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the Independent Agronomist

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the home of independent agronomy

ADVICE YOU CAN TRUST FROM THE ASSOCIATION OF INDEPENDENT CROP CONSULTANTS | **SUMMER 2022**

Maximising margins

How to make your arable business more resilient

www.aicc.org.uk

HOW IS AICC GOVERNED?

The AICC is governed by a Council of Management who are Directors of AICC managed by the CEO. In addition, members take on specific roles related to their expertise and AICC is represented on all major industry bodies. Additional professional expertise is sourced as required. There is a separate trials team with representation from each trials region.

TRAINING AND SUPPORT

Training is staged in seven regions by coordinators which provides members with comprehensive technical and industry updates. Training is also staged nationally as required with industry partners such as the British Beet Research Organisation (BBRO), Rothamsted Research and NIAB, as well as the Academy modules.

AICC members gain discounts on industry schemes and professional indemnity insurance. They also receive help and support with business and industry issues.

AICC TRIALS

AICC has had a long history of running in-house trials for the benefit of its members. The portfolio of projects undertaken and regional extent of these member trials has been significantly increased in the last nine years.

The AICC Trials team comprise a committee of highly proficient and technically driven, established agronomists from the South, West, East, Central and Northern regions of England along with Scotland.

AICC Trials run a national series of independent field trials that are principally involved in testing and comparing the performance of current and near market agrochemicals. Our trials also focus on specific agronomic issues such as nitrogen response, the role of micronutrients, and the use of adjuvants.

In addition, we also run a number of regional variety trials looking to compare the performance of new and established varieties – currently the main focus of these trials are early drilled winter wheat varieties and the tolerance of winter oilseed rape varieties to Verticillium wilt.

AICC Trials data is turned around quickly to maximise the benefit to members, and external manufacturers have praised the efficiency and professional way we handle trials. AICC Members are able to attend a detailed results session at our Annual Conference each year as well as inspecting trials sites during the season.

This resource is one of the many pools of information that AICC members use (see infographic on the back cover). But there is no doubt that access to these extensive, independent trials results and innovative technology are at the forefront of delivering technical excellence – providing AICC members with the tools to deliver the most cost effective advice to growers.

THE FUTURE

AICC takes the view that it is healthy to have a near 50:50 split of the advisory market and expects to see the independent share increase. The current climate is enhancing this independent thought process. Independent in thought, why wouldn't a grower wish to have an independent adviser?

WELCOME

Demand for commercially independent expert advice is stronger than ever, says AICC chief executive **Sarah Cowlrick.**

Why growers value truly independent advice

Established in 1981, the Association of Independent Crop Consultants (AICC), has a UK market share of almost 50% when it comes to delveiring arable advice.

Arable farming is changing dramatically. And more growers are turning to agronomists who provide wholly transparent advice not linked to sales as their business needs and challenges become ever more complex.

Farmers know they can rely on the integrity of advice from AICC members – underpinned by a strict Code of Conduct which has stood the test of time for the last 41 years. So much so that the AICC now supports 98% of independent crop consultants.

AICC members are free to evaluate and recommend products based on their advice, firmly fixed on ensuring that growers achieve the best margin possible for their crops. The grower knows exactly what they are paying for their comprehensive, unhindered advice backed up by independent research.

Recognising the importance of building for the future, AICC has developed its Academy in response to the continued demand and growth, to support its members with their chosen trainees on their journey to becoming a full-fledged independent agronomist.

Being the largest group of independent agronomists in Europe, AICC is well placed to undertake market surveys which provide valuable insight into various issues. One such survey was undertaken in autumn 2021 to demonstrate the areas AICC members cover, the varieties that were recommended to growers and other agronomic insights, and in particular, whether they advised on environmental schemes and the number of crops they advised on. In a matter of days, we were able to establish a picture across the whole of the UK.

Nationally, three quarters of independent agronomists advise on eleven or more different crop species and nearly two-thirds are advising on stewardship schemes;

Demonstrating the wide ranging comprehensive skill sets of our members and their ability to work as a team with their farmer clients helping them have profitable and sustainable businesses.

> “Huge requirements are placed to ensure financial advice is genuinely independent – and I think that is coming to UK agriculture too

Members are proud to deliver advice based on information including that from AICC R&D trials. They are able to interpret raw technical data to evaluate products and methodologies with an open and independent mind. To future-proof this vital research, our R&D operation is under-going a re-structure this year.

The future of independent advice is vital, says Sir Dieter Helm, professor of economic policy at the University of Oxford. Speaking at our conference earlier this year, Prof Sir Dieter Helm said: “In the financial institutions, huge requirements are placed on making sure that financial advice is genuinely independent – and I think that’s coming to agriculture too.”

INSIDE

ASSOCIATION OF INDEPENDENT CROP CONSULTANTS (AICC) **E:** info@aicc.org.uk **W:** www.aicc.org.uk
The Independent Agronomist, developed by Sarah Cowlrick and produced by Ruralcity Media on behalf of the AICC.

The best of times, the worst of times

These are hugely uncertain times for arable farming – an unprecedented era. Never in my long career have I been more relieved to be an independent agronomist – selling advice and ONLY advice, says AICC chairman **Sean Sparling**

Every requirement growers have for even basic crop production has been compromised in some way over the last 12 months – or so it seems.

Back in April 2021 we heard whispers of impending price hikes on glyphosate. That was an underestimate. In fact, 12 months later, we have seen a 300% hike in glyphosate prices. For some farmers and agronomists, it is still proving difficult to source. And even where supplies are easing, it is not getting any cheaper. This is all a result of manufacturing issues yet to be resolved. And it highlights the fragility of global supply chains.

Ammonium nitrate – which is apparently a by-product of manufacturing CO2 for fizzy drinks according to the BBC – today seems cheap at £700 a tonne compared to the £225 a tonne which many thought was too expensive just one year ago.

We have seen the UK's major domestic ammonium nitrate producers ceasing production altogether and even mothballing their domestic manufacturing plants in the last 12 months.

"How much is imported nitrogen?" It is a question with absolutely no answer today as Europe battles similar supply issues and Russia battles Ukraine. So, the complication of where next year's UK nitrogen fertiliser will come from looms frighteningly large in the headlights as imports will be likely to be severely compromised for the foreseeable future.

Add to all that the hikes in electricity charges, gas charges, diesel costs for agronomists, consumers and growers alike, the food crisis (which isn't merely imminent, its already here but they just don't know it yet), red diesel in road travelling vehicles being imminently removed, the imposition of limits and constraints on our organic manure use, the current price of feed wheat and the catastrophic effect that's having on the livestock sector who are the producers of that crucial organic manure and, presiding over all of this, a minister of state who believes we have no imminent need of importing food, that we have sufficient organic manures in the UK to completely remove the need for any manufactured nitrogen fertilisers at all and a department around him which thinks that food production in the UK is neither worth protecting nor supporting – financially or otherwise.

