very long cycles. Typical

VC funding cycles will be 10 years; they want to see an exit in 10 years. In agri-tech it is very hard to get an exit in 10 years, because we are battling the environment. The lack of patient capital in the UK is probably the biggest bottleneck. For instance, I get my patient capital from outside the country. I do not want to have to do that.

Q149 **George Freeman:** Quite a lot of agri-tech delivers savings for farmers quickly. It delivers benefits and generates revenues quickly. That is not long-term bioscience, so presumably there are some companies where patient capital is key and others where that is not the issue; it is pulled through by industry.

Dr Griffiths: Sure, that could be the issue. For my company in particular, because we look at novel crop inputs, we are battling regulations as well as the weather. Most of the time, if a farmer is going to adopt a new technology, especially with agrichemicals, they will want to see a data package of five to six years of field trial programmes. They will want to see how it works on their farm, in their environment, on their soil. It takes a long time for us to generate that kind of dataset.

Ross Haffenden: With regard to public funding, in agri-tech and technology it has to be very specific to the use case that you are trying to address. One area we focus on is the route-to-market question. We have the farming equipment and technology fund, as you know. When we review that, it is not understood how, as a manufacturer, to get into that fund. It seems to us that it is a bit of who you know, and finger in the air, with regard to specifications and so on. It would be nice to have a better playbook about how you can get equipment into those types of funds, and how the farmers can access the grants.

On the private sector, I have a slightly different take, as ours is obviously an established company. A lot of the start-ups that we talk to, which obviously approach OptiGene for funding, as well, cast their net too wide with regard to what they focus on within the industry. That brings in risk for investors. If they can focus the lens a bit more on achieving one benefit for a farmer, the risk is lowered and they can come to market quicker. The narrative around the storytelling of investment is very important within the agri-tech sector. SMEs could do with help with that.

Q150 **George Freeman:** Thank you. My last question for each of you is to do with who the big players are in this sector. I should declare an interest. I used to be a director of Elsoms Seeds, launched the agri-tech strategy, and was a director of Norwich Research Park, so I know this, but I am keen that you have a chance to tell us today. In life sciences we are lucky to have AstraZeneca and GSK here. In plant science we have Syngenta here—a massive global No. 1. For each of you, from your different sectors, who are the big investors who either should be here but are not, or are here but do not invest enough? What are the big companies that we should be thinking about at the top of the supply chain, to pull your innovations through? Is it Unilever or Danone?

Ross Haffenden: Absolutely, the Syngentas, the Bayers and the BASFs of this world—the seed breeders—would obviously be the big investment. I would also say now we need more of the higher-end supply chains—the food producers and manipulators. The Kraft Foods, Nestlé and Mars of this world need to invest. They are investing in technology to help farming and the supply chain.

George Freeman: Great.

Dr Griffiths: Yes, that is a brilliant answer. I do not have that much more to add. I think it is the major corporates that will help you do your open innovation pathways and investment. It would be great to see some of those players at the table.

Q151 **George Freeman:** Like?

Dr Griffiths: BASF, Bayer, Syngenta, UPL.

Q152 **George Freeman:** The old agrichem companies that are now trying to switch away from chemical reliance for protection to biological and other systems.

Dr Griffiths: Yes, the biggest thing that I have found when I have worked with these companies is that they do not mind new chemical inputs. I create new chemical inputs, but I base it on plant metabolism. Everything is completely biodegradable. They are looking to alter their offering of product.

Ben Crowther: I think both Cara and Ross answered that pretty well, but, specifically within greenhouse horticulture, there is very little presence in the UK. You have a couple of big names such as CambridgeHOK and—

Q153 **George Freeman:** G's?

Ben Crowther: G's Fresh in terms of the growers. I am talking more on the constructor side that we would build alongside. Yes, you have G's Fresh and various people across the Vale of Evesham, etc, but on the greenhouse construction side, which is our kind of route to market, you have CambridgeHOK and probably CMW Horticulture, both of whom are part of now Dutch-owned private equity roll-up groups, which is the general trend for the industry. For greenhouse construction and greenhouse hardware, it is pretty much all centred in Holland and then exported globally. There are not really any big fully British-owned names any more in our space.

Charles Veys: Yes, I agree with the panel. One thing, from what we have seen on investment, is that it comes from some of the bigger growers. There has obviously been consolidation of growers, with fewer smaller ones, and some bigger ones and names like Thanet Earth and APS. You mentioned G's already, buying out Tozer. I think there are a few there that are really going above and beyond, and they are an exit

strategy for a lot more companies, which was not so when we started 10 years ago. Going directly to a grower would not have been considered like that, but the UK has to decide if we want fewer much larger multinationals doing that. That is a decision of the past.

George Freeman: Thank you. I think, Chair, we are hearing very strong early-stage funding support from Government and Innovate UK, a real problem with pull-through into industry and scale-up, and domination by other economies. I am interested that in your summaries none of you was able to say what the UK is really investing every year in agri-tech. That is a criticism not of you but, I think, of us. As a trade envoy I think we need to tell the world. That was very helpful. Thank you.

Q154 **Chair:** Thank you very much, George. I would like to understand whether the public funding that you have received was focused on, or directed to, UK food security and UK agriculture or the global food security outlook, or, in your experience, did it not make any difference whether it was for a UK or global market? Could you answer that quickly?

Charles Veys: I think most of the funding that we have from farming innovation pathways has to be on an English site, never mind the UK; and I think most of the focus is for global expansion but UK demonstration. That is normally within the funding terms. I am not sure that I agree with that, but those are the terms that we develop under.

Q155 **Chair:** Has anyone got anything to add to that?

Ross Haffenden: In the application for some of our funding, the commercial angle has to have global reach for a lot of the answers. It is a specific question.

Chair: Okay, great. Thank you. That is very helpful.

Q156 **Kit Malthouse:** My broad questions, to be honest with you, have been answered with George's, but I want to explore the funding position a little more. Before I do that, just so I am clear, Charles, is your product robotic? It scans a row of tomato plants, detects microscopic beginnings of blight and allows much earlier intervention before it spreads through the crop.

Charles Veys: Yes.

Q157 **Kit Malthouse:** Okay, and it is doing this 24/7 up and down the row.

Charles Veys: Yes. It runs imaging at night and temp and humidity in the day.

Q158 **Kit Malthouse:** How early is the detection of disease?

Charles Veys: The sweet spot for making it cost-effective is normally around 1 mm per pixel. If you go any smaller than that it becomes a tool for Bayer, not for growers, because the data is too big.

Q159 **Kit Malthouse:** Right. Just take us through your funding journey. You

are spinning out of Manchester, and the initial development is funded within Manchester. What then happens?

Charles Veys: I kind of followed the research to commercialisation path. I took part in the ICURe programme as it was at the time. We then raised funding from Innovate UK—small proof of principle.

Q160 **Kit Malthouse:** How much funding from Innovate UK?

Charles Veys: It was about £100 k to start off with, and we raised £20 k from some investors.

Chair: It is really good to know how much money we are talking about, here.

Q161 **Kit Malthouse:** Yes, for a sense of scale. So £100 k from Innovate UK and £20 k from the three Fs.

Charles Veys: Yes.

Q162 **Kit Malthouse:** And then what happens?

Charles Veys: Then we showcased that. We were part of the birth of the UK agri-tech centres, in CHAP then, and we were able to get some customers who were revenue-generating for quite a long time.

Q163 **Kit Malthouse:** Right, okay, and then more capital starts to flow.

Charles Veys: Yes, so we raised about 2.5 in VC investment and 7.5 in grant investment over eight years.

Q164 **Kit Malthouse:** So that is £2.5 million VC and £7.5 million grant investment.

Charles Veys: That includes series 8 co-investment fund from Innovate UK.

Q165 **Kit Malthouse:** All right. So you have actually raised 10 million quid for the project overall in the space of how long?

Charles Veys: We started in 2018, so about eight years.

Q166 **Kit Malthouse:** Are you likely to want to raise more money in the future?

Charles Veys: Yes, for scale expansion outside the UK; correct.

Q167 **Kit Malthouse:** On a scale of one to 10, if 10 is incredibly difficult and one is it just dropped off the back of a lorry, how hard was funding to obtain?

Charles Veys: At the early stage, funding was very difficult to obtain.

Q168 **Kit Malthouse:** The 20 grand or the grant?

Charles Veys: Both. I think with the £2 million, the challenge was that to attract the VC investment we needed to go beyond ag investors, and

then you have to have revenue generation and an actual operational model to get people to invest.

Q169 **Kit Malthouse:** You talked a little bit about EIS and SEIS that you possibly used. My perception is that those routes are in fact incredibly bureaucratic and restrictive, and there are all sorts of crazy rules, like you cannot have a joint venture; you have to own more than 90% of a subsidiary. Have you found EIS to be a constraint?

Charles Veys: No, honestly, I haven't. I dealt with a VC fund that operates the item, but we have not had any issues. We are not a subsidiary, but we are a university spin-out so we have a cap table that is probably messier than it needed to be.

