**AGRITECH**

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Will E: Hi, I’m Will Evans and welcome to another episode of *Ahead of the Field* from NFU Mutual where today it’s all about agri-technology. We’re exploring some of the most cutting edge development in farming, from vertical farms…

 This is one of the most exciting technologies I’ve ever seen in my whole career…

…to monitoring sensors…

We will pick up cows that are lame two weeks before you would notice most of them being lame…

…speaking to the people working to shape the future of agriculture…

We've got artificial technology analysing all these images before they go...

…and if you want to find out more about the subject of precision technology in agriculture, NFU Mutual has published a report that you can download right now. Just go online and search for ‘NFU Mutual agri-tech’.

So today, we’re initially basing ourselves with Intelligent Growth Solutions, just outside Dundee, and this is where they have their demonstrator facility, and we’re standing in a polytunnel outside a large industrial building. The CEO here is David Farquhar and he’s going to be our guide alongside one of the engineers, Cameron Williamson.

Will E: So, in a nutshell, what sort of technology are you working on here?

David F: So, it’s technology that we’ve adapted an invented in order to automate the process of growing indoors on a very small footprint. If you think about growing crops, first of all, we have to seed them, at the end we harvest them, we bring in third-party equipment for that. But what we do in our facility is, we go through the germination, propagation and the final growing stages of a wide range of crops.

Will E: And it’s vertical farming, then?

David F: It is vertical farming.

Will E: And can you explain exactly what that is?

David F: Sure. You basically imagine taking a field, cut it up into snooker tables, stack them nine metres high, with the crops on the top and the weather on the bottom, put it in a box and control the weather from your mobile phone.

Will E: That’s what every farmer dreams of, controlling the weather, isn’t it?

David F: Absolutely.

Will E: So, is this the main base for the testing? Do you carry out trials and experiments elsewhere too?

David F: This is our third prototype, so the first two were down near St Andrews, but this one is the final one, this is the pre-production one and, indeed, we’re going into production this quarter.

Will E: And what’s the building we’re about to go into then?

David F: It looks like, from the outside, like a corrugated iron shed, it’s 25 metres along the front, 12 metres down the sides and 10 metres high. It’s not actually corrugated iron, what it is, is insulated material that would normally be used in cold storage, but we’ve turned it inside out and put it in a frame.

Will E: Okay, so shall we go and have a look then?

David F: Let’s do it.

Will E: So, this is the airlock into the main building, we’re standing in a large, square room, doors either side of us. David, why do you need to go through here?

David F: We’re trying to keep pests out and we want to absolutely minimise the use of any sort of materials that could contaminate the plants. So, we actually use zero pesticide in here, we also don’t have any lubricants so there’s nothing that could possibly taint the crop. This is positively pressurised and it’s in order to give us a complete block between the growing area and the outside world.

Will E: Okay, so this already feel like it’s a factory rather than a farm, how do you find that traditional farmers, like me, react to it?

David F: When they come and see it, they’re the best people in the world to show, because you guys know what the challenges are. I mean we talked a moment ago about controlling the weather, well if you suddenly are in control of the weather, you can think about your business and the workflow in a completely different way. You’re going to dictate to the climate when it is to behave in a certain way, not have to react to it because you’ve watched the weather and you know it’s going to pee down next weekend.

Will E: Yes, after the summer we’ve had, that sounds very appealing. So, where does most of the interest come from?

David F: We have about five different types of people that are interested in this. The first one are real farmers like yourself, and usually what they’re looking for is some sort of efficiency, for example, in growing their seedlings in a very efficient way and doing so with absolute minimum disease or pests. Another way is to diversify, so what you can grow in here, you probably couldn’t grow outside in a field in North East Wales where you farm. So, those two things, efficiency and diversity. We then get wannabe urban farmers, so these are typically entrepreneurs, maybe they’ve done a bit of mushroom-growing or something before, and they’re wanting to serve restaurants or communities in a city.