The issues we see today in agronomy and farming are as many & varied as they always have been, but today they're way more wide ranging than any of us could possibly have predicted even 12 months ago. There are always issues we must deal with in our working lives and we should approach all of these issues – new and old - in the same way as we approach the weather. Some things are out of our control and they're not things we can change by worrying. Making mistakes is far better than not making decisions in the first place. We should never lose sight of the fact that 80% of this job is out of our control, the other 20% is skill – and as independents we have all of that 20% in spades.

So, we as independent advisers and AICC members will continue to do just what we're paid to do by almost half of UK arable – we advise without caveat.

Growers know that as independent

In the last 12 months glyphosate prices have increased by 300% and ammonium nitrate had risen to £700 a tonne.

advisers, we can be relied upon to offer our clients an informed and commercially detached opinion on what's best, what's likely to be the next best and what's best to avoid. No vested interests, no hidden agenda, no reason for growers to think otherwise. The independent adviser is now and always has been the one to trust.

In today's farming climate and with all the problems we face as an industry, it's understandable that advisers and growers alike get disheartened, but as an independent advice sector, we are possibly more relevant today than ever before in our history. Today more than ever, those growers need an adviser who sees the bigger picture and can make decisions based upon a conscience and a no-nonsense, no-hidden-agenda approach to delivering and implementing that advice.

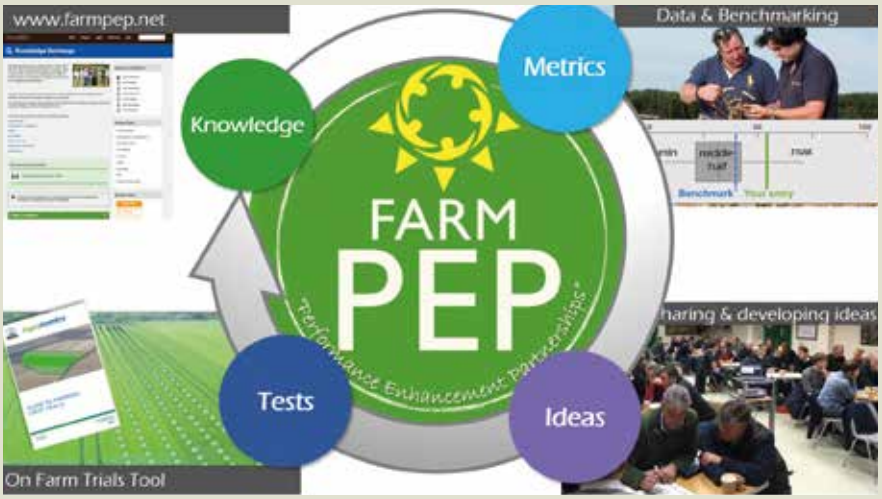
UK agriculture is crucial to our collective UK future. Independent advisers have a very particular set of skills and we're proud of the reputation we've accumulated to ensure UK agriculture survives and thrives. The way we farm, the land we manage, the tools we help develop, the knowledge we have and the food we produce, are all safe in our independent hands. These are very interesting times we find ourselves in and normality has gone out of the window, then again, there's no such thing as a "normal year" is there?

Meet our new chairman elect Andrew Blazey

I have always had a keen interest in crop husbandry & research, this led me to study crop science at the University of Reading before joining ADAS where I gained my BASIS, ICM, BETA and FACTs qualifications.

I am a founding member of Prime Agriculture where we have always had the philosophy that in order to achieve the best results for our farmers, this advice should be fully decoupled from supply. With that in mind I also serve as a director of The Association of Independent Crop Consultants and have recently had the honour of becoming their Chairman Elect.

I am fortunate to take over with AICC in a strong position and demand for independent advice greater than ever. I look forward to the role, working with an enthusiastic, accomplished, and dedicated team to the benefit of all our members offering unbiased advice to farmers and their businesses.



Farm PEP for AICC

How should we generate and share knowledge in agriculture? The information that is used by farmers and advisors to make crop management decisions comes from a range of independent and commercial sources, additional information comes from the experience of what's worked on farm before, or has been seen to work on neighbouring land.

AICC is part of an Innovate UK consortium in Defra's Farming Innovation Program with ADAS, Innovative Farmers, British Geological Society and Map of Ag to help democratise the knowledge landscape. The FarmPEP project brings together shared knowledge with a framework for sharing data and benchmarking measurements, with the formulation of ideas and hypotheses in groups with tools to robustly conduct and analyse Tramline Trials on farm, to generate sound conclusions to inform the knowledge base.

The first component of this, a knowledge exchange platform, is already online at www.farmpep.net. FarmPEP.net aims to connect people, projects, organisations and knowledge in agriculture by linking to Topics. The idea is that the top of each Topic page has a Wikipedia style summary written by trusted 'Stewards' who also recommend useful content, resources and organisations.

At the bottom of the page are links to content produced by the community that are connected to the Topic, with the most liked content at the top.

FarmPEP.net is open to anyone – the plan is that organisations will ultimately pay a modest fee for their pages to cover the costs of running the platform, like paying for a stand at an agricultural show.

The second component enables easier sharing of data and real time online benchmarking of measurement, using the approach developed in the Yield Enhancement Network (YEN).

Map of Ag is working to permission sharing of agronomy data directly from farm management software like Gatekeeper. ADAS is integrating with the YEN database to allow 'Dynamic Benchmarking' where comparisons can be filtered by soil type or region or yield level.

AICC is involved with ADAS and Innovative Farmers in facilitating groups of farmer and advisors to develop and test ideas for better decisions and systems. This year we have run a number of Crop Nutrition Clubs, testing appropriate N fertiliser rates and various efficiency products. We also plan to run Soil Carbon Clubs looking to compare and test ideas for raising soil Carbon levels.

With BGS, ADAS will be developing its Agronomics approach to managing and statistically analysing on-farm Tramline Trials, creating an online tool that is useable by growers and advisors as well as researchers.

The project runs until October 2023. To be involved, please email Daniel Kindred at daniel.kindred@adas.co.uk..

How to make your arable business more resilient

There are clear short term cash flow issues to overcome this year. But growers shouldn't lose sight of long-term goals, according to consultancy group Ceres Rural, whose arable advisers are all AICC members, **writes Adam Clarke**.

It is a turbulent time for arable producers, with input inflation threatening profitability at over 30% – and further inflation likely when producing the 2023 crop.

In addition to fertiliser, fuel is also a concern. One large-scale contractor is forecasting a £250,000 increase in his fuel bill for harvest 2022 – a jump many businesses will find tough to absorb.

This is against a backdrop of falling Basic Payment Scheme (BPS) funding as the industry transitions to support schemes with an increased environmental focus.