Q170 **Kit Malthouse:** Okay, but the VC people on the EIS side dealt with the compliance.

Charles Veys: Correct.

Q171 **Kit Malthouse:** Okay, Ben, similar questions to you, I guess, but just so I am clear: with the plants you are irrigating, there is no growing medium.

Ben Crowther: Yes, next to none. You need a little bit.

Q172 **Kit Malthouse:** So you are just spraying—basically misting it.

Ben Crowther: Straight on to the roots, pretty much, yes.

Q173 **Kit Malthouse:** Which must be a huge saving in terms of water and space.

Ben Crowther: Yes. We use about a quarter of the water that you would use—it depends on how you design it—in a big industrial hydroponic greenhouse, which is how the vast majority of our leafy greens and herbs and so on are grown already.

Q174 **Kit Malthouse:** Amazing. It sounds like you two should be in a joint venture.

Ben Crowther: We do know each other quite well actually. I didn't know we would both be here today, but we have collaborated quite a lot, including through the farming innovation part.

Q175 **Kit Malthouse:** Ben, tell us your funding journey, then.

Ben Crowther: It is extremely similar to Charles, to be honest. We were not a university spin-out, so it was the three of us as founders that started it, but, again, £20 k accelerator funding from Bethnal Green Ventures in London, alongside an £80,000 Innovate UK grant—so extremely similar. That allowed us to go full time and quit our jobs to do it. Then there were multiple £2 million to £3 million investment rounds from VC, predominantly, alongside a number of grants. I think our split is probably more that we would have raised around the £10 million mark in private funding and £3 million to £4 million in total of public money

through Innovate UK, in investor partnerships, grant projects and more recently an Innovate UK loan.

Q176 **Kit Malthouse:** How much of your time would you say has been spent on fundraising versus actually building the business?

Ben Crowther: Charlie, our CEO, is pretty much full time the whole time, alongside a lot of added input from Jack, our other co-founder, and me. You are probably looking at a good one and a half FTE consistently running fundraising and managing operations.

Q177 **Kit Malthouse:** I think this is also the challenge, beyond the regulatory side. People underestimate how much management capacity is taken up in just fundraising. Cara, was it a similar story for you?

Dr Griffiths: Yes, a similar story for us. We started off in a Shake Climate Change accelerator programme backed by Société Générale. That gave us our first £140,000. We then started going to a full Innovate UK grant when the feasibility studies were first released. Since then, we have raised £3 million in grants—non-dilutive investments—and £7.3 million in venture capital. That is a combination of angel investors taking advantage of those EIS schemes, as well as major VC funds.

Q178 **Kit Malthouse:** Have you found that the more there are, the more there are, if you see what I mean—that as soon as somebody is willing to put serious money in, suddenly confidence becomes compounding?

Dr Griffiths: Yes, this is something we almost had to rely on. We recently closed an investment from Mosaic Biosciences in the US. It is the biggest single chunk of investment we have had into our company to date. Because they are strategic and offer us a route to market for major arable cropping sectors—we are talking maize and soyabeans; massive markets throughout the world—now venture capitals have seen this. They have seen the press release and are back knocking on our door. Even people who said no to us before are coming back. So having a big, strategic investor, from a major corporate—it would be great if it was a UK corporate—does attract, because it reduces the risk that the venture capital funds are worried about.

Q179 **Kit Malthouse:** Very good. Just so I am clear—I am not being flippant—your product is a sort of scientific ginseng for plants. It is a sort of stimulant.

Dr Griffiths: Yes, it supercharges processes that already exist. Usually there are a lot of metabolic bottlenecks in plants. The main one, which our first product is based on, is trehalose 6-phosphate, which is essentially like blood sugar regulation in plants. It is like the insulin of the plant. We supercharge that and then we can direct metabolism into yield improvements. In the field, in arable cropping systems, we are getting about a 10% yield improvement just by using our product.

Q180 **Kit Malthouse:** Very good. Ross, you have been going a lot longer, so

presumably you are making money.

Ross Haffenden: Yes, we are privately funded just like a traditional company. Any development that we do is obviously funded through revenue as a normal business would do. My take on this is that we are in a position where we fund a lot of trials to speed things up. Rather than going through the process of having CEOs and CTOs take time out of their days to apply for various bits of funding for trials, we support them, because it is of benefit commercially. This is biostimulants and biofungicides. We detect colonisation from that so it is within our procedures to support those sorts of companies, because our success is determined by their success as well.

Q181 **Kit Malthouse:** Just so I am clear, as well, on your product—forgive me if this is wrong—you are a kind of Oxford Nanopore looking at plants.

Ross Haffenden: Yes. We are not sequencing like Oxford, but, yes, we are detecting the specific region of a genome for a pathogen or disease at molecular level.

Q182 **Kit Malthouse:** Very interesting. My final question for you all, really: my guess is that you all spend a fair amount of time at conferences, conventions and all the rest of it. You are all here because you have been successful. When you are at those events, do you come across sad groups of people with fantastic products who cannot find the 20 grand? I used to go to quite a lot of life sciences conferences and would meet people with an amazing molecule who just could not find any funding to take it into trial. We are seeing the success here, on the panel—albeit hard fought and won. Is there a sort of pyramid of innovation out there that is just dying because it cannot find the 20 grand it needs?

Ross Haffenden: Yes.

Charles Veys: I think it is slightly higher up than that, but there is a graveyard of some great ag-tech companies from the last four or five years that are no longer with us. There was a group of us, with Charlie, pitching for that initial money at the same time, and there is now probably two of us out of the 10 who were standing in the room at the time. Others have gone elsewhere or outside the UK since forming, or folding.

Q183 **Kit Malthouse:** Would it be possible afterwards for you to give us examples of noble failures where you thought, "God, this is a great product," and yet it is not getting anything? We always talk to people who have made their way through, but it is the people who are now driving a train for Great Western, because their fantastic thing never actually got there.

Charles Veys: I am more than happy to do that.

Kit Malthouse: That would be great. Thanks very much.

Q184 **Dr Gardner:** A short question from me. We often bewail the dominance

of the golden triangle in terms of agri-tech SMEs. Charles and Ben, does operating outside London and the south-east create additional challenges for agri-tech SMEs when it comes to scaling and securing investment?

Charles Veys: I am in Manchester. For me, the initial investment was a bitter time, but afterwards I really cannot complain. I have some of the best connections to talent and the biggest companies. We have Arm on the doorstep. Obviously, it has a Cambridge arm as well. I feel a bit of a fraud to complain about the golden triangle being in Manchester as we have quite a good network there. It has been increasing over the past five to 10 years, which I am sure everyone has heard about recently.

Q185 **Dr Gardner:** Again, you are settled in a big metropolitan city, are you not? There is an advantage to that. Companies outside big metropolitan cities might have a challenge.

Ben Crowther: We are based in central Bristol. It is not quite Manchester in scale, but still very much metropolitan. I think the majority of investors in that area sometimes refer to it as the Silicon Gorge in terms of chip development, AI, etc. There is not too much in terms of ag-specific in Bristol and, therefore, it is quite a lot of early-morning trains into London, often at quite an expense for a day trip, to make meetings, as we did a couple of weeks ago to meet with an investor. There is definitely still a strong cluster in London and they will not always come to anywhere as far away as Bristol. It is not too far, but it is out of their way to come and visit us as readily as if we were on the doorstep. The flip side is that we need a large warehouse to build, process and test everything. That would be completely unviable anywhere near London because of the cost of rent, etc. There is a trade-off there. It is not a massive hindrance because, as was mentioned earlier, you are going to trade shows, conferences and investor events anyway. You would be travelling halfway across London to go to those, versus travelling from Bristol. It could always be better, but it is not too bad at all.

Q186 **Dr Gardner:** I am definitely being naive, but it still surprises me that a sector focused on agricultural solutions is still very much based in cities. We mentioned Manchester, Bristol and London, but I wonder what is happening in whole swathes of the country.

Ben Crowther: We are in a position where we are developing hardware products. We have engineering teams—computer science teams in your case—that are doing that kind of technical work. In the vast majority of cases, that primary work is desk and small warehouse-based design and development, just like it would be in any other engineering firm. Trying to get talent in a rural location for those kinds of jobs would be quite difficult. That is very much why we have stayed in Bristol. You can get good engineers from the aerospace industry, as an example, to come and work for you, which would be a lot more difficult if we were in the middle of nowhere.

That said, we have links to UK agri-tech centres that give us some of that exposure to different groups of growers. We have taken on the rent of a greenhouse outside Bristol which is now our primary test location for what we do. We have one-on-one links to farms in Cirencester. You have to travel out from the hub, but it is rare that you can get an office with greenhouse and access to talent in a rural location.

Q187 **Dr Gardner:** As a final question on that topic, we have Stoke-on-Trent in north Staffordshire, which is a big rural area; we have Keele University and Staffordshire University. People there are very interested in agri-tech. What would be your advice to them to try to manage being in that location, especially when you talk about skills?