The third type are governments, so city, regional, national governments looking for food security, food safety, better nutrition. Then we get people like retailers, so people facing the consumer, so restaurants, hotels, food service or contract catering, and those kind of people. And finally, we get folks who are in food production, so they might be making sausages, pies, soups, salads, sandwiches, anything like that, and they just want better quality ingredients and they want them close to the point of production.

Will E: So, shall we go through to the main building then?

David F: Yes, let’s go. Technically, this isn’t actually a building, it’s a machine, it just doesn’t happen to have any wheels on it, so when you think about purchasing something like this as a farmer, just think it’s bigger than a combine harvester.

Will E: Can you explain what’s going on here at the moment?

David F: So, we’re standing in a corridor between two pairs of towers, so each tower has a footprint of about 40 square metres. And if we get Cameron to open the curtain here, and we go and take a look inside here, you can look all the way up to the ceiling and you can see that we have two stacks of 25 trays. Each tray, as I say, is the size of a snooker table, it has the crop on the top and the weather on the bottom. As you can see from all the different colours here, we have complete control over the three main aspects of the weather, the light, the wind and the rain.

So, we’re in the process at the moment of making a time-lapse through 24 hours, going from night, through sunrise, to the Mediterranean in May, and we can be that specific. We can pick a latitude, we can pick a time of year and we can mimic exactly that, because if you think about it, going back to the weather, if you want to grow something like vine tomatoes or basil, it comes from the Mediterranean, so why would you give it any other kind of light? Because that’s what it was evolved to grow best in.

I’ll give you one example. We did some tests on brassica seedlings for some local growers in Angus, they normally take six weeks to reach the point where the seedlings are ready for hardening and planting out. They gave us some seeds, after three weeks we phoned them up and said, “How big are these things supposed to be?” They told us about six to eight inches high and we said, “You’d better come back,” and on the time-lapse, they had actually grown to the desired height in 11 days.

Will E: Wow, so that’s massively improving production then, isn’t it?

David F: Yes, and it means you can run multiple, more cycles in a year, so typically for a herb or a salad you’re looking at around about a month to get to harvest weight. We’re typically getting there in 20 days.

Will E: Do you think this has the potential to replace traditional farming?

David F: Absolutely not. What I do think it could do -

Will E: Good.

David F: - well, I can’t see herds of cattle coming through here any time soon, or rice paddies or bananas or fields of barley. So, we know that food supply chains are causing difficulties in terms of carbon footprint and so on. There are parts of the diet that I believe we can grow anywhere in the world, so this machine will work from -60 to +60 centigrade outside.

The ventilation system is completely closed, the water system is completely closed, which means it’s totally self-sustaining. And given all those controls you’ve got, we can replace that part of the diet which is medium to high value, which is expensive to move around the world and is a part of a cause of the increasing climate change. So, we can supplement what farmers are doing, but we’ll never completely replace it.

Will E: No, so is it realistic to expect a farmer, the likes of me, to start integrating this technology onto their farm?

David F: There’s absolutely no reason why not. As we said before, diversity … I mean so much that you read about agriculture today is about people putting up yurts or all kinds of stuff to try and diversify their income. The vision I have is for a network of these around the country, of this size and this is, frankly, too big for an artisan food producer to afford. But, if you had one of these on your land, you would be able to rent out, say six trays, to someone making high quality soups in your area. They could grow a lot of their ingredients in here and it would be a source of income for you, it would be surety of supply for them, it would be sustainable, it would be very high quality.

Will E: It must be quite an expensive and difficult thing to do though, is it?

David F: So, in terms of difficulty, we’ve done the heavy lifting for you and, essentially, what you would get if you order one of these, it will come like an IKEA kit, flat-packed in a box. So, we would put up the frame, we put up the cladding on the outside and then we literally drop this racking, which holds the trays, down into the middle of the tower. Then we stick the roof on it and then we would build it from the inside, and that whole process takes about three months to assemble. In terms of cost, each tower is going to cost somewhere in the region of £500,000, it will produce 20 tons of crop per annum and we’re calculating that the payback is around about four years.

