

WEDNESDAY 26TH - THURSDAY 27TH JUNE WWW.GROUNDSWELLAG.COM



Contents:

- 5 **Welcome to Groundswell** Paul Cherry
- 7 Soil and Water Shaun Dowman
- 9 Agricultural Horticultural Development Board at Groundswell
 AHDB
- 10 **Holistic Management: Will it work here?** Christopher and Sheila Cooke
- 13 **No-till Benchmarking the Finances One Year On**Gary Markham, Land Family Business
- 14 Regenerative Agriculture: Key Pathway to Transforming Earth and Human Health in the Anthropocene Epoch Charles Massy
- 17 Expertise from Kings and insight from Soil Life demonstration sites provide innovative soil health solutions Kings
- 19 **'SIM'-ply Bio-Logical!** Steve Holloway
- Working together for soil and water health Affinity Water
- 21 **Song of the Un-Tilled Field** Adam Horovitz
- Why measuring soil biology is key for good soil health, sustainability and increased yields. FungiAlert
- 25 Agroforestry a win win for farming and the environment Woodland Trust
- Done correctly, regenerative agriculture is more profitable than conventional farming. Nicolas Verschuere
- Want to know about soil health? Become a soil expert for your farm... Abby Rose
- 31 Because Soil Health Matters Biofil
- The Ambitious Farmer: how will you make your farm's future bigger than its past? Sam Watson Jones
- 35 IMFermentation (Bokashi) versus Composting of Organic Waste Materials: Consequences for Nutrient Losses and CO2footprint. Agriton
- 37 How can we manage land to produce food and reduce flood and drought risk at the same time? Gerard Stewart & Joanna Clark
- 39 Artist In Residence Liz Elton
- Passionate about Farming and the Environment? Want to Connect with like-minded Farmers? Then the Nature Friendly Farming Network (NFFN) is for you! NFFN
- 40 At KWS we believe variety selection doesn't get the time it deserves.

 It's time it did. John Miles
- 31 The Elterwater Challenge
- 49-68 Speaker Biographies
- 70-71 Event Schedule
- 73-82 **Session Guide**
- 83-95 Exhibitor Directory
 - 96 Refreshments & Evening Entertainment
- 97-109 Drill Manufacturers & Distributors

110-113 Direct-drill Comparison Chart

Back cover - Event Map

CONTACT US



@groundswellaguk

#GW19



www.instagram.com/ groundswell_agriculture/



www.facebook.com/ groundswellag/



www.groundswellag.com/

Email: contact@groundswellag.com Telephone: +44 (0)1462 790219

OPENING TIMES

Wednesday 26th Thursday 27th

8.00am - 6.00pm 8.00am - 5.30pm

BBQ 6.00pm - 7.30pm

Bar open late Bar open late

TICKETS (Strictly limited)

ADVANCE GATE PRICE: (subject to availability)
Single Day £60 Single Day £70
Both Days £95 Both Days £110

(Ticket prices subject to VAT) www.groundswellag.com

Tickets must be presented at Registration in order to redeem your lanyard

LOCATION

Groundswell takes place on a working no-till farm in North Hertfordshire, just off Junction 9 of the A1 (M), near Baldock.

Stevenage train station is a 10 minute taxi ride away. Luton and Stansted Airports are within 30 minutes drive.

The address of the show is

Lannock Manor Farm, Weston, Hertfordshire, SG4 7EE.

LOCAL TAXI COMPANIES

ABC Stevenage: 01438 424 242
Stevenage Taxis: 01438 357 111
Gold Star Taxis: 01438 727 277
Central Taxis Letchworth: 01462 290 000

FACILITIES

There is a large meadow car park (free) conveniently located next to the show for all attendees.

Cash - No cash machines on site.

Wi-fi available.

FOOD AND DRINK

Food and refreshments are available throughout the day from a range of caterers.

The Earthworm Arms Bar will be serving drinks in the afternoon and throughout the evening.

ACCOMMODATION

Information about local accommodation can be found at

www.groundswellag.com/accommodation

CAMPING is available for a pitch fee of £8 per person, purchasable with ticket or at Registration Tent. Showers and facilities are provided.

GLAMPING is also available for the first time this year, Luxurious Bell Tents can be hired from £52 per person for 3 nights. Book through www.woodvilleproject.co.uk/groundswell or woodvilleproject@gmail.com









www.sky-agriculture.co.uk



EasyDrill

The most versatile drill on the market



LOW DISTURBANCE ESTABLISHMENT

Designed for perfect seeding in no-till, min-till, & conventional establishment systems making it a truly versatile drill.

- Up to 3 separately metered hoppers
- · Separate air circuit for grain and fertilser
- Up to 250kg coulter pressure to ensure correct seed placement in any system
- Fully adjustable coulter and press wheel pressure to suit soil / weather conditions
- · Low hp requirement (from 30hp/m)

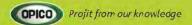








No-till . Min-till . Into Cover Crops . Conventional



Welcome to Groundswell

by Paul Cherry, Host farmer at Weston Park Farms

Most of us hate change, it usually involves stopping doing something we have got into the habit of doing; it implies loss. But we are living in a time when change is necessary and inevitable. One of the lovely things about Groundswell is that it is meeting of so many minds, and it does feel as though everyone here is at least thinking about making a change, with a majority having already done so.

After the first Groundswell, three years ago, we wondered whether there would be enough new speakers to be able to put on a conference each year but we are gratified to find that this really is a "growing concern," in both senses, and that enlightened experts and innovative thinkers abound. We welcome them all.

Allan Savory is a world voice in Regenerative Agriculture. His work has transformed the way that soil is treated and animals are grazed, not only in his native Africa, but also across millions of acres around the rest of the world. It takes a big man to make such positive change on the scale that he does, and we can all learn from his experience.

We met Jay Fuhrer out in Kansas two years ago. His knowledge of the grazing of cover crops and the improvement in soil carbon should inspire even the most obdurate of arable farmers. We welcome Charles Massy from Australia, Frederic Thomas from France and Joel Williams from Canada: but Groundswell is very much 'By Farmers For Farmers', and whilst we must tap into the huge wealth of knowledge from all these countries, some of which are years ahead of us in the way they understand soils, we are catching up fast.

This year, for the first time, we have introduced a knowledge pathway, for both those who are coming new to the whole world of CA and for those who have gaps in their knowledge. The philosophy of Regenerative Ag is so exciting that it is easy to forget that its practice is so much more complicated than just selling the plough and buying a drill. This course is coloured blue (like the easy skiing run) and comprises a series of different talks that together will explain everything from the First Principles to advice on how to put it into practice on your farm. Look out for the talks on the Wednesday.

We are planning to take this course to Ag colleges and universities in the Autumn and are grateful to The Esme Fairbairn Foundation for making this outreach programme possible; it has also kindly sponsored the bursaries for this year's conference.

This year we also have extended our remit to cover food – the market, changing diets and how the relationship between food and health is being recognized. Henry Dimbleby and Sue Pritchard will talk on why we need a food policy, there are a couple of sessions on finding new markets and we will have a forum on the gut and how our diet is likely to change. These sessions will be led by Baroness Rosie Boycott.

Also new this year (other than the layout of the whole show) is the demonstration of a compost turner on a windrow of fresh farmyard manure. We bought our own turner this year and have just started using it and it's totally addictive, and makes such perfect sense on so many levels. Look out for the turner in the demonstration



field. Simon Cowell, Soil Farmer of the Year, will be speaking about his experience with improving compost on the Wednesday.

We've had an exciting year on the farm here. We are delighted to welcome Oliver Martin onto the team as assistant farm manager. He joined in the spring and his energy, knowledge and enthusiasm has really lifted everyone in a very few brief months. Oliver is running the drill demonstrations at Groundswell, and amongst many new ideas is planning a 'Drill Challenge' in the Spring of 2020, where we will invite all the major Direct Drills to drill plots in a field, same seed rates, same everything, after which we can follow the progress of those plots right through to harvest in a properly conducted trial. Stuart Leader has also joined this year, as a tractor driver with a huge skill base, not least raising £15,000 for the local hospice by organising a tractor run. We really do have the dream team.

Finally, Groundswell has its roots in the family farm: it was John's idea originally, but it has become a great team effort, coordinated by my son Alex, who puts a huge amount of work into making the show what it is today. We really enjoy the dynamic atmosphere of the run up to such a unique show and I hope you will reap dividends from your visit. The feedback has been positive so far, please keep it coming in.



GRAIN & FERT NOW AVAILABLE ON ALL HORSCH DRILLS





Available in 3m, 4m, 6m, 8m and 12m working widths.

Avatar SD

HIGH PERFORMANCE DIRECT DRILL WITH SINGLE DISC COULTER FOR NO-TILL FARMING

Visit our website, your local HORSCH dealer or call 01733 667895.



Soil and Water

by Shaun Dowman, Affinity Water (Stand FY1)

Less than 1% of the worlds water is available freshwater. 1% is all we have on the planet to meet the needs of 7.7 billion of us, grow our crops and sustain terrestrial life on earth. Water is a precious resource, as is the soil. 95% of the food we eat comes from the soil and we're losing much of this at a faster rate than it can be replaced, much of it washed away into the vital 1% of freshwater that we all rely on.

The need for change in how we manage our soils and water resources is clear; and a close working relationship between farmers and water companies is key to helping us achieve this. The water catchment, and all the land that it drains, is a water company's most valuable asset. Investing in our catchments is essential to secure the long-term sustainability of our water resources and the wider environment.

Whether you farm on the banks of the Thames or the tops of the Downs, every piece of land, every farm in this country (and in fact the world) sits within a water catchment. Not every water catchment in the UK is used for public water supply, but those that are can be dominated by agricultural land. Therefore, what happens on farms and in the field is of interest to us in the water industry and we want to help farmers make positive choices for their farm business and the water environment.

By visiting Groundswell, it's clear you are interested in soil health and value your most valuable asset, the soil.

Although difficult to measure, improving soil health is something you are working towards and see value in. What impresses me about no-till farmers is not only the desire to improve soil health but also the innovative ways many of you are farming. Innovation such as reducing inputs, trialling companion cropping and introducing novel crops into your rotations are a few examples. Many of these innovations will contribute towards a sustainable, resilient farm business but can also help the water environment by reducing soil run-off and losses of inputs to water such as pesticides and nutrients, put simply: healthy soil = healthy water.

The soil is the interface between the rain that falls from the sky and the rivers and groundwaters that rely on rainfall for their function. As an industry we are completely reliant on rainfall. We can't affect how much water falls from the sky but the next best thing we can influence is the soil that covers our catchments. It is generally acknowledged that no-till soils have better water infiltration than a tilled soil, therefore if a greater area of arable land in our catchments was under no-till then we have greater potential for water recharge into our aquifers. This is something we plan to research in the coming years.

Groundswell fills me with immense optimism and highlights the opportunities that soils offer you as a farmer, but also wider society and the environment. There are many challenges ahead with increasing carbon dioxide emissions, climate change, water stress,



growing populations and declining biodiversity. Conservation agriculture offers, in its small but not insignificant way, the chance to restore degraded soils, tackle climate change, protect water, feed the world and enhance biodiversity. This is why all of us at Affinity Water are excited by Groundswell and are once again proud to be headline sponsors of this hugely enjoyable, thought-provoking and positive event.

We hope you have an enjoyable two days and please do come and visit me, and others in the team, at the Affinity Water Catchment Hub.

Shaun Dowman, Agricultural Advisor, Catchment Management Team, Affinity Water

Speak to Affinity Water on 26th & 27th June at Stand FY1.











FROM £6,800*



FROM £8,800*

ASK ABOUT OUR PAY AS YOU FARM PLANS
CALL **01386 49155** OR VISIT WEAVINGMACHINERY.NET

Agricultural Horticultural Development Board at Groundswell



Soil health is an important focus for all farmers and growers to enable high yields, effective workability, future sustainability, nutrient cycling, soil biodiversity and more.

This year at Groundswell, AHDB will showcase the latest developments from the GREATsoils programme, demonstrating how a range of physical, chemical and biological indicators are being brought together to allow growers to assess the condition of their soils, and help inform site-specific soil management.

As part of the AHDB-BBRO Soil Biology and Soil Health Partnership, a range of soil health indicators are being assessed and validated both on-farm and in research trials. Thresholds for the indicators are being tested in different production systems and soil types.

On the AHDB stand you will find a soil pit with experts on hand to discuss the soil health scorecard approach, with examples of how indicators such as pH, nutrients, bulk density, visual evaluation of soil structure (VESS), microbial respiration, earthworms and soil organic matter are influenced by growing cover crops or following repeated organic matter amendments.

The soil health scorecard will feature as part of the seminar series, where Anne Bhogal (ADAS) and John Elphinstone (Fera) will also be presenting on some of the newer indicators for soil biology that are being investigated in the ongoing research projects, including DNA measures of pathogens and soil health, nematodes and microarthropods. One of the questions is whether novel molecular techniques can replace some of the more traditional biological assays.

Knowing your soils is key to being able to measure and manage soil health in an effective way. Principles for improving and maintaining healthy soils include reducing tillage where possible, increasing organic matter inputs, and increasing plant diversity e.g. through using cover crops.

You will have the opportunity to discuss AHDB's research on maximising the benefit of cover crops (Maxi-Cover crop). This research focuses on understanding how species with differing rooting characteristics influence soil properties, as well as taking a rotational view on the economic benefit of growing cover crops.

AHDB's soil specialists Amanda Bennett and James Holmes will be on hand throughout the event to answer any questions and provide information on AHDB's extensive work on soil management. Technical machinery and business information will also be available from Harry Henderson and Teresa Meadows, AHDB Knowledge Exchange Managers.

Visit us in the Spoil Pit at 3p on both days at Groundswell to learn more or go to www.ahdb.org.uk/



Holistic Management: Will it work here?

By Christopher and Sheila Cooke

As educators affiliated with the Savory Institute, one of the most common questions we're asked about Holistic Management is the title of this article: 'Will it work here?'

Our answer is always, 'Yes, of course'. But, people who live in temperate climes, such as found in the UK and Ireland, are often sceptical, because they hear Allan Savory's TED Talk on desertification, and think, 'surely that won't work for me, because I have high rainfall combined with soil that poaches easily in Winter.'

We can assure you that managing holistically works wherever you are and for two reasons. First, Holistic Management is not a tool, a method, or a prescription. It's about decision-making and planning from a holistic perspective, and everyone, all over the world, needs to start learning how to do it. Our world is becoming increasingly complex. Just look at our global response to climate change, and it's easy to see why we need new ways of making decisions, because the old ways just aren't working.

Second, embedded within Holistic Management are key insights that enable you to understand why a given tool works differently in different environments. The framework for decision-making enables you to choose and use tools wisely by anticipating the likely outcomes on your land in your specific environment. In so

doing, you are able to regenerate your land, and enhance the economic foundation for you and your family's quality of life.

Scepticism is natural in the early stages of the adoption of a new idea, and it was precisely for this reason that the Savory Institute was formed in 2010, to set up regional hubs that would localise the training of Holistic Management across the globe. Our Savory Network hub in the UK and Ireland, known as 3LM, began work as an accredited hub in 2016. Here are several examples of how Holistic Management is bringing local farmers benefit:

Moy Hill Community Farm – County Clare, Ireland

A year ago, we did ecological monitoring in Festival Field at Moy Hill Community Farm and we found 19% rushes. In May 2019, Fergal sent this photo and texted:

Hi Sheila, here is a photo of the girls in the field you have done the survey in and wow it looks good! Amazing after one season of the cows going through -- it's a different field. Nearly no rushes left in the field now and the grass is growing so tall! The neighbours are all talking about it already and want to cut it for hay! Thanks for the help. Going to start grazing it next week. - Fergal







Mossgiel Farm - Ayshire, Scotland

Bryce Cunningham, of Mossgiel Farm, rang us up this past week very excited to tell us he is the only farmer around who has grass this Spring, thanks to Holistic Planned Grazing.

On top of grazing success, he has had business success. In February 2019, The Farmers Guardian wrote an article about Bryce's dairy, 'When he launched his home-delivery service in November, he received 2,500 emails in two days from all over Scotland...' What had he done? Thanks to Holistic Management, which



includes Holistic Financial Planning, Bryce had the confidence to make a series of decisions which led to an economic success:

- He switched from plastic to glass containers.
- He used his livestock to regenerate the land.
- He realised the value of his milk brand, and expanded his operation in a way that doubled sales in a year's time.

Left: Two different properties along the same river. The one on the left practices Holistic Planned Grazing, the one on the right is downstream and manages conventionally.

Top: Moy Hill Community Farm, May 2019

Middle: Bryce Cunningham replaced plastic bottles with glass for ecologically-minded consumers.

Low Sizergh Farm - Cumbria, England

Farming to improve soil health, maximise grass production, and be self-sufficient were the aims of Richard Park, of Low Sizergh, as he made a conversion from an intensive grazing regime dependent upon fertiliser, to organic. He decided to use Holistic Management as his framework for decision-making to support the transition. Last summer, two years into his organic conversion, he already saw benefits:

The grass growth this Spring was comparable with other farmers using fertiliser and then slowed to nothing during the dry weather. When the rains came grass growth exploded and again our growth rates were the same as others, and some weeks higher.

The key benefit of Holistic Management from Richard's point of view is having greater insight into what's happening on the farm.

I can read the land and see it in a completely different way. I can make sense of what is happening, and how my management is influencing it.

– Richard Park

Sailean Farm - Argyll, Scotland

Gilly Dixon-Spain, of Sailean Farm gained a big insight about their croft.

If it hadn't been for the thorough way holistic financial planning made us look at areas of profitability over all our croft's current income streams – beef cattle, heritage sheep, meat



Richard Park won an award from the National Trust for the quality of his pastured eggs.

sheep, and laying hens, we would never have realised how much more our off-grid Bothy holiday rental made after all expenditure, than any of our other current enterprises. Holistic Financial Planning has given us a blueprint to master the complexity of planning our income so that our work is focussed on what will unblock our cashflow. We have plans for further diversification and now know we have a method for moving forward that takes care of all the complexities.

-- Gilly Dixon-Spain

As you can see from these examples, Holistic Management does work in green and pleasant lands, and covers a whole lot more than grazing. It is truly whole farm management.

Visit 3LM at Groundswell, stand SB8

At Groundswell, 3LM are introducing Ecological Outcome Verification in collaboration with Savory Institute, and British market partners H. Dawson, Brannach Olann, and Ethical Butcher. Jo Dawson, CEO of H. Dawson, says the consumer has an appetite for wool grown on regenerating soils.

It's about the why. People buy things from you because of why you're doing it. We've all got enough stuff. If people are going to buy something there has to be meaning behind it. 'The Blue Planet' has raised people's awareness about microplastics. There's no better way to link the consumer with the land, than to say, 'my purchase of wool is going to drive positive change.'

- Jo Dawson, H. Dawson





A network of farmers, researchers and organisations sharing knowledge on sustainable agricultural practices

VISIT THE AGRICOLOGY DISCUSSION TENT



RESEARCH TRIALS

FARMER PROFILES

FIELD EVENTS

Evidence based research tests and trials on sustainable farming from leading institutions

Practical tips from farmers sharing their experiences of using agroecological practices on their farms On farm knowledge exchange events with insights and advice from farmers and researchers

For the latest information go to www.agricology.co.uk



No-till Benchmarking – the Finances One Year On

Gary Markham, Land Family Business

We shall have benchmarking data for the 2017 and 2018 harvests from the Groundswell Benchmarking Group to be presented at Groundswell and early indications are very positive.

We have analysed the output of individual farms using a standard crop price thereby providing the output in physical production variance.

The cost of production per tonne provides an indication of one of the performance components of a business and is lower than traditional high input/output systems

We are developing and identifying some of the key performance ratios for arable crop production economics rather than using the traditional gross margin system which tends to focus on maximum yield and high output farming. Capital of machinery per Ha plus hire charges have a large influence on total machinery costs.

The Vicious Circle

The largest influencer on arable profits is currently the capital investment required in machinery. The average depreciation charge per Ha in the Land Family Business annual survey is around £148 which at 16% equates to a capital value per Ha of £925. This level of investment is destroying viability.

The natural and traditional reaction to this has been

 Acquire additional land to spread the machinery costs – additional land comes at a high cost in a competitive market which often results in a negative additional margin Maximise yield and output from autumn sown crops to counter the cost of additional land

This then leads to the requirement of additional working capital in terms of inputs to obtain that maximum yield, high labour and machinery demands in the autumn – the vicious circle continues

Reverting from this treadmill into a less intensive system with lower margin spring crops and less cultivations is not an easy change to make. Often an investment in new equipment is needed which may not be justified within a single business.

Working Capital

One of the major differences is the lower amount of capital required in the Group. Investment in machinery in the Groundswell group is typically around £600 per Ha, around £325 per Ha less and £71 per Ha less in variable costs – this equates to £396 per Ha less working capital. In a typical farming business of 1,000 Ha, this totals nearly £400,000 saving

Collaboration?

Many businesses would benefit from sharing machinery in the form of machinery syndicates and share farming the crops. These can be very effective as restructuring models for the conversion into conservation agriculture. They can bring the following benefits

- The labour and machinery costs are quantifiable and transparent
- Provide a focus on labour and machinery which would not normally exist within a family farm



- Scrutiny of best practice
- Economies of scale without having to take on high cost additional land
- A platform or vehicle to sense check new ideas
- Flexibility in labour availability
- Knowledge sharing

These structures can be set up whilst retaining individual family farming businesses for taxation and succession purposes — they are the new era contractors for family farms

As chemistry becomes less available in the industry, we shall have to rely increasingly on husbandry methods

Therefore, one of the key performance indicators is the ratio of investment in machinery to crop output at a standard price – these results will be available at Groundswell for discussion

The Groundswell Benchmarking Group has met several times on members' farms since Groundswell 2018 and shared ideas and best practice.



Regenerative Agriculture: Key Pathway to Transforming Earth and Human Health in the Anthropocene Epoch

By Charles Massy

Regenerative agriculture implies more than just sustaining something but rather an active rebuilding or regeneration of existing systems towards health. It also implies an open-ended process of ongoing improvement and positive transformation. This can encompass the rebuilding or regeneration of soil itself, and of biodiversity more widely; the reduction of toxins and pollutants; the recharging of aquifers; the production of healthier food, clean water and air; the replacement of external inputs; and the enhancement of human health, social capital and ecological knowledge.

But we are also talking big picture here: of both saving our planet and turning around human ill-health. There is overwhelming evidence to show that our planet has moved into a new geological epoch following the last twelve thousand years of the Holocene. The latter epoch was that ideal climatic time when humans developed agriculture and from this modern urban civilisation. Unfortunately, with our modern industrial capitalism and the economic credo of economic rationalism (i.e. endless growth and greed), human activity has now unequivocally destabilized the 9 Earth systems that maintain ideal living conditions for humanity and other life on our planet.

As historian John McNeill put it, 'humankind has begun to play dice with the planet, without knowing all the rules of the game'. That is, our behaviour has now tipped us into the Anthropocene epoch: a new, dangerous, human-caused, disruptive geological epoch. Damningly, industrial agriculture has proven the major player in destabilizing the six key Earth systems of Climate change, biodiversity loss, land systems change, destruction of our water systems, and disruption of the interrelated nitrogen and phosphorous cycles.

However, because these Earth systems are self-organizing, it is not too late to transform the Earth. All we need do is change the way we think about farming and the Earth we inhabit and, in turn, how we grow food and fibre. In my book Call of the Reed-Warbler: A New Agriculture - A New Earth, I explore regenerative agriculture and the vital connection between our soil and our health. It is a story of how a grassroots revolution - a true underground insurgency - can save the planet, help turn climate change around, and build healthy people and healthy communities. A key for this is our relationship with growing and consuming food.

In my book, in addition to recounting my early mistakes as an industrial farmer, I tell the real story behind industrial agriculture and the global profit-obsessed corporations driving it. But more importantly I show – through evocative stories - how innovative farmers are finding a new regenerative and transforming way to farm.

However, the key point is that at stake is not only a revolution in human health and our communities but the very survival of the planet. Regenerative agriculture hinges around regenerating the five key landscape functions. These comprise: the solar cycle, the water cycle, the soil-mineral cycle, biodiversity, and finally, the key but overlooked factor of the human-social: the world-views or paradigms we bring to our farming and living. To illustrate these, I build much of the core of my book around stories of extraordinary regenerative farmers who primarily set out to regenerate their most degraded landscape function, but which in turn they found positively impacted the other four - given that all landscape functions are indivisibly connected.

Concerning destabilization of the Earth's governing systems, evidence is now



mounting that the best approach to address climate destabilization and the other threatened Earth systems is regenerative agriculture and its capacity to massively drawdown CO2. Now, Agriculture, in occupying thirty-eight per cent of the Earth's terrestrial surface, is both the largest user of land on the planet and humankind's largest engineered ecosystem. But the problem is that traditional industrial agriculture - through practices such as land clearing and burning vegetation, using lots of fossil fuels (in fertilisers and chemicals, and to power farm machinery), overgrazing, ploughing and fallowing - emits, rather than stores, carbon. In particular, excessive carbon dioxide in the atmosphere (largely due to the release of long-stored carbon through burning fossil fuels) is, we now know, one of the key causes of the greenhouse effect.

However, because it is based on plants, which take carbon out of the atmosphere to make and store sugar through photosynthesis (and because these plants have roots growing in the ground), a regenerative agriculture (i.e. one with biologically active and healthy soils) has the potential to bury huge amounts of carbon for long periods. Moreover, when a healthy agriculture puts more long-lasting carbon into the soil while minimising the loss of such carbon, this in turn has a major impact on the water cycle and its crucial role in thermoregulation (i.e. climate control) of our planet.

World leading environmental and social change agent Paul Hawken, in his latest book Drawdown, reveals how vital regenerative agriculture is to helping save the planet. Over 70 leading scientists and analysts calculated the 100 best methods to drawdown CO2 (or prevent its emission). When different regenerative agriculture practices are calculated as one, then regenerative agriculture proves the best drawdown method by nearly two and a half times the next best method. All these regenerative methods are based around practices like revegetation and inculcating healthy, living soils (that is, soil containing plants, insects, bacteria, fungi and other organisms).

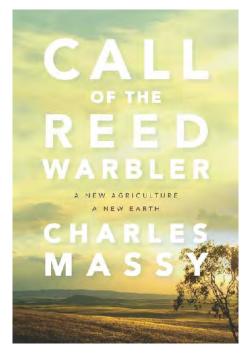
At the same time, such a new ecologically-based agriculture is also proving the best way to address the mounting and massive escalation in modern human diseases. That is, the trashing of landscapes and life-supporting systems is not the only negative impact of modern industrial agriculture. Another is the way it produces food and then how it processes, distributes, markets and sells it. At the same time as we are degrading the air we breathe, we are also denaturing the food we eat and water we

David's Bookshop,

Letchworth.

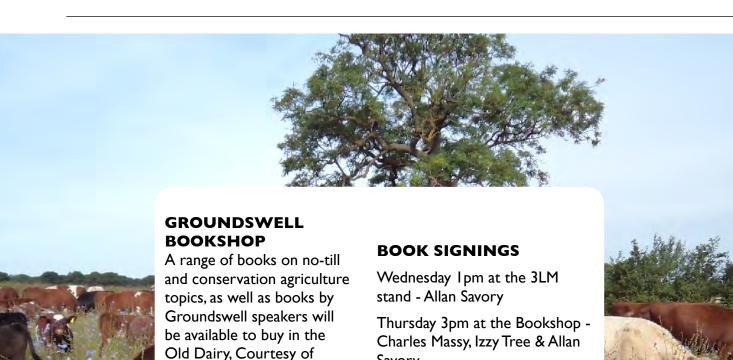
drink and lacing them with a witch's brew of deadly poisons - such as the world's most widely used herbicide of Glyphosate (a variant being Roundup). This in turn is leading to a near exponential increase in modern chronic diseases

What makes these impacts so deadly is that we are genetically hard-wired to live off our natural environment. This includes eating food that is free of man-made chemicals but also full of a large range of nutrients and micro-nutrients. However, while we can't change this genetic wiring, we can change our landscapes, and thus the food and water that they supply. This is the remarkable story I conclude with in my book: that by shifting away from modern, chemically based industrial agriculture to one that regenerates Mother Earth and its systems and which delivers food chock-full of nutrients from healthy soils and landscapes, then we not only can regenerate human health but can also address the Anthropocene boundary crossings at the same time.



In Call of the Reed Warbler, Charles Massy explores regenerative agriculture and the vital connection between our soil and our health.

Charles will be signing copies of his books on Thursday afternoon at 3pm in the Bookshop.



Savory



Cross out the past and let the worms work for you

Some direct drills from around the world may have been a good idea when they were invented. But times have changed – so keep up with the future.

With a Novag drill you're not only investing in the world's most innovative no-tillage drill, but you'll also receive healthy soils that will make the next generation's farming a success.

Cut your costs and working hours and let the worms, fungi and bacteria do the job for you. Enjoy increasing carbon sequestration, water storage and nutritional quality all while increasing yields and revenues! It even helps you to restore thriving ecosystems. This may sound like a fairytale, but it works.

Novag sas \ TEL +33 5 49 24 65 43 \ www.novagsas.com



Expertise from Kings and insight from Soil Life demonstration sites provide innovative soil health solutions

The shift towards soil health becoming a key pillar of sustainable crop production has never been so prominent. With less than average rainfall now more common, yet sporadic, high volume rainfall 'events' also appearing more regularly, looking after our soil with an action plan that nurtures our most valuable asset is absolutely critical.

A new focus

We continue to see an ongoing change in direction with regard to farming policy, alongside a wider perspective from industry stakeholders as to how to best manage our soil and water assets. From private sector water companies working with growers to promote best practice, through to Government funded agrienvironment options focussing on short term green cover crops and long term herbage features, there is something for all.

At Kings, our activity with growers across the UK and Europe covers all bases. We support those who are just starting their 'journey' as a means to meet Ecological Focus Area (EFA) requirements, to those with a clear strategy on how to improve soils to ensure increased resilience – and therefore profitability – for their farm business.