Charles Veys: My first hire as a hardware lead was from Leek, which is not very far from Keele. We commute and have hybrids. We have people who live all round. I have people who live in Bristol and York. The recruitment world is quite global. Where we have our headquarters is based on logistics, IT infrastructure and access to talent. Where we have sites is different. Today, I have people in Cambridge. We have people in Evesham installing equipment. We would recruit someone who had that spread. Agriculture is across the country, so we naturally have to be spread.

Ben Crowther: The major downside I see is access to the kind of networking and peer-based events that you might be able to access more readily in a larger city. As a start-up founder, it is a pretty intense job. It can be somewhat lonely with very few people understanding the pressures of doing it. That would be the main downside. Access to capital, talent, etc, as Charles said, would not stop me starting a business there.

Ross Haffenden: We have a little flip side to this, in that we are in Horsham. A lot of the on-farm events are obviously pushing north, and so resourcing going on farms for farm trials, farm days, where large numbers of farmers are coming to see technology, can be a resource struggle for us, because it is not within the traditional engineering and science; it is much more agronomy-led, so that pushes it the other way.

Dr Gardner: That was what I was thinking of, because my fellow is in the rural farming industry and has never before been on a train on his own. I had to put him on the train to go back. He is trying to manage getting the farmers to all these sites and stuff, with all the pressures on their work.

Q188 **Chair:** You are saying that agri-tech meet-the-farmer events are outside the golden triangle?

Ross Haffenden: They are where the farms are, typically. You will have the incubator or innovation farms that a lot of big agronomy companies are operating. You have to go there, put up your gazebo and do your

demos there. That is becoming much more prominent than the big conferences, because you get your boots on, get dirty and do live demos.

Q189 **Chair:** Do we understand how these demonstration farms are distributed?

Ross Haffenden: From Suffolk all the way across the country to the glasshouses. For us, it could be grapes down in the south-east, or it could be up into Suffolk for the wheat crops and things like that.

Q190 **Chair:** What about the north-east?

Ross Haffenden: And the north-east, exactly. For instance, there are the strategic farms for AHDB in the midlands. We are across all of that up to York and Yorkshire. It really is across the country.

Q191 **Dr Gardner:** I assume you go to county shows.

Ross Haffenden: We would not go to county shows because we are just doing the individual demo days that the farms arrange to bring in other farmers to say, "Hey, look at what I'm doing. Look at the trust I can give to an agri-tech product." Farmers are really good, where a product supports their own farms, in telling other farmers how good it is.

Chair: We need to move on because we are running out of time. Perhaps you could send us a geographical distribution of your demonstration farms or technologies. I would be interested to see that.

George Freeman: On the subject of cluster mapping, it might be helpful to ask DSIT and DEFRA whether they have any notion of where these clusters are, because they are all round the country.

Chair: Yes.

Q192 **George Freeman:** I want to ask about regulation. Thank you for your very succinct and clear answers. I will ask each of you for your thoughts on the UK's USP, and where we are in building a dynamic regulatory landscape that helps you show the world what your innovations can do. I want to ask about the Europe question, which is quite hot in Parliament at the moment. On dynamic alignment, should we be losing our gene-editing freedoms or accessing the European market, or can we have both? Which countries do this best?

Just to set the scene, it is worth reminding ourselves that there is an animal side of agri-tech as well as a plant side, and some public concerns. The public get very frightened by Frankenstein foods, whatever that is supposed to mean, as if somebody is putting dangerous foods in babies' mouths. I think the public are beginning to understand that gene-editing is something different; it is the up and down regulation of naturally occurring plant properties, not putting a rhinoceros gene into an elephant. Equally, on animal digestion, some technologies reduce methane emissions. Weirdly, those have been demonised, although everyone is concerned about animals. There is public concern.

Kit Malthouse: It is seaweed, is it not?

George Freeman: Yes. There are lots of public issues here. It seems to me that a major way to help you is not to spend 10 years legislating but to create these regulatory sandboxes where, if you are doing the technology you can go there with the regulator either side and help demonstrate to the world what your innovation does, that it is safe and it works. It seems to me that for the UK that is a global offer. People round the world would say, "We've been to the UK sandbox and have had it tested. People trust the UK flag." How do each of you see our regulatory environment at the moment? The Government have done some good work on sandboxes, but in your sector is there a sandbox? Do you know how to ring it up? Can you go there? Can you get a data package?

Charles Veys: Most of our regulatory exposure would be via the CRD. There is a lot of regulation about how chemicals can be used. The people there are very amenable to join projects. Rather than being a sandbox, they will come to individual projects and advise on how they would see or perceive that project or technology. Glasshouses are probably not regulated well in terms of their height. It is not really considered in terms of labour rate. New types of approaches using higher labour rates in a certain area are not quite accepted. I think they are amenable to be discussed, but we have not seen that put into practice.

On your comment about Europe and alignment, I buy a lot of components from areas like the Netherlands, because that is where they make them—you asked who does it well. You will have heard quite a few times about the triple-helix model and how it is deployed and enforced, particularly around IP and research, which we have not touched on today. It is a core area where the university is probably shooting itself in the foot. That would be the one where we would see the benefit.

Q193 **George Freeman:** On the first question about the sandbox, would it help you to have a place where you could go and show that your technology is in the top quartile globally, or is the best, or is mid-table, but having that data package would allow you to show investors what you do?

Charles Veys: I would certainly be interested in that. I know that the breeding or phenotyping area has been trying to do that for a bit of time and with mixed success. I would be interested to know why. I could certainly introduce you to people who have tried that.

Ben Crowther: In the regulatory framework for our products themselves, we have focused closely on doing just a better version of what is done already. We mark ourselves against that and, therefore, we are not subject to too many regulatory hurdles, just general engineering and product safety stuff.

On the sandbox point, we have done exactly that. The place is called Wageningen University & Research in the Netherlands. That is the gold standard globally, so if you test something in a greenhouse here, people

will listen to you about it. If you travel to the Netherlands before you have the rubber stamp—a journal article was posted a couple of weeks ago after four years in the academic process—nobody will talk to you. If you have not been proven yet, then, exactly as you describe, you must go to Wageningen and you can talk about those results and the professors you work with. All of a sudden, you are a legitimate option. The UK does not really have that. It is something we talk about and are starting to collaborate on with UK agri-tech centres. Specifically, within greenhouse horticulture, there is a gap between R&D trials and commercial adoption, but we are trying to establish and have funded ourselves the building of a greenhouse site that is a commercial operation. It breaks even. It is not there to make a profit, but it is a commercial business where you can trial your technologies and see the impact on all operating metrics. That does not really exist anywhere. We have some sites. We have the Stockbridge Technology Centre in Selby, near York, but it does not really exist as an operating partner. That is what we need in our very specific area of the industry to bridge the gap between R&D and commercial adoption.

Q194 **Chair:** As a Committee, we are travelling to Holland to look at the institute. You are saying that we should develop something similar in your particular area, not in competition with it, but you think there is room for two.

Ben Crowther: I think there is an opportunity to do it in collaboration. If you look at Holland, you should visit the World Horti Center. Everyone joins as a member and you can demo technologies and exhibit them to the world. I was there last week. There is Wageningen University, which is the more academic research side of that.

Dr Griffiths: My sector is in agricultural biostimulants, so we are crop inputs. Our regulations around the world are developing. The biostimulant we are developing almost does not fit into any regulation because it is so innovative and novel in the way it works. Part of the issue, focusing on the UK, is that there is no biostimulant framework. That is a problem for us and a lot of companies like us, because it means anyone can enter the market and claim to be a biostimulant. They do not have the trust of the farmer. Farmers will use them and think that biostimulants do not work. They do work. What we do is focus on generating a solid data package that will look at a variety of farms, dose rates and treatments—a variety of everything—so we can build up that dossier. We are involved as stakeholders in DEFRA's biostimulant consultation. It is moving quite slowly and it is looking to adopt the European framework, which is still in development.

Q195 **George Freeman:** It sounds like an opportunity. If Wageningen does not have a biostimulant testbed, could we not set one up, and set the global standard and the data packages?

Dr Griffiths: That would be a really good thing because biostimulants are being begged for by farmers as something to reduce their use of

pesticides and nitrogen, particularly in the current geopolitical climate. They are looking for these new kinds of technologies, but they come with inherent disadvantages. Biostimulants themselves, particularly metabolic regulators, are reliant on the crop variety being used and the environment. It is not a go or no go with a traditional agrichemical product; it requires a little bit more scientific thought. We get so much interest in our product because we have that. We just need the regulations to be there to be pro this kind of approach. The European Commission is probably the biggest.

Q196 **George Freeman:** If we had a biostimulant sandbox, who would be the regulators here? Would it be MHRA or FSA?

Dr Griffiths: It would need HSE as well, because chemical regulation and safety are really important. We have tested all of this with people like HSE, DEFRA and another one that I have forgotten for animals.

George Freeman: I suggest a regulatory innovation office.

Q197 **Chair:** We have to move on because we are over time already. I will just let Ross answer the question.