While Defra has recognised potential cash flow issues and will offer 50% of BPS payments up front this July, the fall in overall support is set to continue.

This is focussing minds on cost cutting on farm, according to Ceres farm economics specialist Ben Bates.

He is helping farm businesses through the Future Farming Resilience Fund (FFRF). It enables farmers to get free advice from consultancies like Ceres during the transition away from direct support payments.

The scheme involves benchmarking each business. Ben says the combination of input inflation and potentially less cash coming in, has highlighted the importance of knowing where every penny is spent.

This helps farmers scrutinise decision-making, both in the short and long term, making sure businesses are getting value out of expenditure.

"I think the benchmarking exercise has been a wake-up call for some businesses, as they thought they were doing relatively well, but the data says otherwise," says Ben.

"Farming is profitable when done well, but you must get a handle on fixed and variable costs. Get them under control so they are appropriate to the business and its productive capacity."

Short term

The Ukraine conflict and poor production forecasts in other grain-producing regions around the world means commodity prices are buoyant. Wheat has been trading at £320/t for November 2022 and the 2023 crop price has been trading at anout £250/t for the same period.

Selling well will take some of the sting out of ever-increasing inflationary pressure and encourage growers to push this year's crops for maximum potential.

Ceres farm consultant Beth Speakman *(pictured left)* is already seeing this shift in the field. "When prices weren't so high, more growers were opting for rotational stewardship options and talking about cutting inputs.

"Now it feels like there's a swing back to production with a focus back on output," she explains.

Ben says agrochemical inflation for the 2022 crop has lagged slightly behind other price rises, so applications to many combinable crops and sugar beet should be appropriate and not cut unnecessarily. This will help maximise yield, as savings will be negligible, he adds.

However, there is still an opportunity to look at money-saving agrochemical options for 2023 before prices catch up with other inputs, says Ben.

"Thankfully there are cash reserves, new season nitrogen has been secured and it's a good idea to be thinking about forward sourcing other essential products such as glyphosate and autumn pre-emergence herbicides," he advises.

With fuel and energy prices at an all-time high, many growers are already concerned about the potential of a wet harvest and high drying costs, eroding the uplift from buoyant grain prices.

This has brought everything from pre-harvest glyphosate applications to additional combine capacity into conversation as growers prepare for harvest.

"It feels high fuel prices are here for the short term and while diesel consumption should not be the tail that wags the dog – as with nitrogen – there is an increased responsibility scrutinise input use," explains Ben.

"Once crops are off the field, there is also the opportunity to move less soil and although many growers are uncomfortable with less or even no cultivation, the current situation is driving innovation and a necessity to explore different thinking."

Organic sources of nutrition

Utilising organic materials for this autumn does make the list of short-term options for reducing spend. But it also fits nicely into long-term strategy to improve farm productivity and resilience, says Beth.

Recent increases in fertiliser price is driving the on-farm demand for organic sources of nutrition, as clients strive to

supplement and sometimes replace bagged nutrition with organic manures.

Demand for organic manures outstrips supply in eastern England. Farmers with access to historic sources tend to hold on to them. But there are still opportunities to strike deals with local suppliers of animal manures, digestates and waste products.

"You also have potential straw for muck arrangements with livestock producers, but just be careful of how much you give away in straw and what you get in return as muck," says Beth.

"There is also the hygiene issue of grass weeds coming onto the farm in the straw and on balers to consider."

Sewage sludge is worth enquiring about, she adds, despite recent concerns about microplastic contamination. This involves building a constructive relationship with your local water company representative.

"Digestate is another option and light land farms are generally well catered for by local AD plants," says Beth.

"Installing storage could help secure supply if further away from a plant and there is experimentation this year spreading dried digestate into standing crops in spring. This makes better use of its nitogen content and could be one for the future."

Beth is seeing a generational shift in mindset – both in the number of farm businesses shifting to regenerative systems and the number of younger farmers or farm managers with a firmer grip on costs.

She is a keen advocate of regenerative practices. At her family's mixed farm, which was purchased some 20 years ago, organic matter levels have increased from 2% to 6% with yields improving as a result.

This increased yield is through improved structure and drainage making soils more workable, more resilient to weather extremes and improved nutrient use efficiency – all helping future-proof the farm.

Cost v reward

Beth believes benchmarking has a huge role to play in making these long-term improvements, as well as short term decisions like inputs. Data can help identify poor performing areas that might not have a favourable cost v reward ratio.

"Don't just accept that land is performing poorly – be inquisitive and question why, using the numbers to give you confidence to change," she notes.

Previous grain prices have resulted in unproductive land being taken out of production and put into environmental schemes.

But higher grain prices are seeing more Ceres clients exploring the root causes of poor performance. This can include basics like lime applications, field drainage restoration, ditching and hedge clearance.

Beth says this is where AICC advisers come into their own. They are not out and out sellers so only recommend appropriate management changes and inputs based on production potential in each field.

"A generic, broad-brush approach isn't right. You need to know when to push and when to hold back based on potential and pay real attention everything from rotation, variety choice to nutrition and disease control.

"The top 25% in benchmarking are the ones focused on every aspect of production – like soil and tissue testing, keeping accurate records and understanding what happens in different scenarios."

TOP TIPS TO BUILD RESILIENCE INTO YOUR FARM BUSINESS

- Benchmarking is vital for short and long-term decision making
- Don't lose sight of long-term goals in inflationary climate
- Where it makes sense, invest in storage infrastructure to increase grain marketing flexibility and the potential to diversify in future
- Consider hedging fertiliser purchases with corresponding crop sales
- Source organic sources of macronutrients where possible
- Address poor performing areas to improve long-term productivity
- Reember: regenerative practices and better soil health future-proofs farms
- Source autumn agrochemicals now before prices catch up

Infrastructure investment

Finally, Ben says benchmarking has highlighted the importance of farm infrastructure – and the big role it plays in profitability. For arable farms specifically, crop storage is key.

"It's a big help in mitigating the current volatility in yield and price, providing time and opportunity for growers to consider their options," he notes.

Where growers do not have adequate storage capacity, they are forced sellers of grain and not always in a position to take advantage of late season price rallies. They can also see margins eroded by the need to pay for storage elsewhere.

With machinery potentially difficult to get hold of in the short term, it could be sensible to invest any spare cash in buildings or storage improvements, with grant funding available for some options.

"Looking at harvest 2021, growers without storage would have averaged about £130/t for early feed barley sales, but those who held onto it in their own stores gained a further £70/t as the market strengthened," says Ben.

The market hasn't always behaved this way and many businesses require early cash to pay bills. But there is no doubt adequate storage is becoming a major asset to the farm business.

Not all businesses will be able to put up new buildings. They include some contract farmers. In these cases, it is about being a bit smarter with crop and variety choice, Ben explains.