Will E: Wow, 20 tons per year? That’s very impressive.

David F: Yes, and if you want some economics, let’s talk about basil, everyone talks about basil, it’s the biggest herb crop in the world. If you go to your supermarket, you’ll pay £37.50 for a kilo of basil, you’ll just buy a little 30g pack. If you were to go to Spitalfields Market in London, you’d pay £28 for organic, £20 for non-organic. If you’re a large food producer, you can buy fresh, non-organic for between £7 and £8, frozen, between £5 and £6, our farmgate price here is £2.70.

Will E: Wow, that speaks for itself then, doesn’t it?

David F: Yes.

Will E: We touched on it before, but we know that population growth and food security are huge issues for the world in the next 50 years, is this technology a way of solving those global problems?

David F: It will certainly have a major contribution to it, so if we no longer grow our blueberries in Peru and fly them halfway around the world, and we can grow them close to the point of production or consumption, that is massively going to help with the carbon footprint and food miles and all that type of stuff.

Will E: It seems very timely at the moment, doesn’t it, with everything that’s going on at the moment, discussions around these kinds of things and environmental impact of food production.

Will E: So, with all these lights, is it using a lot of energy here?

David F: The best way for me to describe that to you is that if you were growing under glass with some supplementary light, you’re going to produce around about 100g of crop per kilowatt hour. Other vertical farming systems currently are between 25g and 30g of production, we are now at 75g and we can see the way to get to 100g, so we can get to parity with growing under glass.

Will E: What about demand for these crops and a route to market for farmers if they were considering putting up one of these units?

David F: We’ve had every major supermarket, food retailer, here, we’ve had an increasing number of restauranteurs and so on, everybody is astounded by the quality of the crop and you can taste some in a moment. So, in terms of quality of supply and consistency of appearance and all those kind of things, absolutely no concerns about that at all. The really clever thing is that we can advance and retard growth, so because we’re in control of the weather, we can actually stop it.

So let’s say the supermarket that you were going to deliver two tons of herbs to says, “Oh my goodness, we’ve got two weeks of bad weather coming, I don’t need half of that,” you can literally stop it and then start it growing for when they do want it. So, yes, that’s the kind of control that you’ve always dreamt of, right?

Will E: Yes, definitely, that’s very, very exciting.

Cameron W: Would you like to take a look at some of the crops? I can bring one of the trays down just now.

Will E: I would love to.

Cameron W: Because we don’t use pesticides and we water from below the plants, they’re all safe to eat, none of them have to be washed, you can just pick them and eat them.

Will E: So, what is it that we’re looking at on this tray?

Cameron W: This tray has got a range of different products, the interesting one in the middle is kale, I can look up how early this is in its growth, we’ve got an app which is how we monitor all this. This is tray number nine, tray number nine is going arugula, scarlet kale, red Batavia lettuce. It was planted ten days ago and we’ve got a time-lapse here where you can see them growing, we get photographs every set period and you can see how it grows. We’ve got artificial intelligence analysing all these images as they go and trying to line up the size of the leaves for that specific plant with the time that it’s taken.

And when this is in use in industry, you can have it looking at it in real time and it can say, ‘you’re on day four of this crop, the leaf should be this size’. If it isn’t, that can identify there’s something wrong, maybe you need to take some action, you might have something wrong with your system somewhere. Or, maybe it’s bigger than it should be, maybe something’s changed that shouldn’t be there and it’s made the plant better. That’s something that we can harness and you can try to repeat that in the future, and because we have a lot of data-logging, we log everything, if you get it once, you’ll be able to repeat it because it’s such a controlled environment.

Will E: So, for as high tech as it is, it’s actually quite a simple system then really, isn’t it?