Ross Haffenden: With regard to the sandbox idea, it needs to be a balance between allowing real-life farming industry to use it at the same time as the institutions. We definitely see products going into these types of institutions and never coming out. If they do come out, they just get rejected because they are not ready for real-life applications.

With regard to the regulatory question, obviously we work in human diagnostics. We would be nervous about very stringent over-regulation within the crop plant because it does not allow for innovation or flexibility, and the timelines would get extended.

Chair: Thank you very much, George. That was fascinating. I will now bring in Freddie, Daniel and Lauren.

Q198 **Freddie van Mierlo:** I want to ask a few questions about the level of support that you feel from the Government. The Government made a big announcement on their industrial strategy, with agri-tech slipped in there. It was named as one of the six potentially important industries of the future within the advanced manufacturing plan, alongside batteries, aerospace and space. As a result of those announcements, do you feel the love? Is your sector being embraced by Government?

Charles Veys: On the industrial strategy fund, it is interesting that we are put under manufacturing. We have seen that enacted already in things like the agri-scale programme which helps people to make hardware scale manufacturing with sites like MTC in areas to get UKCA certification and that kind of set-up. One thing I would challenge for someone who tries to sell to greenhouses is that greenhouses or ag-tech will be put under manufacturing. They should probably be considered as

high-energy-intensive industries and get the same tax benefits with their energy bills that the manufacturing industry does.

Ben Crowther: That was going to be exactly my point on greenhouse energy costs. Probably more can be done using UK agri-tech centres, that are already very good, as a route to bridge that gap between R&D and commercialisation, if the Government are serious about supporting and exporting ag-tech innovations.

Q199 **Freddie van Mierlo:** Have you seen anything tangible as a result of being included in those plans?

Ben Crowther: We are having some conversations about what it means with agri-tech centres, and new strategy based on it. There is a kind of trickle-down effect, but not yet. There are things like agri-scale grants that are coming through Innovate UK, but so far there is nothing immediately for us.

Q200 **Freddie van Mierlo:** At the moment, it is just nice words on paper.

Ben Crowther: We are getting there. It is nice words turning into action, but for us it is more in that stage at the moment.

Dr Griffiths: The current industrial strategies are good with the catapults, the agri-tech centres, ag-tech transfer offices and Innovate UK. All of the pieces are there. It just feels very fragmented. A lot of the time in agri-tech we do not feel that we have strategic relevance. It would be great if we could have more of a foot in from the Government and publicly about the success stories in agri-tech and generate hype—I hate to use that word—around agri-tech. There is a lot of fantastic science here, but it is still quite fragmented. That is due partially to geography. We are all over the place. On connecting it all together, I am not sure what you would do to do that, but the strategy is there. I think we just need to be a little more excited about it.

Q201 **Freddie van Mierlo:** Ross, as a larger company, one of the ambitions in that strategy or plan is to grow the sector to £20 billion by 2035. Do you think that is realistic?

Ross Haffenden: Yes. It has to be; that is the ambition and that is realistic. On your original question, as a frontier industry, which is how we term it, I do not think there is enough to be aligning it with the other frontier industries like AI and aerospace. We should be recognised within those sectors, and we could do more to recognise that. That would help.

Q202 **Freddie van Mierlo:** Clearly, there are a lot of exciting companies, as you have explained to us. At the moment, three of you are still quite small companies, below 50 employees or something like that. What do you think is the growth potential of your companies? Could you be employing thousands of people here in the UK? As an economy, we need more people employed here paying taxes and getting good-quality jobs. Is that scalable and achievable for your companies, and what sort of

timescale are we looking at?

Charles Veys: That is possible, but the current route—based on the fact that especially in horticulture glasshouses have been declining in the past eight years—would be to go and sell outside the UK and have that benefit elsewhere. That would not be the preferred choice, but the industry would like to see a change of direction. It is not just a UK problem; it is a global issue. The value of food, its link with nutrition and how that links to health is starting to be understood, but is not propagated into how we support the food and tech around food systems.

Ben Crowther: I think that in our case to get to 1,000 or so employees we would have to become a primary manufacturer of our products. The cost base in the UK is not going to be competitive with other areas of Europe, North America or the middle east, depending on where we are selling into. The likely route for us and the trajectory we are taking is a knowledge-intensive business where we develop IP and know-how behind how we most effectively irrigate plants. We manufacture the smallest possible element of that system and then license designs to the existing established large-scale manufacturers who have the economies of scale and access to the right cost basis for us to do that. I do not think it would be the most efficient use of capital for us to try to build that business. Other people would like to get to the scale off the back of it because of the manufacturing, but I do not see a route for us to do the manufacturing in the UK currently.

Dr Griffiths: My answer is very similar to Ben's. Our company is knowledge intensive. We are here to create and validate the solutions and for others to sell them through trusted channels. We are not looking to build high capex expenditure. We want to be the best scientists we can be; we want to work with academics as well as industry to co-develop products and farmers, and create jobs that way, but we are not looking to turn our company into 1,000 employees. Manufacturing in the UK is incredibly expensive. That is just how it is, and when you are creating, essentially, a synthetic chemical it is much easier to go to some of the hundreds of sites around the world that can manufacture your product at a very cheap cost. We would not want to build any kind of manufacturing or formulation plant; it would not be the best use of capital.

Q203 **Freddie van Mierlo:** I understand the commercial realities you face, but I find it really sad. I have two questions. First, do you think you should get public funding if you are not committing to employing people here in the UK and growing UK businesses? That is slightly challenging. Secondly, Ben spoke earlier about how the US can capture a lot of the innovation and growth that happens here in the UK. How do we get around that? It is basically legal theft of UK growth and potential. How do we stop that from happening?

Ben Crowther: I will jump in on the second point, partly because I have forgotten the first one; forgive me. Investment and venture capital in the UK, as I said earlier, is conservative. It is considered, and maybe you do

not get as much boom and bust as you might get in the US, but given the network of people we deal with and where I would expect we would get to, there is a lack of funding once you get to a certain scale. Granted that in our case we would not necessarily be a 1,000 or 10,000-employee company, there just is not the appetite from UK investors to build like that. I was at an event where one of the senior people from AIM highlighted exactly the same fact, that somehow we need to stimulate public markets to put those big chunks of capital in so you can build a Google, or pick your large company in the UK without them being taken to the US. I am not the person who is going to advise how to do this. Somehow, we need to free up capital markets to put big bets on potentially big British businesses.

Dr Griffiths: I will approach the challenge question, on why we are funding people who will be selling overseas and not creating big companies here. From my perspective, my company is completely built on IP that has been generated in British institutions. It has been backed by British science, BBSRC research, and funded by Innovate UK. We are very keen to give back to our host institutions and UK taxpayers some kind of value for money for the research we have been doing. We will get the best value for money and return on that investment from the research we are doing by accessing those global markets, not from creating a really big business in the UK. It is important to fund companies that ultimately will go international because that is where the market pull is. The more British products being made and being bought, the more money that will come into the UK because of that.

While I am on my soapbox, I will say that the journey of SugarROx from academia to commercial industry has highlighted that the UK does not have a strong focus on translational science as a pillar. It is not really celebrated enough. We have a lot of capability, but it is very fragmented. It would be great if we could get more translational science on the table because then this can happen quicker and we can get more and more out there.

Chair: Those are fascinating points. I think the key question about the Government's ambition when it comes to UK manufacturing is something to which we will return.

Q204 **Daniel Zeichner:** I will be very quick because I am conscious of time. I was a Minister last year, so I am possibly slightly more enthusiastic about what we are doing than Freddie. I have two questions. Cara, I think in your opening comment you said that the regulatory problems were the biggest ones you had identified. I would be pleased to hear you say a little more about that. To Ben and Charles, the question I ask repeatedly is: why can we not grow more of our fresh produce here? What I think I hear you say is that innovation will take us so far, but a whole range of other things would be needed. Can you confirm whether I have got that correct? Could Cara speak first on regulation?

Dr Griffiths: I am quite passionate about this. There are lots of biostimulant products on the market that fail to meet the claims that are put on their labels. If we do not have regulations that address that kind of issue, trust in the sector is lower and farmers will not adopt it. You really need that pull from a farmer to adopt that particular crop input, with good strict regulations here. I know that a lot of people are not in favour of having a highly regulated field. For a company like mine, the regulation is really important because it prevents copycat products and products that do not do what they say on the label, because they are not legally bound to have any kind of efficacy or safety portfolio, for that matter. It is just one of those things we should absolutely be doing. That is why regulation to me is so important. It is about, first, getting trust from the end user and, secondly, making sure that what we are doing is not going to poison the environment. New technologies are fantastic, but you really need to have a look at what is going to happen 10 years down the line if it is not biodegradable. Having these kinds of regulations is really important for sustainable intensification of our agriculture.

Q205 **Daniel Zeichner:** That is a really important point, because I think most people who will have heard your opening observation may be thinking that these are regulatory obstacles. You are making a very powerful point about how important it is to have good regulation. I would ask whether it should be in line with Europe, but I do not think we have time. Let us go to Charles and Ben.