"They need to suit the land and a particular harvest window that ensure a reliable premium spec is achieved at the end of the summer."

IPM takes centre stage in quest for sustainability

David Boulton, AICCA representative on AICC Council and Indigro agronomist, explains how integrated pest management (IPM) is at the heart of all his crop management decisions – and why it is good for farm business as well as the wider environment.


David Boulton

'As we're going through with the sprayer, we'll put an insecticide in, just in case…'

This has been an often-heard statement on UK arable farms over recent decades, with little scrutiny given to pesticide input and its potential impact on the environment.

One problem caused by this attitude is insensitivity to insecticides, which is rife in several key pests, including cabbage stem flea beetle (CSFB) and some aphid species affecting a range of crops.


Flea Beetle feeding

Indigro agronomist and AICC member David Boulton says the CSFB issue across his midlands area led to a major depletion of the oilseed rape hectarage, reaching its lowest point in the past two seasons.

However, with buoyant prices and fantastic looking crops for harvest 2022, he expects the area to rebound again this autumn and is optimistic about the crop's future.

The reason for the optimism is not purely economic – there is now a much better understanding and implementation of how IPM methods can help manage flea beetle risk.

Much of that has come through education of growers, farm managers and sprayer operators, with many now holding a BASIS Crop Protection Certificate, which puts IPM principles at its heart.

There are also plenty of lessons learnt from past successes and failures growing the crop and David doesn't believe that the same mistakes will be made again.

"There were a lot of wheat-rape-wheat rotations in the midlands and that is far too narrow. From my standpoint, oilseed rape should be grown one year in five or six to be sustainable.

"You also have to consider other issues like clubroot, charlock and slugs. The building of blackgrass pressure due to earliness of drilling and high seed return where thin, uncompetitive patches of OSR exist within a field are also a concern.

"These can all increase if growers return to tight rotations again," he explains.

Early establishment

A successful IPM strategy for CSFB hinges on good early establishment and David says many of his growers have incorporated winter barley, winter rye and early maturing wheats into cropping plans to facilitate early August sowing.

His clients have been using early nutrition and establishment methods that conserve moisture, whether auto casting or direct drilling if conditions allow, or using a low disturbance subsoiler where soil loosening is required.

"Companion crops are an option, albeit a more marginal gain for flea beetle management.

"Legumes like vetch and berseem clover can offer a diversion, as well as providing some symbiotic rooting patterns and encourage mycorrhizal fungi. Something we know oilseed rape does not do," says David.

Pyrethroid sprays are no longer used across his oilseed rape area, with Indigro's own sampling and testing of beetles in 2020 and 2021 showing about 60% of the population are 100% resistant.

"The insecticides aren't providing the control we need and take out the parasitic wasp species that lay eggs in flea beetles, killing their hosts."

David is encouraged by potential breeding efforts led by John Innes Centre, where they are looking for traits that confer tolerance to CSFB at its adult and larval stages.


Barley Yellow Dwarf Virus

Like with turnip yellows virus resistance, which is now in most top yielding varieties on the Recommended List, he hopes it will become the norm to have CSFB tolerance in 8-10 years' time.

"It would also be good to see some biopesticides coming through, so long as they are non-toxic to beneficial insects. These things are just part of the package though and the cultural options are still most effective at present," he explains.

Aphid threat

The control of aphid vectors of barley yellow dwarf virus (BYDV) in cereal crops is another pest problem forced up the agenda by the loss of neonicotinoid seed treatments.

Clothianidin (for example, Deter) applied to cereal seeds used to give growers a significant period of protection post-drilling, often negating the need to use foliar sprays.

Last autumn saw significant pressure, with aphids moving into crops from the middle of September. There was then a brief lull in numbers before mild conditions brought another peak in late October and early November.

David says symptoms of BYDV are evident in particularly high-risk situations, even where pyrethroid sprays were applied, highlighting that chemical control cannot be relied upon alone.

"Growers generally kept to a later drill date, with crops going in from mid-October onwards, and that certainly eased the pressure in those situations. Direct drilling can also help by encouraging spiders and beetles that predate the aphids," he explains.

On insecticide use, he says that where you are growing a susceptible crop and/or variety, a conversation must be had between grower and agronomist on risk versus reward.


Septoria

There is evidence that less BYDV issues occur where David's clients haven't used insecticides for several years, and this is probably the influence of increased beneficials, so longer-term thinking may be required.

This also applies when selecting catch or cover crops mixtures through the rotation, as they can act as a green bridge.

"Before sowing a spring cereal, it would be best to avoid a cereal species such as black oat to minimise risk, especially when drilling 'on the green'," says David.

Where crops have good potential and risk is identified, a well-timed application based on risk will help alleviate BYDV symptoms and there are several tools available to help inform decisions, including AHDB's BYDV digital tool.

Resistant varieties are available, with several barley options to choose from. However, there is only one resistant wheat on the Recommended List, and it lags in yield and disease resistance, so drilling it comes with trade-offs.

"Although you might save an insecticide spray, there might be the need for an additional fungicide.

"If gene editing overcomes the regulatory hurdles and becomes accepted, it would be exciting to have the ability to combine traits like BYDV resistance with good yield, nitrogen use efficiency, disease resistance and quality characteristics together.

"It would provide big benefits for the environment, carbon footprints and a farmer's margin," says David.

Septoria testing

For disease, Indigro has been trialling two rapid septoria detection tools in the past two seasons, providing another string to its IPM bow.

Both Bayer's CropCheck and Swift Detect from Microgenics allow agronomists and growers to collect leaf samples and send for testing. Laboratory technicians then mash up leaves and analyse the material for pathogen DNA loading.

Initially, David was sceptical on the practical value of the rapid tests, as fungicides in wheat are typically applied as a protectant insurance policy, guarding against what might happen within two or three weeks of application.

This makes it impossible to base any spray decisions on the rapid test results alone. If the weather turns wet after missing an application or lowering dose based on a low-risk test result, septoria may still explode if the crop has inadequate protection.

However, David says it has been useful for decision making, reinforcing Recommended List septoria resistance scores, and giving confidence to adjust programmes in combination with other factors such as drill date and weather forecast.

"Extase is resistant and this season results have come back as zero, whereas varieties like Zyatt and Skyfall have been moderate to high, even in a relatively dry spring. We still applied a programme on all varieties, but tailored rates to risk and saved £5-£10/ha in some cases.

"We've also used the tests results to justify multisite inclusion this year. For example, in Extase where there were no symptoms and DNA loading was very low, we have omitted folpet at T2, but it stayed in programmes where need for protection was higher."

HOW GRAZING CEREALS AND OSR CAN HELP REDUCE INPUT COSTS

Indigro have investigated grazing of cereals and oilseed rape in recent seasons and achieved success in both crops, adding to the IPM armoury.