Cameron W: Yes, what it’s actually doing is simple, how we’re doing it is what makes it special. Every single tray can have its own temperature, and it’s all watered individually, the ventilation is done through here, you can see these vents that go along the back. There are holes in the back there, they line up with the hole in the back of this tray and there are actually channels underneath with little holes that go through the LEDs. The air comes out, cooling down the LEDs, warming up the air a little bit till it gets to the exact temperature we want to set that tray. So, this lettuce and kale, its temperature is controlled and its light is controlled by the tray above.

Will E: So David, what’s the main advice you would give to farmers who are interested in this technology and what it could do for their businesses?

David F: Come and see it, because I think it’s not until you get up close and personal with this kit, as you have just seen yourself –

Will E: Yes, I would agree.

David F: - with a smile on your face, that you begin to realise what you could possibly do. And if you are thinking of improving on your efficiency or looking to grow your own seedlings instead of importing them or looking to diversify, you can stick this literally anywhere and you can grow a very wide range of things to a very high standard.

Will E: So, we’re also joined today by the Chairman of NFU Mutual, Jim McLaren, what do you think of what you’ve seen today, Jim?

Jim McL: Well, it’s been a hugely impressive visit, I’m fortunate to stay only about 30 miles from here, but I’ve never had the chance to come and see this operation until this morning, and I have to say I’m really, really blown away by the scale. As in, it’s not an enormous building and the amount of produce coming from a very small physical space is very impressive. But David, I have a question for you, linked to the water consumption, one of the criticisms of our farming industry often is the consumption of water. And here we have a system that is completely independent from the climate, how are you sourcing water and what sort of volume of water would the system be using vis-a-vis vegetables grown outside in a field?

David F: We harvest rainwater, just straight from the sky, we put it through a UV filter, we manage to pH the EC, the nutrients and the temperature that are in it and it gets delivered directly onto the tray itself. The crop will typically take up about 5% of the water that flows through, the rest of it is run off, recaptured in the white pipes you can see at the back, put back into the system, cleaned and UV-filtered again.

Also, we have humidity in here and what we do, with our background ventilation, is we capture that warm, humid air as it rises up from the crop, it is cooled, it is condensed, that water is also captured and put back into the system. So, the only water that ever leaves here is inside the body of the crop itself, that means that we’re using up about 5% of our water per crop growth, and we do about 20 a year, which means you only have to replenish your water once a year.

Jim McL: And is there nutrition in the water, David, or is it simply the UV-filtered water that you’ve suggested?

David F: We do add different types of nutrition, again, based on the crop science advice that we get from the guys at the James Hutton. But, what we grow in also has an impact and so far we’ve been experimenting with peat, a little bit of soil and coir. We’ve discovered that the coir, the coconut matting, ground up, is probably the most effective, it’s the most pest-free and if you actually recycle it and use it about four times, what it does to the crop improves each time.

Jim McL: Thank you.

Will E: We’re joined now by the CEO of the James Hutton Institute here in Dundee, Colin Campbell. We’ve just come into his office right now. Colin, can you explain what the James Hutton Institute does, please?

Colin C: Yes, the James Hutton Institute is a scientific research institute, it’s the biggest research institute in Scotland and one of the biggest in the UK. We do research on all the major issues facing the world today around climate change, food security, water security and energy security. We do fundamental research, collecting primary data about all of these matters and try and synthesise these into recommendations around policy or into new products and services for industry.

Will E: And how do you collaborate with Intelligent Growth Solutions here?

Colin C: We collaborate by providing, essentially, the biology and the biological understanding around the crops so we can make recommendations about the right types of varieties to grow in these indoor vertical farming systems. The right growing conditions for the crops that you would grow in them and applications of the indoor vertical farming system for conventional agriculture.

Will E: Are you excited by that technology and its potential?

Colin C: Yes, this is one of the most exciting technologies I’ve ever seen in my whole career. What they’ve done is truly transformative by making food production independent of the climate, independent of the land in an indoor vertical farm, we’re future-proofing food systems for the future against climate change.

Will E: Where do you think that technology could go in the next 10, 20 years?