Working together to create innovative solutions

As always, the key to success is expertise and collaboration. We work closely with our colleagues at SOYL and Frontier Agriculture to make innovative approaches accessible while ensuring that they meet grower requirements. With a new network of five Soil Life demonstration sites across the UK, we can now show best practice for the effective management of soils at farm scale through a wide range of positive strategies.

Kings at Groundswell

For the third consecutive year, Kings is delighted to be the official Cover Crop Partner to Groundswell. Across both days of the event, our expert team will showcase a diverse range of demonstration plots and walk visitors through the crops and concepts behind them.

One such plot will give further insight into how mycorrhiza and rhizobacter systems can be integrated within green cover to support soil health for crops within the wider rotation, while another will display a range of straights and mixes to demonstrate varietal characteristics. Visitors will also have the opportunity to explore a range of crop mixes that can





support integrated pest management programmes to control nematodes in both cereal and root crop rotations.

EFAs and Countryside Stewardship

For those interested in meeting EFA requirements, our team will also exhibit mixtures that meet the increasingly popular EFA catch/cover crop options. Alongside this, there will be the opportunity to discuss key Countryside Stewardship options that bring benefits to soil, water, farmland birds and pollinators – bringing the integrated whole farm approach to life.

Visit Kings at Groundswell on 26th and 27th June – find the team and their cover crop demonstrations in the Drill Demonstration Field.

With a team of expert advisors across the UK, an extensive product range and ongoing support that leads the way, Kings can meet all of your specialist crop needs. For further information please visit www.kingscrops.co.uk, follow @kingscrops on Twitter and Facebook or call 0800 587 9797.

KINGS DEMONSTRATION PLOTS

- 1. Super 10
- 2. Soil Structure Mix
- 3. EFA Power Mix I
- 4. EFA Nematode Reducer
- 5. Soil Vitality Mix
- 6. Radish/Oat Mix
- 7. Black Oat and Vetch untreated
- 8. Black Oat and Vetch with innoculant
- Annual Pollen and Nectar Mix
- 10. Moir Mix
- 11. Herb Rich Sward Mix
- 12. Buckwheat/Phacelia Mix
- 13. Adagio Oil Radish
- 14. Accent White Mustard
- 15. Stinger Tillage Radish
- 16.EFA Basic Mix
- 17. Turnip Rape
- 18. Black Oat
- 19. Buckwheat
- 20. Phacelia

All soils solution



KUHN

PERFORMER

Versatile deep tine disc single-pass cultivator.



Also in KUHN's growing min till offering:

Espro: Fast and accurate drilling in full range of tillage conditions

Cultimer L: Variable depth tine cultivation

Optimer +: Independent discs and roller for shallow stubble cultivation

Prolander: Multi-purpose tine cultivator

Discover XM: Disc harrows for surface to deep stubble cultivation

All available in a range of working widths and with roller options where appropriate.

forage harvesting I livestock husbandry I arable I landscape maintenance

be strong, be KUHN







www.kuhn.co.uk

'SIM'-ply Bio-Logical!

Steve Holloway, Soil Fertility Services

Imagine your soil as if it was a complex metropolis full of transport systems, waterways and people, all going about their daily business, each having its own small part to play in the city's smooth operation; constantly utilising and replenishing its resources. Yes, there are the less savoury elements creating chaos and disruption, but a strong well-managed society will cope with most situations once the infrastructure is in place.

The city supports the people and the people support the city - ring any bells? Or put another way; there's an earthquake in the city, buildings collapse, gas and water mains break, access by road becomes difficult so we end up in an environment no-one is happy to work in except - The bad guys! They come in, steal valuables and take full advantage of the situation.

On top of that, injury and disease go unchecked. Paramedics are kept out of town by lawlessness and disruption. But; in a well-managed society, the army is called in to quell the uprising; utilities are stabilised, and the network sets about reestablishing itself and order is restored.

That might very well sound like a Hollywood movie but here in reality Biological Farming is all about being proactive - focusing on what you can actually affect. Last year we contended with a Beast from the East and a Dry from Dubai and the crops still grew! Many of you were only pleasantly disappointed on yields but you can always say when asked: "it wasn't so good because…"

Our customers range from Nuffield Scholars who have farmed for generations,



through to first time farmers with a small holding; whether it be arable on a massive scale or grassland in a paddock, the principles are the same; build on what you have and support the soil's ecosystem. The more conducive a healthy atmosphere you create, the greater diversity can thrive and get on with what comes naturally.

Your soils need the tools to ride out adversity, starting with improving it's structure by minimising tillage; potentially saving around £60/ha on a contractor. Now you've added structure to the city it's time to populate it with beneficial, advantageous elements like Vitaplex V8 derived from vermicompost and jam packed with fungal feeding Humic acids and Fulvic compounds that aid bacterial growth.

These powerful carbon sources will hold moisture in the soil reducing drought stresses, stimulating soil microbiology, minimising nutrient leaching and promoting natural disease resistance. These basic benefits are key regardless of the growing crop and are the building blocks to soil improvement and biological farming.

At Soil Fertility Services, we blend our own product mixes in house giving us flexibility to tailor-make exactly what is required. We can add our beneficial microorganisms that aid Nitrogen, fix Phosphate and Potassium, fight soil-borne diseases like Take all and Clubroot; some can also adjust rhizosphere pH if needed. So, we have built the city, given it utilities and populated it with useful inhabitants...



Working together for soil and water health

Affinity Water

Ian and Fiona Waller farm 450ha of mainly arable land in the mid-Chilterns area. The husband and wife duo have worked together to help improve water quality both on and off the farm.

Fiona is the head of water quality at Affinity Water and Ian is a farmer who has been implementing conservation agriculture practices on the farm for the last 20 years, finally converting to zero till over the whole farm in 2018.

The Groundswell team asked how their job roles impact their agricultural and water management decisions.

What would you say is the most important piece of kit on your farm?

Ian: The most important tool is a garden fork for getting a good look at my soil.

We have a high stone content in our soil which can impact the accuracy of measuring compaction with a spade or penetrometer. The prongs of the garden fork find their way past the stones giving a much more accurate picture.

If the soil falls through the prongs of the fork, that's always a good sign.

I usually check my soil health in the autumn, winter and after harvest. I always try to take the fork with me when I go for a walk to test an area that is looking particularly good or bad.

Fiona: From a water quality perspective my focus would be on the farmer themselves.

They have the knowledge, they know where their land boundaries are, where the water flows, where it floods and what happens on their land when it rains.

Essentially, hearts and minds are as important as any kit.

Fiona, how does being married to a farmer influence your work at Affinity Water?

Fiona: I work very closely with our catchment team, so it's been really helpful to be able to share ideas and information from Ian with them.

Affinity Water has been doing catchment management work for the last eight years and during that period we've had really close links between the catchment team and farmers. But in the beginning, I used Ian as our main sounding board and the catchment team came to the farm for a visit, to learn more about some of the challenges and to see for themselves what could be achieved.

This relationship helps fill the gap between water industry and agricultural knowledge. For example, when we were discussing the impact metaldehyde was having on water quality, I was able to discuss this with Ian to get his input.

I was also able to provide the team with information on ferric phosphate, as Ian had been using it with great results for many years.

Ian, how does being married to Fiona impact your farming practices and decisions?

Ian: I'm very aware of the impact that agriculture has on water quality, and this is all coming home to roost now that it's very high up on the government's agenda.

The 'eye opener' for me is seeing what Fiona goes through when there are problems with water pollution, and how seriously this impacts the water industry.

Most farmers aren't aware of all the work that goes into providing high quality water and all of the measures in place to achieve this.

I've been to a surface water treatment works three times now and it's so enlightening to see what goes on. I find it staggering how much sediment, which is essentially topsoil, comes out of the works. We're talking about lorry loads every day from just one treatment works.

Farmers need to do something about this and I'm a firm believer that direct drilling has a big part to play. However, it's also about doing a whole host of things right to stop this, and for those of us who are aware, to share knowledge and educate.

Fiona, how do you think farming and water industries can work together to deliver the government's goal of sustaining food production while protecting the environment?

Fiona: It has to be a multipronged approach. For me this starts with integrating water and food production requirements.

We need to think about what crops we're growing, their water demands and location. For example, whether we can sustainably grow heavily water dependant root cops in areas of water stress, such as the south east and East Anglia.

There are lots of challenges, and farming is increasingly required to achieve maximum yields with minimum water and chemical input.

There's not one 'silver bullet' that will deliver this. That's why the entire industry needs to be more joined up, and look at this challenge holistically.

Ian, what three conservation practices would you recommend to other farmers to protect their soils?

Growing cover crops is extremely important, but finding detailed information can be hard.

I'm constantly striving to find plants that I can grow in a short space of time and understand how to grow them, so cover crops are at the top of the list of things that I want to learn more about.

Secondly, treat every day as a learning day. Don't think you know it because it's happened once, you need to keep improving your knowledge.

People always ask me what my goal is, and I say to improve soil health, but it's a long term goal. We have damaged some soils over the last 50 years and so it could take as long to rebuild their condition - I'll never achieve it, it's an ongoing project.

Finally, we need to do more research on soil. I have a saying: 'Soil is like the ocean' — we know about the big things in the soil; the equivalent of whales are worms, but we don't know enough about all the smaller bacteria and microorganisms and their interactions with our farming.

Fiona, what are your top tips for famers who want to have a positive impact on water quality?

Fiona: The best thing that any farmer can do is to engage with their local water company catchment team.

These teams are full of really enthusiastic people who want to work with farmers to improve water quality. They will have access to some funding through schemes and grants that companies, or Natural England may have and can help you to identify these.

Finally, soil health is the key to improving water retention on land, to prevent flooding and to reduce the amount of soil, pesticides, and nitrates running off into watercourses.

Farmers need to focus on soil health as much as yield and crop output. By doing this yields could increase at the same time as water quality being improved.

Ian, you'll be attending Groundswell this year, what are you most looking forward to seeing at the event?

Ian: I'm really looking forward to attending both days of Groundswell and in particular I'm looking forward to attending the lectures on rebuilding soils.

I'm especially interested in the interview with Sue Pritchard, Henry Dimbleby and Rosie Boycott, on 'Does Britain Need a Food Policy?', as I think this will generate a good debate.

The event is also a great opportunity for me to meet like-minded individuals to share experiences and develop new networks within the zero-till community.

Farm profile:

- 450 ha split into six blocks
- Predominantly milling variety winter wheat – for Warburtons
- Other crops: WOSR, spring beans, cover and fodder crops
- 65 breeding Herdwick ewes used to manage the grassland, cover and fodder crops
- 18% of farm is in stewardship
- Predominantly medium loam soil type
- Zero tillage across the whole farm as of last year



Song of the Un-Tilled Field

The plough rests and rusts so that soil can sing again under a veil of cover crops.

Earth gathers out of dusts, bonds into a chorus, born of rain.

Into sticky clots. Each seed drops deep into harmonic zones of growth and change, among roots and worms and uncut fungal layers.

Left long enough, the soil builds bones from the social life of plants, recruits insects, carbon — all the microscopic players that are the countless funds and trusts of un-tilled fields — into a muscular,

teeming chain;
a subtle songline that stirs crops
to action as the plough rests and rusts.
The song of soil made whole again.
A cycle that, nurtured, never stops.

- Adam Horovitz



HUTCHINSONS

Crop Production Specialists

Hutchinsons has grown to become the leading national agricultural and horticultural input advice and supply company, taking a dynamic, forward-thinking approach to supporting growers in the production of quality crops in a sustainable and responsible manner.

Hutchinsons remains a family business offering specialist agronomy advice, services and inputs nationwide, together with a comprehensive range of packaging materials for the fresh food industry.

Our professionalism is matched by our total commitment to customer service. We have long term commitment to customers and staff, to ensure that the business will be able to successfully meet the needs and improve profitability of farmers and growers in the future. At **Hutchinsons** we recognise that the people working within the business are the essential ingredient in maintaining and enhancing the quality of service offered to customers.



Why measuring soil biology is key for good soil health, sustainability and increased yields.



Over the past years, soil-health has become a trending topic due to the realisation of an upcoming soil health fertility crisis. During the last 50 years, intensive crop production has exhausted our planet's soils, endangering their ability to meet future food demands. If no actions are taken now to stop this crisis, then it will be devastating for agricultural yields, with the UN predicting that there are only 60 harvests left before our planet's soils become too degraded to feed us. The good news is that the Food and Agricultural Organisation has estimated that efforts to sustainably manage the soil will improve soil-health, which could increase food production up to 58%. It is clear that we need to start taking care of the wellbeing of our soils now, in order to improve agricultural yields and guarantee food supply for future generations.

A large part of determining the health of soil is gaining an understanding of the soil's living ecosystem, i.e. the soil biology. FungiAlert has revolutionised soil biology analysis, making it simpler, more costeffective and faster. FungiAlert's novel SporSenZ sensors sample in-the-field, giving growers, for the first time, a simple to use tool that can determine the presence of viable pathogens and beneficial microorganism in the soil. Many other soilhealth methods require soil samples to be sent to a laboratory, however, this has two inherent problems i) it can lead to changes in the soil ecosystem, as the soil is being tested away from its natural environment, and ii) many methods are based on DNA analysis, meaning that even dead DNA can be picked up. Current methods can lead to a miss-interpretation of the true health of the soil. However, FungiAlert's in-the-field

Right & Center: Our SporSenZ technology allows us to offer studies to understand disease pressures of particular crops, and across different seasons. The results can guide key decisions, such as, which crop protection product to use, and when to apply it.

soil-health test allows for a true profiling of the active soil fungal/oomycetal communities in the soil.

FungiAlert's revolutionary soil-health test disentangles the complexity of the soil biology, becoming one of the key tools for guiding sustainable disease management strategies. By using this tool as a 'pre-season



soil-health screen', the grower can determine potential pathogenic threats, and learn how healthy the field's soil biology is. This information drives key agricultural decisions, such as:

What crop to plant and where? If there is a high risk of disease for a particular crop in a field, then growers may choose to plant that crop or choose a resistant variety.

What seed variety to use? A grower may choose to use a more profitable seed variety in a lower risk field.

Is a seed treatment necessary? Higher risk fields may benefit from a seed treatment (this could be a biological control treatment).

The best crop protection strategy for the upcoming year. This allows growers to plan better IPM strategies.

Furthermore, FungiAlert's soil-health test allows growers to monitor the health of the field during the growing season and preharvest, in order to mitigate losses due to the spread of plant disease and to guide management practices. It also allows users to assess crop protection strategies, as FungiAlert's soil-health tests determine the soil biology before and after the application of crop protection products (chemical or biological), giving a clear picture of how these treatments have an impact on the pathogens and on the beneficial microorganisms. This could be a key driver for sustainably managing the soil, lead to the reduction of chemical applications and the uptake of more bio-control and biostimulant products.

Please come and visit us at stand PFD10 or contact us on 01582 320971 or at info@fungialert.com

The FungiAlert Team





We all need trees

To make a difference on your farm

Trees aren't just a pretty face. They give you an extra crop of fruit, nuts, timber or woodfuel you can harvest all year round. They improve soil quality, prevent run off and shelter your livestock.

woodlandtrust.org.uk/plant





Agroforestry - a win win for farming and the environment

Why should farmers consider agroforestry? Whether you are an arable or livestock farmer, agroforestry - integrating trees into your farming system - offers multiple benefits. It can boost productivity, increase wildlife, improve soil health and animal welfare, manage water flow and contribute to climate change mitigation. Agroforestry can deliver while avoiding potential tradeoffs between food production and public goods that occur in many modern farming systems.

This year for the first time, the Woodland Trust is here at Groundswell. We promote the benefits of agroforestry and help farmers and landowners plant trees – and we want to help you too.

Come and visit our stand FY2 just outside the main conference barn and talk to one of our outreach advisors – they have years of goods. Our friendly panel will include farmer Stephen Briggs who has a 52 hectare silvoarable scheme, one of our outreach advisors and researcher Tom Staton who is investigating how agroforestry can support pollinators and beneficial insects. There will be plenty of opportunity for practical questions too.

"It has delivered everything we wanted. It's making us more income and delivering soil protection and biodiversity benefits."

- Stephen Briggs Whitehall Farm

The interest in silvopasture – planting trees for shade, shelter and browsing - is gaining momentum. Both the 'beast from the east' and last summer's drought highlighted the benefits of having natural shade and shelter available. The drought also highlighted the value of tree browse. A well designed

tree species to grow, when and how to plant and funding options. Join us at 12pm on Wednesday in the Soil Tent to find out more.

Let us help you plant trees on your farm. Visit woodlandtrust.org.uk/plant for more information.



WOODLAND TRUST

experience advising landowners on the benefits of trees and can provide information on our subsidised tree packs and planting schemes.

We are also running seminars. Join us on Wednesday at 11am in the Soil Tent to find out how silvoarable (trees and crops) can improve the sustainability of your arable business whilst delivering an array of public scheme provides many public goods - including enhanced biodiversity and a solution to climate change.

We are joining the Pasture-Fed Livestock Association, Groundswell founders and hosts, the Cherry family and Organic Research Centre to host a practical session on the benefits of silvopasture and how to get started, including choosing a site, which Woodland Trust will be presenting the Agroforestry seminar at 11am in the Soil Tent on Wednesday, and a Q&A on Agroforestry at 4.15pm on Wednesday in the Discussion Tent. You can visit them at stand FY2 throughout the event.





DYNAMIC Direct Drill Available for demonstrations



- * High quality, low disturbance no tillage system
- * Turbo cutting disc creates a clean micro tilth for seed to be placed in
- * Rubber or steel closing wheels firm the soil around the seed
- * Tilled soil under the seed gives easy root establishment
- * Modular design 4.5, 5 and 6m
- * 25cm and 19cm row spacing
- * Easy maintenance and low running cost
- * Each drilling coulter has up to 35cm of travel for following ground contours





Done correctly, regenerative agriculture is more profitable than conventional farming.

Nicolas Verschuere, Co-Founder & Chief Operating Officer, Soil Capital

Since Soil Capital's inception in 2013 as a farm management firm committed to scaling regenerative agriculture, we have held management responsibilities on over 30 large scale farms across 15 countries. We have learned, sometimes the hard way, what creates value and what does not.

Our goal at Groundswell 2019 is to share a few lessons we have learned about how regenerative farming can be the route to a farmer's success.

Many farmland operations struggle to perform financially, to inspire the next generation and to keep up with the burden of tougher consumer demands and regulation. On the other hand, a growing number of farmers have adopted a new farming paradigm, turning previous roadblocks into concrete opportunities:

- Cutting input costs from the first year onwards,
- Maintaining (or improving) yields,
- Receiving a better price for products

The key driver to this shift in mindset is soil health and ecosystem fertility. Regenerative farmers protect and nurture their soils, increase biodiversity, adapt to their landscape and climate, and minimize external inputs as much as possible. The more farmers focus on developing the soil's ability to better feed the plants, the more profitable, and valuable, their farms become. Incidentally, their crops also become healthier and their impact on the environment becomes positive.

This said, examples of failed regenerative operations exist, and we need to learn a few simple lessons if we want to realise regenerative agriculture's true value.

Direct seeding of winter wheat into multi-species cover crops, rolled with no added chemicals on Nicolas's farm in Belgium

Farming is a business going far beyond the soil.

Lesson #1: Strategy, risk and cash management matter: regenerative farming is a rapidly developing field. The science of chemical fertility that underpins conventional farming is mature, tried and tested. The formal science behind biological fertility is still in its early stages. Even if regenerative agriculture already delivers meaningful gains, rolling out new practices too fast can hurt a farm more than not changing at all.

This is why trials, adapted technology and frequent discussions with regenerative practitioners are crucial. Through gradual steps, where a portion of incremental profits is reinvested into manageable changes, trials and investments, a farm can transition to a regenerative organic system over five to ten years, while beating its historical performance.

Lesson #2. The hardest resource to find is a great farm manager. Ideal profiles must offer an almost opposing set of skills, for example a seasoned farm manager also open



Above:Technical and strategic analysis for a holistic livestock management project in Australia

to learn from people who have never set foot on your farm before or financially astute, yet deeply operational.

If you are this person, we have a job for you! We've learned from our own experience this skillset is easier found in a team.

Lesson #3. A portfolio of farms is more complicated to manage than a single farm. A group makes more sense when there is a clear value creation strategy, such as a dedicated focus on specific complementary products, markets, or geographies. This allows the emergence of a brand and synergies which are expensive to achieve otherwise.

In the words of Nasim Nicholas Taleb, "the solutions need to be simpler than the problems". Lack of farm profitability, unhealthy food and environmental degradation are complicated and serious problems. Done correctly, more profitable regenerative farming is the simple solution we need.



Want to know about soil health? Become a soil expert for your farm...

By Abby Rose, Vidacycle (Sectormentor for Soils)

Most farmers agree that soils are our greatest resource. As we uncover more about the complex world beneath our feet, we realise that there is a fungal internet and bacterial empire down there working to help plants grow and ecosystems flourish. The question is, how can we work with these tools the natural world has cleverly developed over millennia? How can we build our soil health? And importantly how do we know when we are building soil health?

As I have explored soil science looking for a clear indicator that our farm is building soil health, I've learned that right now science doesn't have a definitive answer or test for this. In fact 'the test' is a few years off maybe it will be DNA analysis, or fungal and bacterial counts or something research is yet to uncover.

This gap in soil health knowledge could be a cause for concern since around the globe we hear that soils are in crisis; one senior UN official warned all of the world's top soil could be gone in 60 years. However I see it another way, I think this is an opportunity for farmers to lead the charge: to become experts in the soils on our own farms and regenerate soil health globally.

Being a soil specialist on your own farm can of course sound a bit daunting. Isn't this the realm of scientists? The truth is that no-one spends more time on your farm than you, and actually through informed observations you can quite quickly get a good eye in for judging how healthy the soils are in different parts of the farm.

Of course it's important to record your results and learnings so you can look back and compare how your soil has changed since last year or the year before – to make this easy we created the Sectormentor for Soils app to accompany the soil tests. This software makes it easy to build up a photo diary of the soils in each field, combined with more quantitative measures such as earthworm counts, infiltration rate, slake tests, as well as results from lab tests. Documenting everything also means you can easily get external help with specific

queries and questions arising from your observations.

Now farmers around the UK (and beyond) are using this selection of tests, along with the Sectormentor for Soils software, to understand their soils and use their soils as a guide to more ecological and profitable farming methods.

Don't have time for this? Me neither, but I have learned to make time - I do these tests with my dad on our farm at least once a year. Sometimes it brings up more questions than answers, but those questions are the guide for our journey of discovering what works best on our farm. The best farmers always have an excellent handle on their most important resources - undeniably soil health is every farmer's most important resource. Spending time getting to know your soils and then experimenting with what works to build soil health on your farm is worth every minute in the long run.

To hear from farmers doing these soil health tests and using Sectormentor for Soils on their farm, head to our session on Wednesday in the Agricology Discussion Tent at 1pm. We will also be doing a practical demonstration of the tests after this discussion. You can also find out more and access our free soil testing guide on our website soils.sectormentor.com

Luckily this is something the Pasture Fed Livestock Association have been thinking about. The PFLA ran a series of events bringing together farmers, soil scientists, and advisors to find a way that farmers could monitor their own soils. All parties agreed on a selection of simple, visual tests that were helpful indicators of soil health, and importantly, doable on farm without any high-tech equipment or expert consultants.

Along with soils advisor Niels Corfield and Soil Health Expert Jenni Dungait we produced a free online guide of how to do each of the tests, when and where. We are also working with Sally-Ann Spence, part of the DUMP team, to create a dung beetles protocol, as Dung Beetles are an important



part of a living soil for animal farmers. Of course it's important to record your results and learnings so you can look back and compare how your soil has changed since last year or the year before – to make this easy we created the Sectormentor for Soils app to accompany the test. This software makes it easy to build up a photo diary of the soils and aboveground diversity in each field, combined with more quantitative measures such as earthworm counts.

To understand what works you need to be able to perform some sort of analysis so you can compare findings from one field to the next and learn as you go - it's all about looking, and then going back and looking again in a systematic way.

(PFLA) in the United Kingdom started a working group on soils. Many farmers felt confident that different grazing techniques positively affected their land and their soils but they didn't have any way to quantify this; it remained hearsay. The scientific measures that are available, such as Soil Organic Matter, change slowly and so it's difficult to use them as a way to understand if on-farm experiments are improving soil health each year. What farmers really wanted was a way to measure the pulse of their soils, so to speak, in order to easily adopt the farming practices that improve soil health.

From there a soils advisor, Niels Corfield, began to put those tests into practice on Ian Boyd's farm - a PFLA member. However one problem was that he didn't have a way to easily record the results of these tests in the field. I had developed some apps for my family's farm and so worked with Niels and the PFLA to create a simple app, Sectormentor for Soils, so farmers can record their soil observations as they go.



In this way I found myself on the doorstep of Ian Boyd's 700 acre farm, smartphone in hand, ready to help him dig into his soils. Ian Boyd is a farmer and wildlife photographer, who has been farming at Whittington Lodge Farm since he took it over from his father 40 years ago. He sadly watched the wildlife decline significantly on farm, while growing monoculture cereals for 30 years. His thin soils got worse and worse, the weed burden grew, and it became unviable to farm in that way. With the advent of environmental funding schemes from the government he decided to try a new approach; maybe he could bring back the wildlife and have a viable farming business. His family bought some pedigree Hereford cows to manage grassland and wildflower meadows which turned out to be a huge success, bringing wildlife back to the farm. Since then the whole farm has gone organic. For their cereals they have started to plant each field in herb rich leys to build up the soil health for 4-5 years before growing the arable crops for a few years and then back into herbal leys. The herbal leys are grazed by his 40 strong herd of suckler cows (together with calves, yearlings and 2 year

Ian wanted to understand how effective the herbal leys were at building soil health, how did year one compare to year four? We were there to help him uncover answers . We gathered together our simple tools - a spade, a few trays, soil corer, garlic crusher and a refractometer and headed up through the mist into the fields. The first thing you notice when you get out into Ian's fields is that there are wildflowers everywhere; the fields are alive with color. We walked around the field, stopping every 100 steps to count the percent of undesirables (i.e weeds), percent of bare earth, number of grass species, number of broadleaves and more, Ian recording it all himself in the app.

Ian had been understandably suspicious at the outset; how was he going to analyze his soils with just a smartphone and few bits of equipment? But by lunchtime Ian was excited, all reservations abandoned, telling all the visitors about how easy he had found the different soil tests, and that the app made it no trouble at all to record the results. I was rather taken aback by his enthusiasm; we hadn't expected this to be such a novel experience for a seasoned farmer. Ian later told us, "I realised that a healthy farm is all about healthy soils. The app makes it easy for me to monitor my own soils."

Since that inspiring day out with Ian, we have worked with a number of other farms and had similarly enthusiastic responses, a fire lighting in the eyes of each farmer as they took soil analysis into their own hands. In partnership with the PFLA and Niels we created a free online guide to soil testing on farm. We have about 15 different tests to choose from, and a simple guide of where and when to do each test, how frequently, any equipment you might need and what the results indicate.

It was very clear when we were out there in the field, this is not just about monitoring, it's about learning and being in conversation with your soil.

We all know it's one thing listening to an expert's advice about your animals; it's another going out there and looking for yourself and then building up a picture of the animals over time. It's the same for soils; nothing replaces going out, looking yourself, and building up your own picture. We also know soils are complex, so you can share the results of your soil tests in the app with agronomists and other farmers to get feedback and further the conversation once back at the office.

When the science does catch up and we have agreement on reliable soil health lab

tests - being in conversation with your soils still keeps you ahead of the curve because nothing replaces seeing for yourself, that knowledge gained as you observe and investigate your soil first hand. As the old Japanese proverb goes, 'a farmer's boots are their best fertiliser'. And as Joel Salatin always says, we are moving into an era of clever farming, and I think engaging with our soils is a great place to start.

It's that simple; this is how you become the soils expert on your own farm - by looking and monitoring yourself. Now is the time to get out there and start tracking your own soils, observing infiltration rates, earthworm counts, aggregate structure, percent bare soil, percent weeds, take photos, document what it's like now and later in the season. How does the soil change after just one season of a new management practice? What about a year later? Have you reduced the amount of weeds and bare soil?

For me, this is what farming is all about, experimenting and figuring out what works on your farm, what works for the ecosystem sitting on your doorstep, what works for you.

You can access the on farm soil monitoring guide, find out more about the app and hear case studies of farmers already using it at soils.sectormentor.com.





Successful Direct Drilling starts with an Inverted T-Slot Low Horse Power - lighter tractors - less compaction Good Penetration - even in high trash volumes & dry soil Seed always placed in the soil - no "hair-pinning" Soil movement around the seed - mineralising nutrients Rapid emergence - no growth check, as with disc drills An ability to work in all conditions - wet or dry Give your seed the best possible start in life, with the unique environment created by the Inverted T-Slot System "the greenhouse in the soil"





Simtech Aitchison

01728 602178

www.simtech-aitchison.co.uk



Because Soil Health Matters

BIOFIL is organic and the only known soil inoculant available today that is specifically designed to support plant growth in soils with extreme pH, either acidic or alkaline. BIOFIL's products have been especially formulated for this purpose, with each containing very high concentrations of seven different strains of naturally occurring soil microbes.

Developed in Hungary, and used consistently by farmers since 2014, they

report significant improvement in soil structure and water retention, and plants with larger and stronger root systems that are naturally resistant to environmental stresses.

BIOFIL products have been scientifically proven to have an NPK nutrient value in excess of 100kg's/ha, and it is well established through research and extensive commercial use by farmers in Hungary that crop yields increase significantly

compared with what is achieved with a conventional NPK fertiliser programme.

Many independent field trials have confirmed the benefit of including BIOFIL in a fertilisation programme with crop yield increases ranging from 10% to 40%, and in some instances even higher.

A recent study of Biofil used on an organic corn crop showed great yield increase and healthier, stronger plant with no chemical fertiliser, indicating what we already knew that Biofil can fully replace NPK fertiliser for organic farmers.

See Biofil website (see below) for a great overview of different trial results documented.

www.terragro.hu.