Ben Crowther: We import some 70% of our fresh produce into the UK annually. As for our greenhouse estate—the number of greenhouses built in the UK—about 70% of it is around 40 years old. These are old installations that need renovating to be cost-competitive. The primary reason we are not doing that is that over the past five years or so interest rates have been quite high, limiting borrowing against large capital assets like greenhouses.

You have primary inputs in terms of labour and electricity that are too high to make most business cases viable. You need to go really big. You are talking about a $50 million to $100 million investment to make a large-scale greenhouse that can be cost-competitive versus imports, at least in the summer months. The winter months are different. You get slightly different produce prices. You need to resolve some of those things, such as labour and electricity. Interest rates is a bigger challenge. There is the potential to do it, but it requires substantial capital investment. If you do not unblock those things to make growers profitable, obviously you will not get investment in those kinds of projects.

Most people do not perceive that all the tomatoes in any supermarket or sandwich are grown in greenhouses pretty much globally. With cucumbers, peppers and all those kinds of things, that is where the vast majority of our fresh produce comes from. We are good at open field arable, etc, but for those kinds of fresh produce you need to build big

greenhouses. If you do not do that, you will have to import from southern Spain, northern Morocco, Kenya, etc.

Q206 **Daniel Zeichner:** That is very helpful.

Charles Veys: I reiterate what Ben said. It is a challenge, and there are some great growers like Thanet Earth, JEPCO and Flavourfresh that are building glass. Despite the current climate in the market, tomatoes were at 20% of what we eat, and we could be three or four times that easily. We need to start valuing the food that we eat that is from our own country and has higher nutritional value rather than what is bred to ship across. When that is done and we understand the difference between an English tomato in England versus a Spanish tomato in Spain, that value will start to earn its right on the food shelf at that price.

Daniel Zeichner: Brilliant, thank you.

Chair: Thank you very much, Daniel. I am sorry that we have gone over a bit, but it has been a fascinating discussion.

Q207 **Dr Sullivan:** It has been really interesting. Our next session will, we hope, have Government Ministers in to answer some questions. I want to ask you guys what we should put to them. In our report that we are writing, what would you like to see included as a part of our recommendations to Government? Here is your chance for a wish list, whoever would like to take it first.

Charles Veys: Clarity on the funding landscape. We have things like the farming innovation pathways, but that finishes in 2029, and there are no more big projects in that. There is not really an understanding of how that is going to be taken on. There have been some great examples like ADOPT and how we have moved. Innovate UK has a new CEO. The focus has shifted up and it is about scale-up. That has been well communicated, but what does that mean? What does that look like? Where are the funds? We and growers are working on three to five-year plans, and it is hard to do that when the funding runs out in two.

Ben Crowther: Adding to the point earlier about energy costs and energy-intensive manufacturing for greenhouses, benefit to energy costs would be a big thing for that portion of the industry, and that would enable the kind of growth in things like tomato production that Charles mentioned. Investing in UK equivalents of the likes of the World Horti Center and Wageningen, as George has mentioned, that kind of sandbox would for greenhouses specifically be very valuable.

Dr Griffiths: On my side, I have two recommendations. One would be to integrate investors into the translational infrastructure and to get more investors involved in these agri-tech centres so that they can see what is happening and they have that relationship with the developing technologies. The other one would be to see a little more capital investment for operational growth. In a lot of the Government funding and venture capital, we focus a lot on the R&D, but there are a lot of

operations that go on beyond that which a lot of the time people like me balance along with my actual job. It would be great to have a little more thought into operational investment. That could come as individual investments for companies or be a general support system. I am not sure how it would work.

Ross Haffenden: As a company that manufactures all our product in the UK, both electronics and chemical, and employs in the UK, our growth will come from growth in exports. It is the support of the agri-tech sector more widely to the world, the sandbox idea, etc, and getting us in front of those important people worldwide.

Chair: Thanks very much.

Freddie van Mierlo: I have one question.

Chair: Very quickly, to one person.

Q208 **Freddie van Mierlo:** It is about tomatoes. I am half Dutch, and there is a joke about Dutch tomatoes, which is: how do you slice water? You get a Dutch tomato. Can you make greenhouse-grown tomatoes taste good as well?

Ben Crowther: Yes.

Q209 **Freddie van Mierlo:** In the UK?

Ben Crowther: Yes, absolutely.

Freddie van Mierlo: Okay, fine.

Q210 **Chair:** How?

Ben Crowther: Using the kinds of techniques that various companies like those that Charles mentioned are doing. A lot of the industry-leading techniques developed in the UK and the Netherlands—that IP and know-how—is still in the grower's mind and at the grower's fingertips. It is hard to document and replicate, but a really good grower with good equipment will grow a far better tomato here than even the best tomato shipped in.

Chair: That is how we should have positioned this session: how can we make tomatoes taste good? It has been fascinating. Thank you for joining us this morning. You can see how much the Committee has been engaged. I have been really surprised listening to you. You are part of a scientific innovation that will drive what we eat and the proportion of the population that is well fed with nutritious food. In the midst of a cost of living crisis, when every headline every day tells us how our food security is under threat, I have been somewhat surprised to hear that you do not feel part of a strategic sector and do not really feel that you are part of the major concerns of our industrial, scientific and global community. That is one key thing that I am taking away from this session. I finish by thanking you very much for joining us.

Examination of witnesses

Witnesses: Rory Hornby, Duncan Ribbons and Dr Hayward.

Chair: Welcome back to today's session of the Science, Innovation and Technology Committee as part of our inquiry into innovation and global food security. We have already heard from one panel of UK-based innovative agri-tech small and medium enterprises. Now we are joined by our second panel, which will look at some of the same issues as well as covering more of the international opportunities and challenges. I start by going to Lauren.

Q211 **Dr Sullivan:** Lovely. Thank you, Chair. Thank you very much for joining us today. First, I will ask first Rory and Duncan to answer questions, and then I will come to you, Rhian. What does your company do? What problem is it solving, and how does it contribute to global food security? A nice quick question for you.

Rory Hornby: Thank you for inviting me here today. I am Rory and one of the co-founders and COO of ALORA. We develop performance traits in crops so that they are able to tolerate the forever changing environment caused by climate change. More specifically, we have developed yield traits in rice. We are also looking at how we can increase heat tolerance and salt tolerance. Globally, we are losing about 20% of our rice yield due to climate change. Rice feeds about half the world's population and is 50% of our global calories. If you are looking at global food security, rice is a good crop to start with. Globally, we are losing so much of our yield because of drought, heat stress, salt intrusion and all the challenges as a result of our changing climate. We are presenting the solutions to that through precision breeding.

Duncan Ribbons: I work for Tropic. Similarly to ALORA, we are using precision-breeding technology to develop improved crops. As the name suggests, Tropic focuses on tropical agriculture. The reason we focus on crops grown there is because the tropics have the greatest need and have seen the least investment. They have the greatest need because they have the fastest-growing populations. As a proportion of household spend, they spend the greatest amount on food. Food security in the tropics is a higher priority than most other regions for these factors. We focus on rice as a crop because it has massive global significance. Banana is the other crop that we are working on. Both crops are very familiar to us here and across the globe. Banana is the world's favourite fruit. The EU is the world's largest consumer of bananas. We are very fond of them in the UK as well.

Q212 **Dr Sullivan:** What is it that your company does?

Duncan Ribbons: We are using precision breeding. We are developing improved varieties that will add value through traits that deliver value to consumers, reduce waste in supply chain or create resistance to disease.

Q213 **Dr Sullivan:** Brilliant, thank you. Rhian, as an innovation campus, how do you support agri-tech SMEs? What is your story?

Dr Hayward: Thank you. It is a pleasure to be here. I run AberInnovation, which is an innovation campus at Aberystwyth University. We are one of the five BBSRC campuses, and specialise in food security and climate change mitigation. We operate as an R&D hotel, effectively, for businesses of all sizes, but we major on SMEs and small businesses because they need the help. We help them to prove their concepts. We are quite particular in what we help with.

We look at processing of feedstock. We help companies to understand what valuable chemicals are locked away within the crops that we hear about. We also apply similar technologies to food byproducts of the agricultural industry—waste materials whose chemicals go back into the food system or the feed system in some way. Addressing food security from that point of view is something that we major on.

We see a lot of companies come and go with particular ideas, and that sometimes catches farmers and farming businesses that find the way to our front door, who, through their experiences, think they have a really innovative approach to something that they are doing and are looking to try to find scientific expertise and facilities where they can try that out and see if it works.

Q214 **Dr Sullivan:** How do people get to your front door? We heard from the last panel that, sometimes, getting access to some of these areas is challenging.

Dr Hayward: The challenge is on us to be as good as we can be in terms of marketing the facilities that we have. Along with Norwich Research Park, so we are in good company, Babraham, Rothamsted—we heard about Rothamsted earlier—and Roslin in Scotland, the five campuses are collectively trying to do what we can to put the word out there that we have all these amazing facilities. We sit next to BBSRC institutes in the same location, so we have the academic expertise and the translational facilities. We can always do more to make sure people know about our front doors.