Colin C: That technology needs to obviously be grounded in economics in terms of production, but it has the potential to actually really change our food production systems by reducing the environmental footprint that we currently have for food production systems. Be more efficient in energy, more efficient in water use, more efficient in nutrient use, and at the end of the day, producing more healthy, more nutritious, more flavourful food.

Will E: And how quickly do you see that being rolled out to farms around the country?

Colin C: I think that it’s not necessarily going to happen overnight, conventional agriculture is still way ahead on price of production for the major food crops. At the moment, indoor vertical farms are really addressing the very high-value crops such as leafy salads, herbs, for example, but over time, as the costs come down, we will be able to grow more and more different types of food crops.

Will E: So, we’ve just seen a range of different leafy salad crops being grown but what kind of different things can be grown in the future?

Colin C: Obviously, it’s about growing plants in an optimal condition, they don’t have to be food crops, they could be crops which are actually producing medicinal compounds. And this ability to grow these crops in a high-hygiene environment under optimised conditions is very suitable for growing high-value medicinal compounds. Effectively, the indoor vertical farm can be like a plant factory producing chemicals of high value.

Will E: So, are we leading the world in this technology, here, in the UK?

Colin C: I think we are, and there are obviously vertical farms popping up all around the world at the moment, they have got many essential common elements around using LED lights and environmental control. But the real difference with IGS Limited’s technology is they’ve really mastered the cost of the energy use in these systems through very innovative [flexing] with the National Grid and controlling that energy for the lighting. There are also innovations around the ventilation and the robotics and the use of artificial intelligence. And it’s the combination of all these technologies converging in one unit which is really making us leading the world at the moment.

Will E: We’re joined here by Charlie York, one of NFU Mutual’s experts on rural affairs. Charlie, what advice would you give to customers looking to invest in precision technology?

Charlie Y: Hi Will. There are loads of places that farmers can go to find out more about agri-tech and precision-tech in farming. The obvious would be to go and look on Google and see what you can find, but when it comes to a topic like this, the best thing the farmer could do is go and speak to the experts. If you’re looking at investing in a vertical farm like the systems we’ve been seeing today, go and talk to the likes of David and the team at Intelligent Growth Solutions. If you’re looking at tagging systems or livestock monitors, go and talk to experts such as CowAlert.

Don’t forget to speak to your insurer, go to your local NFU Mutual office, advise them on what you’re looking to do. Make sure you’ve got the correct policies, liabilities in-place just before you start the build, because that’s really important, to make sure the foundations are right before you start. Go online and search ‘NFU Mutual agri-tech’ and have a look at the report that’s been put together, that really brings to life real case studies by sector of what farmers are doing, how their journey has gone and top tips for investing and start up your business.

Will E: And how can you see precision-tech changing the farming industry?

Charlie Y: It’s certainly not something I can see in the short to medium-term, replacing traditional farming methods, I still think it’s a technology and a use that will definitely work alongside the farmer to improve efficiency, safety, all of those day-to-day jobs that you might do on the farm. The great example I would say is, the autosteer on tractors, and that’s really helped farmers and operators carry on doing the jobs they’re doing or concentrating on the implement rather than driving and doing the implement. So that, for me, is a great example of how technology has evolved and worked. Do you use that on your farm?

Will E: Not autosteer yet, but we are looking at it, I’ve been doing a bit of research and it’s quite right what you said about Google, you can be overwhelmed by the amount of information. So, again, the chance to speak to someone like David today is really going to help you cut through all the noise really.

Charlie Y: Absolutely.

Will E: Well, thank you very much to all of you, it’s a fascinating place. And now, as part of our trip up in Scotland we’re also off to visit the home of Ice Robotics, based in Edinburgh…

 *Just before we carry on with the rest of this episode, to remind you that NFU Mutual has a report on technology in agriculture, showing you what advice is out there and what other farmers are doing. Just go online and search ‘NFU Mutual agri-tech’. Right, back to the programme.*

Will E: Welcome to Edinburgh and IceRobotics, the makers of CowAlert. The team here are pushing the boundaries of monitoring sensors for animals, which aim to give farmers as much real-time data as possible on their livestock. Again, this is very much an office rather than a farm, but it’s where the software development gets done. Douglas Armstrong is the CEO.