What if you could simply create the perfect seed bed?



At Dale Drills we're as passionate about your soil as you are. As farmers we know just how vital good soil structure is to the health of your crop - locking in vital nutrients to create optimum conditions for sowing and growing.

Capable of drilling in direct, min-till and conventional seedbeds our versatile range

of lightweight seed drills have been made with exactly that in mind - promoting low impact cultivation that encourages minimal disturbance. Renowned for excellent contour following, accurate seed placement and a low power requirement, why not see how our drills can help your business fulfil its full potential?

daledrills.com info@daledrills.com 01652653326



Farming is on the verge of a massive transformation. The role of the farmer, how we think about our farms and how we think about ourselves will need to adapt to a new world of Digital Farming. Almost everything that we currently think of as a fixed part of our farming lives will change. From the technology and machinery that we use, to the data that we gather on the things we grow, to the way we think about what our farm does and how we use the soil to produce food - all this will look radically different.

Much of this change is out of our control. This realisation can be an uncomfortable experience.

But if you cannot control the change, then you can control how you react to it.

At Small Robot Company, we are actively trying to create technological change in farming through our vision to build a new model for sustainable food production. We are building three small robots - Tom, Dick and Harry - to monitor, treat and plant your crop. Our Artificial Intelligence system Wilma will transform the way you think about your crops and how you take decisions



We believe that today is the most exciting time that there has ever been to be a farmer. But only the most ambitious and courageous farmers will seize these new opportunities.

So we are launching a new business coaching programme: The Farm Ambition Blueprint.

Making progress with your ambitions

The challenge for farmers is to get really clear on their purpose and their goals, questions that we rarely ask ourselves. What are your ambitions for your farm? What are your ambitions for yourself?

Ambition can be one of our greatest strengths: you are always looking towards the next project and the next goal. Naturally optimistic, and excited about the possibilities that the future holds. But it can also lead to a sense of frustration. You are often plagued by a sense of never quite getting there. You can obsess over the things that you have not yet done, rather than celebrating your achievements.

The Farm Ambition Blueprint will help you to develop a farming business and a life which is full of a sense of progress, positivity and ever increasing ambition. To design a working life which supports your purpose as an individual.

Our starting point on this journey is to introduce you to our Eight Mindsets Model.

To find out more come and visit our stand. Score yourself on our Mindset Scorecard, sign up to the Farm Ambition Blueprint today, and get yourself a copy of our E-Book. This maps out the Eight Mindsets that we believe the most successful farmers will adopt.

Discover your strengths – and start creating a plan which guarantees that your most exciting and successful days are yet to come.

Left: Our Tom monitoring robot prototypes are currently in field trials at 20 farms across the UK.

Top: Harry prototype robot together with Sam Watson Jones, co-founder, Small Robot Company, Andrew Hoad, Partner & Head of the Leckford Estate, and Joe Allnutt, Head of Robot Awesomeness

The Ambitious Farmer: how will you make your farm's future bigger than its past?

By Sam Watson Jones, co-founder, Small Robot Company and fourth generation farmer

However, more important than any technological development is the development of yourself, the farmer, as an individual.

Through quarterly group workshops, we will work directly with you to develop the mindsets which will create the future that you want.



WHAT COULD BE THE IDEAL NO-TILL DRILL?

UNDERCUT DISC - CLOSING / GAUGE WHEEL - ROW CLEANER

THE PERFECT COMBINATION!



slyagri.com

Considering No-till/Zero-Till? Looking for a minimal disturbance disc drill for reducing grass weed emergence? Consider the Boss! With over 1 million hectares sown in Arid+Wet conditions in Australia we have an extremely durable solution.





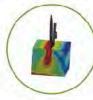


Two gauges possigle, with the side wheel or the gaugewheel. Adjustable without tools

The boss opener has almost zero seed furrow compaction



V DOUBLE DISC WITH SIDE GAUGE



SINGLE DISC WITH SIDE GAUGE



ANGLED DOUBLEY DISC



1, 2 or 3 tanks, small seeds, liquid fertilizer system



SEE US AT GROUNDSWELL SHOW 2018

Groundswell





The

IMFermentation (Bokashi) versus Composting of Organic Waste Materials: Consequences for Nutrient Losses and CO2-footprint.

Composting of organic (waste) materials has already been applied for many years in agriculture and horticulture. During composting, the material is aerated by regularly turning the windrow. This stimulates the aerobic micro-organisms. These micro-organisms use organic matter as their energy source. This will heat up the windrow and as a result a considerable part of the organic matter will be lost as CO2, which is emitted into the environment. Another option is fermentation of the organic materials. This process takes place without aeration by turning. Following the Agriton method, Ostrea Seashell lime, Edasil Clay minerals and Actiferm (a microbial inoculant containing Effective Microorganisms) are added to the windrow when the windrow is set up for fermentation. After this the windrow is closed by putting a plastic foil tightly stretched over the windrow. During a period of 6 to 8 weeks the windrow is fermented. This is called Agriton Bokashi; fermented organic matter. The goal of this experiment was to compare this Bokashi process with the traditional way of composting. As expected, this anaerobic conversion (fermentation) of the organic material resulted in considerably lower organic matter losses and an enormous reduction in CO2 emission (lower CO2-footprint) to the environment.

In agriculture and horticulture, enormous amounts of organic materials are being produced which are not consumed and can be regarded as waste products. Traditionally, these materials were composted and used as organic matter supply.

During the composting process, a large part of the energy is lost as heat and CO2. As a consequence, the carbon/ nitrogen ratio (C/N) is substantial reduced. The C/N ratio of the compost is too low for optimal plant growth. The C/N level of the compost is not optimal to stimulate the life in the soil. support plant growth, Compost is hard to digest for the life in the soil as it lacks nitrogen and easy degradable carbohydrates. These carbohydrate has gone lost as CO2. With the world population growing rapidly, we need all the organic matter to grow foods and feeds and we have to take care of our environment. Instead of traditional composting, another method to treat these waste materials is available: Bokashi, which is the Japanese word for "well fermented organic matter".

The system keeps the materials stored airtight. During this process complex structures are broken down by the micro-organisms. Due to a lack of oxygen, however, organic material is not



completely broken down to CO2, water and heat. Compared to traditional composting it should be possible to considerably reduce energy losses and CO2 emission when making Bokashi instead of compost.

A seven year research programme was set up by Agriton and concluded that energy and nitrogen are a lot better kept with Bokashi than with composting which showed an average loss of 50 % of the available carbon.

The carbon/nitrogen level of organic material in the soil of around 20 is optimal for plant growth.

In the Bokashi material the C/N ratio was 19.5 in 2013 and 22.3 in the 2015 material. For the traditional compost this ratio was 10.1 (2013) and 11.4 (2015), which is too low for optimal activity of soil life. Energy losses from the product as well as an enormous reduction in the production of the greenhouse gasses, CO2, methane (CH4) and NO2, favour the production of Bokashi instead of traditional Compost.

	Grass	Grass With Bokashi Additives	Compost 8 weeks	Bokashi 8 weeks
Kg product	12.820	13.750	5.070	12.850
Dry matter	2.640,9	3.973,8	1.363,8	3.610,9
Organic Matter (kg)	2.051,2	2.117,5	699,7	2.017,5
C total (kg)	1.076,9	1.113,8	329,6	1.053,7
N total (kg)	34,4	47,7	28,9	46,9
N mineral (kg)	2,9	5,1	0,2	0,5
N organic (kg)	31,4	42,6	28,7	46,4



8 weeks fermentation = 6,6% loss. 8 weeks composting = 60,6% loss

Comparison with V1.0 (2013): 6 weeks fermentation = 3,2% loss. 6 weeks composting = 60,2% loss.

Ma/Ag No Till Drill



Proving itself across the UK with;













To find out more contact Ryetec;



Tel: 01944 728186 Email; info@ryetec.co.uk www.ryetec.co.uk

How can we manage land to produce food and reduce flood and drought risk at the same time?

Gerard Stewart, NFM Programme Communications Coordinator, University of Reading

Joanna Clark, Landwise Project Principle Investigator, Associate Professor, University of Reading

Many of the things we need from the countryside depend upon good soil health. We need to produce food, and at the same time good management can also ensure that we also produce other things too like biodiversity, carbon storage and flood and drought risk mitigation. Conservation agriculture and its focus on soil health can help to deliver more than food from our lands.

How can healthy soils reduce flooding? Good soil structure will help open up soil pores and air spaces to allow water to infiltrate in to the soil when it rains. Increased infiltration, improved structure and organic matter will help to store water in the soil for crops and other life to use over time, which is particularly important during periods of low rainfall. This water storage helps to reduce surface runoff, which can cause flooding. When soils are saturated, management that creates rough surfaces will help to slow the flow of water as it moves overland, offering opportunities to infiltration in other areas or simply just to reduce peak flows downstream.

So, how can we manage the land to deliver healthy soils? If we think about our soils like a bucket, what can we do to make the bucket larger and stop it from filling up? There are many different types of soil, many different climates and many different farming systems. What works in one area might not in another.

We have come to Groundswell 2019 because we want to listen and learn from your practical experiences of conservation agriculture in your area. What have works on your farm with your soils? Have you noticed areas with good infiltration, and areas where crops still grow well in dry periods?

What is Natural Flood Management?

Soil use and management is one of many options available from Natural Flood Management (NFM). NFM addresses flood risk by protecting, restoring and emulating the natural functions of soils, catchments and rivers by storing and slowing the flow of water. NFM can provide environmentally sensitive approaches to minimising flood risk, to reduce flood risk in areas where hard flood

defences are not feasible or cost-effective, and to increase the lifespan of existing hard defences. There is growing interest in integrating NFM within agri-environment schemes and flood risk management schemes, so NFM is an opportunity for farm diversification.

What is the Natural Flood Management Research Programme?

This is a four year £4m programme funded by the Natural Environment Research Council (NERC), part of UK Research and Innovation which is sponsored by the Department for Business, Energy and Industrial Strategy. The NFM programme consists of three projects: Landwise, Protect NFM and Q-NFM. These are being carried out in geographically different locations and environments with correspondingly different approaches. Each project has been co-developed with local stakeholders, including farmers, landowners and farm advisors. The research involves cases studies, making measurements in the field and computer simulation modelling.

How can you help?

Sharing knowledge is critical to the success of our research programme. Researchers bring technical skills, but we need guidance and support from people on the ground with practical knowledge of what works and what doesn't to ensure the research is useful and relevant.

Please visit us at Stand B10 for a chat. We're looking forward to meeting you!

Please also visit us online to take part in our national survey of farmer knowledge.

https://research.reading.ac.uk/nerc-nfm/blog/blog-groundswell2019/





Unlock the potential of your crops.

AminoA Biostimulants a complete range of L-isomer amino-acid products.

Suitable for use in all crops

Use AminoA biostimulants in your tank mix





www.aminoa.co.uk Tel 01633894300



A UK Biotechnology Company

AMINOA BIOSTIMULANTS

A complete range of new generation biological crop stimulants produced in the UK. Developed from concentrates of L-isomer amino acids through enzymatic hydrolysis.

Suitable for use in all crops

AMINOA BIOSTIMULANT EFFECTS

- Increase root development
- · Improve leaf and bud development
- Stimulate blossom, formation and growth of fruit
- Increase resistance to stress by cold, heat, drought, and agrochemical phytotoxicity
- Facilitate and increase nutrient absorption by roots and leaves
- Stimulate early and more uniform fruit ripening
- Stimulate mobilisation of Calcium (Ca) in fruit
- · Extend fruit preservation after harvest
- Increase Iron (Fe) and Potassium (K) in the plant



IMPROVE PROFITS BY

- Increasing yields (trials have been conducted in many different crops and countries to support the efficacy of our products;
 - Winter Wheat yield increases 6-18%
 - Oilseed Rape 250-1000kg ha
 - Potatoes >8000 kg ha)
- Improving quality
- · Manipulating harvest date
- Improving the efficacy of inputs (Fertiliser, agrochemicals, trace elements)



ENVIRONMENTALLY FRIENDLY

AminoA Biostimulants are safe to handle, are a food source for soil microorganisms and leave no pesticide residues.

AminoA **

AminoA FLO is an easy to use liquid natural amino acid complex with in-built spreading and anti-foam technology to provide optimum plant cover and uptake.

AminoA FLO has been formulated to use in tank mixtures with other agrochemicals and fertilisers

AminoA FLO should be applied at 2.5 litres ha in minimum of 100 litres water or at 1 litre in fungicidal tank mixtures.





AminoA GRO is a liquid natural amino acid complex formulated to be suitable for use in all organic production systems

To find out how are our products can improve your crop performance email enquiries@aminoa.co.uk or call 01633894300 to speak to our technical team.

www.aminoa.co.uk

AminoA Biostimulants Ltd, Nant yr Ochain, Michaelston-y-Fedw, Cardiff UK CF36XT















Artist In Residence: Liz Elton - 100 Harvests

Landscape artist Liz Elton's is the Groundswell Artist in Residence at this year. Her work '100 Harvests' is made with water miscible oil, vegetable dyes from food waste, food colouring and earth pigments on 100 compostable food recycling bags. Liz often uses this material as a ground for her paintings. Made from crops such as corn or potatoes, it is produced in order to facilitate the disposal of waste food and intended to break down in the process. It is fragile and ethereal and floats like parachute silk with the movement of the air around it. The title '100 Harvests' comes from an article in the Guardian newspaper discussing the compromised fertility of our soil and the expectation that it may only support a further 100 harvests. Visually the work refers to a watercolour by Paul Klee painted in the early 20th century and

included in a show at the Hayward Gallery called 'The Nature of Creation'. Liz aims to embed a sense of time passing in her paintings to prompt the viewer to think forward, knowing that the work is not intended to last. She has a BA in Fine Art, Painting (Wimbledon College of Art), and an MA in Fine Art (Chelsea College of Art and Design). Shows include the John Moores Exhibition at the Walker Art Gallery in Liverpool in conjunction with the Liverpool Biennial (2018 and 2012). Residencies include The Florence Trust, Highbury, London (2018) and the Bothy Project, Isle of Eigg, Small Isles, Scotland (2016).

Website: lizelton.com Instagram: liz_elton



Passionate about Farming and the Environment? Want to Connect with like-minded Farmers? Then the Nature Friendly Farming Network (NFFN) is for you!

NFFN is a farmer-led organisation, uniting farmers from all backgrounds (big and small, organic and conventional) who want to manage their land in ways that deliver benefits for wildlife, soil quality, flood prevention and carbon emissions, at the same time as growing healthy food.

The NFFN promotes the benefits of farming with nature, shares knowledge and works for better policies for food and farming. The network is open to farmers and the public alike and there is no cost to join.

This is a critical time for agriculture policy in the UK. We work to ensure nature friendly farmers have a strong voice in these important debates to



secure a sustainable future for farming and the environment.

Make a Difference, Add Your Voice and Join Today

www.nffn.org.uk

Follow us on Twitter @NFFNUK

#naturemeansbusiness



At KWS we believe variety selection doesn't get the time it deserves. It's time it did.

By John Miles

Good performance starts with the right variety

In 1931 the National Institute of Agricultural Botany (NIAB) produced a booklet for growers that highlighted the importance of variety selection and its significance to farm performance.

Its direct and to-the-point message could not have been clearer: not all varieties are the same and failure to match variety to the region or farm situation leads to poor performance. In an era where mistakes had severe implications, there was no room for diplomatic language. It was a case of 'tell it straight'.

Nearly a century later and our choice of words may have become a little more subtle, but the NIAB message is as valid today as it was in the 1930s: good performance begins with making the right decisions from the start.

Much to consider

The subject of variety selection tends not to get the time it deserves because often it is seen as a personal choice and something, we have done since leaving college with little change in our thought process. How often do you hear someone say they are not growing a variety simply because it's a milling wheat and they grow feed? It's absurd logic. Farmer meetings devote many hours to issues such as cultivation policy, fungicide strategy and tackling problem weeds. All subjects for which there is no easy and quick or right and wrong answer. Just as with variety choice, the solution is often unique to the farm situation under discussion.

The point about variety choice however, is that it is the first-step towards answering the questions farmers love to ponder, such as cultivation policy, fungicide strategy and tackling problem weeds. Though many may not recognise it: it is one of the biggest decisions they will make in the growing season. Variety choice determines:

- market opportunities and therefore chances of a price premium over feed;
- influences whether to drill early or late;

- decides the order in which crops get sprayed in the spring;
- the order in which varieties mature and therefore are harvested; and
- cost of production.

Variety flexibility

At Groundswell 2019 our plot features three varieties: KWS Kerrin, KWS Siskin and KWS Firefly. Each has been chosen to help illustrate the NIAB point that not all varieties fit all situations.

For example, the bread-maker KWS Siskin has excellent disease resistance and it does offer the opportunity to save on fungicide spend compared with a more management heavy variety, such as KWS Santiago. We know the reliance on variety resistance is becoming more important as fungicide efficacy falls, but it is only part of the solution. We also need consistent yields across regions, soils and seasons to deliver a constant cash-flow. This is what KWS Siskin brings to the party, not a boom-to-bust rollercoaster performance.

KWS Siskin has a highly vigorous growth habit that means it is not suited to early drilling. This speed is desirable where there is a need to spray-off a grassweed flush prior to drilling or sowing has to be delayed until after root crops. It is also useful when sowing occurs after temperatures have dropped (typically mid-October onwards), seedbeds become poorer and establishment is threatened by slugs. Vigorous growth habits exhibited by varieties, such as KWS Siskin move fast to counteract this adversity. Our question to those who drill direct is: how valuable is speed of establishment and early spring growth to you and is something you consider when choosing varieties?

The third string to KWS Siskin's bow is its market versatility that raises its potential for a price premium over feed. Demand for Group 2 wheats is strong and the protein flexibility — contracts span a range of specifications from 11.5% through to full 13% — means they are often easier to manage and more financially rewarding than Group 1 varieties. This is the basis of what we call 'Dynamic' wheat: they have

either market quality or agronomic characteristics that either add value or save time or money and having the option to decide which market to aim for – milling or feed –after it is sown is an advantage not to be over looked.

Management considerations

At the other end of the spectrum, we have feed wheat KWS Kerrin. A consistent performer across two contrasting seasons, it was one of the stand-out performers from harvest 2018. Its vigorous-but-not-too-lively growth habit gives it a wide autumn drilling window. If trash management is a consideration, KWS Kerrin is not much taller than Costello at 84cm. Several of the more recent variety introductions have average heights of around the 90cm. Does this factor in your considerations as direct drillers who want minimal surface trash?

Its below average Septoria tritici resistance however, means it needs good agronomy if its yield potential is to be realised. For those in the east who can handle a high-input, high-output variety, Kerrin is the outstanding choice.

It may not give you the mid-season flexibility that Siskin or newcomer KWS Extase do, but its exceptional brown rust resistance (score of 7 out of 9) relieves the workload pressure at the T3 timing. Is having a range of varieties that help spread the seasonal workload important?

KWS Firefly is included in the plots for these reasons. First, its new and is a variety that will restore the appeal of biscuit wheats. Second, it's the highest yielding quality wheat for the East region; and third, it offers the third best combination of Septoria tritici rating (7.0) with orange wheat blossom midge (OWBM) resistance.

Like KWS Kerrin it is another vigorous, strong tillering type with a wide drilling window, but is slower to reach growth stage 31 than Siskin.

It too may offer the opportunity to save on fungicide spend compared with a high-input variety, but we should be mindful of the role fungicides play in protecting the longevity of these varieties now and for the future.

Market uncertainty will be rife in a post-Brexit era, but there is a strong argument that says growing for a domestic market that is not threatened by competition from foreign wheat is a sensible way to manage business risk. The risk is lower still given Firefly's yield potential rivals the best of the feed wheats.

VARIETIES OF CEREALS FOR AUTUMN SOWING

Farmers should know

- The RIGHT variety may do 20 per cent. better than the WRONG.
- The RIGHT variety costs no more than the WRONG.
- Many farmers still grow the WRONG variety.
- The County Agricultural Organiser knows the RIGHT variety.

The National Institute of Agricultural Botany, County Agricultural Organisers and others have been engaged for years in widespread trials and enquiries to discover the right varieties, for they know that there is no other factor which the farmer can so easily and so cheaply control. The N.I.A.B. now makes the following recommendations for the Midlands and South of England; they do not necessarily apply to the North. Farmers who need to know more about these or other varieties should apply to their County Agricultural Organiser or direct to the N.I.A.B., Huntingdon Road, Cambridge. Organisers can also help farmers in applying these general recommendations to their particular circumstances.

WINTER WHEAT

Wilhelmina (or Victor) is the most reliable high-yielding variety on heavy soils in good condition, and also on fertile light soils where the rainfall is not less than 25 inches a year. The straw is fairly short and stout and stands well. The grain is of the same quality as Squarehead's Master for bread-making purposes. Wilhelmina has a smooth white chaff, white grain, and dense square ears of medium size. It takes about two days longer than Squarehead's Master to ripen.

Cross Slot®

The Ultimate No-Tillage System Science-based • Innovative • Unique

Cross Slot has already revolutionized NZ no-tillage

Is now doing the same worldwide

Thrives on residues – the more the better

Is untroubled by stones

Fertilizer banding is standard & has an undeniable effect on yield

Downforce is altered automatically on-the-move to match soil hardness

Equally effective for pasture, forage and arable crops

A genuine high speed, low maintenance opener

Ranked #1 by US Department of Agriculture

Visit us at www.crossslot.com





UK Contacts

Primewest Limited

Office Phone +44 (0) 1608664513

Paul Alexander +44 (0) 7973848828 • paul@primewest.co.uk

James Alexander +44 (0) 7779149466 • james@primewest.co.uk

Email info@primewest.co.uk

www.primewest.co.uk



The Elterwater Challenge

We are republishing The Elterwater Challenge, some nine years after it was first written, as it is still incredibly relevant. At least four of the original signatories will be at Groundswell this year and three of them, John Landers, Will Scale and Amir Kassam, will be speaking at various points. Great strides have been made by pioneer no-tillers in Europe in refining techniques to adapt the principles of Conservation Agriculture to our conditions, but we still lack any serious action from DEFRA or Research bodies to create policies that will help to regenerate our soils and preserve biodiversity, whilst enabling farmers to grow good food to feed the nation. You might have thought it's a win/win situation.

Now seems like a good moment to update this Challenge, so we have set up a meeting for anyone who has a view on this, or a penchant for politics, at 5.30pm in the Old Dairy barn. Let's kick donkey, as they nearly say in America.

The Rt Hon Caroline Spelman MP Secretary of State for the Environment, Food & Rural Affairs, DEFRA

The Rt Hon Andrew Mitchell MP Secretary of State for International Development, DFID

The Rt Hon Chris Huhne MP Secretary of State for Energy and Climate Change, DECC

Elterwater, July 2010

Zero Tillage: an Urgent Opportunity for the New Government

Dear Ministers

British policy on agriculture, at home and abroad, was made at a time when world food supplies were considered secure. We now know that food supply cannot be taken for granted because of declining soil fertility, competition from biofuels and vulnerability to climate change. In the next two years, the new government faces three major challenges: DEFRA will renegotiate the CAP; DFID must decide how to respond to world food crises; and DECC will negotiate international deals on CO2 reduction.

There is growing international experience with new farming methods of zero tillage that improve soil health and allow high levels of food production to be sustained with reduced inputs, flooding, soil erosion, pollution and CO2 emissions and with improved water retention and biodiversity. Over half of Brazil's food production now uses zero tillage systems and it is expanding in Canada and Australia. A small group of UK farmers have shown that it can work well in the UK.

In view of the severity of the problems, the availability of solutions and the opportunities for public intervention, we strongly recommend that the new British Government:

- (A) Appoints a staff member of DEFRA to investigate zero tillage with a view to including it as a central feature of the new CAP.
- (B) Appoints a Zero Tillage Champion in DFID to promote and report on zero tillage activities undertaken with the core funding it provides to the CGIAR and to multilateral institutions.
- (C) Investigates opportunities for international financing to support zero tillage on the margins of rainforests and on degraded lands, as a means of reversing deforestation.
- (D) Allocates a research and dissemination funding stream managed jointly by DEFRA, DFID and DECC and undertaken with the private sector, to be dedicated to scientific and technical progress, including on-farm research, information exchange and evaluation.

Yours faithfully

Amir Kassam OBE, Francis Shaxson OBE, Kit Nicholson, Keith Virgo, Declan Walton, Land Husbandry Group, Tropical Agriculture Association, landhusbandry@taa.org.uk

William Scale, Christopher Renner, Jim Bullock

Zero Tillage Farmers, UK No-Till Alliance, www.no-tillalliance.co.uk

John N Landers, OBE, Associação de Plantio Direto no Cerrado Anthony Reynolds, UK Zero Tillage Farmer Brian Sims, FAO Agri-engineering Consultant

Mark Ritchie, The NR Group

Julia Wright, Honorary Research Fellow, Coventry University

Restoring Soils for Future Food Supply

British policy on agriculture, at home and abroad, was made at a time when world food supplies were considered secure. We now know that food supply cannot be taken for granted because of ongoing decline in soil fertility, competition from bio-fuels and vulnerability to climate change. In the next two years, DEFRA will renegotiate the Common Agricultural Policy, DFID must decide how to respond to world food crises and DECC will negotiate international deals on CO2 reduction. There is growing international experience with a new farming technology – zero tillage – that improves soil health and allows high levels of food production to be sustained with lower inputs, less pollution and greater biodiversity.

A. The Problem

To produce enough food to feed the world whilst maintaining soil and water resources.

'There is an intrinsic link between the challenge we face to ensure food security through the 21st century and other global issues, most notably climate change, population growth and the need to sustainably manage the world's rapidly growing demand for energy and water ... This threatens to create a 'perfect storm' of global events."

- John Beddington, UK Government Chief Scientist.

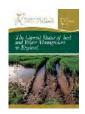
There are plenty of political statements.

'We need to produce more food without damaging the natural resources – air, soil, water and marine resources, biodiversity and climate – that we all depend on.' and 'Food production needs to make sustainable use of natural



resources: reducing and being more efficient with man-made inputs, like ... chemical fertiliser ... using better land management or cultivation practices, to allow for wider benefits of protecting and enhancing soil, water and wildlife ...'

- HMG, Food 2030.



'Farmers in England, who manage 72% of the land, face the challenge of increasing yields while at the same time reducing inputs, improving soil health and generally enhancing the environment.'

- RASE, The Current Status of Soil and Water Management in England.

'Soils in England continue to face three main threats: soil erosion by wind and rain; compaction of soil; organic matter decline.'



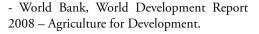
- DEFRA, Safeguarding Our Soils, 2009.

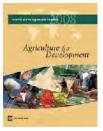
'Given our dependency on food imports, the UK is not immune to the potential impacts of its declining investment in agricultural research and development at home and abroad.' and '2010 presents a historic opportunity for the UK to seize the initiative, mark a break with past DFID policy, and help set the agenda for the coming

decades in the fight against hunger.'

- All Party Parliamentary Group on Agriculture and Food for Development - Why No Thought for Food? Jan 2010.

'Agriculture continues to be a fundamental instrument for sustainable development and poverty reduction' and 'it is time to place agriculture afresh at the center of the development agenda'.



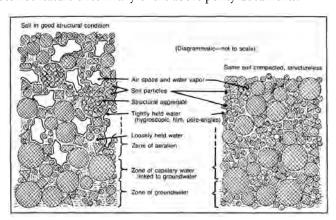


'Environmental degradation, including both natural and man -made disasters, and their possible impact on migratory pressures, could be a potential additional contributor to conflict.'

OSCE Madrid Declaration 2007.

These policies turn a blind eye to the critical problems caused by soil degradation, to the severity and causes of the problem and to possible solutions.

There is little sense of urgency and of the large areas of land where soil degradation is becoming irreversible. Soil erosion and compaction is created mainly by ploughing but the word 'plough' does not feature once in any of the above policy documents.



The policies refer ubiquitously to 'sustainability', a comfort word that now has little meaning. Policy is dominated by a paradigm that assumes that we must rely on improvements to our current production systems and accepts radical solutions only as niche initiatives.

Environmental policies are designed almost exclusively for the promotion of biodiversity and the prevention of pollution and many policy makers still see farmers as the enemy.

Research is dominated by the search for high-tech solutions to individual problems that expect to save our soils by improving our current systems of production. There does not appear to be any strategic thinking about different options for improving soil management.

But there are new farming practices that avoid ploughing and will feed the world for the foreseeable future.

'Management of soil health thus becomes synonymous with management of the living portion of the soil to maintain the essential functions of the soil, to sustain plant and animal productivity, maintain or enhance water and air quality, and promote plant and animal health.'

- (Trutman, 2000. TropSCORE website).

Ploughing has long been considered an essential method of controlling weeds and preparing a good environment for seeds and roots. But it also causes huge damage to the soil and new practices have been developed for managing the soil and that can be adapted to a wide variety of conditions. Zero tillage:

- improves soil organic matter, soil porosity and the life of soil organisms and reduces the effects of compaction
- improves availability of plant nutrients whilst using less fertiliser controls weeds and pests with fewer agrochemicals, provided that intelligent targeted techniques are used
- improves water absorption and groundwater recharge which
- reduces runoff and flooding
- reduces labour/tractor inputs
- reduces greenhouse-gas emissions from the soil and reduces farm fuel use
- enables current yields to be sustained in the long term, thus reducing deforestation and releasing land for biofuels
- reduces costs and increases profits



Switching to zero tillage could save the world about £14,700bn a year

Source of savings	£bn
On-farm margins	7,200
Reduced irrigation costs	700
Reduced flood damage	900
Slower silting of reservoirs and ports	300
Increased aquifer recharge	3,600
Net carbon gains	2,000
Total savings from zero tillage	14,700

Notes: farm margins and physical parameters based on Brazilian and UK experience; silting costs valued at market rates for dredging; aquifer recharge measured at virtual water costs less groundwater extraction costs; carbon gains valued at world carbon trading prices.

B. Solutions

The majority of Brazilian farmers now grow crops without ploughing.