Q215 **Dr Sullivan:** Is there a generic email on your website, if someone watching this session could go to?

Dr Hayward: Yes, absolutely; of course it is. It is contact@aberinnovation.com.

Q216 **Dr Sullivan:** Excellent, thank you. Finally, for all of you, what are the main challenges facing SMEs in the UK? We heard a little bit from the first panel, but I would be grateful to hear your insights.

Rory Hornby: ALORA has had quite an interesting journey to get to where it is today. We started off in San Francisco. During the pandemic we moved north to Canada, and just over two years ago we relocated

back to the UK. You face different challenges along that journey through your scaling and through de-risking your technology. The availability of funding is something that was talked about in the previous session. There is a grade mix: it needs to be combined private with public. Particularly within agri-tech where our innovation cycles are so long—rice takes quite a long time to grow, and banana takes even longer—you need both those avenues to work hand in hand to be able to de-risk great technologies that have huge market potential beyond the UK. That is a major issue.

Regulatory harmonisation is critical to that as well. Ultimately, the UK is not the largest agricultural market. A lot of the innovations that we are talking about here today are really well suited to a global market, but that means that there has to be global harmonisation on precision breeding, for instance, so that a performance trait that is developed in the UK can be sold to markets and ultimately bring that value back for the success of the company.

Duncan Ribbons: In terms of greatest challenges, probably on the R&D phase, it is infrastructure—glasshouses and controlled environment. Partly, that is linked to the climate that we have in the UK and the crops that we have chosen. Our crops grow in the tropics. To be able to grow them here, we cannot just put them in a field.

Linked to that is that, when we get to the commercialisation stage, our customers—farmers—are in the tropics in international markets, and accessing those markets can be tricky at times. There have been occasions where support from Government would be useful. We found the attachés that the UK Government have in various locations to be supportive, but I do not think they are quite as advanced as, for example, the Foreign Agricultural Service of the USDA. There have been times when we have drawn support from the USDA rather than our own Government representatives as they have bigger scale and bigger clout. That is an observation that I would make.

Q217 **Chair:** Just to clarify, that is US—

Duncan Ribbons: Department of Agriculture, Foreign Agricultural Service.

Q218 **Chair:** You found them more helpful and more supportive to address things.

Duncan Ribbons: Sometimes they have been able to move faster to unlock some blockages like non-tariff trade barriers that we have experienced and the like.

Q219 **Chair:** Right, and that is even post the cuts to international development that the US Government implemented.

Duncan Ribbons: Yes.

Chair: Interesting.

Dr Hayward: Running an innovation campus, we see a lot of companies that will eventually scale, as some of the companies that you have heard from do. It is that bottom of the pyramid or top of the funnel—however you want to call it. We help a lot of entrepreneurs and early-stage businesses. That is the focus and where we see the challenges. A lot of those challenges are common to a lot of sectors where we want more innovation, entrepreneurship and everything.

In agrifood, which is our term for it, there is a significant attrition rate of companies that have really good ideas that work wonderfully well in the laboratory, and when they get into this competitive space of Innovate UK funding, etc, they do not appear to find as many funding options. From conversations that you have with entrepreneurs back at base, they do not appear to see themselves particularly reflected in the industrial strategy, to the point from the earlier group, and you see a lot of peeling away of interest, enthusiasm and energy at that stage. We are not sure whether we are getting all the engagement that we can into the schemes that we have and whether there is enough of them. One that I particularly reference that would be great to do more of is the DEFRA investor partnership programme. We have had a few entrepreneurs engage in it. They needed lots of courage to do that, but that for me is part of the solution. Engaging with that early-stage funding and succeeding in it is a challenge.

Q220 **Kit Malthouse:** I want to ask a little more about funding. If you heard the previous panel, we had a talk about funding. Rory, what has your funding journey been and how difficult was it? If you say you have moved around, presumably you have had American money and British money. Have you been following the money, or was it for other reasons that the company moved around?

Rory Hornby: Almost all our money comes from outside the UK. In fact, we do not really have UK investors.

Q221 **Kit Malthouse:** Have you tried to get UK investors?

Rory Hornby: We have, yes, absolutely.

Q222 **Kit Malthouse:** They have just said, "No, thanks."

Rory Hornby: This is part of the incompatibility between UK-based investors and international investors. There is an incompatibility that you will have already heard about with valuations. There is an element of the conservative nature within UK venture capital investments. The vehicle of investments can also be very different. In America, it is mostly convertible notes or similar vehicles. There is not the same level of acceptance for that vehicle of investment in the UK, and that means that for a company like ours that got our initial investment from the States—that is why we initially went over to San Francisco, to be part of an accelerator programme there—a lot of UK investors are now incompatible with us because of our previous fundraising vehicles. There is an exclusion of UK investors being able to play with international investors.

Agri-tech is a global business, and it needs to bring in investors from all over. We have investment from the US and Singapore. Toyota Ventures is one of our largest investors. That brings a whole new range of international money.

Q223 **Kit Malthouse:** For your American money, did you have to try that hard, or did it come pretty easily?

Rory Hornby: It changes depending on what stage you are at. When we got our initial investment from IndieBio, we had never been in a lab before. We had only a vision about what our technology could be and an idea of how to create it. That is the value with that American system; they are very willing to put a cheque on a technology that could have great reward but has a lot of risk. The market was huge and technological validation very slim. That would have been impractical in the UK. In fact, IndieBio had an accelerator programme in London that has since closed down because it was unable to succeed. That is ultimately where you are seeing that for a lot of investment it is just easier to get along a different cycle or different cycles of a start-up's growth externally.

Q224 **Kit Malthouse:** Duncan, is that your experience as well?

Duncan Ribbons: We have a mix of nationalities in terms of our investor base. It is predominantly international, but there is some UK money, or at least UK-headquartered funds. Whether all their money comes from the UK or elsewhere is less certain. Some UK investors have participated. It is predominantly international. On the investment climate, it has obviously been a lot tougher in the last couple of years than it was prior. There are a lot of stories, to the point made earlier, about the companies that are not making it, and there are a lot of those at the moment. What the UK does well—it is not the funding per se but the lifeline—is the R&D tax credits. My CFO said to me yesterday that if it were not for the tax credits Tropic would not be alive and many other companies would not be alive. They are a lifeline.

Q225 **Kit Malthouse:** Although they are becoming increasingly difficult to navigate, right?

Duncan Ribbons: This was going to be my point. The more restrictions you put around these and the tighter that becomes, the less of a lifeline that will be and the more company failures and the harder the struggle.

Q226 **Kit Malthouse:** I am not surprised you say that. What the revenue always does is that, where there is an element of abuse of a particular avenue, it overcompensates and start hammering legitimate businesses to deal with the abuse. It happens again and again.

Duncan Ribbons: The other observation that I will make on investment is from economic development agencies. We take investment from Singapore and from the Netherlands. Both are good examples. In the Netherlands, we heard earlier about Wageningen. That is an example we could learn from, as is the way Singapore has transformed its economy

with investment. We have seen and heard them have conversations about similar investment from UK sources. With the mandate that comes with investment from economic development agencies, we have to go and spend some of that money elsewhere. We are spending money in Singapore creating jobs. We are spending money in the Netherlands on conducting research in Wageningen that otherwise could have been done in Norwich or dollars spent here in the UK.

Q227 **Kit Malthouse:** On bananas, am I right in thinking that every banana is a clone?

Duncan Ribbons: Yes.

Q228 **Kit Malthouse:** Therefore, you are basically genetically engineering clones.

Duncan Ribbons: Yes, we are creating diversity that does not happen naturally through breeding because of the asexual reproduction.

Q229 **Kit Malthouse:** Interesting. Was there not a whole type of banana that was wiped out by disease because they were all clones?

Duncan Ribbons: The Gros Michel was wiped out by a fungal pathogen. The Cavendish was the saviour and replaced it, but now the Cavendish is under threat from a similar fungal pathogen, Panama disease or TR4. One product we are developing is to create resistance.

Chair: Kit, I want to bring in Allison here if it is okay because she needs to go, and then we will come back to you.

Kit Malthouse: Okay.

Q230 **Dr Gardner:** Thank you. I was smiling because I have talked about the issues with monoculture and that situation for many years. You brought me back, Kit, with that one.

Particularly within tech, we have an issue with a lot of the funding and the start-ups focused within the golden triangle, and trying to get these companies and innovation further out across all the regions. With agriculture, you would think that that would happen more, but it was interesting to hear from the first panel that it seems to be very much focused within the city regions, particularly within London and easy reach of London, even though the whole sector seems to be spread out. Your customers in the UK are spread throughout and not always necessarily going to be travelling to London to visit. How does operating outside London and the south-east, if you are outside the golden triangle, create additional challenges for agri-tech SMEs when it comes to scaling and securing investment? Generally, how does that work for you?