This year, one of David's clients grazed off some forward winter wheat with sheep in January and February, with stock seeing some impressive liveweight gain figures.

The grazing reduced biomass and saw the crop tiller impressively. As older leaves were removed and the crop shortened, it cut the need for a T0 fungicide or plant growth regulator.

"It was on a light soil type, and I wouldn't recommend it in every situation, but the crop certainly looks well, and costs have been kept down as a result," says David.

He adds that grazing oilseed rape has also been successful in some situations and allowed the grower to avoid using a PGR application in the autumn.

Other Indigro work has also explored the credentials of a white clover understory, which is established with a spring cereal, grown on and grazed the following winter, before establishing another spring cereal the following year.

The grazing of the understory with livestock adds manure into the system between cash crops, benefitting nutrient availability and soil health.

A split field trial was established at the Blaston Estate in Leicestershire in 2020-2021.

Although a small reduction in barley yield was observed where the understory was established and nitrogen input reduced by 40kg/ha, it was economically viable.

It's hoped that after two seasons, the nitrogen-fixing clover will provide more significant benefits and allow further reductions in nitrogen input on the spring cereal crops.

"It will provide ground cover all year round, fix N and the grazing value of the clover is very good, so it could provide a very good eligible option for the Sustainable Farming Incentive (SFI) scheme," adds David.

To plough or not to plough? That is the question in Aberdeenshire

There is no 'right answer' when it comes to farming systems, says AICC director **George Green**

The hottest topics in the farming media at the moment are unquestionably around soil health, regenerative farming, cover crops, no-tillage, and carbon sequestration. The main thrust seems to be about reversing the damage to soils, particularly in the east of England.

But not all soils are depleted. And not all farmers have degraded their main asset. Aberdeenshire has traditionally been a mixed farming region, with grass and livestock a large part of rotations, although the recent trend has been towards more pure arable units. The northern latitude means a short growing season of long summer days with up to 20hrs of daylight and spring barley for the local whisky industry is the major crop, but how best to establish it?

The Case for Ploughing

Ask an Aberdeenshire farmer to give up ploughing and he will give you the same look of horror a heavy land English farmer might if you asked him to use a plough. In Aberdeenshire ploughing is so important that farmers who plough are every bit as concerned about potential climate change regulation forcing them to adopt min-till practices as non-inversion farmers are at the prospect of losing glyphosate.

Growers in North East Scotland are well used to the challenges of unpredictable weather. Spring barley is the major crop and almost all will be established using a plough as the primary cultivation tool. Most land will be ploughed over winter for frosts to weather, ready for planting mid-March to early April, with yield potential dropping off after the middle of April.

PLOUGHING

Advantages

- Trash free seedbed
- Buries difficult to control weeds
- Ploughed soil dries quickly
- Less reliance on herbicides for grass weed control
- Ploughs and drills can work in tandem in challenging weather

Disadvantages

- High power requirement
- Slow work rate
- Ploughed land can require extensive secondary cultivations
- Loss of organic matter in hot dry conditions
- More susceptible to capping and erosion

Spring barley is a lazy rooting crop and likes a warm dry seedbed. Ploughed land warms and dries much quicker than uncultivated or shallow cultivated land meaning drilling can start up to a week earlier on ploughed land in some seasons with the corresponding advantages of better establishment higher yield potential, better quality and earlier harvesting.

The main driver in a switch from ploughing to min-till or no-till is work rate, with the added benefit of reduced cultivation costs.

The figures in Table 1 *(see below)* show the potential cultivation cost savings to be had by switching from ploughing to non-inversion tillage. Savings of between £10/ha and £35/ha are possible. But with a full grassweed herbicide programme costing upwards of £30/ha and with glyphosate costs rising by 300%, any savings in cultivation costs can be quickly and easily spent elsewhere.

The case for Non Inversion.

Over the past decade many growers have experimented with subsoiler-based strip tillage for winter oilseed rape establishment. This has been successful on lighter land where no straw was incorporated. But on heavier land – or where there is chopped straw and particularly in a wet season – slug pressure can be so intense that any time or cost saving can be lost and many have switched back to ploughing.

Strip-till drills such as the Claydon or Mzuri have found favour with some growers but results have been mixed. Areas of perfect establishment and areas of complete crop failure within the same field have been a common theme. The other major issue with the wide row spacing is lack of crop competition for aggressive grass weeds such as brome.

The rapid increase in problem grass weeds in pure strip-till systems have resulted in many growers reintroducing

Table 1

Cultivation costs	Ha / hr	fuel l/ha	Fuel £/l	Fuel cost £/ha	Parts £/ha	Tractor £/ha	Total £/ha
Shallow disc	4.00	4.20	0.90	3.78	2.00	8.75	14.53
Deep tine	2.80	8.00	0.90	7.20	5.00	12.5	24.70
Plough & Press	1.60	16.40	0.90	14.76	15.00	21.90	51.66
Drill after min till	3.60	6.80	0.90	6.12	5.00	9.72	20.84
Drill after plough	3.40	7.80	0.90	7.02	5.00	10.30	22.32
190 hp Tractor & driver assumes cost £35 / hr							

rotational ploughing. The brome problem is most challenging in winter barley and our other premium crop – oats. No post-emergence herbicides control it in winter barley and there is no opportunity for a stale seedbed due to the quick turnaround between crops as it almost always follows spring barley, ploughing is the only sensible option.

Establishment of winter wheat after winter oilseed rape is the drilling slot where min-till has been consistently successful. Soil structure is excellent following winter rape. There is reasonable time to allow for a stale seedbed, the as yet absence of blackgrass allows for mid-September sowing where soil temperatures are still high, soils dry quickly after rain and there is a good selection of herbicides to control other weeds.

Opportunistic min-till is the most popular no inversion option. Shallow tillage (100 -150 mm) mixing in trash and drilled with a normal drill when conditions allow has proved successful at increasing work rates and reducing costs without the high initial capital costs or variable performance of specialist drill systems.

Work rates are double that of ploughing, and fuel use is halved. Min-till is most successful where there is a change of following crop, and time to implement a stale seedbed – for example winter barley into winter oilseed rape, winter oilseed rape into winter wheat, or winter wheat into spring barley. Without those conditions, problems compound themselves.

Direct drilling has not found favour in Aberdeenshire. The soils do not self-structure, are often wet on the surface and harvesting can often leave significant surface compaction to remedy. There are some exceptions and direct drilling spring barley into very light sandy soil prone to wind blow has proved very successful where the surface residues stabilise the soil.