Many of Brazil's soils are fragile and crop yields have declined with soil compaction, exhaustion, sterilisation and erosion.

Over the last 15 years zero tillage has grown to over half the cultivated area. As a result, Brazil is now increasing food production whilst also improving soil organic matter and fertility and reducing runoff and erosion. All with public spending at about 10% of EU levels.

But this has all required substantial promotion, first from networks of farmers groups and then from government.



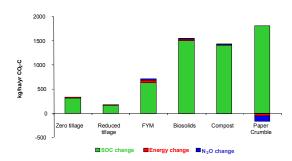
Zero tillage is also growing in Australia, the USA, Canada and other countries.

There is wide interest among UK institutions and success from trend-setting farmers.

There is now a small group of UK arable farmers who have shown that zero tillage works. After an initial drop, yields recover over several years while the soil is rebuilt. Profits recover sooner, as costs are lower. Soil organic matter contents are typically over twice the national average. A 600 acre arable farm can be managed with one tractor, a no-till seed drill, a combine and a sprayer. Some weeds and pests create specific challenges but the health and diversity of soil biota help reduce the incidence of weeds and maintain a reserve of predators. Improved soil life and cover has a dramatic effect on birds and other wild animals.

Cranfield University has been influential in developing zero tillage equipment. Rothamsted has researched the CO2 impact of tillage practices, showing that savings can be made, but that more research is needed into nitrous oxide. In Europe, ECAF promotes zero tillage - www.ecaf.org.

CO₂-C 'savings' from reduced tillage and organic material additions



The main international research institutes are promoting zero tillage.

Most of DFID's limited support for agriculture goes to the CGIAR international network of research institutions. FAO, CIRAD, ICRAF, CIMMYT, ICARDA and ICRISAT all promote zero tillage, including mulch cover and crop diversification.

Local manufacturers of zero tillage equipment are expanding products and sales in many countries, at various scales. FAO is active in supporting the full range of local manufacturing and marketing business.

In India and Pakistan, zero tillage for wheat plays a crucial role in maintaining soil quality and water retention and in controlling weeds and pests, with support from the Rice-Wheat Consortium (CIMMYT, IRRI, ICRISAT, IWMI and CABI), many donors (including DFID), national research institutions and the farming industry (www.fao.org/ag/ca) Adoption is growing amongst commercial farmers, but small risk-averse farmers need more support.

As part of CIMMYT's Global Programme for Conservation Agriculture, IFAD is funding programmes for zero tillage in West and Southern Africa.

C. Actions

An international approach is needed.

The principles and benefits of zero tillage are universal, but the practice needs to be adapted to local conditions. Exchange of experience is invaluable to this adaptation. This exchange should cover technical solutions, institutional arrangements and government incentives.

The EU is lagging behind other countries and can benefit from their experience. Despite the neglect of recent decades, there is still a strong agricultural skills base in the UK and we can provide important support to other countries.

Government support can include common features that are consistent with world trade rules and benefit from shared experience.

Zero Tillage provides an ideal focus for government support in the new CAP.

The current CAP lasts until 2013 and major reforms will be negotiated. With increased pressure on the EU budget, it will no longer be politically acceptable to make payments to farmers that are related to historical payments and conditional only on relatively undemanding compliance measures. But, World Trade agreements will prohibit direct payment for production. Support for zero tillage provides the ideal opportunity to pay for the environmental benefits which derive from improved soil health, without accepting reductions in food production.

A Zero Tillage Conversion Scheme should build on experience with higher tier agri-environment and the Organic Conversion Scheme. Schemes in other countries (eg Canada and Brazil) should be reviewed.

In South America, Zero Tillage provides further benefits from reduced deforestation.

International funding is already provided for 'REDD' schemes that reduce deforestation. Zero Tillage is being used in some areas to help farmers rehabilitate degraded pastures, so that cattle herds can

be maintained without further deforestation. This gives global environmental benefits that merit international funding.

Existing initiatives in developing countries need sustained support.

DFID has opportunities and responsibilities to exercise the leadership role that it enjoys in the international development world and the leverage it enjoys through its core funding to the CGIAR and to multilateral institutions, including DG8 in the EC, the WB, IFAD and the Asian and African Development Banks. DFID should support existing initiatives, including:

- The significance of zero tillage in the agricultural programmes of the EC, WB, IFAD, AfDB and AsDB
- The Rice Wheat Consortium and the Sustainable Rice Intensification initiative.
- CIMMYT's Global CA Programme
- FAO's experience with conversion pilots
- Growth of local equipment manufacturing

There are also opportunities for increased international discussion and research.

Conservation Agriculture worldwide 117 Million ha



Experience in Brazil, Australia and Canada shows that farmer cooperation is at least as important as public support. Very low levels of public funding can facilitate influential cooperation, by funding expenses and facilitation for discussion forums designed to exchange farm experiences, both within and between countries. Modest funding for international networks (ECAF and PACA, RELACO, CAAPAS, ACT and SACAN) will be very influential. National institutions (like ABPD, APPRESID, CASA, CAAANZ, WANTFA) would benefit greatly from international exchange. In the UK, the Soil Management Initiative, the UK No-Till Alliance and the Tropical Agriculture Association provide a sound basis from which to support exchange of experience.

Zero tillage depends on continual updating and adaptation of techniques, especially for weed and pest control. It uses agrochemicals in a more selective way than conventional farming, but their use is critical to success. Farmer innovation needs to be supported with science.

Finally, public funding for research is needed to understand better the impact of zero tillage on the environment, on emissions, on biodiversity and on the rural socio-economy.

MULTICROP EFFICIENCY





V451M AND V461M

The new V451M and V461M balers - experience true multicrop performance and versatility from low to frequent use. Designed and built to the highest specifications, these balers are packed with features for efficient operation and produce bales from 1.65 to 1.85 m in diameter. Get in touch now to book a demo!

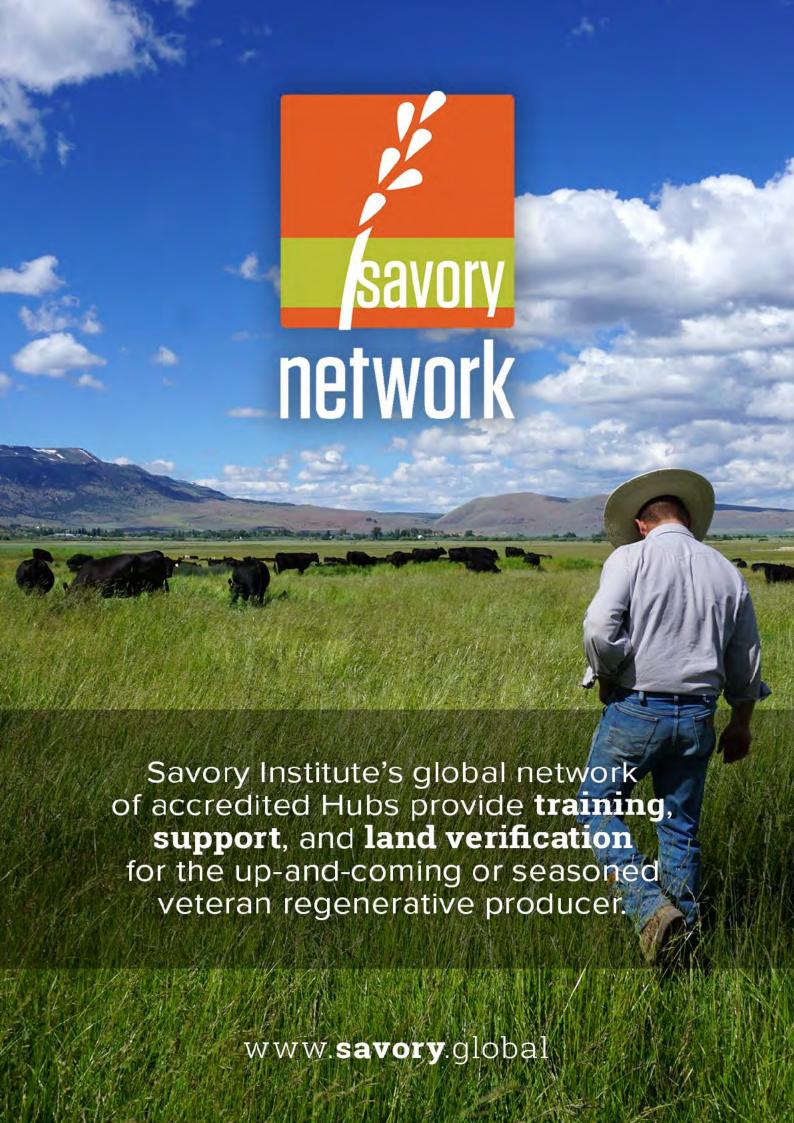
CALL US ON: 01438 861257

HIGH STREET, CROMER, NR STEVENAGE, HERTS, SG2 7QA











Allan Savory

Allan Savory, born in Zimbabwe and educated in South Africa (University of Natal, BS in Zoology and Botany) pursued an early career as a research biologist and game ranger in the British Colonial Service of what was then Northern Rhodesia (today Zambia) and later as a farmer and game rancher in Zimbabwe.

In the 1960s he made a significant breakthrough in understanding what was causing the degradation and desertification of the world's grassland ecosystems and, as a resource management consultant, worked with numerous managers on four continents to develop sustainable solutions.

He served as a Member of Parliament in the latter days of Zimbabwe's civil war and became the leader of the opposition to the ruling party headed by Ian Smith. Exiled in 1979 as a result of his opposition, he emigrated to the United States, where he continued to work with land managers through his consulting business. The growth of that business, a desire to assist many more people and the need for furthering his work led him to continue its development in the nonprofit world. In 1992 Savory and his wife, Jody Butterfield, formed a non-profit organization in Zimbabwe, the Africa Centre for Holistic Management, donating a ranch that would serve as a learning site for people all over Africa. In

2009 Savory, Butterfield and a group of colleagues co-founded the Savory Institute in Boulder, Colorado to serve the world through an international network of entrepreneurial innovators and leaders committed to serving their regions with the highest standards of Holistic Management training and implementation support. The Africa Centre became the first of the Savory Institute's locally led and managed "hubs."

Savory's book, Holistic Management: A New Framework for Decision-Making (Island Press, 1999), describes his effort to find workable solutions ordinary people could implement to overcome many of the problems besetting communities and businesses today.

In 2003, Allan Savory received Australia's International Banksia Award "for the person or organization doing the most for the environment on a global scale," and in 2010 Savory (and the Africa Centre) received the Buckminster Fuller Institute's Challenge award for work that has "significant potential to solve humanity's most pressing problems." A TED talk Savory gave in 2013 has received over 5 million views and in 2014 was voted one of the 50 most intriguing TED talks of all time. The Savory Institute is one of 11 finalists in the Virgin Earth Challenge, a \$25 million initiative for the successful commercialization of ways of taking greenhouse gases out of the atmosphere and keeping them out with no countervailing impacts.

On Wednesday, Allan will be delivering his lecture, "A Commonsense Revolution to Restore our Environment" at 9am in the Conference barn.

On Thursday he is giving a lecture on "The Importance of Managing Holistically" at 9am in the Conference Barn. In the afternoon he will be in conversation with Charles Massy at 2pm in the Conference Barn.

Allan will be signing copies of his books at 1pm on Wednesday at the 3LM stand, and at 3pm on Thursday at the Bookstand in the Old Dairy.



Charles Massy

Charlie Massy (BSc PhD OAM), has a BSc in Zoology and PhD in Human Ecology. While managing the family farm in NSW he also teaches at universities and consults in the fields of Merino breeding and landscape design.

He has engaged in freelance journalism since 1977, and has published books on Merino sheep and wool history. His recent best-selling book, Call of the Reed Warbler: A New Agriculture – A New Earth, concerns the emergence of a regenerative agriculture in Australia and cause for hope.

Charlie will be giving his lecture, "Call of the Reed Warbler" at 11am on Wednesday in the Conference Barn, at at 4pm on Thursday in the Seminar Barn. He will be in conversation with Allan Savory at 2pm in the Conference Barn on Thursday.

He will be signing copies of his books at 3pm on Thursday at the Bookstand in the Old Dairy.



Jay Fuhrer



Joel Williams

Jay Fuhrer is a Soil Health Specialist employed by the Natural Resources Conservation Service in Bismarck, North Dakota.

He has boots-on-the-ground experience over 38 years, working with cropping systems, grazing systems, cover crops, and gardens.

Jay also has an extensive background working with groups and entities; these include soil and water conservation districts, national and international notill organizations, grazing clubs, watersheds, farm organizations, urban groups, and more. Jay's interest in soil health has resulted in numerous speaking engagements within the US, Argentina, Australia, Canada, Denmark, France, Germany, Russia, and South Africa.

Jay spends his time at the Menoken Farm, minimizing soil disturbance, adding soil armour, maximizing plant diversity, maintaining living roots in the soil, and integrating livestock.

Jay will be leading the First Principles session, "Rebuilding and Maintaining Life in the Soil" at 1pm on Wednesday in the Seminar Barn. He will lecturing on "Carbon, Crops and Covers" at 11am on Thursday in the Seminar Barn.

Jay will also be demonstrating the Rainfall Simulator at 2pm on Wednesday and 12pm on Thursday outside the Conference Barn.

Joel is an independent plant and soil health educator and a healthy soil advocate. He has a particular interest in managing soil microbial ecology along with crop and soil nutrition to optimise plant immunity, soil function, food quality and soil carbon sequestration. Passionate about teaching and sharing both scientific and practical knowledge on agroecological growing practices, Joel provides lectures, workshops and consultation on soil management, plant nutrition and integrated approaches of sustainable food production.

Joel has worked on conventional and organic farms improving biological practices in Australia and the UK where he integrates soil chemical and biological assessments along with plant nutritional analysis as a joined-up strategy for farm management.

Joel studied a Bachelor of Agricultural Science in Australia specializing in plant and soil dynamics and is currently completing an MSc in Food Policy in Canada, as well as working on a book on the links between plant and soil microbioms, nutrition and plant immunity.

Joel will giving a talk on First Principles with Amir Kassam at 10am on Wednesday in the Seminar Barn, and will be on the panel for the "Farmer Perspectives: Reducing N" session at 5pm in the Conference Barn.

On Thursday, Joel will be giving his lecture, "Nitrogen Sharing from Legume Companions" at 2pm in the Soil Tent, before leading the "Soil Farmer of the Year" panel at 4pm in the Conference Barn.



William Scale

William Scale has 15 years of experience of continuous no tillage farming and is based in Pembrokeshire on probably the most Westerly no tilled farm in the UK. With an annual rainfall of about 50 inches a year, the motivation to preserve soils against erosion and to keep driving down costs on the family farm has always been paramount. A keen conservationist, a Nuffield Scholar and a Churchill Fellow, Will has travelled and met a range of farmers and landowners over the years relevant to the field of Zero Tillage, Holistic Management, Regenerative Agriculture and Environmental Conservation and is going to share his ideas and experience at Groundswell.

William will be on the panel for the Glyphosate Debate at 1pm in the Conference barn, and giving the "CA Principles into Practice in the UK" seminar with Simon Cowell and Ian Piggott at 3pm in the Seminar Barn on Wednesday.



Frédéric Thomas

Frédéric Thomas discovered minimum tillage and Conservation Agriculture during his practical training placements and employment experience in the field of agriculture in the USA, Australia and New Zealand and in the course of numerous trips throughout the world. In 1991 he undertook the promotion of minimum tillage and direct drilling in France. His strong conviction regarding the economic, agronomic and environmental interest of these techniques, but also his certainty regarding their adaptability to the diverse pedo-climatic conditions in the country, have enabled him to develop solid skills and a very specific expertise in this field.

In 1996 he took over his family farm. It is partly sandy, poor soil – prone to drought in summer and water logging in winter. Implementing these techniques in those tough conditions has not been easy but the process has helped him to understand even more about soil, fertility, cover-crops and eco-system management. This experience enriched his expertise whilst developing his practical skills.

In 1999 he launched the specialist magazine "TCS" which served as a link and furthered technical exchanges between the pioneers in the field which today it has more than 4500 subscribers, mainly in France. He also

supported the creation of the association BASE (Biodiversity, Agriculture, Soil and Environment) and for 15 years has been the Chairman of this active network of innovative farmers (1200 members today).

Today he has become one of the specialists in this new agriculture; he plays an active role in France and throughout the world with producers, technicians and decision-makers in the agricultural sector.

For further information on Frédéric THOMAS and agroecology practices:

www.agriculture-de-conservation.com

Frédéric will be here on Wednesday giving a Q&A at 10,15am in the Agricology Discussion tent. In the afternoon he will on the panel for the Glyphosate Debate at 1pm in the Conference Barn, before giving a lecture on "Different approaches to weed management with CA" at 3pm in the Conference Barn.



William Kendall

within the county.

William read law at Cambridge University and completed an MBA at INSEAD in Fontainebleau. He was awarded an honorary doctorate from the University College Suffolk. In his twenties he had short careers as an army officer, a barrister and an investment banker. Over nine years he built up The New Covent Garden Soup Company before selling it to a public company. He and several colleagues then bought the embryonic Green & Black's from its founder and grew it to an international brand which they sold to Cadburys in 2005.

William and two partners formed Nemadi Advisors in 2000 to advise and finance early stage businesses. Over the years, he has developed experience in such diverse sectors as London restaurants, flower retailing, natural insulation, pottery, specialist concrete, bovine genetics and building hotel chains.

He is an advisor to or director of many organisations, both public and private including Cawston Press, a fast growing premium soft drinks brand, Farmdrop, an innovative online farmer's market and retailer of food with a story, Samworth Brothers, a large, family owned food manufacturer and, main market listed investment trust, Keystone.

William farms organically and conventionally in East Anglia. He is an active environmentalist and a campaigner for better food and rural issues. He is President of The Suffolk Wildlife Trust. He speaks and writes regularly on these issues as well as on innovation and the creation and fostering of entrepreneurial cultures in all types of organisation. He was High Sheriff of Suffolk 2016 - 2017 and maintains links with many NGOs and volunteering organisations

William lives in coastal Suffolk with his wife and two daughters.

William is on the Routes to Markets panel at 12:30pm on Thursday in the Conference Barn.



Isabella Tree

Isabella Tree is an award-winning travel writer and author, married to the conservationist Sir Charles Burrell. Her latest book 'Wilding' tells the amazing story of their daring wildlife experiment: the rewilding of Knepp Estate in West Sussex. Forced to accept that intensive farming on the heavy Sussex clay was economically ruinous, they decided to step back and let nature take over. By introducing free-roaming herbivores —proxies of the large animals that once roamed Britain— the Burrells' degraded agricultural land has become a functioning ecosystem again. In less than twenty years wildlife has rocketed and numerous endangered species have made Knepp their home. The Knepp experience challenges conventional ideas about our past and present landscape, and points the way to a wilder, richer future—a countryside that benefits farming, nature and us.

On Thursday, Isabella will be giving a seminar about Rewilding at Knepp with Charles Burrell at 2pm in the Seminar Barn, before signing copies of her books at the Bookstand at 3pm.



Sir Charles Burrell

Charlie Burrell studied for a Higher National Diploma in Agriculture and Advanced Farm Management at Circucester Royal Agricultural College, fully expecting to be a farmer. He inherited Knepp Castle Estate in West Sussex from his grandparents in 1983. Despite intensifying the Estate's arable and dairy business for seventeen years, farming on the heavy Sussex clay remained unprofitable. All 3,500 acres of the Knepp Estate are now devoted to a processled rewilding project involving free-roaming herds of cattle, horses, pigs and deer as drivers of habitat creation. Charlie is married to the writer Isabella Tree who tells their story in 'Wilding - the return to nature of a British farm'. In 2015, Knepp Wildland received a People Environment Achievement (PEA) award for Nature and, in 2017, the Anders Wall award for special contribution to the rural environment within the European Union. Knepp was singled out for mention in the Government's 25 Year Environment Plan as an outstanding example of landscape restoration. Charlie is on the board of Rewilding Britain, Ingleby Farms and the Endangered Landscapes Programme, and is Chair of Foundation Conservation Carpathia.

Charles will be giving a seminar about Rewilding at Knepp with Isabella Tree at 2pm in the Seminar Barn on Thursday



Michael Gove

In 2017 Gove was promoted to Environment Secretary by the Prime Minister. Since then he has brought forward a new bill before parliament, mandating, for the first time, measures and targets to preserve and improve the health of the UK's soils, amid growing concern that we are sleepwalking into a crisis of soil fertility that could destroy our ability to feed ourselves. Gove has suggested that, after Britain leaves the EU's common agricultural policy, maintaining healthy soils will be one of the "public goods" that farmers are expected to provide in return for taxpayer subsidies.

The Secretary of State is being interviewed by Rosie Boycott at 10:30am on Thursday in the Conference Barn.



Steven Bailey, Catchment Sensitive Farming Partnership

Steven Bailey is a Soil Scientist in the Catchment Sensitive Farming Partnership. He studied soil scientist at the University of Newcastle upon Tyne, then soil science and plant nutrition at the University of Queensland, Australia. As an ADAS Soil Scientist, he specialised first in manure management, before joining The Plant Clinic, to work on soil, nutritional and pesticide disorders of plants. In CSF, he works on ammonia mitigation advice and pesticides in soils and water.

Steven will be in the Soil Tent at 9am on Wednesday co-leading the seminar, "How to check soil health and knowing where to stop" with Jackie Stroud.



Clive Bailye @TWBfarms

Clive Bailye is a zero till arable farmer from Staffordshire, and founder and owner of The Farming Forum and Direct Driller Magazine. Clive was FCCT's Soil Farmer of the Year in 2016. Farming combinable crops at scale, Clive managed the transition to a zero tillage system in 2010 with the aim of reducing costs whilst improving yields. Massive reduction in labour, fuel and capital requirements have resulted in the creation of an arable business far more sustainable both financially and environmentally whilst providing opportunity for expansion of his contract farming business. His farming system places focus on increasing soil organic matter levels, water infiltration and capturing sunlight through cover cropping, rotational diversity and even reintroduction of livestock.

Clive will be speaking about his experiences as a no-till farmer at 9am on Wednesday in the Agricology Discussion Tent and at 9am on Thursday in the Seminar Barn



John Baker

John is a New Zealand scientist, engineer, farmer who spent 25 years at Massey University researching the reasons why no-tilled crops sometimes failed and often lost yield. His initial goal was to find the weak points in pioneering no-till efforts and see if he and his team could correct them. He developed machines and methodologies that put his scientific findings into practice, writing scientific papers and books, addressing international conferences, winning awards and marketing Cross Slot machines. This scientific work culminated in the Cross Slot No-Tillage System. Alongside this he has done important work in demonstrating the importance of retaining water vapour in the soil during seeding and restoring soil carbon. His work is on-going and he has many new ideas and designs to bring forward.

Will be presenting virtually via a webinar at 9am on Wednesday in the Old Dairy, due to unforeseen circumstances will not be travelling from New Zealand.



Nick Barnard, Rude Health

Nick Barnard co-founded Rude Health in London in 2005 with his wife Camilla. Rude Health is renowned for its innovative, delicious and nourishing foods and drinks, winning scores of awards for taste and ethical standards. Nick is the inspiration behind the Rude Health rants, and is well-known for his infectious enthusiasm for traditional food and drinks. In 2013 he was crowned World Speciality Porridge Champion, and continues his quest for the Golden Spurtle.

Writer of more than 16 non-fiction titles, in 2016 Nick released his first cookbook, Eat Right, an inspirational upbeat celebration of positive eating. Nick's book offers achievable and simple ideas, recipes and advice on how to be nourished by traditional foods in a modern world. Eat Right has won acclaim from food writers and chefs across the UK.

Nick will be part of the Routes to Markets panel at 12.30pm on Thursday in the Conference Barn, and will be discussing Food & Health in the Old Dairy at 4pm on the same day.



Dr Anne Bhogal, Soil Scientist, ADAS

Anne is a Principal Soil Scientist in ADAS involved in the research and development of policies on soil and nutrient management. She has a particular interest in the impact of organic amendments to soils, being involved in the development of the MANNER-NPK model and more recently the development of best practice guidelines for the use of digestate and compost in agriculture. She is currently leading the field experimentation programme of the AHDB Soil Biology and Health Partnership as well as the AHDB 'Maxi cover crop' project looking at ways to maximise the benefits of cover crops. She is a FACTS qualified advisor and a Fellow of the British Society of Soil Scientists.

Dr. Bhogal will be giving a seminar with John Elphinstone on Measuring and optimising soil management using the soil health scorecard and molecular approaches at 9am on Thursday in the Soil Tent. They will also be giving an interactive workshop in the AHDB Soil Pit at 3pm on both days.



Liz Bowles

Liz is Associate Director Farming and Land Use and is responsible for leading and managing our work with farmers, with agricultural technical, marketing, supply chain and networking queries. Liz has a wealth of experience of agriculture and food both in the UK and internationally. She has worked in the sector for over 20 years and brings a practical approach combined with scientific and sector knowledge to her role.

Liz is responsible for leading and managing the Soil Association's work with farmers throughout the UK in conjunction with the Producer Support Team. The Producer Support Team work includes supporting Soil Association licensees, managing the Duchy Future Farming Programme Field Labs, implementation of development plans for organic agriculture in the UK and supporting organic supply chain development.

Liz will be involved in two session on Thursday. She will be in the Agricology Discussion Tent at 11am as part of the Innovative Farmers panel, and then at 12pm will be giving a workshop on Harvesting ideas for soil health innovation in the same venue.



Rosie Boycott

Baroness Rosie Boycott is a journalist and publisher. She has edited national newspapers and in 2008 was appointed as the chairman of London Food Board to advise the Mayor of London to help improve Londoners' access to healthy, locally produced and affordable food. This role evolved in 2016 when Rosie was asked to lead the development of a new London Food Strategy which was to help the food system to work better to meet the needs of everyone who lives and works in London. She chairs Veg Power and is a trustee for Food Foundation and Feeding Britain and also is a trustee of The Hay Festival.

Since becoming a member of the House of Lords in 2018, she continues to speak about the importance of food in tackling childhood obesity, improving health and putting an end to hunger.

Rosie will be interviewing Henry Dimbleby about Food Policy on Wednesday at 11am in the Old Dairy, and Michael Gove in the Conference Barn at 10:30am on Thursday. She will also be chairing the Routes to Market and Soil/Gut Connection panels.



Cathy Boyd

Cathy Boyd has been selling the Pasture-for-Life, Organic Beef from the herd of Pedigree Herefords on her family farm in the Cotswolds.

She started from scratch learning the hard way how to engage with customers. Over 10 years, she has now 100's of regular customers as well as supplying butchers, restaurants and farm shops.

Cathy is on the How to Engage with Consumers panel at 3pm on Thursday in the Agricology Discussion Tent.



Ian Boyd, @cotswoldbeef

Ian Boyd is a Cotswold Hill Farmer passionate about the Farmland Wildlife.

As a former arable farmer, he soon came to realise that to see the wildlife, there has to be a thriving insect population which is in turn dependent on having healthy soils which was a problem with conventional arable. So began a journey to improve his soils with Organic herbal leys, mob-grazed with a suckler herd of Herefords. Whereas he used to measure the soils P&K indexes, he now looks for soil structure and biological activity.

Ian is giving the Become a Soil Expert for Your Farm seminar at 1pm on Wednesday in the Agricology Discussion Tent.



Stephen Briggs

Stephen is an organic arable, vegetable and fruit farmer based in Peterborough who has established the largest silvo-arable scheme in the UK (52ha), growing apple trees and field crops together. He is the Director of Abacus Agriculture Consultants and Head of soil and water at Innovation for Agriculture which is part of the Royal Agricultural Society of England (RASE).

Stephen is speaking at 11am on Wednesday in the Soil Tent as part of the Agroforestry seminar.



Jennifer Brodie, REMIN

An Aberdeen University Zoology Honours Degree graduate, Jennifer is daughter of a Scottish Highland Estates factor. She was a Member of Scottish Environmental Protection Agency North Board for 8 years and secured best 2003 Winston Churchill Memorial Trust Fellowship for researching European composting and waste management. For 15 years she has developed and promoted freshly crushed, finely screened, 360 million year old volcanic rock dust from selected Scottish Quarries. In 2014 she set up REMIN (Scotland) Ltd which provides award winning, organically approved REMIN volcanic rock dust for UK and export. She is convinced that this product has exceptional unrealised potential

Jennifer will be leading the 'Microbes and Minerals' workshop at 11am on Thursday in the Old Dairy.



Paul Brown, Eastern Technical Advisor Kings

Paul Brown is the eastern technical advisor for Kings. A graduate of Nottingham University, Paul has a BSc degree in Plant Physiology and has been advising farmers on crops, varieties and seeds for 43 years. As well as working full-time, Paul also runs a family farm that grows cover crops.

Paul is part of the Cover crops for soil, water and the environment workshop at 10.15am on Wednesday in the Conference Barn. You can also find him giving tours of the Kings Cover Crop Plot at 1.30pm on Wednesday and 2.30pm on Thursday.



Sophia Burke

Sophia Burke has a PhD in hydrology specialising in impact of drought and climate change and has worked for a flood engineering consultancy and for international sustainable development programmes. Sophia now works for AmbioTEK CIC, a not-for-profit that develops software and hardware to better monitor and manage water and natural hazards, including droughts and floods. It has co-developed a series of high quality, low cost environmental monitoring equipment with Kings College London, monitoring weather, stream water level, soil moisture and water quality sensors and the data are sent hourly to our website. Many of these sensors have a wide range of applications for farming. They are straightforward to build and instructions and parts lists are published online.

Sophia is part of the "Low cost, open-data & DIY approaches to assessing the public goods provided by your land"



Dr Natasha Campbell-McBride

Dr Natasha is an organic farmer. On her 28 acre farm in Norfolk she and her family have cows, goats, pigs, chickens, ducks, turkeys, peacocks, geese, bees, gardens and orchards. Through WWOOF (World Wide Opportunities on Organic Farms) the farm is used as an educational platform to teach organic farming to young people from all over the world.