 So, what sort of monitoring is integrating into CowAlert and how does it work?

Douglas A: Fundamentally, what we’re doing is, we’re measuring changes in animal behaviour, we’re trying to measure, using sensors, what a good stockman will see every day. We’re trying to help the farmer with having eyes and ears on the farm, 24/7, so by measuring behavioural changes, we can pick up conditions in animals much earlier than you would normally pick up and then that allows an earlier and more natural intervention.

Will E: And all of us have got less and less staff on farms these days.

Douglas A: Absolutely, so there’s a huge pressure on most farmers because of the availability of staff, the time that they have personally and the quality of staff is becoming more challenging and animal numbers are increasing.

Will E: So, can I have a look at one of the sensors, please?

Douglas A: Yes, absolutely, wherever it is.

Will E: Okay, so that’s pretty robust, isn’t it? I suppose it has to be.

Douglas A: It has, yes, we’ve chosen to put it on the rear leg of the cow, that’s probably the richest single source of data on an animal, but it’s also the most challenging environment. So it has to be very, very robust, we have two engineers here who spend all of their time testing, and it’s also a fairly complex piece of technology. We’ve got the same processor in here as you would find in your iPhone and we have to put that on a cow’s leg for up to seven years and our target failure rate is less than 2% per year. So, not even your mobile phone manufacturers will be achieving that, so it’s a very challenging task that we’ve set ourselves, but we’re now successfully getting these on and we warrant them for five years.

Will E: So, it’s a blue box, slightly bigger than a matchbox with a very hardy strap around it, does it stay on the cows okay?

Douglas A: It does, yes, it’s very easy to attach, having it on the rear leg makes it very easily attached in a milking parlour, you can just walk behind the cow. It’s a simple Velcro strap, it’s easily attached and it will stay there for the lifetime of the product.

Will E: What are the advantages to farmers in monitoring their livestock so closely?

Douglas A: Well, you’re effectively monitoring them 24 hours a day, seven days a week, and not only are you monitoring them, but the algorithms are constantly working behind the scenes. So, it means that the system will alert you to any problems that you’ve got or any issues on the farm, probably before you would ever see them yourself. Things like lameness detection, which is a key area for us, it will pick up cows that are lame probably two weeks before you would notice most of them being lame. Which, in itself, is a challenge because whenever farms put them on for the first time, they’ll see that the system is alerted, they lift the cow’s foot to examine it and they won’t see anything. So, we’ve had to develop a whole range of things to help the farmer actually prove that the cow is lame.

Will E: Presumably, you get an alert on your phone? It works in-conjunction with a smartphone.

Douglas A: Absolutely, so you get an alert on your phone or you get an email to tell you that the animal is lame, and then it becomes a permanent record that you can keep and put in your files.

Will E: Yes, a very simple system.

Douglas A: Very simple, yes. So, as far as lameness alerting is concerned, lameness is really the farmer’s tool for treating lameness, but what we also do is have automated mobility scoring. On the dashboard, the mobility score appears daily and that’s giving each individual cow a mobility score as per the AHDB scale in the UK. If we look at the benchmarking system that we’ve got … so here we see a table which ranks all the farms, so we anonymise each farm and each farmer knows their number. They can see where they sit in relation to all the rest of the participating farms, and you can see here the wide range and wide variation in the lameness. So, what we’re doing is, we’re adding … in the UK there’s a four-point scale, so it’s 0-1-2-3, so we consider 2’s and 3’s as being lame cows, so here we’ve got herds here that are 2.4% lameness, combined 2’s and 3’s, which is excellent, I mean really, really good. But you can see the huge variation there is.