Much has been said about the benefits of moving the soil as little as possible and these benefits are clearly visible to mixed farmers who don't move the soil at all for three or four years while it's in grass. But there is strong evidence that carbon loss from ploughing is not happening to the same extent in the north of Scotland if at all

A 2016 soil DUMAS report of 9.3% organic matter on a sandy loam field which had then been ploughed every autumn for the next six years and grown spring barley every year with all straw removed returned a 9% DUMAS report in 2022. The neighbouring field – in grass for 20 years – has returned a 6.3% increase in organic matter.

NON-INVERSION TILLAGE

Advantages

- High work rates
- Keeps organic matter near the surface
- Builds on previous seasons good soil structure
- Suited to controlled traffic farming
- More natural surface drainage due to worm activity and higher worm numbers

Disadvantages

- Relies on stale seedbeds for weed control
- Heavy reliance on Glyphosate
- Trash can provide disease bridge to following crop
- Relies on previous seasons soil structure remaining undamaged
- Wet surface trash hinders drilling, restricting weather windows
- Favourable to slugs

Similar results have been confirmed elsewhere. Ploughing cold damp soils in November in Aberdeenshire is different to ploughing warm dry soils in East Anglia in August. Proper studies must be done on these effects if farmers are to be rewarded or penalised for their tillage choices.

Green cover

Cover crops have a large part to play in restoring fertility, structure and organic matter to soils but this is very dependent on cover crop choices, establishment success and ensuring they do not multiply weed problems for later years.

In Aberdeenshire the opportunities for post-harvest establishment are limited, both by the more pressing need to get the main crops drilled and the very short autumn growing period. In most cases the amount of cover is barely negligible and is only done to comply with support regulations and may even have a net loss in environmental benefits once establishment and desiccation are considered.

Alternatively, a full season green manure has been a great success in producing biomass and root structure to benefit following crops. Perhaps this is an area where support should be directed.

Summary

The key to successful crop establishment will always be working the land when soil conditions are right, doing the least possible soil movement to achieve the best result, regardless of tillage system. With very tight calendar windows and severe yield and quality penalties for missing these windows, ploughing gives the best chance of maximum yield through perfect establishment at the optimum time. Min-till systems build on previous seasons soil structure, in the North harvesting can often happen in less than perfect conditions leaving a lot of surface compaction to remedy before sowing the next crop. Ploughing easily remedies this problem. A plough-based system provides a clean trash free, weed-free environment for the next crop, reducing herbicide and fungicide inputs and the resistance problems associated with their over use.

Time is of the essence for autumn crop establishment in Aberdeenshire. Target drilled up by dates are 20 August for winter rape, 15 September for winter barley and 10 October for winter wheat. To achieve this, advantages in work rate can be had from min-till systems and in a perfect world, farmers would have a choice of cultivation systems. Many larger farms now have more than one type of drill. Others call in a contractor with a different option.

Ultimately, establishment of different crops in different soils in different seasons and different climatic conditions will as always require a flexible approach, there will always be more than one right answer. But for the North east, for now, ploughing still has a very important role to play.

Agronomist George Green is a director of Pitinnan Farms (Daviot) Ltd, Aberdeenshire.

SMART FARMING

Maximising benefits from next generation Conviso sugar beet

New beet varieties promise better yields and bolting resistance. But they must be managed correctly, says **Penny Oakes**

We now have three years experience advising growers who have decided to grow CS herbicide tolerant sugar beet. This has been an exciting learning curve. There has been some outstanding benefits in terms of the control of weed beet, but equally some unexpected downsides.

Smart Janninka came to the market in 2020. Newer varieties are now available with improved yields, and better resistance to bolting. BTS Smart 9485 on the 2023 Recommended List has an adjusted yield of 96%. This yield is taken from RL trials which are treated with conventional chemistry.

ALS tolerant varieties produce higher yields when used with partner herbicide Conviso One (foramsulfuron + thiencarbazone-methyl), than conventional products. Conviso One from Bayer contains two ALS herbicides which have activity on a wide range of grass and broad leaved weeds, both contact and residual.

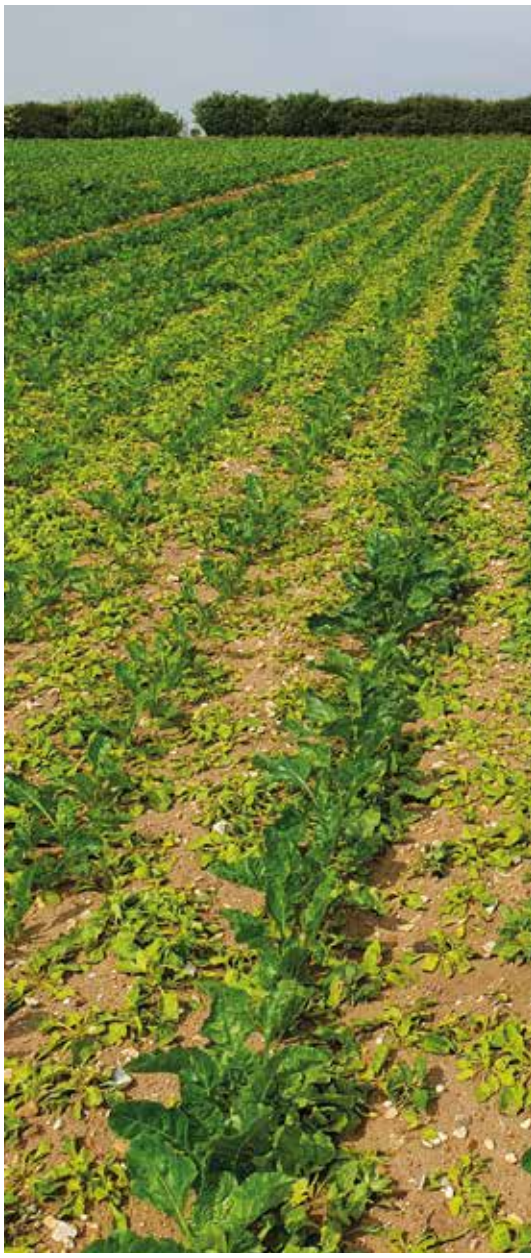
But the primary benefit for growers has been the ability to control weed beet at an early stage before it competes with the crop. It has been expensive and sometimes ineffective removing weed beet from crops in the past, and many fields have been taken out of sugar beet.

The control has been exceptional on some of these fields, and has allowed growers to widen the sugar beet rotation across the farm again

A second benefit of Conviso varieties is the simplicity they can bring to a system, especially where beet is grown on outlying fields. A single application of Conviso One can provide complete weed control, although our experience has shown that a "holding" spray can occasionally be necessary, especially where fat hen is a problem weed.

Weed control has generally been effective, although high populations of common speedwell, Artemisia and volunteer potatoes have required extra sprays. Conviso One can help with black-grass control, but this still needs a programmed approach.