Her new book Vegetarianism Explained has come out in 2017. Dr Campbell-McBride has been working with many young people who have chosen a plant-based life style and as a result became very ill. This led to an intense study into the value of plant foods versus animal foods, which resulted in this book. The book explains the health implications and dangers of vegetarianism.

Dr Campbell-McBride is a panelist in the Soil/Gut Connection session at 4pm on Thursday in the Old Dairy



Russ Carrington, General Manager Pasture-Fed Livestock Association, @PastureForLife

Russ Carrington, who has been at the helm of the Pasture-Fed Livestock Association for the past six years, is responsible for overseeing the growth and development of the organisation as a strong and effective membership organisation.

Although Russ grew up on his family's farm in Herefordshire he left to study Civil Engineering at Cardiff University and to follow a different career. However, after a few years of office life and a stint of international travel he decided to return to full-time farming. He brought with him a string of off-farm skills and a passion for embracing the challenges of food production in the 21st century.

He helped to manage Caplor Farm, an 800 acre mixed farm in Herefordshire for nearly two years, before taking the opportunity to become executive secretary for the Pasture-Fed Livestock Association in 2012.

Russ is leading the Silvopasture Design Workshop at 12pm on Wednesday in the Soil Tent.



Laura Chapman

Laura is a former vegetarian, turned believer in sustainably produced meat. With her husband Jonathan she raises Pasture for Life certified Red Ruby Devon cattle on the Herts/Bucks borders. They have built up the herd over the past six years, and retail the beef directly.

Laura grew up in Devon, studied at Oxford, then worked in London in real estate investment management for pension funds. This included investing, project managing, and promoting/capital raising. Latterly she has investigated agriculture and resource investments.

She is passionate about educating consumers, professional intermediaries and the investment community about the potential health, environmental and welfare benefits of pasture-based farming.

Laura is on the How to Engage with Consumers panel at 3pm on Thursday in the Agricology Discussion Tent.



John Cherry, Groundswell Agriculture

John farms the Groundswell host farm with his brother Paul. His initial enthusiasm for no-till farming stemmed from laziness and an urge to avoid bouncing around on tractor seats, but the further the brothers advanced down the road of continuous no-till, the more obsessed John became about the various soils on the 2500 acres that they farm and how they should be looked after. The Groundswell show came about because he had too many questions that no-one had satisfactory answers for and the easiest thing seemed to be to gather all the experts in one place and see what happened. The result exceeded all expectations...

John will be giving a mob grazing demonstration at 4:30pm on Wednesday and 5pm on Thursday in the demo field. He is also taking part in the Silvopasture Design Workshop at 12pm on Wednesday in the Soil Tent.



Helen Chesshire, Woodland Trust

Helen Chesshire is a senior advisor for the Woodland Trust, responsible for working with the farming sector to promote the benefits of trees on farms.

Otherwise known as Agroforestry, the deliberate integration of trees within agricultural crops and livestock is a win-win for food production and the natural environment. The Woodland Trust can provide advice and support to farmers interested in agroforestry. Helen grew up on a mixed farm in the Midlands.Look at pictures of soil with Niels and join his soil assessment demonstration in the Soil Tent at 10am on Wednesday and at 10:30am on Thursday.

Helen will be speaking at the Agroforestry seminar at 11am on Wednesday in the Soil Tent, and will be giving an Agroforestry Q&A session at 4.15pm in the Agricology Discussion Tent on the same day.



Doug Christie

Doug Christie farms 540ha of land in Fife, Scotland of which one third is run organically on a mainly livestock (beef) based rotation where mob-grazing is being recently implemented. The rest of the farm is under an arable rotation where regenerative farming practices have increasingly been used over the last 20 years

Doug is on the Farmer Perspectives: Reducing N panel at 5pm on Wednesday in the Conference Barn



Christopher Cooke, 3LM

Sheila and I are co-founders of Land and Livestock Management for Life (3LM), a member of the Savory Institute Network. Our mission is to equip people to achieve quality of life whilst improving the land for future generations. We facilitate the adoption of Holistic Management across the British Isles.

Holistic Management is a process of decision-making and planning that gives people the insights and management tools needed to work with nature; resulting in informed decisions that balance economic, social and environmental considerations.

Managers implement Holistic Planned Grazing to manage livestock and restore grasslands by mimicking the predator/prey relationships in which grasslands evolved.

Christopher and Sheila are leading the What Soil Can Tell You? – Savory Hub Breakout workshop in the Seminar Barn at 10:05am on Thursday.



Sheila Cooke, 3LM

Christopher and I are co-founders of Land and Livestock Management for Life (3LM), a member of the Savory Institute Network. Our mission is to equip people to achieve quality of life whilst improving the land for future generations. We facilitate the adoption of Holistic Management across the British Isles.

Holistic Management is a process of decision-making and planning that gives people the insights and management tools needed to work with nature, resulting in informed decisions that balance economic, social and environmental considerations.

Farmers can implement Holistic Planned Grazing to manage livestock and restore grasslands by mimicking the predator/prey relationships in which grasslands evolved.

Sheila and Christopher are leading the What Soil Can Tell You? – Savory Hub Breakout workshop in the Seminar Barn at 10:05am on Thursday.



Niels Corfield

Niels Corfield has been working to deliver a truly sustainable food system for over 10 years. He is an advisor, researcher, educator, designer, grower and nurseryman, working to create sustainable/ regenerative landscapes, farms and spaces in the UK and Europe. He is focused on agroecological systems that are low maintenance and productive. He advises and consults on: soil health, agroforestry, planned grazing and setting-up on-farm crop trials, and provides whole-farm planning and design services for transition farm operations, through an inclusive/participatory framework. He also offers a specialist mapping service to growers and farmers. He coordinates the PFLA soils monitoring project - establishing an empiric case for healthy soils on pasture and mixed farms, as well as conducting a cover crops trial on arable and horticulture operations.

Neils will he leading his Whole Farm Management workshop on Thursday at 2pm in the Discussion Tent



Simon Cowell

Simon Cowell won the 2018 Soil farmer of The Year competition organised by Farm Carbon Cutting Toolkit and Innovation for Agriculture. He started getting interested in soil and its biology twenty years ago and has been improving his heavy clay soils by stopping all tillage, making and applying highly biologically active compost and building mycorrhizal fungi populations. To prove the theory that a balanced soil food web can provide all the nutrients a crop needs, he hasn't applied any phosphate or potash fertilisers in all that time and has started experimenting with cutting out nitrogen applications as well.

Simon will be talking about putting First Principles into Practice on Wednesday at 3pm in the Seminar Barn. On Thursday you can find him on the UK no-tillers panel at 9am in the Seminar barn, and being interviewed by Joel Williams at the Soil Farmer of the Year session at 4pm in the Conference Barn.



Stefano Cuomo

As Managing Director of Macknade Fine Foods, and 6th generation at the helm of the family business, Stefano heads up one of the UK's leading independent food halls.

Stefano has worked through the business, from the shop floor up, over the past 15 years, taking full ownership in 2014.

The business has moved from a successful local farm shop, to its present role as the regional food and drink hub, with one of its key and growing departments being the butchery led by Simon Maynard.

Stefano is a Committee member for the management of the Guild of Fine Foods (the Fine Food sector's leading membership organization) as well as committee member for Produced in Kent, regional food group, feeding strategy into the board.

Stefano is on the How to Engage with Consumers panel at 3pm on Thursday in the Agricology Discussion Tent.



James Daniel, UK Manager Kiwitech UK Limited, @KiwitechNZ

James is the founder of Precision Grazing Ltd. Growing up on a family farm he was quick to recognise the value of well managed grazing and its potential in the UK. After studying Engineering at Harper Adams University his eagerness to develop his knowledge led him to New Zealand where he managed a TechnoGrazing beef enterprise owned by the Wier family, the founders of Kiwitech NZ. Upon returning home he initially worked with local farmers, growing the business before forming Precision Grazing in 2016. Precision Grazing Ltd provide a farm mapping and grazing system: electric fencing and mobile water system equipment for beef, sheep, dairy and pigs. High quality equipment which is simple and quick to use for the professional grazer.

James will be leading a workshop covering the practicalities of setting up a grazing system in the Agricology Discussion Tent at 5pm on Wednesday



Henry Dimbleby

Henry worked as a management consultant before co-founding, with John Vincent, Leon restaurants, the Sustainable Restaurants Association in 2009, and The London Union, which controls some of London's biggest street food markets.

In 2013, Dimbleby and John Vincent were invited to write a report on school meals. The pair instead created a collaboration and co-authored the Government backed School Food Plan, which set out to transform what children eat in schools and how they learn about food.

He was appointed lead non-executive board member of the Department for Environment, Food and Rural Affairs in March 2018. He is the son of veteran BBC broadcaster David Dimbleby.

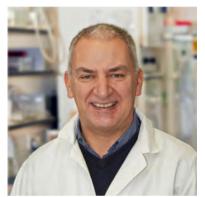
Henry is being interviewed by Rosie Boycott at the Does Britain need a Food Policy? session at 11am on Wednesday in the Old Dairy



Shaun Dowman, Agricultural Advisor Affinity Water, @affinitywater

Shaun Dowman is an environmental scientist with 15 years experience of working within academia, environmental regulation and the water industry. Shaun's work has focused on freshwater science, in particular the biological and chemical health of the UK's waterways. As agricultural advisor for Affinity Water his work targets catchment solutions that help improve water quality and reduce reliance on water treatment. Using knowledge of land management and the aquatic environment he works with farmers to help safeguard drinking water catchments. Affinity Water are a water supply company operating in the south-east of England and as the headline sponsor of Groundswell 2018 are keen to promote farming practices that are beneficial for both soil and water.

Shaun will be part of the Freestation "Low cost, open-data & DIY approaches to assessing the public goods provided by your land" workshop at 3.15pm on Thursday in the Conference Barn



John Elphinstone, Fera

John is a Principal Plant Patholologist in the Fera Plant Protection Programme, Sand Hutton, York, UK. He is a member of the EPPO panel on diagnosis of plant pathogenic bacteria and a founding member of the European Association of Phytobacteriologists. He is currently managing research within the AHDB Partnership on Soil Biology and Soil Health, involving molecular assessment of the effects of soil management practices on the survival of soil-borne plant pathogens and overall diversity within fungal and bacterial soil microbiomes. Other current AHDB projects include detection and control of bacterial diseases affecting potato, tomato and mushroom production. He is also developing contingency measures to reduce risks to UK horticulture posed by emerging pathogens such as Xylella fastidiosa

John will be giving a seminar with Dr Anne Bhogal on Measuring and optimising soil management using the soil health scorecard and molecular approaches at 9am on Thursday in the Soil Tent. They will also be giving an interactive workshop in the AHDB Soil Pit at 3pm on both days.



Natalia Gulbis, Technical and Arable Farm Trials Manager, PlantWorks

Natallia studied soil sciences and agrochemistry as part of a five year agricultural degree programme. After graduating she spent a number of years working on farm, before joining PlantWorks in 2009 where she focused on mass production of mycorrhizal fungi. In 2014, in support of PlantWorks decision to develop a farming proposition, Natallia took on the role of arable farm trials manager and has become an expert in beneficial soil microbes and their use as inoculants in farming systems.

In her role as a Technical and Arable Farm Trial Manager, Natallia remains involved in the research activities at PlantWorks as well as working with farmers and agronomists, sharing her knowledge on the uses of Arbuscular Mycorrhizal Fungi (AMF) and nitrogen fixing, Plant Growth Promoting Rhizobacteria (PGPR).

Natalia will be giving a workshop on Improved Crop Production through Interaction of Beneficial Soil Microbes on Thursday at 11am at the Plantworks Stand



Mike Harrington

Mike has been advising farmers for over 30 years. He initially trained as a chemical specialist, however soon realised that the problems with chemical fertilisers and the increasing resistance to herbicides, fungicides and insecticides would not be solved with current methods. 11 years ago he founded the company Edaphos, an agronomy firm dedicated to improving soil and soil biology to harness its full potential and create a well-balanced system. His work has taken him to many countries including the US, China and Italy from which he has taken valuable knowledge of different farming methods. More people are moving towards a no-till system, and each farm will have its own starting point and its own problems to face.

Mike will be giving a seminar on Integrated Systems Approach Farming at 5pm on Wednesday in the Seminar Barn



Tom Heathcote, Knight Frank

Tom is an experienced Agri-Business consultant and is head of Agri-Consultancy at Knight Frank. He considers himself fortunate to advise a diverse range of farming businesses across the UK. He has a real passion and enthusiasm for conservation agriculture and regenerative farming and believes that land can continue to be used for food production whilst preserving and enhancing the natural environment around it. Tom has a particular interest in the introduction of livestock onto arable holdings and works to facilitate this by linking livestock and arable farmers together.

Tom will be running a workshop in the Old Dairy about the Introduction of livestock into the arable rotation at 1:30pm on Wednesday.



Rob Hodgkins, Kaiapoi

I grew up on the family farm in Sussex where my parents established a commercial sheep flock. Following lessons learned during the foot and mouth epidemic, we moved to outdoor lambing and we then partnered with Wairere NZ to form a UK Wairere stud flock and business selling breeding stock. Jo and I met through Nuffield in 2012 and began setting up our own farming operation, 'Kaiapoi' in Hertfordshire, with 200 NZ romney ewes. We have grown this business to 2250 breeding ewes across 1000ac of grass and 1600ac of combinable arable crops. We have just imported our first NZ Rams with the Myomax gene and our first Myomax breeding stock will be available to buy from this summer.

Rob will be leading a workshop on integrating sheep into the arable rotation at 5:30pm on Wednesday in the Agricology Discussion Tent.



Jan Feersma Hoekstra, Agriton

Jan Feersma Hoekstra is a director of Agriton - a company with a social mission that aims to make agriculture and horticulture more sustainable. Agriton specialises in solutions that increase soil fertility, making extensive use of microbiology (bacteria, yeasts and fungi).

Feersma Hoekstra studied at primary, secondary and higher agricultural schools and has an enormous passion for agriculture. With more than 40 years of experience in his field, he has mastered various disciplines in detail, including plant physiology, microbiology, (sustainable) arable farming and livestock

Jan will be leading the Carbon Loss? How to increase organic matter content in the soils workshop at 2pm on Wednesday on the Agriton Bokashi stand.



Jonathan Holmes, Albrecht Soil Scientist and Agroecologist

Jonathan Holmes of Lordington Park Agronomy is an independent agronomist and university lecturer in agriculture, as well as teaching BASIS & FACTS.

A leading specialist in equine, deer and agricultural grassland management, Jonathan utilises the Albrecht model of soil balancing to develop sward management plans that are specific to both the environment and the well-being of animals. His interests focus on establishing sustainable and profitable farming environments for arable and grassland farmers that also contribute to the reduction of atmospheric CO2. Current projects involve assessing the environmental and financial benefits of root colonisation with Arbuscular Mycorrhizal Fungi.

When he's not knee-deep in soil, Jonathan can be found hiking with his dogs or judging gun-dog trails. Rob will be joining the Pasture for Life Forum at 12:30 on Thursday in the Seminar Barn. Jonathan will be talking about Carbon Sinks at 9:30am on Thursday in the Old Dairy



Christopher Hook

Chris is a New Zealander with a broad base of international business experience, holds dual citizenship though Irish ancestry, and is a permanent resident of Ukraine.

Chris became involved with the marketing of bio-fertilisers and soil inoculants in 2013 when he tried to establish poly-microbial technology developed at Michigan State University in NZ but was generally rejected and he was branded a "snake oil salesman". Not one to give up, Chris travelled to Europe and was introduced to a Hungarian research company that has developed what he and others consider to be the most advanced organic soil inoculant technology available today. Chris is also closely involved with the global development of world-leading Cross Slot low soil disturbance no-tillage, including an initiative to manufacture its machines in Europe.

Chris will be leading a short seminar, The Future is now for Biology to replace/supplement chemical fertilizers and pesticides, at 1pm in the Old Dairy on Wednesday





Andrew Howard

Andrew is a no-till farmer from Ashford, Kent. He is a Nuffield scholar, a consultant with Abacus and is a specialist on no-till, cover cropping, intercropping and reducing inputs. His interest in regenerative agriculture was sparked by reading Graeme Sait's book called "Nutrition Rules" and he has since been experimenting with methods of soil improvement and nutrient balance to help improve farm performance.

Andrew is on the Farmer Perspectives: Reducing N panel at 5pm on Wednesday in the Conference Barn



Rebecca Inman

Rebecca Inman is a Farm Environment Adviser for FWAG East with 22 years experience giving on-farm advice. Prior to this she worked for 7 years on a range of farm enterprises including sheep, dairy, beef and arable farms. Rebecca has extensive experience preparing agri-environment scheme applications and helping farmers manage their agreements. She has been involved in a number of projects over the years on habitat and species conservation and on catchment management projects to help improve water quality. She has a particular interest in hedgerows and is vice-chair of Hedgelink. She also represents the FWAG Association on the CFE Delivery Group and the LEAF Marque Technical Advisory Committee. She is a member of the Chartered Institute of Ecology and Environmental Management and a Chartered Environmentalist.

Rebecca will be talking about Cover crops for soil, water and the environment in the Conference Barn at 10:15am on Wednesday.



Simon Jeffery, Harper Adams

Dr. Simon Jeffery is a Senior Lecturer in Sustainable Technology at Harper Adams University where his research investigates different aspects of soil function and soil health. His background is as a soil microbial ecologist with a main interest is ecosystem functioning and in particular how soil organisms function to drive soil processes. His work has been focused on understanding such processes with the aim of harnessing them to increase the sustainability use of our soils. Simon has previously worked in Italy, providing scientific policy support to the European Commission at the Joint Research Centre where he published the first European Atlas of Soil Biodiversity. Following that he worked as a research scientist at Wageningen University, a world leading institution in the field of life sciences and soils research. There he managed a range of experiments aimed at elucidating the mechanisms underlying the observed effects of biochar application to soil and the impacts on soil health and soil function.

Simon will give a seminar on no-till from a Soil Biota perspective at 9am on Thursday in the Discussion Tent.



Amir Kassam @AmirKassam1

Amir Kassam is the Moderator of the Global Platform for No-Till Conservation Agriculture Community of Practice (CA-CoP) hosted by the Food and Agriculture Organization (FAO) of the United Nations, Chairman of the International Conservation Agriculture Advisory Panel for Africa (ICAAP-Africa) of the African Conservation Tillage (ACT) Network, Vice-Chairman of the Conservation Agriculture Association for the United Kingdom (CA-UK), and Visiting Professor in the School of Agriculture, Policy and Development, University of Reading. He was awarded an OBE in the Queen's Honours List in 2005 for services to tropical agriculture and to rural development. Amir's work is focused on globalizing the development of No-Till Conservation Agriculture systems for sustainable agriculture and land management. During his career, Amir has worked with a number of national and international agricultural development and research institutions around the world.

Amir will be co-leading a First Principles session at 10am on Wednesday in the Seminar Barn



John Landers

John Landers, a British agronomist, arrived in Brazil in 1966, as an irrigation research specialist with IRI Research Institute. He was the chief agronomist on IRI's Jari Irrigated Rice Project in Pará state (1967), setting up up an agricultural research project in the Orinoco Delta of Venezuela. He returned to Brazil in 1972 and developed an IRI tropical forage seed project and there he continued to develop quality forage-seed technology. He introduced Zero Tillage with the first tropical soybean variety worldwide and ran a development project for three years. In 1992 he founded the Farmers' Zero Tillage Association for the Cerrado (APDC). He has received many Brazilian and international awards for his services, but the accolade he most treasures is being dubbed by farmers as "The Father of Zero Tillage in the Cerrado",

John is part of the Glyphosate Debate at 1pm in the Conference Barn, and is leading the Elterwater Challenge workshop at 5.30pm in the Old Dairy on Wednesday. On Thursday he will lecturing on Zero Tillage in Ley Farming at 11am in the Soil Tent.



Annie Landless, @sectormentor

Annie leads community development for Vidacycle, including Sectormentor for Soils, and supports farmers to learn about and monitor their soil health. She is interested in how regenerative agriculture practises can help farm businesses become more resilient, including her own family's mixed beef and arable farm. To further her knowledge she is currently studying an agriculture course at the RAU alongside working for Vidacycle.

Annie is giving the Become a Soil Expert for Your Farm seminar at 1pm on Wednesday in the Agricology Discussion Tent.



Sam Lane

Sam studied for his degree at Harper Adams University in Shropshire, after which he worked for five years at Swinbrook Estate, in Oxfordshire, carrying out many duties including cultivation and drilling throughout the season. He joined Cotswold Seeds five years ago, and as well as providing farmers with advice on complex grass seed mixtures, and visiting farms all over the UK, Sam is actively involved with FarmED, the new Centre for Food and Farming Education, due to open later this year.

This year at Groundswell, Sam and Technical Advisor Lizzie Arnold, will be on hand to discuss the demonstration plot of herbal ley, as well as to discuss the establishment and management of the leys – how to sow and grow them on different soil types, as part of a crop rotation. His presentation will also focus on the many benefits of the ley in terms of building soil fertility.

Sam will be running the Cotswold Seeds Herbal Ley Workshop at 4pm on Thursday in the Demo Field



Chris Leach

Chris has spent 28 years working in conservation and Forestry both in the UK and abroad.

The last 15 years have been spent on the Waddesdon Estate on the forestry team.

The Estate consists of 4150 arable acres, 950 of grass and 450 of woodland.

As the estate moves down the path of regenerative agriculture Chris and the team are developing new ways of using Estate waste to provide compost and biofertilizers to rejuvenate and maintain the health of the soils.

Chris is part of the Become a Soil Expert for Your Farm seminar at 1pm on Wednesday in the Agricology Discussion Tent.



Alister Leggatt, Affinity Water

Alister Leggatt is an Asset Manager within Affinity Water, a water supply company operating in the south-east of England, responsible for delivery of their catchment management programme to improve water quality. He has worked at Affinity Water for 15 years in a variety of roles and has been leading an enthusiastic catchment management team for 8 years. Alister is an experienced practitioner of environmental management as well as having expertise as a water quality scientist. His current focus is on working in partnership with a range of sectors, including agriculture, to develop integrated catchment solutions to water quality issues posing a risk to public water supply including pesticides, nitrate and industrial pollutants. Affinity Water are the headline sponsor of Groundswell 2019 are keen to promote farming practices that are beneficial for both soil and water.

Alister will be talking about Cover crops for soil, water and the environment in the Conference Barn at 10:15am on Wednesday.



Martin Lines

Martin is a farmer and contractor in South Cambridgeshire, growing mainly arable crops on his family farm and rented land. He has a special interest in farm conservation management, currently running an ELS and HLS agreement and has applied for Countryside Stewardship schemes on the land that he rents. He also supports the delivery of Stewardship Schemes for a number of other farmers. Martin is the NFFN UK steering group chair and hopes to see the network grow with like-minded farmers and land managers who will work together, sharing best practices and demonstrating what can be accomplished for nature while producing great produce.

Martin will be discussing whether we can farm without insecticides at 3pm in the Discussion Tent on Wednesday. In the evening he will be going the Why Farming with the Environment is the way Forward workshop at 5pm in the Old Dairy.



Gary Markham, Land Family Business, @garyjmarkham

Gary advises clients on such diverse subjects as succession planning, restructuring advice, mediation, management accounts and tax advice. Since 1992 Gary has produced benchmarking data from clients' annual management accounts and using this data has helped clients to identify strengths and weaknesses and to challenge business structures and practices. He enjoys writing and has many articles published in the press together with books on Machinery Management and also two issues of the Institute of Chartered Accountants reference book on auditing and accounting. He is also a member of the Agricultural Law Association. A regular speaker at many events Gary is passionate about encouraging and helping young individuals progress and for clients to receive the very best advice available.

Gary is leading the Groundswell No-Till Benchmarking Session in the Conference Barn at 12:15 on Wednesday



Ollie Martin, Weston Park Farms/Groundswell

Ollie Martin is Technical Manager at Groundswell as well as being Farm Manager at Weston Park Farms. Having graduated from Writtle University College in 2017, Ollie spent two years as assistant farm manager at a large organic estate in Norfolk before joining the Groundswell/Weston Park Farms team in February 2019. Ollie's objectives at Weston Park are to continue the journey toward a truly regenerative farming system by means of zero-tillage, livestock integration and reduced use of artificial inputs. His personal long-term goal is to realise a profitable organic no-till farming system.

Ollie will be chairing the two Direct Drill Discussions at 5pm on Wednesday, and 4pm on Thursday in the Soil Tent. He will also be leading the compost turning demonstrations in the Demo Field, at 17:00 on Wednesday and 14:00 on Thursday.



Tom Martin

Having spent 10 years working in the film industry, Tom returned home to the family farm, a predominantly arable holding in Cambridgeshire, focusing on wheat, OSR, barley, and linseed, as well as fattening sheep on grass. He has continued in the footsteps of his forbears carefully stewarding the environment and moving toward a 'no till lite' version of conservation farming. Tom is passionate about sharing what happens 'behind the farm gate', which has led him to become involved in the CLA, NFU, LEAF, and East of England Agricultural Society, as well as writing monthly in local publications and hosting a well-supported presence on Facebook, Twitter, and Instagram as 'Farmer Tom'.

Tom is leading the UK no-tillers panel at 9am on Wednesday in the Agricology Discussion Tent.



Tim May

Tim May runs a mixed farming system in on the family Estate in North Hampshire. After Completing a Nuffield scholarship, Tim embarked on a journey to revitalize the soils of the farm. Rotational Herbal Leys were introduced over half the 2500 acre holding these are managed with Sheep and Dairy cattle using a mobile Milking Parlor. Tim Completed a Holistic Management training program in 2013, and finds the insights gained over the 6 day training to be pivotal in how he now runs the Business. The estate is no going through Organic Conversion with the first Organic crops planted this Spring.

Tim is chairing a conversation between Allan Savory and Charles Massy at 2pm on Thursday in the Conference Barn



Simon Maynard

As Butchery Manager at Macknade, Simon has varied experiences within the food sector, including as a chef in some of the country's leading restaurants.

Before being involved in the food scene Simon was heavily involved in competitive freestyle skiing, achieving a high ranking in the UK scene and becoming part of the England freestyle mogul ski team.

He entered the in 2014 taking on a role at a venison farm. He moved to Macknade in 2017 and now has the leading role within the butchery, constantly striving to achieve 100% providence and a greater understanding of animal welfare, linking this in to the quality of the product and communicating to the end consumer

Simon is on the How to Engage with Consumers panel at 3pm on Thursday in the Agricology Discussion Tent.



John Miles

John Miles is the product development manager at KWS UK. Working for one of the UK's leading plant breeders since leaving University John has worked on both the breeding and commercial sides of the business. His current roll focuses on providing the right agronomy information for farmers and agronomists across the range of crops developed. In the past years John has been involved in several trials investigating a range of variety types for no till environments.

John will be at the KWS Trial Area discussing the details around variety choices in modern farming at 12.30pm on both days.



Humphrey Mills

Humphrey left school at 16 to work on a farm. After Agricultural College, he pursued a career outside farming before buying a smallholding in Norfolk. He moved to Steeple Bumpstead, Essex in 2006 and began a joint venture with a local contractor while continuing with the livestock side of things which he had started in Norfolk. In 2012 they took the arable in hand, bought a direct drill and stopped cultivating completely in 2013. They started mob grazing in 2017. This year they are growing rape, wheat and spring oats after a bias towards spring crops over the last few years. The farm is about 150 hectares.

Humphrey is on the UK no-tillers panel at 9am on Wednesday in the Agricology Discussion Tent.



Glyn Mitchell, The Credible Food Project

Glyn got his hands into soil at a very early age, as grandson of a decorated soil engineer Norman Glynn MBE who worked with Sir Albert Howard on organic systems in the colonies.

In 2015 Glyn got involved with Dr. Elaine Ingham of The Soil Food Web fame, forming The Credible Food Project (Charity) dedicated to supporting soil-regeneration strategists, carbon farmers and the Soil Food Web school. Glyn continues his own interest in teaching soil health at schools and working with farmers trying to balance the living soil with crops' needs, to improve ecosystem services, farm profits and biosecurity.

Glyn is a part of the 'Microbes and Minerals' workshop at 11am on Thursday in the Old Dairy.



Mark Mulligan, Kings College London

Mark Mulligan is Head of Geography, Kings College London, and honorary fellow at the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). His research field includes the development and application of spatial policy support systems for agriculture, land use change and climate change impacts on water and ecosystems. He has 30 years experience of ecosystem services mapping and environmental monitoring and is committed to science in the service of society and has thus focused (collaboratively with farmers and policy makers) on making his research results available through decision support tools, web-based modelling tools and data distribution systems.

His open source designs for environmental monitoring are available at www.freestation.org.

Mark is part of the "Low cost, open-data & DIY approaches to assessing the public goods provided by your land" workshop at 3.15pm on Thursday in the Conference Barn



Adrian Newton, The James Hutton Institute

Adrian Newton has over 35 years of experience of crop research, particularly plant pathology, focusing mainly on cereal diseases, particularly on barley.

His main research themes are:

- 1) Pathogen ecology and mechanisms of rhynchosporium resistance in barley,
- 2) Analysing epidemics, pathogen spatial trends and local competition effects in heterogeneous vegetation (mixtures / blends / intercropping);
- 3) Resistance elicitors in crop protection;
- 4) Adaptation to climate change in plant pathology; and
- 5) Integrated Pest Management and assessment of sustainability.

Adrian will be giving a seminar on Building diversity and soil health for sustainable cropping systems at 1.15pm on Thursday in the Agricology Discussion Tent



Timothy Parton

Tim is a Farm Manager from South Staffordshire farming 300 ha of arable land.

He was FCCT 2017 Soil farmer of the Farmer.

Tim is a No-till farmer focusing on brewing biology as much as possible to replace chemical inputs, using Bacteria to fix nitrogen release phosphorous and fight of disease. He has reduced the use of Glyphosate where possible, using rolling/crimping, he hasn't used insecticides for the last 5 years always working to improve soil carbon content through rotation and cover cropping, also using companion cropping where possible.