Will E: Yes, right down to the other end here.

Douglas A: Right down to the other end of the scale, and I think the most important thing is that these are real live figures, because it’s automated and because it’s happening all the time, it’s consistent and it’s subjective. So, they can see that there’s real potential here to actually improve their lameness, which is what we want them to do.

Will E: So is it about animal welfare or increase in revenue or both?

Douglas A: Well, it’s all now-linked, I believe that we’ve got to have a sustainable industry, but certainly in countries like the UK, the consumer is quite happy to have livestock products, but they have to be assured that the animal welfare is to the highest standard. They also have to be very sure that we’re not having a detrimental increase impact on the environment. It’s really, really important that those things are assured and it’s really important that the supply chain is transparent and that the farmers demonstrate that that’s the case.

I think as long as we do that, then the industry will be secure and they’re not contradictory, so every farmer knows that if they have an efficient farm, if they have well looked after animals, they’re healthy, they’re happy, that translates into efficiency and efficiency translates into reduced impacts on the environment. So, none of these things are contradictory, it all fits together, but never has there been more pressure on farmers to make sure that that’s the case.

Will E: Is it just for dairy herds or is it relevant to others such as beef farmers like me?

Douglas A: No, absolutely, what works in a dairy cow is obviously going to work on a beef animal, it just depends, it comes down to economics at the end of the day. Obviously, the economic proposition on the dairy cow is significantly different to one on beef animals, but we have beef herds with sensors on.

Will E: It’s really making the whole system more efficient then, isn’t it?

Douglas A: It is, yes, so it’s trying to provide not only accurate data but interpreted data so that people can look at it, all the members of the team can look at it and decide on actions. So, we’re desperately trying not to bury people in data, because that’s another problem, our focus is on interpreting that data and try and give the farmers and their advisors and all those that participate in the farm, the team, good signed pointers as to what they should be doing.

Will E: Do you have a lot of farmers who get involved in your studies in trials?

Douglas A: Yes, so we have a sort of hardcore group of people who are really interested in what we do and they want to participate in any research work that we do. Again, something that’s unique to ourselves is that whenever someone buys a system, they’re allocated an account manager, so we don’t just sell it as a piece of equipment, we sell this as a service on the farm. The account managers, their objective is to try and help the farmers get the best use of the system, so they’ll spend time on the farm, just encouraging them and disseminating the knowledge that we’ve received from all our trials and all our trial work.

Then quite a lot of them will have their own ideas as to what protocols should be followed whenever they get an alert of some description. So it becomes a two-way process where farms in different circumstances contribute their own knowledge and their own expertise into the programme. The account managers will harvest that and bring it back to us and likewise then we’ll disseminate that around all the rest of the farms. We’re trying to create a community here, so everybody can work together, everybody can share their knowledge and everybody then can get their standards up.

Will E: So, what advice would you give to farmers who are considering this sort of technology?

Douglas A: Well obviously we’re very keen that they buy our equipment, but equally we’re very keen that they cast their net around and really understand the landscape, because we’re very confident that whenever they do that, they’ll realise that we’ve got a very, very good product here.

Will E: So, thank you to Douglas and the team at CowAlert and the guys at Intelligent Growth Solutions this morning. It’s been really apparent today that some of the problems we’ve traditionally had in farming are being solved by modern technology. These things that we’ve talked about, and it seems as if they’re way in the future, are actually happening now and it’s going to be fascinating to see how the industry changes in the coming years. It’s been a real glimpse into the near future for me and how agri-tech is going to help me improve on my farm.

If you’ve been inspired to find out more about precision-technology in agriculture and see what help is out there, you can download NFU Mutual’s technology report. Just go online and search for ‘NFU Mutual agri-tech’. In the meantime, if you’ve enjoyed this podcast, please do subscribe, rate and review in the normal way. For now, from me, Will Evans, NFU Mutual and everyone here in Edinburgh and Dundee, it’s goodbye.