There are several downsides, and it's essential to be aware of these before going down this route, and spending an extra £100/ha. Growers must adhere to a strict stewardship protocol and have a zero tolerance for bolters. The varieties are tolerant to all ALS products so it is a must that any bolters are taken off the field to remove the risk of ALS tolerant weed beet.



Non-ALS herbicides should be used on other crops in the rotation and other ALS products kept to a minimum to reduce reliance on this group of actives.

To minimise groundkeepers, fields should be ploughed after Conviso beet. Beet shoots from groundkeepers left on the surface can be particularly difficult to control with sprays, although MCPA and 2-4 D appear to be effective in cereals.

Conviso beet & Clearfield OSR should not be grown in the same rotation. The herbicide will not control Clearfield OSR volunteers, and these can carry on growing for several years.

Practical points to be aware of are the 10 metre (non-reducible) aquatic buffer requirement, and the need to drill whole fields. Any drift on to conventional beet crops from neighbouring fields will be dramatic. Additionally, extra attention needs to be given to sprayer cleaning after applying Conviso One, especially where conventional varieties are grown on the same farm.

Overall, we believe that the use of this technology will continue to expand as varieties improve. Good crop records and keeping your agronomist involved in all these decisions is essential to make it a continued success.

Crop consultant Penny Oakes is an AICC director. With thanks to co-author Sue Lord

POLICY

How the AICC helps to inform government policy making

As a respected independent voice, the AICC is influential when it comes to advising Defra ministers, says **Andrew Watson**

The 2021/22 year has been an important year for regulatory change. Not only are farmers having to adjust to a future world without basic payments and the need to restructure their businesses accordingly, in conjunction with their agronomists and advisors, but critical changes have been made around the use of organic manures and urea.

The Farming Rules for Water (FRfW) have been of particular concern this season and last summer/autumn, the prevailing guidance created a great deal of confusion and worry amongst both farmers and agronomists with an effective ban on the application of organic manures in the autumn/winter, in most situations.

However. around Christmas 2021, a technical consultation group was setup by Defra which involved many interested industry partners as well as the Environment Agency.

This group was formed to find a suitable compromise for both agriculture and environment and the AICC was specifically invited to get involved to provide both practical and technical input.

The AICC and NIAB were heavily involved with this group – and indeed instrumental in proposing key technical changes to the guidance to allow the autumn use of manures for both autumn and spring crops, with suitable and sensible environmental protections and restrictions.

The AICC executive was updated throughout the process and able to influence and direct how AICC members were represented in this group.

Ultimately, the final decision on the FRfW guidance, published on the 30th March 2022, was for Defra and the ministers to make, but it is fair to say the AICC did work hard to suggest suitable positive compromises for all concerned and both Defra and the Environment Agency were very constructive in their approach and did listen to and act on our concerns and proposals.

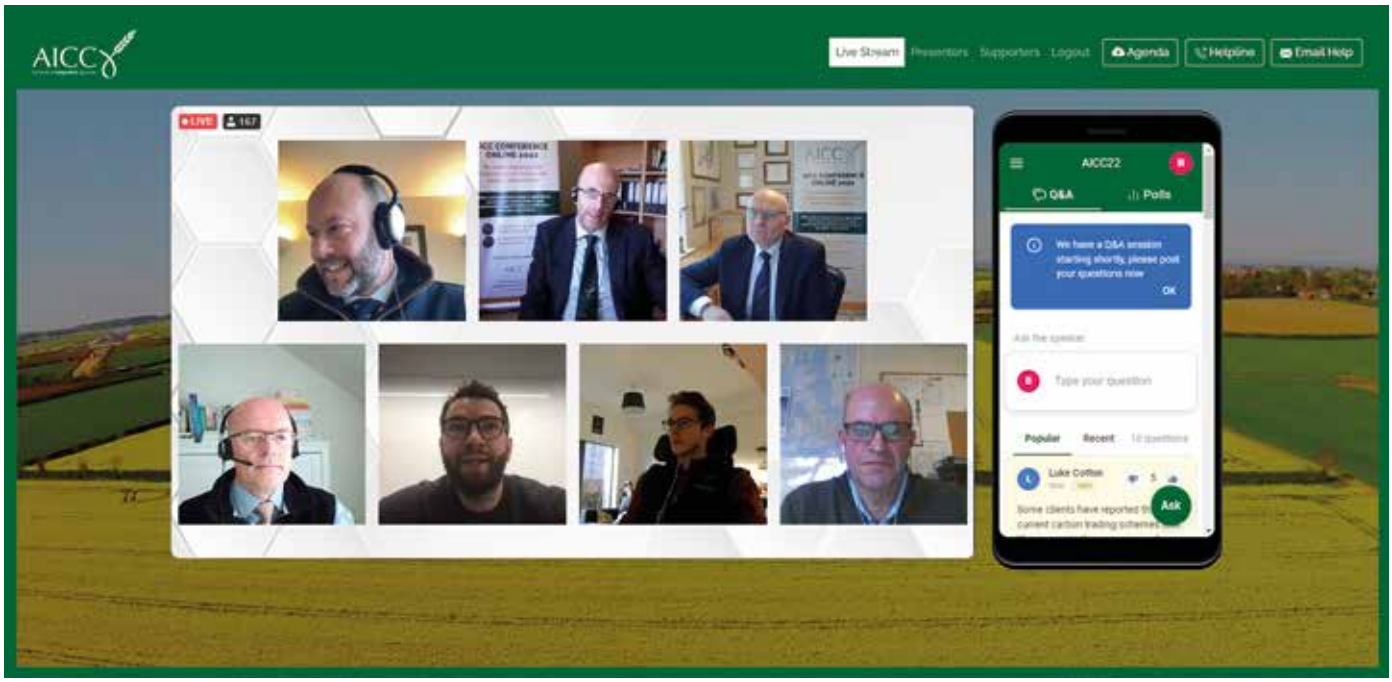
The group shows what can be achieved by government and the agricultural industry working together positively and constructively to reach a practical compromise which meets the broad objectives of all concerned.

Similarly, the recent Defra consultation on the potential ban on the use of solid urea is a classic example of how the industry including the AICC has influenced government policy. Defra did favour a ban but the industry proposed an alternative approach which aimed to provide the same reduction in ammonia emissions by restrictions on the use of urea and Urea Ammonium Nitrate (UAN) – but without an outright ban which would have had serious market and supply implications.

Again, Defra's approach was positive and collaborative, and they agreed to a self-regulatory approach using farm assurance which practically comes into force on 1st April 2024 when the use of urease inhibitors will be required with both solid and liquid urea containing products (with the exception of foliar urea products for wheat protein).

Yes, this is a compromise and added cost for urea users at some times of year, but the alternative, an urea ban, would have been much worse for the industry. It is also a great example of how both commercial farming and the environment can be accounted for, which lets face it, are both key objectives of the vast majority involved in UK farming.