Timothey is on the Farmer Perspectives: Reducing N panel at 5pm on Wednesday in the Conference Barn



Richard Phillips, AminoA Biostimulants

Richard is a British and Polish agronomist with crossover knowledge in Animal Nutrition. After graduating from University of Leeds UK, he built a mixed farming operation in South Wales focused on vegetable and cereal seed production.

After the fall of the Berlin wall he set up a company in Poland, managing former state farms, growing a vast range of crops, providing agronomy advice and manufacturing liquid fertilisers.

He formed AminoA Biostimulants in 2014 together with soil scientist Zoran Nedic (University of Belgrade, Serbia) to develop a range of amino-acid based crop Biostimulants with the aim of commercialising their use in broad-acre agriculture and increasing farm profitability whilst reducing the environmental damage caused by the overuse of pesticides and fertilisers.

Richard will be giving a seminar on Amino-acid based Biostimulants and their role in broadacre agriculture at 2pm on Thursday in the Old Dairy



Ian Pigott

Ian Pigott OBE, DL runs a diversified farming business in Hertfordshire. As LEAF Demonstration farmer, Ian is committed to combining conservation agriculture, education and environmental stewardship. The farm has been no-till since 2016.

Ian started The Farmschool charity in 2014. Its purpose is to reconnect young people with farming, food and the countryside through interactive workshops, cookery and outdoor learning at his purpose built 'on farm' school and kitchen.

He is a Nuffield Scholar, the founder of the UK's National Farm Open day, Open Farm Sunday, a Trustee of LEAF and a columnist for the Farmers Weekly. Ian was awarded an OBE for services to Agriculture and Education in the 2016 New Year's Honours List.

Ian will be chairing the conversation with UK No-Tillers at 9am on Thursday in the Seminar Barn



Fred Price, @gothelneyfarmer

Fred farms 250 acres in Somerset. All his decisions are measured by an underlying passion for, and growing understanding of, soils as living things and fertility as biologically driven. He says "I'm pleased with what I've achieved so far – I have built a mixed farm around forage-fed pigs to enable me to profitably incorporate cover crops, herbal leys and perennial forage mixtures into my rotation. But my 'to do' list was easy compared to the raft of practices I'm trying to 'un-learn' and wean my soils off. With the tools in place, and others in the pipeline, I'm now focussed on building a low-input, regenerative farming system. Exploring ways of measuring my progress are key as I try and persuade others to join me on the journey."

Fred is part of the Become a Soil Expert for Your Farm seminar at 1pm on Wednesday in the Agricology Discussion Tent.



Sue Pritchard

Sue is Director of The RSA Food, Farming & Countryside Commission, a two-year independent inquiry set up to help shape a more sustainable future.

Her work for the last twenty years, as a researcher, writer and consultant, has focused on leading change in complex systems for more sustainable futures.

Sue and her husband Tim run an organic, permaculture farm in Wales, also home to their charity, Silver Birch Foundation, which offers a different, eco-systems-based approach to education and development for deprived and disaffected young people.

Sue is being interviewed by Rosie Boycott at the Does Britain need a Food Policy? session at 11am on Wednesday in the Old Dairy



Ben Pugh

Ben started Farmdrop in 2012, spotting an opportunity for tech to bypass conventional supermarkets from the food supply chain. Prior to this, Ben spent several years sailing around the world delivering yachts, before going to work in the City of London. In his spare time, Ben loves to surf and enjoys making fresh juices every morning with his young children.

Ben will be giving a seminar on Fixing the Food Supply Chain at 3.30pm on Wednesday in the Old Dairy.



David Purdy

David worked for John Deere for nearly 30 years in many roles and is currently a Territory Manager for East Anglia. He has developed real passion for agronomy and particular soils and their biology, and as a result of this is BASIS trained and currently studying part time for a PhD in the area of the plant-soil biology interface. David has focused on training and development of farm staff in machinery management, soil health and in particular their interface.

Much of his personal time involves developing conservation agriculture in developing countries; he regularly travels to Africa to train and develop rural communities in these sustainable farming methods. David is regularly seen digging holes, walking fields, setting machines up and involved in all things farming, he also endures the banter of colleagues and the wider farming community for his passion for the John Deere 750a drill!

David will be in the Pasture Field at 3pm on Thursday presenting the findings from the Michelin-Groundswell Compaction Trial,



Ian Robertson, Sustainable Soil Management

I have been working in Agriculture since 1996. Initially in intensive fresh produce which highlighted the fact that a lot of the issues we found with production and quality were of our own making. This lead me to form Sustainable Soil Management; an independent soil testing and advisory business covering all aspects of farming. The biggest drive is to increase the soils contribution to our farming systems allowing for more sustainable and profitable farming. I work across all sectors and throughout Europe. I believe that there is no silver bullet; we must be a broad church, allowing for the best use of all the different strategies and knowledge to create a farming system best suited to your own land.

Ian will be giving a seminar on Linking soil health to output at 2.30 pm in the Old Dairy on Thursday.



Abby Rose @abby_super

Abby Rose is a physicist-farmer. She worked with the PFLA and Niels Corfield to develop Sectormentor for Soils, an app that enables farmers to monitor and learn about the health of their soils using simple soil tests. She also makes Farmerama Radio, a podcast sharing the voices of the independent farming community. Through the apps and podcast Abby is building ecology, beauty and profitability, one farm at a time.

Abby is giving the Become a Soil Expert for Your Farm seminar at 1pm on Wednesday in the Agricology Discussion Tent.



Rob Saunders

Rob is an agronomist at H. L. Hutchinsons Ltd, providing crop protection consultancy and best practice advice to fruit and hop growers. Rob has specialised in fruit agronomy for over 20 years; previous agronomy roles include GlaxoSmithKline (primarily looking after Blackcurrants for Ribena), and as a fruit agronomist for Willmot Pertwee.

Rob trained in agriculture at Seale-Hayne and started his working life helping to manage a fruit and hop farm. Currently Rob manages two Innovate UK research projects, one seeking to develop methods to improve the release from dormancy of perennial crops suffering from inadequate winter chilling, the second a precision spraying project, with the objective of treating apple trees as individuals. He also looks after HELIOS: the Hutchinson's Enhanced Light Interception Orchard System, a prototype orchard that pushes to boundaries of canopy management for maximum light interception and yield.

Rob is on the Innovative Farmers panel at 11am on Thursday in the Agricology Discussion Tent



Jo Smith

Jo is a Principal Researcher leading the Agroforestry programme at the Organic Research Centre. With a background in soil biodiversity and agri-environment schemes, Jo works on UK and European projects investigating agroforestry as a way of reconciling production with protection of the environment.

Jo is leading the Silvopasture Design Workshop at 12pm in the Soil Tent, and the Agroforestry Q&A at 4.15pm in the Agricology Discussion Tent on Wednesday.



Tom Staton

Tom is currently a doctoral researcher at the University of Reading, studying the effects of integrating trees into arable fields (i.e. agroforestry) on natural pest control and pollination. His background is in biology and ecology, having undertaken a Master's degree in Biological Recording and Ecological Monitoring at the University of Birmingham, followed by working as a consultant ecologist for several years. He has a long-standing interest in how benefits to ecology and biodiversity can be integrated with social and economic needs.

Tom is speaking at 11am on Wednesday in the Soil Tent as part of the Agroforestry seminar.



Rob Stichbury, FungiAlert

Rob has over 25 years' experience in the Agriculture, Biotech and Food ingredient sectors having spent the major part of his working career with DuPont in a variety of roles including research, development and business management spanning UK, USA, S. America, Europe and Russia. Later establishing new businesses in Eastern Europe as well as the Biotech sector. Following DuPont, he ran a spin-out healthcare imaging company from Cambridge University and then Intellectual Property Outsourcing Services for Law Firms and Companies. Rob has also invested in and supported Agricultural development projects in West Africa. Rob joined the FungiAlert team in 2019 to develop sales.

Rob is giving a workshop on Innovative soil and water health testing for increased agricultural productivity at 1.30pm on Thursday on Stand PFD10 in the Pasture Field



Jackie Stroud @wormscience

Dr Jackie Stroud is an agricultural soil scientist based at Rothamsted Research, England.

She studied Environmental Geology at RHUL, (Royal Holloway, University of London), then soil science – specialising in soil pollution at Lancaster University. This was followed by postdocs at Rothamsted Research in fertiliser use to improve crop quality, and the University of New South Wales, Australia, to remediate acid sulfate soils. Jackie leads the co-created farmland earthworm survey (#WorldWormWeek) which is a publicly funded research initiative through the NERC Soil Security Programme (2016 – 2019, Ploughing on Regardless?).

Jackie will be in the Soil Tent at 9am on Wednesday co-leading the seminar, "How to check soil health and knowing where to stop" with Steven Bailey. You can also find her showcasing some of her latest earthworm studies in the brick shed next to the Seminar Barn Area.



Igor Vaintraub

Igor's vision is to convert the food waste created by the built environment into renewable nutrients in situ to sell for soil stock enrichment.

To date, food waste has only been processed into biogas at high temperatures, or sent to landfill, making nutrient recycling industrially unviable. Simply relying on the food waste management status quo, rather than shifting fundamentally to a new paradigm, is a doomed strategy. Traditional composting or equivalent systems can be problematic, creating odours, attracting vermin, flies and wild life (birds, foxes, insects) and are off-putting and unhygienic.

Unlike conventional schemes, Igor's focus is to take a more active role looking at affordable solutions that are more environmentally sustainable.

Igor is giving the The Food Waste Farmer workshop at 11:45am on Thursday in the Old Dairy





Nicolas is 45 years old, born and based in Belgium.

With a background in bio-engineering, Nicolas has 20 years of experience in large-scale farming project management in various parts of the world, advising on fruit, grain, vegetables, sugar beet and cane production. He is an expert in regenerative agriculture.

In 2009, he founded GreenFarm in Belgium (www.green-farm.be), a farming consulting and contracting company, advising on soil conservation and managing agricultural properties.

In 2013, Nicolas co-founded and still holds the position as Chief Operating Officer of Soil Capital (www.soilcapital.com), providing large-scale farming management and consulting based on soil regeneration, in Europe, Africa, South America and Australia. Soil Capital is currently active on more than 100.000 acres. In addition, he worked as Chief Operating Officer in the Fruit Farm Group (www.thefruitfarmgroup.com) for a few years.

Nicolas in giving a seminar on How regenerating soil health can improve farm profitability from year one at 9am on Thursday in the Old Dairy



Sam Watson Jones, Small Robot Company

Sam is a fourth generation farmer from North Shropshire with a desire to make farming better. Since taking over the family farm six years ago, he has grown both revenues and profits by 60%, unusual in a low growth industry. His focus in the arable enterprise is on finding ways in which technology can help to grow productivity and efficiency as margins continue to shrink.

Sam was previously a management consultant at Accenture. He specialised in global technology implementations of minimum \$100m, leading multisite teams of 100+ people.

Sam is extremely well connected in the farming industry through initiatives such as NFU Development Programme and Monitor Farm Programme. He has used this network to secure commercial trials of the technology in 2018.

Sam in speaking about The Ambitious Farmer: How will you make your farm's future bigger than its past? At 3pm on Wednesday in the Old Dairy. The same evening he is talking to Ruby Wax about the Courage to Change at 7pm in the Conference Barn



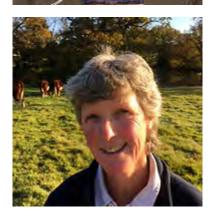
Ruby Wax

After a lifetime in comedy and creating innovative vox-pop television shows, Ruby became what she describes as "the poster-girl for mental health."

She has written three books and toured stand-up shows taking this as the main theme. Ruby has wise and often hilarious suggestions on how to navigate the 21st centuary without being over-whelmed by stress. She holds a master's degree in mindfulness-based cognitive therapy from Oxford University and was awarded an OBE for her services to mental health.

"Quirky, engaging and wise, the first half of the show saw Wax offer an accessible overview into what makes human beings tick, and how we have developed throughout our history."

Ruby is in conversation with Sam Watson Jones at 7pm in the Conference Barn on Wednesday.



Fidelity Weston, @romshedfarm

Fidelity farms in Kent, certified with the PFLA and Soil Association, she runs a suckler herd of 20 Herefords to finishing, 150 Lleyn ewes, poultry and a few cereals under Higher Level Stewardship which has also focused on wildflower and hay meadow restoration. Since Autumn 2017 she has been trialling faster grazing rotations, longer rest periods and actively building the soil, and using Sectormentor to assess changes over the years.

Fidelity is part of the Become a Soil Expert for Your Farm seminar at 1pm on Wednesday in the Agricology Discussion Tent.



David White @RTKfarmer

David White farms 160ha on light land over chalk between Cambridge and Newmarket. He is in his forth year practicing Conservation Agriculture – no-till direct drilling into catch and cover crops farming "forever green". David's interest in doing his own trials was fostered by the time spend hosting wheat and OSR trials for Niab on the farm in the past. Going from full cultivation to 100% no-till in a single step was a big change that could only be made successfully by trialing different things to see what works best on his soil type, with many new things still being tried each year. A member of Base UK has given the opportunity to learn from many experienced no-till regenerative farmers from across the globe as well and visiting farms in Europe.

David is on the Innovative Farmers panel at 11am on Thursday in the Agricology Discussion Tent



Paul Woodgate

Paul is an outreach advisor for the Woodland trust covering central east England. He works with private land owners, conservation groups NGOs and the public sector giving advice on woodland creation, ancient woodland restoration and agroforestry schemes. Before joining the trust he worked in commercial forestry and agriculture for 15 years as both a contractor and on private estates.

Paul is leading the Silvopasture Design Workshop at 12pm on Wednesday in the Soil Tent.

The future of sustainable snacking-No-Till Potato Crisps?

Just like growing cereals most people assume you need to do some form of cultivation to establish a cereal crop, or physically plant tubers into a loose soil to produce a viable potato crop? The Groundswell potato trial set out to showcase an alternative technique. The resulting crisps, produced from the 2018 potato harvest are proof that cultivations are unnecessary.

However for this technique to be successful it involves a "systems approach" to growing that begins the year prior to any potatoes being grown. It's very important to remember permanent soil cover is a cornerstone of Conservation Agriculture and sustainable soil management. This cover can be achieved either with something physically growing in the soil or by utilising the previous cash crops residue.



The trial began in autumn 2017 with a high biomass cover crop direct drilled into preceding cereal crop stubble. The aim being to capture any soluble nutrients left over from the previous cash crop and biologically cycle the inherent fertility of the trial site. An application (25tons ha) of cold composted FYM was then applied to

the living cover in the Spring and prior to planting of the Endeavour seed potatoes. In this trial no further nutrition was applied or an application of glyphosate used to terminate the over wintered cover.

The seed potatoes are placed on not in the soil. Then a heavy mulch 25cm (10") of loose wheat straw applied to cover the tubers. On this occasion no further herbicides or fungicides were then applied during the trial. There is the potential to use a mycorrhizal inoculate applied close to the tuber at planting which may improve nutrient availability to the establishing crop and this could be a particular advantage for a no-till establishment system. Work in conjunction with the Kent based company Plantworks is ongoing in this area.

In order to harvest the tubers easily 6 meter beds were created and tramlines left to allow easy access for machinery. No irrigation was used on this crop apart from a light application of water to dampen the straw preventing it being blown away by wind. One reason not to irrigate was in order to demonstrate how the straw mulch will not only supresses weeds but retain the inherent moisture of the soil at planting some of which would normally be lost in a more conventional system. By covering the soil it further prevents evaporation caused by the wind or sun.

Hand harvesting of the crop was required in the autumn of 2018, however the next step in this trial is to investigate how to fully mechanise the technique as well as to evaluate the overall financial and environmental impact.

We hope you enjoy the Groundswell no-till crisps, processed to the final product you are eating today by Fairfield Farm in Essex, we think they are the best crisps we've ever tried!







A great British fertilizer that's naturally high in phosphate

Grades

0 - 34 - 0

0 - 24 - 4

0-12-12

All inclusive of trace elements

For more information, contact us on 01427 629155 or rebecca@tigerfertuk.com

	D1 Cross Slot D2 Sly Agriculture D3 Sly Agri D4 Dale Drills	1100 - 1130 New Ag - Connected Weather Station - On Sencrop Stand	D5 Weaving D6 Simtech 1230 - 1300 Variety Trial Discussion at KWS Trial Area D8 Horsch	1300-1330 Compost Turning Savory Book Signing at 3LM Sand 1330 - 1400 Kings Cover Crop Plot Tour (Demo Field)	Carbon Loss? How DIO Novag matter content in the soils - on Agriton Stand	1500 - 1600 Dr Anne Bhogal & John Elphinstone - AHDB Interactive Soil Pit Session	1600 - 1630 Cotswold Seeds Herbal Ley Workshop - on Herbal Ley 1630 - 1700 Mob Grazing Demo - John Cherry	1730 - 1800 WOX Machinery Demo	PASTURE FED SPIT ROAST BBQ - at Earthworm Arms
0900 - 1000 John Baker - The future of no-tillage (understanding the "INVISIBLES")		1100 - 1200 Henry Dimbleby interviewed by Rosie Boycott - Does Britain need a Food Policy?		1300 - 1330 Chris Hook - The Future is now for Biology to replace/supplement chemical fertilizers and pesticides 1330 - 1400 Tom Heathcote - Introduction of livestock into the arable rotation		1500 - 1530 The Ambitious Farmer: How will you make your farm's future bigger than its past? - Sam Watson Jones 1530 - 1600 Ben Pugh - Fixing the Food Supply Chain		1700 - 1730 Martin Lines - Why Farming with the Environment is the way Forward 1730 - 1800 John Landers Refining the Elterwater Challenge	
0900 - 1000 Tom Martin, Clive Bailie, Humphrey Mills - Conversation with UK No-Tillers	1015 - 1045 Q&A with Frédéric Thomas	1100 - 1200 Agricology Bringing in the Good Guys - IPM in practice	1215 - 1245 Getting out of the commodity trap	1300 - 1400 Abby Rose, Chris Leach, Fidelity Weston, Fred Price, lan Boyd & Annie Landless - Become a Soil Health Expert on Your Farm	1415 - 1445 Agricology - Weed Surgery	Martin Lines (NFFN) Can we farm without insecticides?	1615 - 1645 Agroforestry – your questions answered!	1700 - 1725 James Daniel Grazing Infrastructure 1730 - 1800 Rob Hodgkins - Integrating sheep into the arable rotation	ay 261
0900 - 1000 CSF - How to check soil health and knowing where to stop		1100 - 1200 Stephen Briggs, Tom Staton & Helen Chesshire Agroforestry - a win win for farming and the environment	Russ Carrington, Jo Smith, Paul Woodgate & John Cherry - SilvoPasture Design Workshop			Vii -		1700 - 1800 Ollie Martin (Chair) - Direct Drill Discussion	edneso
	1000 - 1130 Joel Williams and Amir Kassam	- First Principles	1200 - 1300 Jay Fuhrer - Rebuilding and Maintaining Life in the Soil			Vill Scale & Simon Cowell - CA Principles into Practice in the UK		1700 - 1800 Mike Harrington - Integrated Systems Approach Farming	
0900 - 1000 Allan Savory - "A Commonsense Revolution to Restore Our Environment"	1015 - 1045 Affinity - Cover Crops for soil, water and the environment.	Charles Massy - Call of the Reed Warbler: A New Agriculture - A New Earth	1215 - 1245 Gary Markham GW No-Till Benchmarking - The finances One Year On	1300 - 1400 Amir Kassam, John Landers, Frederic Thomas & Will Scale - Glyphosate Debate	1400 - 1430 Jay Fuhrer - Rainfall Simulator	1500 - 1600 Frederic Thomas - Different approaches to weed management with CA		Joel Williams, Andrew Howard, Doug Christie & Timothy Parton - Farmer Perspectives:Reducing N	1900 - 2000 Courage to Change - Ruby Wax in conversation with Sam Watson Jones
	0900 - 1000 Allan Savory - "A Commonsense Revolution to Restore Our Environment" Commonsent Restore Our Environment" O900 - 1000 Tom Martin, Clive Bailie, CSF - How to check soil health Humphrey Mills and knowing where to stop Commonsent Conversation with UK (understar	Allan Savory - "A Commonsense Revolution to Restore Our Environment." Commonsense Revolution to Restore Our Environment. Joel Williams and Amir Kassam CSF - How to check soil health Humphrey Mills - Conversation with UK (understanding the "INVISIBLES") (understanding the "INVISIBLES") CARA with Frederic Thomas CARA with Frederic Thomas CARA with Frederic Thomas	Allan Savory - "A Commonsense Revolution to Restore Our Environment. CSF - How to check soil health and knowing where to stop Restore Our Environment. CSF - How to check soil health and knowing where to stop Restore Our Environment. Restore Our Environment. Into - 1200 CSF - How to check soil health and knowing where to stop Restore Our Environment. Rassam - First Principles Into - 1200 Cak with Fréderic Thomas Charles Massy - Call of the Reed Warbler: A New Earth and the environment in practice Restore Our Environment and knowning where to stop Rose Minity - Cover Crops for Finding and the environment in practice Restore Our Environment and knowning where to stop Rose Minity - Cover Crops for Red Morbler and the environment in practice Restore Our Environment and knowning where to stop Rose Boycott Rose Boycott Rose Boycott Rose Britain need a Food Policy?	Allan Savory - "A Commonsense Revolution to Restore Our Environment" Commonsense Revolution to Restore Our Environment" Commonsense Revolution to Restore Our Environment" Light Soil Water and Home Revolution to Soil Water and Home Revolution to Charles Massy Commonsense Revolution to Restore Our Environment" Light Soil Water and Amir Restore Our Environment Commonsense Revolution to Restore Our Environment" Light Soil Water to stop Light Soil Water and Amir Restore Our Environment Light Soil Water and Amir Restore Our Environment Light Soil Water and Amir Restore Our Environment Light Soil Woodgate & John Cherry Commonsense Revolution to Inch Ballie, John Balie, John Cherry Light Soil Water and Amir Restore Our Environment Light Soil Woodgate & John Cherry Commonsense Revolution to Grow On-tillage Light Restore Our Environment Light Soil Woodgate & John Cherry Commonsense Revolution to Grow On-tillage Light Soil Woodgate & John Cherry Commonsense Common Maintaining Life Russ Carrington, Jo Smith, John Cherry Common Maintaining Life Russ Carrington, Jo Smith, John Cherry Common Maintaining Life Russ Carrington, Jo Smith, John Cherry Common Maintaining Life Russ Carrington, John Cherry Common Maintaining Life Concerned to the commodity trap Light Soil Woodgate & John Cherry Common Maintaining Life Concerned Maintaining Life Concerned Maintaining Life Concerned Maintaining Life Light Soil Woodgate & John Cherry Common Maintaining Life Concerned Maintaining	According to the Restore Continued and Restore Restore Continued and Restore Continued and Restore Continued and Restore Continued and Restore Restored Re	Alan Savory - 1000 Alan Savory - 1000 Alan Savory - 1000 Commonsenes Rectore Our Environment - Rassam - First Principles Tom State of Principles of Principles - Conversation with UK	100 - 150 100 100	Alla Savoy - "A Commonsente Revolution to Restrore Our Environment" Restrore Our Environment Journal Savoy - "A CSF - How to check soil health - Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Commonsente Revolution to Restrore Our Environment Journal Savoy - "A Common	Conversation of the Restore Course of the Conversation of the Conversation of the Conversation of the Conversation of the Restore Course of the Conversation of Conv

D10 Novag D9 Kuhn D8 Horsch D7 Sly Agri D100 - 1130 Improved Crop	Beneficial Soil Microbes - Natallia Gulbis - @ Plantworks Stand D6 Simtech D5 Weawing KWS Variety Trial Discussion at KWS Trial Area D2 StyAgriculture D1 Cross Slot Innovative soil and water health testing on Fungi Alert Stand D-1 Ryetec	1430 - 1430 Compost Turning 1430 - 1500 Kings Cover Crop Plot Tour (Demo Field) 1500 - 1530 Book Signing at Book Store Soil Pit Session	1600 - 1630 WOX Machinery Demo	Mob Grazing Demo - John Cherry
1100-1130 Jennifer Brodie & Glynn Mitchell - Microbes and Minerals		1400 - 1430 Richard Phillips - Amino-acid based Biostimulants and their role in broadacre agriculture 1430 - 1500 lan Robertson - Linking soil health to output	1600 - 1700 Natasha Cambell-Mcbride, Bee Wilson and Nick Barnard, Chaired by Rosie Boycott - The Soil/Gut Connection	
1015 - 1045 Agricology - Low input sheep production and saffoin 1100 - 1200 Innovative Farmers	- Improving soil health through farmer-led research 1200 - 1300 Harvesting ideas for soil health innovation - Interactive session 1312-1345 Adrian Newton Building diversity and soil health for sustainable cropping systems	1400 - 1445 Neils Corfeld - Whole Farm Planning for Regenerative Agriculture 1500 - 1600 PFLA How to engage with consumers	1615 - 1645 Agricology - Countryside Stewardship in practice	
100 - 1200 John Landers	- Zero Tillage (CA) in Ley Farming	1400 - 1500 Joel Williams - Nitrogen Sharing from Legume Companions 1500 - 1600 David Purdy - Michelin Soil Compaction Demo and Results	1600 - 1700 Ollie Martin (Chair) - Direct Drill Discussion	E S S S S S S S S S S S S S S S S S S S
1005 - 1100 What can soil tell you? - Savory Hub Breakout Session 11.00 - 12.00 Jay Fuhrer	Carbon, Crops and Covers	Charles Burrell and Izzy Tree - "Rewilding at Knepp"	1600 - 1700 Charles Massy - Call of the Reed Warbler:A New Agriculture - A New Earth	
Michael Gove & Rosie Boycott - Interview with the Secretary of	State 1200 - 1230 Jay Fuhrer - Rainfall Simulator 1230 - 1330 William Kendle, Nick Barnard & Corisand Alberte - Routes to Market	Allan Savory in converation with Charles Massy, chaired by Will Scale ISI5 - 1545 Affinity - Low cost open-data & DIY approaches to assessing the public goods provided by your land	FCCT, Joel Williams, Simon Cowell - Soil Farmer of the Year	
	1005 - 1100 What can soil tell you? - Savory Hub Breakout Session 11.00 - 12.00 I 100 - 12.00 John Landers I Innovative Farmers	What can soil tell you? - Savory Hub Breakout Session 11.00 - 12.00 What can soil tell you? - Savory Hub Breakout Session 11.00 - 12.00 John Landers - Zero Tillage (CA) in Ley Farmers - Zero Tillage (CA) in Ley Farmer-led research 1312-1345 Adrian Newton Building diversity and soil health for sustainable cropping systems 1312-1345 Adrian Newton Building diversity and soil health for sustainable cropping systems	What can soil tell you? Savory Hub Breakout Session 11.00 - 12.00 11.00 - 12.00 100 - 12.00 100 - 12.00 100 - 12.00 100 - 12.00 100 - 12.00 100 - 12.00 100 - 12.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 13.00 100 - 145 Adrian Nevton 1312 - 134 Adrian Nevton 1312 - 134 Adrian Nevton 1312 - 134 Adrian Nevton 1400 - 145 Nells Corfeld - Whole Baiding diversity and soil health for sustainable cropping systems 1400 - 15.00 1400 - 15.00 1400 - 15.00 1400 - 145 Nells Corfeld - Whole Baid Septement Phillips - Amino-add Baing from Legume 1500 - 16.00 1500 -	What can sol tell you? Savory Hub Breakout Session 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1200 1100 - 1300 1100 - 1400 1100 - 1400 1100 - 1400 1100 - 1445 Agriculture 1130 - 1500 1100 - 1500 1100 - 1500 1100 - 1400 1100

Illuminate your wheat with a touch of magic!





KWS FIREFLY

- The UK's highest yielding Group 3
- Great disease package, including 7.0 for Septoria and OWBM
- The joint stiffest variety on the Recommended List









KWS UK LTD, 56 Church Street, Thriplow, Nr Royston, Hertfordshire, SG8 7RE Tel: +44 (0) 1763 207300 / Fax: +44 (0) 1763 207310 / Email: info@kws-uk.com

www.kws-uk.com

SEEDING THE FUTURE SINCE 1856



Wednesday 26th

9:00 am

A Commonsense Revolution to Restore our Environment

Allan Savory

9:00am - 10:00am Conference Barn

LECTURE

Allan Savory will talk about the cause of both global desertification and climate change in which agriculture is playing possibly a greater role than fossil fuel emissions. And he will explain why two new paradigm-shifting concepts are involved in any solution: Management and policy need to be holistic and no longer reductionist and livestock, in greatly increased numbers, are essential to any solution.

How to check soil health and knowing where to stop

Stephen Bailey & Jackie Stroud

9:00am - 10:00am Soil Tent

SEMINAR

There is no agreed definition of soil health, but there are many useful indicators of how healthy a soil is. This jointly-presented seminar will go over some of the indicators by Catchment Sensitive Farming (CSF), including not only laboratory tests and identification of deficiencies, but also potential toxicities and essential field assessments. The importance of worms will be emphasized and Jackie Stroud, the country's leading authority on worm assessment in the field, will explain how farmers can do this. Along with this, the Innovation for Agriculture / CSF kitchen science test for soil structural stability will be presented.

There is no definitive list of assessments for soil health, so this seminar will discuss some of the other tests that could be used and how people should decide what to include and where to stop.

Session hosted by Catchment Sensitive Farming who are exhibiting in the Pasture Field A9B.

The future of no-tillage (understanding the "INVISIBLES")

John Baker

9:00am - 10:00am Old Dairy

LECTURE

No-tillage has achieved about 50% of its potential. The remaining 50% will come from understanding three invisible factors. Controlling these invisible factors is the secret to fail-safe no-tillage. Five key functions for no-tillage drills and openers are identified. Few current no-tillage machines perform more than three of these functions. Those that do, produce consistently outstanding crops with few limitations. Understand the science and the rest will follow!

Please note that due to unforeseen circumstances John Baker will not be able to travel from New Zealand for this session, it will be a live webinar instead.

Conversation with UK no-tillers

Tom Martin, Clive Bailye & Humphrey Mills

9:00am - 10:00am Agricology Discussion Tent

PANEL

Tom Martin hosts a panel of UK farmers to discuss their experiences of no-till.