Rory Hornby: I would flip it the other way around: being based out of London is a lot better for us. Norwich is represented quite nicely on this panel today. Norwich is a fantastic place to be building an agri-tech company. There is comparatively cheaper cost of business there, whether

it be operating or getting glasshouses. We work with the John Innes Centre to be able to do that. There is access to amazing labs through the Norwich Research Park. The talent there is fantastic, at a comparative price point that is cheaper compared to London or other metropolitan areas. This is really where the UK can stand out—not just regions within the UK but internationally as well. The cost of doing business in the UK, in Norwich, is infinitely cheaper than doing it in other agri-tech centres around the world. If you are looking at Raleigh in North Carolina or other centres like St Louis in the US, the UK is a lot cheaper. Norwich is a lot cheaper. Because of the longer innovation cycles within ag, that is really important. We need our dollars to go further than in other sectors. Your burn is really important. You cannot get that in London, but we have all the infrastructure, access to greenhouses, field trial sites and the talent that we need in the Norwich Research Park, and that is fantastic.

Q231 **Dr Gardner:** That is the answer that I wanted to hear, in many ways, from the first panel. That is what I would like to see. This is where I thought it would be located. What are the challenges, though, when you are not near there? They were very focused on it. They were going to London all the time for meetings and stuff. What are the challenges? Rhian, I wonder if you could answer that one.

Dr Hayward: I can talk all day on this subject, to be honest. Based in rural mid-Wales, we see this all the time. AberInnovation serves the whole UK. We are not focused on Wales particularly. About half of the 250 companies that we have helped so far—we are still only five years old—are outside Wales. You have this debate constantly among entrepreneurs and early-stage businesses. They are quite mobile, but a lot of the ones that we see do not want to be in the south-east of England for all sorts of personal reasons.

I would flip it around about the opportunity. In terms of the challenges, one is that you have to be somewhat in proximity to talent, as the first panel mentioned. I would argue that the universities and research institutes that we have around the UK offer us those pools, and they are everywhere across the UK. In Aberystwyth, there is a ready pipeline of graduates who would love to stay and work there, which is why AberInnovation is also there. The challenge of talent can be addressed across the UK.

The challenge of feeling like you are part of a bigger picture, connected and networked with like-minded individuals, is real. You cannot just hop on the motorway for a business breakfast when you are based in Aberystwyth. We as support organisations spend a lot of time—Norwich does the same—investing in staff who create community, a sense of belonging, place and sharing experiences.

The challenge of attracting investment is also real. There are very hard yards, as you guys have experienced, to try to attract private equity to see and notice you, and it requires a lot of effort to engage, because that tends to be around clusters and super-clusters. I would advocate all day

long for the UK doing more to show UK food security as a blanket across the UK. We have so many nodes of innovation that are place based. We need to keep trying to mobilise some of those and address some of those challenges.

Q232 **Dr Gardner:** The challenges that you highlight to me are not surprising and they occur across the way. We did a whole inquiry about regional innovation. It intrigues me that agri-tech, by its very nature, would be regional in many ways. You highlight some of these issues particularly with investment and trying to draw that investment out of the golden triangle. I hear what you say about skills and people there. Very briefly, what would be a golden-ticket solution? We all look now and see if you can come up with that answer, because I am not entirely sure that we have found it yet.

Dr Hayward: Wageningen has been mentioned a number of times. In the Netherlands, the history of that place is definitely something to study. You said you were going to visit. It is that long-term layering of purposeful work, shining a light on lots of places. The first panel talked about the industrial strategy, and rightly it focuses on clusters and super-clusters. You cannot argue with that. For food security, by its nature, our natural capital in the UK is the test bed. Our coasts are agricultural test beds. Somehow, at the top level, we need to shine a light on all the parts of the UK that can help us with this sort of engine house of innovation. It is not one thing. Being very reductionist, it is a massive marketing effort to show the UK being as fertile as it is outside of the south-east.

Dr Gardner: The Chair made a suggestion in the first panel that we need to map all this and have that really good overview.

Chair: We would also welcome any evidence that you could share with us on the mapping of where you are testing or those demonstrator farms, etc. Kit, I come back to you.

Q233 **Kit Malthouse:** My final question is to you, Dr Hayward. You operate this hotel, as you said. You also operate a concierge service into private capital. In the past, around each university there used to be a sort of community of angel investors hovering, waiting for IP to fall out into their laps. Is that the case with your campus?

Dr Hayward: It is not. Each campus like ours tries to plug into the investor community. Because we are sector specific, we try to plug into investors who have interests in the area. The vocabulary changes, so you have to use different words to describe this. You cannot use the word "bioscience". That does not work. You need to use "cleantech", "ag-tech" and "medtech". The language changes, so that in itself is a barrier. Translating what innovations are happening into attractive propositions is a craft. We all try to do it to some degree, as do science parks. As we are in Wales, we have the Development Bank of Wales. Scotland, Northern Ireland and Wales all have additional layers of support through the devolved Governments and regional investment as well, both public and

private. We try to plug people into angel investment networks closer to home. We also try to bring groups to London. We come down the road or on the train and we try to showcase those we think are eminently investable people.

I drew a triangle on my paper in the first session about that attrition rate. We have a programme of R&D vouchers called the Solutions Catalyst, and we funded 60 businesses over the last few years to do some R&D in our location. They are from across the UK. About half of those have gone on to secure Innovate UK funding or meaningful amounts of R&D support publicly. I am only aware of three of them—5% of them—that have gone on to get some seed funding to try to get out of public and into private.

Q234 **Kit Malthouse:** Sorry, this is of 60 that have been through your campus.

Dr Hayward: Yes, on that particular voucher scheme.

Q235 **Kit Malthouse:** Right. On your campus, as people come through your nursery, what percentage would you say exit into oblivion?

Dr Hayward: That is a very good question.

Q236 **Kit Malthouse:** How do they typically stay in the nursery?

Dr Hayward: They stay in the nursery by being good at the craft of securing public money initially.

Q237 **Kit Malthouse:** Okay. As long as they can secure public money, they can stay.

Dr Hayward: Absolutely, yes.

Q238 **Kit Malthouse:** And when they need private money, they have to exit.

Dr Hayward: No, they do not have to physically leave us—absolutely not. As a campus, we are trying to get them to that point where an angel or a private investor—

Q239 **Kit Malthouse:** You must have a failure rate. Do you?

Dr Hayward: We have companies that come and go, and which just fade away. We have had a few that have dissolved. We are still quite new. The other BBSRC campuses, which are much older, will probably have a better statistic on that front.

Q240 **Kit Malthouse:** I have a similar question that I asked the others. Do you have a group of "if onlys"?

Dr Hayward: Oh, yes.

Q241 **Kit Malthouse:** "It is such a great product. My God, they tried so hard. They just could not get the money that they needed, so it has folded, and they are now—I don't know—running a pub in Bangor."

Dr Hayward: Yes, of course we do. As a team, we try to engage with all the different things on the menu that will keep these companies going.

We have what I think is a second bite of the cherry, because the Welsh Government have consistently funded RD&I since I have been involved in this game. The same would be true in Scotland and Northern Ireland. That is always a place that we direct people to. There is definitely a group of "what ifs", and sometimes that is to do with the people. "Oh, my gosh, that person was so investable." Often, it is also the concepts that people come through with.

One area that has not been mentioned in food security that I strongly suggest we major on in the UK is this business about byproduct valorisation and feedstock valorisation. We have had a project recently where we had tarpaulin-loads of ageing bananas that a company was then using to extract what is a pharmaceutical, ultimately. There are so many interesting molecules in the food that we throw away. It is a whole area.

Kit Malthouse: Absolutely. You are totally right. You may not know this, but bananas in particular are the most frequented fruit for the concealment of contraband—illegal drugs, mainly. If there is a shipment of bananas—

Chair: I am not sure that that was the market that—

Kit Malthouse: I don't know if they emit a particular gas that fools the detection system.

Chair: Thank you, Kit. I am not sure that was the market that Rhian was thinking of.

Dr Gardner: That kind of knowledge always impresses me.

Q242 **Chair:** My question is mainly directed at Rory and Duncan, but please feel free to add to their answers, Rhian. UK consumers spend £130 billion every year on food. Globally, the food market is around £7 trillion. These are huge markets under threat from climate change and global conflict. These are really important UK and global issues and opportunities. How do you apply the technology that you are developing in the UK as a springboard for food security in global markets? In particularly, how have the UK Government helped you to do that?

Rory Hornby: There is a huge opportunity within ag, and, like you said, a huge amount of money is spent every year on the food that we consume. That is very fragmented. Many different crops are eaten globally. Within each crop, there are many different germ plasms or varieties. Within rice alone, hundreds of thousands of different varieties of rice are located and preferred within different regions. It is very difficult to market a Thai variety of rice to a grower in Colombia. Besides the fact that it is not optimised for that environment, taste preference is different. In the UK, we do not really care much about what our wheat is, but you might only buy Pink Lady apples. We might have a preferred type of potato. It is that kind of parallel. Ultimately, for a technology to be

able to scale globally, it needs to be able to work in not just your different types of rice, wheat or apples; it needs to be scaled beyond that individual crop. That is something that we are working on.