Andrew Watson is a former AICC chairman. He is also an agronomist for the NIAB eastern region



AICC Conference 2022
Making sense of sustainability

Carbon capture, emissions reductions and carbon trading are increasingly inportant to a growing number of arable farming businesses, writes **Adam Clarke**

Carbon was high on the agenda at the AICC's 2022 Annual Technical Conference – with delegates at the online event shown how it can be managed to benefit farm businesses, biodiversity, and the wider environment.

Climate change is a reality, with weather records being broken with regularity over recent years. This situaltion is largely driven by increases in atmospheric carbon emitted by human activity

This situation has prompted governments around the world to set net zero targets, committing their nations to be capturing more carbon from the atmosphere than they emit, and in most cases aiming to do so by 2050.

The NFU has been even more ambitious with a target for UK agriculture and its supply chains, pledging to hit net zero as an industry by 2040.

Farmers and landowners are uniquely placed to help meet these targets, as they have the potential to help individuals or companies offset emissions.

This looks set to provide a valuable revenue stream at a time when costs of production are rising, and support payments being cut in sweeping reforms.

A new marketplace

So how might a farm go about trading carbon or biodiversity credits once they have been certified? That is a question Gary Styles of Zellar is hoping to answer with a new community platform.

The company's aim is to allow small businesses to practice climate action in an easy and accessible way and become sustainable by 2030.

Put simply, its platform allows a user to build a profile that outlines a strategy and action plan for sustainability and a current sustainability score.

The profile is then searchable and visible to the outside world, creating a peer-to-peer marketplace for likeminded businesses, with Zellar charging a 3% transaction fee for each project sold.

The platform was launched in Manchester last September and has already connected businesses in the city with landowners and farmers around its outskirts, allowing them to invest in carbon capture and biodiversity projects.

"I'm confident this will be the most efficient and profitable route to market for landowners," said Mr Styles.

Sustainability scoring

Before farmers or landowners can trade carbon or biodiversity credits, they first need to understand their own carbon footprint and AICC members and industry guests heard how another digital platform might help.

Trinity Agtech's Alistair Sykes worked through its Sandy digital platform, which uses a farm's data – drawn from existing systems like Gatekeeper and manual entry – to calculate its footprint.

After calculating a farm's present status, it then uses algorithms to produce recommendations of how to reach net zero, identifying areas where emissions might be cut, such as improving nitrogen use efficiency, or sequestration measures to put in place.

"We also bring in gross margin data, so everything we are doing is thinking about the farm's sustainability and getting to net

zero, but also thinking closely about the farm's profitability and the [cost] involved."

On top of emissions, an additional Sandy module scores a user's business for biodiversity using a five metrics, including farmland wildlife, natural enemies, conservation species, pollinators, and soil biodiversity.

Biodiversity impact

Scores are between 1 and 5, with 5 being the highest, and it allows the land manager to see the impact that certain practices have on each metric.

"We allow the user to break that down… so we can effectively identify where the hot and cold spots are for biodiversity… and understand where changes can be made," explained Alistair.

There are over 70 carbon calculators available worldwide, and he was asked how farmers go about choosing the right one.

Alistair pointed out that the pool is much smaller when delving a bit deeper into the science behind some of the systems, as it can vary, so is one of two important considerations when choosing a carbon calculator.

The second is ease of use and Alistair believes Trinity has managed to achieve this by making good use of existing data, which reduces laborious data entry as part of the process from start to finish during a carbon footprint analysis.

Farmer view

One farmer with experience carrying out a carbon audit of his own farm is John Miller of Kelham Ltd, who farms 666ha near Newark-on-Trent in Nottinghamshire.

He recently developed an interest in regenerative agriculture and has been introducing different techniques and products into his arable system to improve soil and plant health and reduce reliance on chemical inputs.

The business is almost ready to enter emerging carbon credit markets after assessing its carbon status using Danish agtech platform Agreena, formally known as Commodicarbon.

John says one of the most important considerations for him before starting was the credibility of the other parties involved, and the carbon credit certificates themselves once finalised.

Agreena use another Danish company, Agrovi, for practical farm consultancy, plus remote surveillance by Hummingbird and Norwegian firm DNV – who specialise in auditing and certification – to ensure land managers are sticking to obligations.

Buyer confidence

This results in carbon credit certificates that abide by the ISO14064 standard and are placed on a register for buyers to purchase with confidence.

The farm carried out an assessment of its carbon footprint in the 2020-21 cropping year and because of the regenerative measures adopted on the farm, its wheat production is very close to net zero.

"I think if we were to reduce nitrogen rates from 170kg N/ha to 150kg N/ha, we would pretty much be there," he adds.

John hasn't got his carbon credit certificates yet but expect them to be confirmed soon.

These will not be sold straight away, instead waiting to see what happens with the market value.

The business may even utilise the certificates to add value to its produce, selling to processors wishing to label products as "made with carbon neutral wheat or oats".

Sell local

A big question on many lips is who farmers or landowners should be selling their carbon credits to, with the concern that some companies will be "greenwashing" its activities without making concerted efforts to reduce their own emissions.

John says that sellers must make sure that buyers are credible and ideally, connect with local companies where possible.

"Work with someone in the same county rather than someone the other side of the world," he added.

Companies like Zellar are trying to address this issue on its platform, which only connects buyers with sellers if they are using 100% renewable electricity within their businesses, for example.

Get involved

There is some hesitancy amongst farm businesses to get involved in carbon trading and this is understandable given the novelty of the markets and myriad companies scrambling for a slice of the pie.

However, AICC chairman and Lincolnshire agronomist Sean Sparling sees carbon capture, emissions reductions and potentially carbon trading as fundamental to arable farming as integrated pest management (IPM) has always been.

He said it is the direction of travel, signposted by the 2040 and 2050 targets from the NFU and Government, so getting involved with agtech platforms that facilitate carbon auditing and trading is a sensible move.

"The worst to do is to do nothing for 20 years…when 2040 or 2050 is looming and these things will be forced on people anyway.

"We have to get involved now and improve understanding of our impact on the wider landscape. Are we emitting or are we sequestering carbon?"

Climate change concerns have prompted the government to set a 2050 net zero target.

AICC MEMBERS

- INTERPRET THEIR OWN DATA
- MAKE OWN CONCLUSIONS BASED ON TECHNICAL MERIT
- ARE NOT INFLUENCED BY PRODUCT SALES

Valuable information

AICC consultants have a wealth of experience and cover all parts of the country. Agronomists are on hand to discuss issues such as: the impact of rotation and variety; choice on weed and disease management; ways of controlling costs this year and into the future. The AICC champions many causes on behalf of its members and is encouraging a more collaborative approach to protect the chemistry we currently have. At the same time, we embrace the cultural and more innovative technologies that are rapidly developing to support our farmers.

Call us for a free consultation

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