10:00 am

First Principles

Joel Williams & Amir Kassam

10:00am - 11:30am Seminar Barn

FIRST PRINCIPLES

An introductory presentation for those new to conservation agriculture (CA). Amir will present a global overview of CA, why it is

needed, CA principles and systems, adoption and spread globally, and broad benefits at the field and landscape level. This will be followed with a discussion from Joel linking the practices of CA back to the soil and will highlight the how and why CA principles improve and maintain soil health.

Direct Drill Demonstrations

Direct Drill Demonstrations – D1 to D4

10:00am - 11:00am Demo Field

DIRECT DRILL DEMONSTRATION

Watch the Direct Drill Demonstrations, timings as follows:

10:00 - D1 - Cross Slot

10:15 – D2 – Sky Agriculture

10:30 - D3 - Sly Agri

10:45 - D4 - Dale Drills

Cover crops for soil, water and the environment

Alister Leggat, Rebecca Inman & Paul Brown

10:15am - 10:45am Conference Barn

SEMINAR WORKSHOP

Session led by Affinity Water, Alister Leggatt to chair with Paul Brown (Kings), Rebecca Inman (FWAG East) and a farmer. A discussion to talk about the wider uses of cover cropping and how to maximise these benefits whilst also increasing soil health and improving the water cycle.

Q&A with Frederic Thomas

Frédéric Thomas

10:15am - 10:45am Agricology Discussion Tent

WORKSHOP

Informal Q&A with minimum tillage and Conservation Agriculture specialist, Frédéric Thomas.

11:00 am

Call of the Reedwarbler

Charles Massy

11:00am - 12:00pm Conference Barn

LECTURE

Charles Massy talks about the enormous promise of regenerative agriculture as expounded in his best-selling book Call of the Reed Warbler: A New Agriculture – A New Earth.

The book is full of stories about world-leading innovators who have regenerated their landscapes and farms, their family health and businesses by regenerating the key landscape functions.

The good news is that by creating healthy, biologically diverse, absorbent soils, and by maximising the solar energy function and rejuvenating water cycles and biodiversity, then regenerative agriculture is providing many of the best solutions to our planet's Anthropocene crisis while regenerating human health at the same time via healthy food and fibre.

Agroforestry – a win win for farming and the environment

Stephen Briggs, Tom Staton & Helen Chesshire

11.00am - 12.00pm Soil Tent

SEMINAR

Find out how agroforesty can improve the sustainability of your business whilst delivering an array of public goods.

Does Britain need a Food Policy? Sue Pritchard, Henry Dimbleby & Rosie Boycott

11.00am - 12.00pm Old Dairy

INTERVIEW

Henry Dimbleby (Commissioned to write a food policy by the Secretary of State) and Sue Pritchard (Director of the RSA commissioned, wide-ranging report into Food and Farming) in conversation with Rosie Boycott.

New Ag Connected Weather Station

Victoria Nicol

11:00am - 11:30am Pasture Field

WORKSHOP

This session takes place on the Sencrop stand (Pasture Field A3). Sencrop is offering an integrated platform for farmers to view live weather at specific sites instantly. The talk will include a demonstration of the

weather station along with an overview of the application and its features. An opportunity for farmers to have an on farm demonstration will be available too.

Bringing in the Good Guys: IPM in Practice

Charlotte Rowley, Katie Bliss & Alice Midmer

11.00am - 12.00pm Old Dairy

WORKSHOP

It's the word on the street – but what does integrated pest management really mean in the field?! Come along to this informal session around the strawbales where we will talk to researchers and farmers about building a farm system that is more resilient to pests. How to identify pests and their enemies, and attract them into the field.

12:00 pm

Silvopasture Design Workshop

Russ Carrington, Jo Smith, Paul Woodgate & John Cherry

12:00pm - 1:00pm Soil Tent

WORKSHOP

Practical design workshop for establishing silvopasture – planting trees for shade, shelter and browsing – how to do it and why.

Direct Drill Demonstrations

Direct Drill Demonstrations – D5 to D8

12:00pm - 1:00pm Demo Field

DIRECT DRILL DEMONSTRATION

Watch the Direct Drill Demonstrations, timings as follows:

12:00 - D5 - Weaving

12:15 – D6 – Simtech Aitchison

12:30 - D7 - P Tuckwell / John Deere

12:45 - D8 - Horsch

Rebuilding and Maintaining Life in the Soil

Jay Fuhrer

12:00pm - 1:00pm Seminar Barn

FIRST PRINCIPLES

LECTURE

Rebuilding and maintaining life in the soil is directly linked to the longevity and reliability of our future agriculture. Plants, animals, and soils evolved together over geological time. Consequently, the cropping and grazing systems we are using today are not the systems which originally built our soils

Landscape simplification has been ongoing for generations fuelled by loss of perennials and animal impact, combined with soil disturbance, residue removal, and monoculture crop production without cover crops. Symptoms of landscape simplification are evident and include reduced soil organic matter and infiltration, wind erosion, water erosion, salinity, water quality impacts, and high fossil fuel inputs.

Groundswell Benchmarking Results

Gary Markham

12:15pm - 12:45pm Conference Barn

LECTURE

Gary Markham (LFB) presents the second year's Groundswell Financial Benchmarking Results, from a cohort of no-till compared to 'conventional' farmers.

Getting Out of the Commodity Trap - New Markets for Sustainable Arable

Fred Price, Katie Bliss & Steven Jacobs

12:15pm - 12:45pm Conference Barn

WORKSHOP

One of the barriers to moving towards more sustainable arable systems is finding a market for smaller volumes of diverse crops. In response to this there is a growing number of farmers who are finding alternative markets for cereals and pulses which support them to farm agroecologically. Come along and talk to them around the strawbales about how they are making it work and explore how it could work on your farm too!

KWS Variety Trial Discussion John Miles

12:30 pm - 1:00 pm KWS Trial Area

WORKSHOP

KWS will be discussing the details around variety choices in modern farming. With a back drop of farm drilled variety strips, we want to learn what variety/traits/characteristics farmers value highest in an established no till and a no till conversion environment. We will be holding a poll so make sure you get your voting card/token from the KWS stand in the main area.

This session takes place on the KWS Variety Trial Satellite stand which is at the end of the Pasture Field.

1:00 pm

Glyphosate Debate

William Scale, Amir Kassam, John Landers & Frédéric Thomas

1:00pm - 2:00pm Conference Barn

PANE

John Landers, Frédéric Thomas, Amir Kassam and Will Scale will be considering the implications of the current media storm about Glyphosate, and the positive or negative effects that a ban on the chemical would have on UK agriculture and the environment, and no-till farming in particular.

The Future is now for Biology to replace/supplement chemical fertilizers and pesticides

Christopher Hook

1:00pm - 1:30pm Old Dairy

SEMINAR

Chris will focus on his practical experience working with two highly sophisticated biofertilizer / soil inoculant products, in a range of soil types, and growing conditions-in more than 10 countries worldwide – successes and failures – and why the failures, as most can e explained. He will advise farmers what to look for in a product they propose to use, how to look after the live micro organisms, apply them, and also what to expect by way of crop yield and improvement to soil structure and financial gain.

Allan Savory Book Signing at 3LM Stand

Allan Savory

1:00pm - 1:30pm Seminar Barn

BOOK SIGNING

Become a Soil Expert for Your Farm

Abby Rose, Ian Boyd, Annie Landless, Chris Leach, Fred Price & Fidelity Weston

1:00pm - 2:00pm Agricology Discussion Tent

SEMINAR

Hear from farmers Chris, Fred, Fidelity and Ian who are all using soil health as a guide as they experiment and discover what works best for their farm. They have been using simple soil tests combined with the Sectormentor for Soils app to learn and assess how healthy their soil is. Whether you want to see how effective herbal leys are, understand if a different grazing strategy is working or just simply reduce your inputs, in this session you will hear how farmers are using soil as their guide as they try a more regenerative approach to their farm. Following the session we will head outside and Annie Landless will demonstrate some of the soil tests, showing how you can easily do them yourself.

Compost Turning Demonstration

Ollie Martin

1:00pm - 1:30pm Demo Field

DEMONSTRATION

New at Groundswell this year in the demo field will be the compost turning demonstration. The aim of the process is to take a standard heap of farm yard manure and increase its worth by creating an environment in which beneficial biology, such as aerobic bacteria, fungi and protozoa can thrive. These micro-organisms then break down the organic matter in the manure creating a biologically active compost. When spread onto the field this not only acts as an organic manure, but also as a biological inoculant for the soil. Numerous components can be added to the mix, including wood chip or straw, with the aim of achieving a Carbon to Nitrogen ratio of approximately 25:1. Clay topsoil may also be added to provide additional nutrient binding sites. Ideally a temperature of between 50 and 70°C should be maintained by regular turning to provide the optimum environment for the beneficial microbes.

Introduction of livestock into the arable rotation

Tom Heathcote

1:30 - 2:00pm Old Dairy

WORKSHOP

Arable farms operate in a volatile market place with limited influence over their input costs and their output is globally commodity subject to unpredictable fluctuations and external influences. With plateauing yields, cost control is key to maintaining profit margins and many farmers are now looking to other methods of land management to help improve soil health, reduce their reliance on artificial inputs and increase farm margins.

The introduction of livestock into an arable rotation has multiple advantages including improving soil health, building natural fertility, weed control and additional sources of income and it can be achieved in a de-risked way with low capital expenditure.

Kings Cover Crop Plot Tour

Paul Brown

1:30 - 2:00pm Demo Field

WORKSHOP

Join Paul Brown at the Kings Cover Crop Trial Plot in the middle of the Demo Field to see 20 different variety mixes of cover crops.

2:00 pm

Rainfall Simulator Demonstration

Jay Fuhrer

2:00pm - 2:30pm Conference Barn

DEMONSTRATION

See the dramatic effect of two inches of rainfall on soils under different management regimes: no-till and cultivated, with and without cover and under permanent pasture.

Direct Drill Demonstrations

Direct Drill Demonstrations – D9 to D-1

2:00pm - 3:00pm Demo Field

DIRECT DRILL DEMONSTRATION

Watch the Direct Drill Demonstrations, timings as follows:

14:00 - D9 - Kuhn

14:15 - D10 - Novag

14:30 - D0 - Sam Agri / Virkar

14:45 - D-1 - Ryetec

Carbon Loss? How to increase organic matter content in the soils

Jan Feersma Hoekstra

2:00pm - 3:00pm Pasture Field

WORKSHOP

Session held on the Agriton Bokashi stand.

Weeds surgery – non-chemical weed control

Nicola Cannon & Katie Bliss

2:15pm - 2:45pm Agricology Discussion Tent

WORKSHOP

With a reduction in the efficacy and availability of many herbicides, agroecological approaches to managing weeds are becoming increasingly popular. This is an opportunity to share practical experiences and ideas with non-chemical weed management and ask questions about specific weed management to the experts.

3:00 pm

Different approaches to weed management with CA

Frédéric Thomas

3:00pm - 4:00pm Conference Barn

Weed management has been one of the most difficult tasks for arable farmers. Even if ploughing and tillage is often put forward, no-till and more widely Conservation Agriculture has brought a complete set of new approaches and options in order to reduce quite drastically weeds, save on cost of establishment and profit of better organised soil structure. During this hour we will go from seed bank management, impact of no tillage as well as cover-crops, rotation and fertility set up. We will also address the connection with animal production. The idea is to leave you with the maximum options in order to keep your weeds guessing!

CA Principles into Practice in the

William Scale & Simon Cowell

3:00pm - 4:00pm Seminar Barn

FIRST PRINCIPLES | SEMINAR

Will Scale, Simon Cowell and Ian Piggott will describe the process of transition to CA on three farms in the UK.

Can we farm without insecticides?

Martin Lines

3:00pm - 4:00pm Agricology Discussion Tent

Cutting Pesticide Use to Help Wildlife?. Pesticide use is a key factor behind wildlife decline. The UK is committed to prioritising Integrated Pest Management for pest and disease control, but consultation with farmers reveals why this isn't happening in practice. What support do farmers need to switch to non-chemical methods? How can individual farmers make a difference?

Discussion chaired by Martin Lines, UK Chair Nature Friendly Farming Network, with Lincolnshire arable farmer Peter Lundgren, NFFN England Steering Group member David Lord, and Friends of the Earth Campaigner Nick Rau

The Ambitious Farmer: How will you make your farm's future bigger than its past?

Sam Watson Jones

3:00pm - 4:00pm Old Dairy

SEMINAR

The world of farming is changing. The role of the farmer, how we think about our farms and how we think about ourselves will need to adapt to a new world of Digital Farming. The challenge for farmers is to get really clear on their purpose and their goals, questions that we rarely ask ourselves. What are your ambitions for your farm? What are your ambitions for yourself? With the right mindsets, we can design a working life which supports your purpose as an individual. We will map out the Eight Mindsets that we believe the most successful farmers of the future will adopt. Come and find out your strengths - and start creating a plan which guarantees that your most exciting and successful days are yet to come. This session is hosted by Small Robot Company who can be found exhibiting in the Old Dairy.

AHDB Soil Pit Interactive Workshop

Dr Anne Bhogal & John Elphinstone

3:00pm - 4:00pm Soil Pit

WORKSHOP

Visit the Soil Pit in the Demo Field to join this interactive workshop with AHDB. Look at rooting, soil structure and soil biology in the soil pit with Anne Bhogal, ADAS and John Elphinstone, Fera. Discuss the soil sampling results from the Groundswell fields, conducted to the AHDB's new soil health scorecard method. Hear about the latest levy funded research on soils from AHDB soils specialists and ask your questions to the team.

Fixing the Food Supply Chain

Ben Pugh

3:30pm- 4:00pm Old Dairy

SEMINAR

Ben Pugh describes how he disrupted the food supply chain with his innovative Farm-Drop supply business.

4:00 pm

Herbal Ley Workshop with **Cotswold Seeds**

Sam Lane

4:00pm - 4:30pm Demo Field

WORKSHOP

Session held at the Cotswold Seeds stand in the Demo Field. Complex seed mixtures and the benefits they bring to animal health, soil fertility and farm profitability are at the heart of much of Sam Lane's work as Technical Manager at Cotswold Seeds. A family business based in Moreton-in-Marsh, Cotswold Seeds has built its reputation on developing forage, herbal leys, green manures and complex seed mixtures as well as providing advice to customers, which now number 15,000 farmers and landowners across the UK.

Agroforestry – your questions answered!

Agroforestry – your questions answered!

Helen Chesshire & Jo Smith

4:15pm - 4:45pm Agricology Discussion Tent

WORKSHOP

Thinking about agroforestry on your farm? Come along to this informal session around the strawbales to ask questions and get guidance from the researchers and farmers making it work on arable and livestock systems.

Jo Smith, ORC; Helen Cheshire, Woodland Trust, Stuart Holm, Woodland Trust4:30pm - 5:00pm Demo Field

Moving the Mob - Mob Grazing Demo

John Cherry

4:30pm - 5:00pm Demo Field

DEMONSTRATION

John Cherry (Host farmer) will be demonstrating moving the mob on the herbal ley. He'll be answering questions and he will be repeating this on Thursday at 5.00pm.

5:00 pm

Farmer Perspectives: Reducing N

Joel Williams, Andrew Howard, Timothy Parton & Doug Christie

5:00pm - 6:00pm Conference Barn

PANEL

Artificial nitrogen has transformed agricultural production arguably like no other input, yet excess quantities of this highly reactive nutrient also cause a host of negative environmental impacts. With typical NUEs of ~50% the norm, there is scope to improve efficiencies and reduce dependency on bagged N. This session will share a selection of on-farm strategies being implemented by UK [and IE] farmers and via a discussion panel, will explore a selection of case studies in detail. Bring your smartphones [on silent] to participate in an audience poll.

Integrated Systems Approach Farming

Mike Harrington

5:00pm - 6:00pm Seminar Barn

SEMINAR

Mike has been advising farmers for over 30 years. He initially trained as a chemical specialist, however soon realised that the problems with chemical fertilisers and the increasing resistance to herbicides, fungicides and insecticides would not be solved with current methods. In 2005 he founded Edaphos Ltd, an agronomy firm specialising in managing soil and soil biology. Working in partnership with farmers the company looks to develop processes and systems more in tune with the environment and nature, making the soil and life within the soil the natural driver rather than products as a short-term solution.

Changing your model of agriculture requires a substantial change in mindset and to reduce inputs the farm must develop an integrated system that requires a very different approach to farming.

Direct Drill Discussion

Ollie Martin

5:00pm - 6:00pm Soil Tent

PANEL

Ollie Martin moderates a discussion between the first six drill manufacturers: Cross Slot, Sly, Simtech Aitchison, Kuhn, Sky, Sam Agri (Virkar)

Grazing Infrastructure – "Keeping the B****s in"

James Daniel

5:00pm - 5:25pm Agricology Discussion Tent

WORKSHOP

Principles of electric fencing and portable water system design and set-up for livestock.

Why Farming with the Environment is the way Forward

Martin Lines

5:00pm - 5.30pm Old Dairy

WORKSHOP

Martin Lines UK Chair Nature Friendly Farming Network explains what is the Nature Friendly Farming Network and why farming with nature is the most productive and profitable way to farm.

Integrating sheep into the arable rotation

Rob Hodgkins

5:30pm - 6:00pm Agricology Discussion Tent

WORKSHOP

Forum to refine the Elterwater Challenge

John Landers

5:30pm - 6:00pm Agricology Discussion Tent

WORKSHOP

WOX Machinery Demo

5:30pm - 6:00pm Demo Field

DEMONSTRATION

6:00 pm

Pasture Fed Open Spit Roast BBQ

6:00pm - 7:30pm - Earthworm Arms

FOOD

A collaboration between Richard Wedlake and Luppo (Straight Line Nutrition), join the evening bbq of pasture fed beef at The Earthworm Arms. Pasture-Fed meat supplied by Boyd Farms Cotswold Beef and Deerbrook Farm Butchery and Farm Shop.

7:00 pm

Courage to Change

Sam Watson Jones & Ruby Wax

7:00pm - 8:00pm Conference Barn

WORKSHOP

Ruby Wax in conversation with Sam Watson Jones, guided by Joanna Cherry.

Thursday 27th

9:00 am

The Importance of Managing Holistically

Allan Savory

9:00am - 10:00am Conference Barn

LECTURE

Allan Savory's Day Two session. Allan will explain why managing agriculture holistically is imperative, and why livestock – properly managed – are essential to regenerative agriculture globally. Based on experience gained on continents with harsher environments and economies, he will share ideas that can help UK farmers thrive. There will be ample time for questions and answers.

Conversation with UK no-tillers

Ian Pigott, Clive Bailye & Simon Cowell

9:00am - 10:00am Seminar Barn

PANEL

Ian Piggott in conversation with UK notillers.

Measuring and optimising soil management using the soil health scorecard and molecular approaches

John Elphinstone & Dr Anne Bhogal

9:00am - 10:00am Soil Tent

SEMINAR

AHDB' Soil Biology and Soil Health Partnership is a five year, cross-sector programme of research and knowledge exchange to help farmers and growers improve productivity through better understanding of soils.

Two key parts of this programme will be highlighted during this talk – the first is the development of a soil health scorecard for farmers and growers to be able to measure and interpret their soils. The second, an evaluation of DNA-based analysis to look at

the potential for their use for soil analysis in the future – fascinating new technology!

Anne Bhogal will look at the development of the soil health scorecard, the key parameters that are being discussed and analysed, the use of grower groups and long-term experimental site data to develop and ground-truth the benchmarks and to showcase the development of the scorecard for farmer and grower use.

John Elphinsone will share the development work of the use of molecular approaches for routine soil-borne disease and soil health assessment. Could this DNA analysis be the future of soil sampling and assessment for the industry?

Why no-till? A soil biota perspective

Simon Jeffery

9:00am - 10:00am Agricology Discussion Tent

SEMINAR

Introduction to soil biology and a report on some of the experimental data from the Conservation Agriculture projects that Simon is involved in.

How regenerating soil health can improve farm profitability from year one

Nicholas Verschuere

9:00am - 9:30am Old Dairy

SEMINAF

Soil Capital is a farm management firm committed to scaling regenerative agriculture through market solutions. Our team of agronomists and finance professionals is united by the conviction that soil health is the single most important driver in increasing farm productivity, reducing risk and protecting profitability.

Over recent years, we have had the privilege to execute strategies to transition some 30 farms across 15 countries to regenerative production practices, advising on many more. In almost all cases, we have improved farm profitability from the first year. Here, I

will share some key insights from our experience, illustrated with practical examples.

Carbon Sinks – Get planting and generate productive profitable soils

Jonathan Holmes

9:30am - 10:00am Old Dairy

SEMINAR

Understand how a plant interacts with soil and increase your gross margin while saving the planet!

Albrecht soil science quantifies your soil's potential for productivity. Use that information to increase plant health while reducing fertiliser and fungicide costs.

Productive soils will generate a healthy plant that has the capacity to sequester carbon – extract atmospheric carbon dioxide and allow the soil-borne mycorrhizae to store it in the soil as calcium carbonate

This session is hosted by Jonathan Holmes (Lordington Park Agronomy).

10:00 am

Direct Drill Demonstrations

$\begin{array}{l} \textbf{Direct Drill Demonstrations} - \textbf{D10} \\ \textbf{to D7} \end{array}$

10:00am - 11:00am Demo Field

DIRECT DRILL DEMONSTRATION

Follow the Drill Demonstrations, timings as follows:

10:00 - D10 - Novag

10:15 - D9 - Kuhn

10:30 - D8 - Horsch

10:45 - D7 - Sly Agri

What Soil Can Tell You? – Savory Hub Breakout

Sheila Cooke & Christopher Cooke

10:05am - 11:00am Seminar Barn

WORKSHOP

When you start making changes in favour of healthy soil, how do you know if things are moving in the right direction? Do you have to wait a whole season before you find out if you made the right decisions?

When we make changes in our management, the earliest signs of change occur at the soil surface. Monitoring for signs of change at the soil surface gives the best chance of spotting positive or negative variances early, before it's too late.

Sharpen your capacity to manage for soil regeneration by attending this one-hour session that will enable you to read the language of the land.

We will look at the soil through four different lenses: the water cycle, the mineral cycle, the flow of solar energy, and community dynamics (the dynamics of how things change in plant and animal communities.)

Take away a survey you can use to assess the health of your land.

Low input sheep production and saifoin

Richard Smith & Tim Field

10:15am - 10.45pm Agricology Discussion Tent

WORKSHOP

Looking to integrate sheep into your farming system? Already got sheep but want to enhance their benefit in your rotation? Want to learn more about sainfoin? Richard Smith is the Farm Manager at Daylesford Farm in Gloucestershire where they have five breeds of sheep roaming the pastures including rare breed Cotswolds and Kerry Hill. He is passionate about the role of genetics and sainfoin in creating low input systems based on agroecology. Come along to chat with Richard around the straw bales and ask your questions!

Interview with the Secretary of State

Michael Gove & Rosie Boycott

10:30am - 12:00pm Conference Barn

INTERVIEW

Rosie Boycott interviews the Secretary of State (DEFRA)

Please note that this session is subject to last minute change due to the Secretary of State's diary reshuffle

11:00 am

Innovative Farmers – Improving soil health through farmer-led research

Liz Bowles, David White & Rob Saunders

11:00am - 12:00pm Agricology Discussion Tent

PANE

Farmers often innovate and experiment in isolation. Only 1% of research money is currently going towards farmer-led agricultural projects, with much of the rest going to top down research which often tries to parachute products onto farmers, increasing the input bill. Innovative Farmers is trying to change this. Matching the ideas and expertise of farmers with those of researchers, can fast forward agricultural innovation, making farms sustainable and resilient. Innovation around soil health is a key part of our work. Join us to hear from a panel of pioneer farmers at the heart of this new wave of grassroots research.

Carbon, Crops and Covers

Jay Fuhrer

11:00am - 12:00pm Seminar Barn

LECTURE

Managing carbon begins with the understanding of the carbon cycle and how it relates to cropping systems, grazing systems, orchards, gardens, etc. How does carbon enter the soil and how does it leave? What is the process for carbon in the surface residue and the root mass? What role can livestock play?

Soil regeneration requires the constant building and rebuilding of soil aggregates, a foundation building block of soil function. As carbon levels increase, the soil food web increases, and now has the ability to build more soil aggregates and move carbon into the soil organic matter.

Zero Tillage (CA) in Ley Farming

John Landers

11:00am - 12:00pm Soil Tent

LECTURE

Crop/livestock rotations in Peru go back three thousand years to before the Incas and the Romans practiced fallows in between grain cops. But the application of Zero Tillage (ZT) to crop/livestock rotations effectively only took effect after the introduction of Glyphosate, ca. 1980. The Brazilians and later Australians and Americans applied ZT to ley farming. The literature rarely distinguishes ZT in ley farming. Today, the Brazilian and Australian literature are the most complete. The most important synergies are : (i) improved soil structure and organic matter, (ii) higher nutrient use efficiency, (iii) suppression of pests and diseases, (iv) higher yields in crops and animals and hence, (v) a better bottom line. The Australians and New Zealanders took longer than the N. & S. Americans to embrace ZT but were well ahead in tropical and sub-tropical ley farming.

Microbes and Minerals

Jennifer Brodie & Glyn Mitchell

11:00am - 11.30am Old Dairy

SEMINAR

Forget high tech equipment, expensive fertilisers and specialist seed selection. On a back to basics approach Jennifer and Glyn are convinced we are missing a trick for our soil. Jennifer outlines her 15 years' of adding UK's own ancient MINERAL (full suite of 17) rich freshly crushed, finely screened volcanic rock dust to soil. Glyn compliments this by explaining what is achieved by culturing soil MICROBES in the right compost, extracting the beneficial ones and deploying them to protect crops from pests and disease while reducing cost. Simplest is best – as crop yield and health is increased, so is carbon sequestration. A talk not to be missed! Session hosted by REMIN and Credible Food Project.

Improved Crop Production through Interaction of Beneficial Soil Microbes

Natallia Gulbis

11:00am - 12:00pm Pasture Field

WORKSHOP

Session held on the Plantworks Stand (Pasture Field B11)

The Food Waste Farmer

Igor Vaintraub

11:45am - 12:00pm Old Dairy

WORKSHOP

All-in-one solution to transform renewables into nature based soil management system.

12:00 pm

Rainfall Simulator Demonstration

Jay Fuhrer

12:00pm - 12:30pm Conference Barn

DEMONSTRATION

See the dramatic effect of two inches of rainfall on soils under different management regimes: no-till and cultivated, with and without cover and permanent pasture. Hosted by Jay Fuhrer.

Harvesting ideas for soil health innovation

Liz Bowles

12:00pm - 1:00pm Agricology Discussion Tent

WORKSHOP

Peer to peer learning is key to collaborating on soil health. Join us for an interactive session to crowdsource ideas for agricultural research with farmers setting the priorities. We'll have farmers fresh out of their field labs to sound board ideas with, and a smattering of researchers to amplify the learning. Everyone who joins this session should go home with a good idea of how to set up their own field lab. Session led by Innovative Farmers.

Direct Drill Demonstrations

Direct Drill Demonstrations D6 to D-1

12:00pm - 2:00pm Demo Field

DIRECT DRILL DEMONSTRATION

Follow the Drill Demonstrations, timings as follows:

12:00 – D6 – Simtech Aitchison

12:15 - D5 - Weaving

12:30 - D4 - Dale Drills

12:45 - D3 - P Tuckwell / John Deere

13:00 - D2 - Sky

13:15 - D1 - Cross Slot

13:30 – D0 – Sam Agri / Virkar

13:45 - D-1 - Ryetec

Routes to Markets

Nick Barnard, William Kendall & Rosie Boycott

12:30pm - 1:30pm Conference Barn

PANEL

William Kendall, (Cawston Press, Covent Garden Soup), Nick Barnard (Rude Health) and Corrisande Graham (a farmer selling directly to butchers and restaurants) on ways to establish new markets. Rosie Boycott will chair the discussion.

KWS Variety Trial Discussion (on KWS Satellite Stand)

John Miles

12:30pm - 1:00pm KWS Trial Area

WORKSHOP

KWS will be discussing the details around variety choices in modern farming. With a back drop of farm drilled variety strips We want to learn what variety traits/ characteristics farmers value highest in an established no till and a no till conversion environment. We will be holding a poll so make sure you get your voting card/ token from the KWS stand in the main area.

This session takes place on the KWS Variety Trial Satellite stand which is at the end of the Pasture Field.

1:00 pm

Building diversity and soil health for sustainable cropping systems

Adrian Newton

1:15pm - 1:45pm Agricology Discussion Tent

SEMINAR

This talk will give an overview of research at the James Hutton Institute and in an EU project DIVERSify to develop innovative cropping approaches for agricultural sustainability. It will report research to improve overall biodiversity (e.g. intercropping, variety mixtures, management of non-crop components) and soil cultivation (e.g. direct drilling, reduced chemical inputs) and assess their impacts on crop productivity and disease management. It will summarise the utility of these

approaches and how they could be integrated to improve the sustainability and resilience of the cropping system.

See more about the Horizon2020 'DIVERSify' project: www.plant-teams.eu

Innovative soil and water health testing for increased agricultural productivity

Rob Stichbury

1:30pm - 1:55pm Pasture Field

WORKSHOP

The talk will be centred around soil-health testing and how understanding the soil biology can influence key agricultural decisions for increased agricultural productivity. There will be case studies and examples of the applications of the technology. This Session takes place on the Fungi Alert Stand Pasture Field D10.

2:00 pm

Allan Savory in conversation with Charles Massy

Allan Savory, Charles Massy & Tim Hay

2:00pm - 3:00pm Conference Barn

INTERVIEW

Session chaired by Tim May.

Rewilding at Knepp

Isabella Tree & Sir Charles Burrell

2:00pm - 3:00pm Seminar Barn

SEMINAR

Isabella Tree and Charlie Burrell tell the story of how they transformed their farm with this extraordinary project.