Our traits have what is called orthology, where they can jump from one different crop into another. That is something that we are actively working on this year. That is the kind of technology that is required to have that impact. To touch those numbers that you talked about to begin with, it has to be able to bridge between different germ plasm and different crops. The challenge there is being able to test it in those, and that is something that is a big gap globally, not just here in the UK. Ultimately, if you get results in field trials in one variety, you need to get it in another variety to say whether this will work for that customer in that region. That is a big gateway to being able to scale and apply it throughout not just the UK but the world. Access to that germ plasm is typically encumbered by either existing companies—we have heard about the likes of Bayer, BASF and Syngenta—or non-governmental organisations. They have huge access to that kind of germ plasm, which is not always shared with start-ups. It would remove years off our R&D timelines to be able to work directly in elite germ plasm, and that is a huge element that would help scale that technology and reach those kinds of markets and those figures that you are talking about.

Q243 **Chair:** One thing that you would like to see the Government do to support you would be to help you get that access.

Rory Hornby: Yes, absolutely. That would be a major win. The UK is doing great work with the Genetic Technology (Precision Breeding) Act. It allows us to run our field trials here comparatively. We looked at moving to the Netherlands when we relocated here. To run a field trial with the John Innes Centre costs about £10,000. To do the same thing in the Netherlands would have cost €5 million. That is huge by comparison, and obviously makes working in the UK a lot more preferential. There is regulation in place within the UK to run field trials to test in the germ plasm. We work on a cold-tolerant variety of rice that we are growing in Norfolk in the field this year, as we did last year. The regulations here allow us to run those trials. We just do not have access to the germ plasm to make the most of it.

Q244 **Chair:** How do you get access to that germ plasm?

Rory Hornby: That involves working with incumbent companies to get hold of their material. It is a Catch-22: you need the data to get that material, but you need the material to get the data. There is working with organisations like CGIAR and others. Kew Gardens does not necessarily have a germ plasm bank of rice, but there are a lot of other opportunities, and facilitating those kinds of relationship is really important. I was on a FCDO trip to Malaysia and Vietnam a couple of months ago, and that was a great introduction to the International Rice Research Institute facilitated by our Foreign, Commonwealth and Development Office. That is fantastic.

Duncan Ribbons: Riffing off the back end of the point about germ plasm access and the regulatory frameworks around that like the Nagoya protocol on access and benefit sharing, they are incredibly well intended but horrendously complex and difficult to navigate, and they present a real challenge to gaining access to germ plasm, working on it and being able to move quickly in the right germ plasm that will ultimately serve the right farmers.

Back to your original question, I will give you a very stark example, feeding off the beginning of the conversation that we had with Kit earlier, which is the example of bananas. The previous variety that we enjoyed was wiped out and made extinct. Bananas have a problem that they are asexual and clonally propagated, so you do not get a lot of natural diversity through breeding. Precision breeding is a game changer in that respect. If we can develop resistance to Panama disease TR4, which is the version of the pathogen that wiped out its forefather, the Gros Michel, and save the Cavendish, we will literally save the banana from extinction. In terms of the impact that that has on global and national food security, this is our favourite fruit. We could lose the humble banana. It is very headline-grabbing and sensationalised, but there is a realistic possibility that without these technologies and without this work that we are doing in the UK that would be a reality.

Q245 **Chair:** What can the Government do to help you?

Duncan Ribbons: As Rory said, Norwich has been a remarkably good home for us to establish the business. That access to skills has been a relatively modest cost base. Now we need to take our product from the UK to international markets. We need to access those markets. Market access requires regulation. For us, it is important to be able to get IP protection. We work in some exotic markets where there are countries that for our technology and our products deny us any form of IP. Some Government-to-Government initiatives to try to resolve those concerns would be welcome, as well as support for attachés to unlock non-tariff trade barriers that we see.

Q246 **Chair:** Okay. That is so interesting. Neither of you mentioned anything like export finance or any of the usual support.

Kit Malthouse: You are not shipping a product.

Duncan Ribbons: We will be producing products in the local markets.

Chair: It is knowledge, IP and access to markets. Great. Okay, thank you very much for that.

Q247 **Daniel Zeichner:** Very briefly, given the time, this inquiry is basically about how we tackle global food security. What I am hearing from you is that the kind of work that you are doing can play a key role in that. In terms of the regulatory system, here we have the precision-breeding regulations and so on. Other countries have different approaches. How important is it that there is consistency here? How important is it that we

maintain our position in any discussions with the European Union?

Rory Hornby: It is critically important that there is harmonisation across regulatory landscapes. Agricultural supply chains are so global: you can grow a product in one country, it will then be processed in another, and then it will go into the supply chain for multiple other countries. You need to be regulatory compliant throughout that supply chain. This is something that adds complexity to that. A farmer cannot grow a crop that is deregulated in their country if it is not deregulated where it is consumed, because ultimately that is the pull-through of the market.

The UK Government being able to actively participate in those discussions to optimise our precision breeding to be aligned with other Governments and markets that have that pull, and then also to incentivise regions like the EU that might be further behind in that deregulation to align, is ultimately how products like ours end up with a place in the market. It creates that larger pull. It incentivises companies to grow, and ultimately that is how you end up getting more successful exits and higher valuations for UK innovation. That is one major barrier that can actively be worked on.

Q248 **Daniel Zeichner:** I imagine that you would have similar views.

Duncan Ribbons: I echo that. Lack of harmonisation adds complexity and cost to supply chains. That is obviously unwelcome. It impacts on food prices, ultimately. The UK has opportunities to demonstrate leadership on regulation. It is a fantastic opportunity for it to fly the British flag and exert that influence internationally. It would be very sad to see that sacrificed as part of the reset.

Q249 **Daniel Zeichner:** In that case, I will go slightly further on this. In terms of the global food challenge, without access to these technologies, how would you go about saving the banana, for instance?

Duncan Ribbons: It would be very hard. Precision breeding is literally a game changer. This is why in bananas you have seen no new varieties and no innovation for 75 years.

Q250 **Daniel Zeichner:** So it is absolutely essential. Perhaps the last word to Dr Hayward: how important is it that we have these technologies?

Dr Hayward: Our campus is next to a university that has more than 100 years' experience of traditional crop breeding, so we can do it. It just takes an awfully long time. Precision breeding, like CRISPR gene editing, is one of a number of approaches. It is a tool in the toolkit, and we should always be adding to that toolkit. As a point of principle, the UK should continue to show that leadership, as you say. We should try to always be allowing new technologies, where they are safe, to be accessible across the UK and maintain a leadership position there. In a research context these are crucial, and all these technologies are born from the knowledge base. Where the UK can bring new knowledge and techniques to the global marketplace, we should endeavour to do so. For

full disclosure, I am on the board of the Food Standards Agency, so I perhaps have a closeness to this topic when it comes to SPS agreement and negotiations that I would not have if I was not on that board. Those negotiations proceed. What we all want is regulation for growth. That is the mandate. Innovation is part of that growth agenda. We need to try to do it wherever we can.

Daniel Zeichner: I will leave it there.

Chair: Thank you very much, Daniel. Freddie will close us out.

Q251 **Freddie van Mierlo:** I have a quick question on your reflections on what you heard earlier on the industrial strategy. Do you think it is laying out a road map that you can see being helpful to you?

Rory Hornby: I echo the sentiments from the previous session. It is fantastic to see that it has been a named and highlighted part of that industrial strategy, and a lot of potential can come from that. We have not necessarily seen that come through yet. This is the case with a lot of legislation that is coming through; it is about how it is actually applied. Like the Mansion House reforms, it provides a lot of flexibility for pension funds to invest money into private investments. That will not necessarily come through into venture capital. It does not necessarily meet a lot of their requirements, and ultimately it is voluntary. There can be positive legislation that ultimately does not necessarily hit the ground and does not help start-ups that are fulfilling that mission. You can extrapolate that one example out to the wider context of the modern industrial strategy.

Dr Hayward: What we hear at AberInnovation and with businesses that are endeavouring to grow and scale quickly is that in the industrial strategy they recognise some of the tools that they might use, but in the topic area of agrifood in which they apply them—that is the whole supply chain—it does not jump off the page for them. If we want to encourage companies to focus on food security and these areas, we need to give it a life within our policy that they will recognise. We see a lot of projects in animal feed as much as we do in human food, and they are all driven by the want to have more food security in the face of climate change mitigation. An industrial strategy that recognises feed and food, and its connection to agriculture, will encourage the entrepreneurship that we see.

Duncan Ribbons: I do not have a lot to add. It is welcome to give it prominence and highlight its importance, but as an operator in the ecosystem I am not feeling the love.

Chair: Thanks very much, Freddie. Thank you very much for joining us. It has been fascinating. Given how much British people love their food, the fact that you are not feeling the love from Government or from innovation establishments for the tremendous work that you are doing to increase our food security in this country and globally is a matter of concern. I hope you felt the interest and love coming from this

Committee for what you are doing. As part of our inquiry, we will certainly be looking to raise the profile and the narrative that we have heard a number of times about how innovation and technology can contribute to our food security and a well-balanced diet for all of us. Thank you very much.