Nitrogen Sharing from Legume Companions

Joel Williams

2:00pm - 3:00pm Agricology Discussion Tent

LECTURE

Although we predominantly consider the decay of root nodules and legume tissues as the main mode of delivery of N from legumes to the following crop, legume companions can also share N in real time to the current crop. This session will outline

the pathways for below ground transfer of N, give insight into the biotic and abiotic factors that influence this interaction and provide agronomic tips on how to optimise this process in field.

Whole Farm Planning for Regenerative Agriculture

Niels Corfield

2:00pm - 3:00pm Agricology Discussion Tent

SEMINAR

Design principles and practices for regenerative farms, including:

- 1. Managing hedges for maximum benefit/function
- 2. Agroforestry & trees increasing structural diversity on farm
- 3. Providing shelter & shade windbreaks, snow fences
- 4. Silvopasture design for improved animal performance & browse
- 5. Designing water & power distribution for intensive grazing operations
- 6. Fencing & access solutions for low maintenance/low stress animal handling
- 7. Time-saving strategies for management of land & livestock
- 8. Eliminating redundant infrastructure & capital expenditures on-farm
- 9. No-turn strategies for composting manures, bedding & other biomass

Amino-acid based Biostimulants and their role in broadacre agriculture

Richard Phillips

2:00pm - 2:30pm Old Dairy

SEMINAR

Ollie Martin

Amino acids, what they do, where they come from, how to use them in broadacre agriculture.

Compost Turning Demonstration

2:00pm - 2:30pm Demo Field

DEMONSTRATION

New at Groundswell this year, the compost turning demonstration will be in the demo field. The aim of the process is to take a standard heap of farm yard manure and increase its worth by creating an environment in which beneficial biology, such as aerobic bacteria, fungi and protozoa can thrive. These micro-organisms then break down the organic matter in the manure creating a biologically active compost. When spread onto the field this not only acts as an organic manure, but also as a biological inoculant for the soil. Numerous components can be added to the mix, including wood chip or straw, with the aim of achieving a Carbon to Nitrogen ratio of approximately 25:1. Clay topsoil may also be added to provide additional nutrient binding sites. Ideally a temperature of between 50 and 70°C should be maintained by regular turning to provide the optimum environment for the beneficial microbes.

Linking soil health to output

Ian Robertson

2:30pm - 3:00pm Old Dairy

SEMINAR

The discussion is about looking at detailed soil chemical tests, organic matter and active carbon tests (indication of microbial activity) and how these 3 parameters influence soil nutrient cycling. Working through on farm experience of linking these to biomass measurements to meet peak demand of cereal crops. More soil life can mean more yield however you still have to have access to enough key nutrients to build the biomass.

Kings Cover Crop Plot Tour

Paul Brown

2:30pm - 3:00pm Demo Field

WORKSHOP

Join Paul Brown at the Kings Cover Crop Trial Plot in the middle of the Demo Field to see 20 different variety mixes of cover crops.

3:00 pm

How to engage with consumers

Cathy Boyd, Laura Chapman & Stefano Cuomo

3:00pm - 4:00pm Agricology Discussion Tent

MARKETING

PANEL

Exploring supply chains and marketing options and know-how for farmers selling in to butchers, consumers and retailers. Session hosted by the PFLA

Book Signing

3:00pm - 4:00pm Agricology Discussion Tent

BOOK SIGNING

Signed by the Author- Allan Savory, Charles Massy, Isobella Tree... Visit the Bookstand in the Old Dairy

AHDB Soil Pit Interactive Workshop

Dr Anne Bhogal & John Elphinstone

3:00pm - 4:00pm Soil Pit

WORKSHOP

Visit the Soil Pit in the Demo Field to join this interactive workshop with AHDB. Look at rooting, soil structure and soil biology in the soil pit with Anne Bhogal, ADAS and John Elphinstone, Fera. Discuss the soil sampling results from the Groundswell fields, conducted to the AHDB's new soil health scorecard method. Hear about the latest levy funded research on soils from AHDB soils specialists and ask your questions to the team.

Soil Compaction Trial Results and Analysis

David Purdy

3:00pm - 4:00pm Pasture Field

WORKSHOP

David Purdy presents the findings from the Michelin-Groundswell Compaction Trial, looking at the impact of compaction, tyres, axle weights and pressures etc. with a reference to soil health.

The machinery/soil interface is critically important and if managed poorly can have huge and long-term damaging effects on our soils and plant health. Developing the organic content of our soils is the most important thing we can do to become more resilient to the damage done by everincreasing size and weight of machinery; however, management of machinery remains very critical. Compaction can be very detrimental to our soil functions and so needs to be carefully managed. The soil compaction presentation and demonstration area at Groundswell,

sponsored by Michelin, will show how these decisions can impact soil health and the physical aspects of soils including infiltration rates, soil resistance through the profile, pressure impacts at depth, rut depths, structure and tyre contact areas.

Low cost, open-data & DIY approaches to assessing the public goods provided by your land

Shaun Dowman, Sophia Burke & Mark Mulligan

3:15pm - 3:45pm Conference Barn

WORKSHOP

Affinity Water hosted session with Sophia Burke and Mark Mulligan. Practical workshop to highlight how to make your own weather stations and soil sensors to provide you with real-time field data.

4:00 pm

Soil Farmer of the Year

Simon Cowell & Joel Williams

4:00pm - 5:00pm Conference Barn

PANEL

Session led by Joel Williams, interviewing Simon Cowell (winner 2018) and presenting the awards for Soil Farmer of the Year 2019. In association with Farm Carbon Cutting Toolkit.

Call of the Reed Warbler

Charles Massy

4:00pm - 5:00pm Seminar Barn

LECTURE

Charles Massy talks about the enormous promise of regenerative agriculture as expounded in his best-selling book Call of the Reed Warbler: A New Agriculture – A New Earth.

The book is full of stories about world-leading innovators who have regenerated their landscapes and farms, their family health and businesses by regenerating the key landscape functions.

The good news is that by creating healthy, biologically diverse, absorbent soils, and by maximising the solar energy function and rejuvenating water cycles and biodiversity, then regenerative agriculture is providing many of the best solutions to our planet's

Anthropocene crisis while regenerating human health at the same time via healthy food and fibre

Direct Drill Discussion

Ollie Martin

4:00pm - 5:00pm Soil Tent

PANEL

Ollie Martin moderates a discussion between the second batch of six drill manufacturers: Novag, Weaving, Dale, Horsch, Ryetec and John Deere

The Soil/Gut Connection

Nick Barnard, Dr Natasha Campbell-McBride & Rosie Boycott

4:00pm - 5:00pm Old Dairy

PANEL

A panel looking at the connection between soil health and human health – what we eat and how we feel. Panellists: Natasha Cambell-McBride and Nick Barnard. Chaired by Rosie Boycott

WOX Machinery Demo

4:00pm - 4:30pm Demo Field

DEMONSTRATION

Countryside Stewardship in Practice

Alastair Leake

4:15pm - 4:45pm Agricology Discussion Tent

WORKSHOP

A few years down the line with experimenting with cover crops and herbal leys. What have we learned about what works and what doesn't in different soil types and farming systems? Are we trying to do everything with cover crops, and could they work better as part of an integrated solution? Could herbal leys in stewardship options be grazed or mulched in a stockless system and provide similar functions on heavier soils? Could we then be drilling straight into them? Join Agricology for an informal discussion around the straw bales to share ideas, questions and practical experiences.

5:00 pm

Moving the Mob - Mob Grazing Demo

John Cherry

5:00pm - 5:30pm Demo Field

DEMONSTRATION

At the end of the Conference join John Cherry (host farmer) in the Demo Field to witness the moving of the mob on the herbal ley.

Why talk about food at Groundswell?

Many farmers are dispirited by the current market-model in this country whereby wheat is mainly grown for feeding animals who could be eating grass whilst consumers are buying increasingly varied ingredients (spelt, lentils, rye) which are mostly grown abroad.

So this year we are launching a 'Food for Thought' thread: we want to address this disconnect between the food we grow and those who sell and eat it. We live in an age of dietary revolution, with more books being sold on how and what to eat than on any other subject, so, to join together the growers with the eaters, we have created panels of policy makers, nutritionists, growers, and market innovators to start important conversations about the future of feeding the nation.





3LM are the local Savory Network hub, and educators of Holistic Management, a framework developed by Allan Savory. We make it possible for you to listen to the voice of your land through Ecological Outcome Verification. EOV equips you to demonstrate that your management practice is in fact regenerating soil.

Contact: Sheila Cooke Tel: 0744 678 0081 Twitter: @3LM_HM

eMail: sheila.cooke@3lm.network

Website: www.3lm.network





Affinity Water is the largest water-only supplier in the UK. Our catchment management team is keen to undertand and support farming practices that are beneficial for water quality, water resources and the environment.

Contact: Shaun Dowman Tel: 0786 681 2991 Twitter: @AffinityWater

eMail: shaun.dowman@affinitywater.co.uk

Website: www.affinitywater.co.uk





Agricology is a community of farmers and researchers working towards more resource efficient, resilient and profitable agricultural systems. Online & in the field we bring together research and farmer experience on agroecological practices. We are a collaboration of over 20 organisations working with agroecology in research and practice and seek to bring this all together for the farming audience.

Contact: Lydia Moore Tel: Twitter: @agricology

eMail: lydia.moore@agricology.co.uk

Website: www.agricology.co.uk





As a leading provider of agronomy services, technology and strategic advice, **Agrii** combines excellence and innovation with the latest research and development to ensure our customers can meet today's farming challenges with knowledge and confidence.

Contact: Mark Taylor Tel: 0783 652 7251 Twitter: @AgriiUK

eMail: mark.s.taylor@agrii.co.uk

Website: www.agrii.co.uk





Agriton is devoted to the living environment for human beings, animals and plants in the broader sense. Through promoting a sustainable society we hope to protect this planet by helping to reduce mankind's impact on the environment. By correctly selecting environmentally sustainable products, and sharing knowledge we believe we can make a difference to our future. Agriculture is our specialism, nature is our passion.

Contact: Fran Box Tel: 01823 673 344 Twitter: @AgritonUK

eMail: info@agriton.co.uk
Website: www.agriton.co.uk





Join us for an in-depth look at soil health, structure, biology and discussions with the experts. Find out the latest **AHDB** research into soild, see practical demonstrations in the soil pit and discuss your thoughts on soil with the team.

Contact: AHDB Tel: 0738 701 5465 Twitter: @TheAHDB

eMail: teresa.meadows@ahdb.org.uk

Website: www.ahdb.org.uk





Aiva Fertiliser offers targeted solutions and bespoke options for agriculture. Advanced liquid fertilisers are tailored to the specific needs of both the farmer and the crop and offer complex yet efficient recipes which optimise growth, yield and stability. Each product is carefully evolved to maximise production whilst minimising the impact on the environment.

Contact: Nick Woodyatt Tel: 01235 834 997 Twitter: @AivaFertiliser

eMail: office@aivafertiliser.co.uk Website: www.aivafertiliser.co.uk





AminoA a UK based biotechnology company that design, manufacture and distribute high quality plant biostimulant products based on natural L-isomer amino-acids. Our products are suitable for use in all crops and, the majority, are registered for use in organic systems.

However, our customers are mainly conventional arable farmers who have realised that the judicious use of, properly formulated, biostimulants can boost yields and profits whilst at the same time sustaining the fragile ecosystem in our soils.

Contact: Richard Phillips Tel: 01633 894 300 Twitter: @richardnyo

eMail: richard@aminoa.co.uk Website: www.aminoa.co.uk

Aphaeas Agriculture is the distributor for Humintech soil conditioners and biostimulants in the UK and Ireland.

Contact: Susan Wilson Tel: 01505 871 955 Twitter:

eMail: susan@aphaeas-agri.com Website: www.aphaeas-agri.com





phaeas

BASE-UK is an independent knowledge exchange organisation run by farmers for farmers and individuals interested in making agriculture sustainable using conservation and regenerative systems such as no-till, strip-till, cover crops, companion crops and integrating livestock.

Contact: Rebecca Goodwin Tel: 0779 953 2704 Twitter: @baseuk

eMail: rebecca@base-uk.co.uk

Website: www.base-uk.co.uk





BASIS is an independent, self-regulatory registration, standards and certification scheme serving the pesticide, fertiliser and allied organisations and interests.

Contact: Aliona Jones Tel: 01335 30 13 16 Twitter: @BASISRegLtd

eMail: aliona@basis-reg.co.uk
Website: www.basis-reg.co.uk





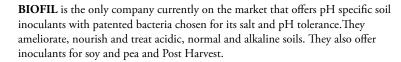
Bio Farming Ltd, evolved organically from the positive synergies found within the amenity and agricultural sectors, Utilising science based innovative products to supplement mineral nutrition and microbial nutriments that support and promote the rich microbiome within a living soil and plant towards higher, cost effective crop values and carry over soil health benefits.

Contact: Mark Atkins/ Tel: 0779 546 7938 Twitter: @BiofarmingL

Janice Harrington

eMail: info@bio-farming.co.uk Website: www.bio-farming.co.uk





Contact: Lena Wolf Tel: 0785 729 9589 Twitter:

eMail: wolfhele@gmail.com Website: www.terragro.hu/products





BIOFIL

Property & Business Consultants: Farm & Estate Agency, Estate Management, Agricultural Business Consultancy, Renewable Energy & Professional services advice

Contact: Charles Whitaker Tel: 0 1664 50 21 26 Twitter: @brownandco_agri

eMail: marketing@brown-co.com

Website: www.brown-co.com





Optimise the nutrients in your soil and maximise its potential with our range of self-applied soil conditioning products, including granulated calcium lime, magnesium lime and calcium sulphate.

Contact: Calcifert Tel: 0800 622 6023 Twitter: @Calcifert

eMail: info@calcifert.co.uk Website: www.calcifert.co.uk





Catchment Sensitive Farming (CSF) partnership works together with farmers and organisations in priority areas across England to improve water and air quality and farm business.

iaiiii busiiicss.

Contact: NE Enquiries Team Tel: 0300 060 3900 Twitter:

eMail: enquiries@naturalengland.org.uk

Website: www.gov.uk/catchment-sensitive-farming





CDA are the Herts rural agency and we campaign to put rural and farming issues on the agenda. We host the Rural issues Network and Rural Loneliness Forum. We campaign for rural affordable housing, village shops, pubs and community transport and have recently launched two Farmers' Cafes to address loneliness.

Contact: Tim Hayward-Smith Tel: 0199 228 9060 Twitter: @cdaherts

eMail: office@cdaherts.org.uk
Website: www.cdaherts.org.uk





Chelsea Green is the leading publisher of books on the politics and practice of sustainable living, publishing authors who bring in-depth, practical knowledge to life, and give readers hands-on information. Chelsea Green specialises in books on organic and regenerative agriculture, gardening, nature & the environment, integrative health, sustainable living, ethical business, and more.

Contact: Rosie Baldwin Tel: 0748 123 0669 Twitter: @chelseagreen

eMail: rbaldwin@chelseagreen.com
Website: www.chelseagreen.com





Cotswold Seeds has built its reputation on developing forage, diverse leys, green manures and complex seed mixtures and this year at Groundswell we have a plot of demonstration herbal ley. MD Ian Wilkinson will be speaking about their many benefits, while Lizzie and Sam will be on our stand to offer technical advice.

Contact: Lizzie Arnold Tel: 0160 865 2552 Twitter: @CotswoldSeeds

eMail: lizziea@cotswoldseeds.com

Website: www.cotswoldseeds.com





The Cranfield University stand will include demonstrations on a range of soil management challenges and their solutions as well as information on the Agri-EPI and CHAPs Facilities at Cranfield and how to access them.

Contact: Dr Rob Simmons Tel: 01234 750111 ext 2761 Twitter: @CranfieldUni

eMail: r.w.simmons@cranfield.ac.uk

Website: www.cranfield.ac.uk/centres/soil-and-agrifood-institute





BBSRC are funding 2 new-investigator project researching the benefits of cover crops. The investigators from both projects (DIVERSE – DIVerse crop residues Engender Resilience of Soil functions and Ecosystem services led by Dr Tom Sizmur, Reading University and 'Using roots to bio-engineer soil' led by Dr Sarah De Baets, Cranfield University) are disseminating their first project results on the benefits of using cover crops for improving soil health.

Contact: Sarah De Baets Tel: 0748 486 9414 Twitter: @CranfieldUni

eMail: s.l.de-baets@cranfield.ac.uk
Website: www.cranfield.ac.uk





The **Credible Food Project** connects soil food web laboratories and regeneration strategists with farmers of any size to build soil carbon levels and profits for healthier farms.

Contact: Glyn Mitchell Tel: 0779 784 4116 Twitter: @regensoil

eMail: glynmitchell@gmx.com Website: www.crediblefood.com





DALE DRILLS

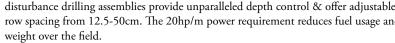
A range of low soil disturbance no tillage machines that sow seed and fertiliser in one pass over the land with automatic downforce on each opener to ensure accurate placement of seed in variable hardness of soil, and through the heaviest of residues from previous crops. Cross Slot technology is recognised internationally as the lowest soil disturbance no tillage technology and most cost effective.



Contact: Dr John Baker/Chris Hook Tel: +64 6323 1119 Twitter: @CrossSlot

eMail: baker@crossslot.com Website: www.crossslot.com

The most versatile, minimum disturbance tine no-till drills on the market. Our low disturbance drilling assemblies provide unparalleled depth control & offer adjustable row spacing from 12.5-50cm. The 20hp/m power requirement reduces fuel usage and



Contact: Dale Drills **Tel:** 0165 265 3326 Twitter: @DaleDrills

eMail: james@daledrills.com Website: www.daledrills.com





Established in 1963, David's Bookshop, Music & Cafe is located in Eastcheap, Letchworth Garden City. We stock over 50,000 books on two floors, a wide range of maps and children's books and over 15,000 second-hand and antiquarian books. As the World's first Garden City, Letchworth is a particularly attractive town, with much to offer visitors. We stock a wide range of books (both new and secondhand) on the area's past and present.

Contact: Paul Wallace **Tel:** 01462 684 631 Twitter: @DavidsBookshop

eMail: paul@davids-bookshops.co.uk Website: www.davids-bookshops.co.uk





Department for Environment, Food and Rural Affairs (Defra) - Future Farming and Countryside Programme.

Learn more about Defra's plans for delivering a brighter future for farming and our countryside. Talk to us about Environmental Land Management, Animal Health and Welfare, the Agricultural Transition and more.

Contact: Defra **Tel:** 03459 33 55 77 **Twitter:** @DefraGovUK

eMail: defra.helpline@defra.gov.uk

Website: www.gov.uk/government/organisations/department-for-environment-food-

rural-affairs





Direct Driller is a new farming magazine, designed by farmers for farmers to educate and inform the industry about direct drilling and no-till techniques, soil regeneration and soil conservation in arable and mixed farming situations.

Contact: Chris Fellows Tel: 01543 68 62 09 Twitter: @mydirectdriller

eMail: info@directdriller.com Website: www.directdriller.com





DSV UK is a subsidiary of DSV AG, Germany. DSV is one of the leading German plant breeding companies in agriculture, particularly forgae and cover crops, focusing on research, breeding, production, advisory services and sales

Contact: Emma Bedford Tel: 01366 38 82 23 Twitter: @DSVUKSEEDS

eMail: info@dsv-uk.co.uk Website: www.dsv-uk.co.uk





Edaphos is an agronomy based consultancy company with a specialist interest in soil health and the restoration of fertile growing systems.

We are dedicated to creating the solutions necessary to facilitate the best of farm system from Organic agriculture and Biodynamics to Agroecology and to some of the most intensive Growing systems in the world.

Contact: Ben Harrington **Tel:** 01235 83 49 97 **Twitter:** @EdaphosLtd

eMail: office@aivafertiliser.co.uk Website: www.aivafertiliser.co.uk





Elsoms Seeds is the UK's leading independent seed specialist and plant breeder. We breed, supply and treat high quality vegetable and agricultural seed throughout the UK, using the latest in plant breeding research and seed technology.

Contact: Grant Hawkins Tel: 01775 715000 Twitter: @Elsomsseeds

eMail: grant.hawkins@elsoms.com

Website: www.elsoms.com





FCCT are a farmer led organisation providing practical tools and advice on reducing greenhouse gas emissions, improving soil health and business resilience to farmers. We run the Soil Farmer of the Year competition, and have a Carbon Calculator and a Soil Carbon applied research project.

Contact: Becky Wilson Tel: 01579 37 23 76 Twitter: @FarmC02Toolkit

eMail: becky.wilson@farmcarbontoolkit.org.uk

Website: www.farmcarbontoolkit.org.uk





Farmdrop is an ethical online supermarket, delivering fresh groceries from sustainable food producers, on fair terms. Farmdrop uniquely combines farmers' market quality fresh food with supermarket range and convenience. We're building a better food system, where customers get tastier food, and producers receive a fairer share of the profits.

Contact: Liz Hosmer Tel: 07899 916664 Twitter: @farmdrop

eMail: liz.hosmer@farmdrop.co.uk

Website: www.farmdrop.com





The Farming Community Network (FCN) is a voluntary organisation and charity that supports farmers and families within the farming community through difficult times. Volunteers provide free, confidential, pastoral and practical support to anyone who seeks help, regardless of whether the issue is personal or business-related. Our volunteers will "walk with" anyone who seeks support and help them find a positive way through their problems – for as long as it is needed.

Contact: Helpline Tel: 03000 111 999 Twitter: @FCNcharity

FWAG is the Farming & Wildlife Advisory Group, an independent advisory service

that works with farmers and land managers. It seeks to support, enthuse and inspire

farmers and land managers to protect the environmental assets on their land, whilst

securing sustainable and profitable farm businesses, now and in the future.

eMail: help@fcn.org.uk
Website: www.fcn.org.uk





V A G East

Contact: Rebecca Inman Tel: 01223 841 507 Twitter:

eMail: rebecca@fwageast.org.uk

Website: www.fwag.org.uk





Using our novel SporSenZ sensors, **FungiAlert** offer novel soil and water health screens at a fraction of the cost and time of any competitor. The SporSenZ sensors detect only actively growing microorganisms in-the-field, which gives a true representation of the microbial community within a field or within a growing system.

Contact: Angela de Manzanos Tel: 01582 320971 Twitter: @AlertFungi

eMail: angela@fungialert.com Website: www.fungialert.com





Hampden & Co is an independent private bank that provides the personal, professional banking service that many successful people still value. We understand, and are designed to support, the challenges that landowners experience. Please come and talk to us to see how we can best help you.

Contact: Andrew Jackson Tel: 0203 841 7484 Twitter:

eMail: andrew.jackson@hampdenandco.com

Website: www.hampdenandco.com





Harper Adams' attractive rural location in the heart of England provides the best of town and country. With a reputation for excellence and innovation, the Shropshire campus offers state-of-the-art facilities and rewarding courses for undergraduate, postgraduate and lifelong learners in agriculture, agribusiness, animal, engineering, food, rural and land-based studies.



Contact: Tel: 01952 82 02 80 Twitter: @HarperAdamsUni

Website: www.harper-adams.ac.uk



As farmers ourselves, **Horsch** undertands the challenges farmers face and builds the best, innovative cultivation, seeding and spraying solutions, proven on our own farms to meet those challenges

Contact: Stephen Burcham Tel: 01733 66 78 95 Twitter: @HorschMaschinen

eMail: stephen.burcham@horsch.com

Website: www.horsch.com/uk





Suppliers and producers of agricultural seed mixtures including herbal leys, cash crops and soil improvers.

Contact: Dan Gladstone Tel: 01377 271 400 Twitter: @HmSeedsAgri

eMail: dan@hmseeds.com Website: www.hmseeds.co.uk





Hutchinsons are crop production specialists with national coverage, supplying farmers and growers with quality agronomic advice, crop protection products, precision farming, environmental services, seed, fertiliser and packaging.

Contact: Hutchinsons Tel: 01945 461177 Twitter: @Hutchinsons_Ag

eMail: information@hlhltd.co.uk

Website: www.hlhltd.co.uk





Hummingbird Technologies is a data analytics company specialising in the Ag Tech Industry. By pushing the boundaries of science and technology, our mission is to improve the efficiency of the global crop production and to feed the worlds growing population sustainably.

Contact: Hummingbird Tel: 07990 043824 Twitter: @TechHummingbird

eMail: sales@hummingbirdtech.com Website: www.hummingbirdtech.com





The **Institution of Agricultural Engineers** is the professional membership body for engineers, scientists, technologists and managers working in agriculture and the environment, agri-technology and allied landbased industries. We promote professionalism with our members through professional qualifications with the Engineering Council or the Society for the Environment.

Contact: Marion King Tel: 01234 750876 Twitter: @IAgrE

eMail: marion.king@sky.com

Website: www.iagre.org





IfA helps farmers put innovation into practice and connects them with farming research. Working with leading agricultural researchers, businesses and farmers to develop the knowledge and technologies that will make modern farming more sustainable, resilient and productive. Through practical interactive workshops, farm walks, and on-farm demonstrations, we help farmers to put this knowledge into practice.

Contact: Emily Stillwell Tel: 02476 692470 Twitter: @InnovationforAg

eMail: emilys@rase.org.uk

Website: www.innovationforagriculture.org.uk





Innovative Farmers is a network made up of a growing group of progressive farmers, growers, researchers and advisors; working together to tackle the stark challenges which farming faces. There are more than 1,700 farmer and grower members with 300 currently involved in field labs and 20 research institutions supporting them.

Contact: Hannah Norman Tel: 07834 339608 Twitter: @IFarmers

eMail: hnorman@soilassociation.org **Website:** www.innovativefarmers.org

The versatile 750A All-Till drill works effectively in stubble, after minimum or conventional cultivations and for single-pass grassland and rough pasture renovation. It creates extremely low soil disturbance at the point of drilling to help control grass weeds, particularly blackgrass. New features include the ProSeries opener and fully ISOBUS-compliant software.

Contact: John Deere Limited Tel: 01949 860491 Twitter: @JohnDeere

eMail: 31enquiries@johndeere.com

Website: www.deere.co.uk

John Straka Agriculture will be showcasing Schulte's fixed Knife technology rotary cutters. For efficient and effective stubble management. A combination of fixed knives and intermeshing rotary knives will size stubbles residues more effectively than a regular cutter. With the aim of providing a clean stubble for direct drilling with the reduces chances of hair pinning in the seed slot. Cutters range in sizes from 4.6m to 12.9m, all units fold down to 3m for road transport, Autumn demonstration's programme will follow.

Contact: Ally Wharton Tel: 07470 442860 Twitter:

eMail: ally@schulte-sales.comWebsite: www.jsagriculture.com

'Kaiapoi' is Maori meaning 'food over water'. We have imported Romney Rams from New Zealand to create the ultimate outdoor lambing ewe for the UK climate.

Contact: Jo Franklin Tel: 07919 995432 Twitter: @theladyfarmer

eMail: robert_hodgkins@hotmail.com

Website: www.kaiapoi.co.uk

With a team of expert technical advisors, an extensive product range and ongoing support that is second to none, **Kings** can meet all of your specialist crop needs, from game cover and conservation crops to green cover and forage.

Contact: Richard Barnes Tel: 07834 098784 Twitter: @Kingscrops

eMail: richard.barnes@frontierag.co.uk

Website: www.kingscrops.co.uk

Kuhn Group is the world's leading supplier for hay and silage making, baling and wrapping, bedding and feeding, soil preperation, seeding, fertilisation, spraying and landscape maintenance equipment.

Contact: Kuhn Tel: 01952 239300 Twitter: @KUHN_UK

eMail: infouk@kuhn.co.uk
Website: www.kuhn.co.uk

KWS is widely recognised as one of the key breeding companies world wide with leading maize, sugar beet and cereal products and operates in over 70 countries.

Contact: Scott Manning Tel: 01763 207 300 Twitter: @KWSUKLtd

eMail: ukmarketing@kws.com Website: www.kws-uk.com

We advise clients on such diverse subjects as succession planning, restructuring advice, mediation, management accounts and tax advice. Since 1992 we have produced benchmarking data from clients' annual management accounts and using this data have helped clients to identify strengths and weaknesses and to challenge business structures and practices.

Contact: Gary Markham Tel: 01480 445490 Twitter: @LFBAgri

eMail: gary.markham@landfamilybusiness.co.uk

Website: www.landfamilybusiness.co.uk

Stand SB9

















JOHN DEERE









LandFamilyBusiness



LEAF (Linking Environment And Farming) is the leading organisation delivering more sustainable food and farming. LEAF works with farmers, the food industry, scientists and consumers to inspire & enable sustainable farming that is prosperous, enriches the environment, engages local communities

Contact: Annabel Shackleton Tel: 02476 41 39 11 Twitter: @LEAF_Farming

eMail: annabel.shackleton@leafuk.org

Website: www.leafuk.org

Livestock & Grassland Mineral Consultancy (LGMC) offers a wide range of services and consultancy to support livestock farmers and veterinary practitioners in planning and implementing mineral supplement plans from facts not fiction. LGMC does not supply any products within its consultancy and has over 35 years of experience in this field.

Contact: Peter Bone Tel: 07785 368591 Twitter:

eMail: pete.bone@lgmc.uk.com

J.J.Metcalfe & Son are a family run agricultural engineering company, specialising in the design and manufacture of tungsten carbide wearing parts. Recognised for our extensive 'in-field' knowledge and customer support, we strive to provide farmers and growers with the tools and information to succeed.

Contact: Mike Metcalfe Tel: 01609 771124 Twitter: @jjmandson

eMail: info@jjmetcalfeandson.com **Website:** www.jjmetcalfeandson.com

For more than 30 years, Pessl Instruments has been offering tools for informed decision-making. A complete range of wireless, solar powered monitoring systems under the **METOS*** brand, and an online platform FieldClimate are applicable in all climate zones and can be used in various industries and for various purposes – from agriculture to research, hydrology, meteorology, flood warning and more.

Contact: David Whattoff Tel: 07752 426006 Twitter: @metos_austria

eMail: david.whattoff@metos.at

Website: www.metos.at

Michelin Tyre innovates and offers a full range of agricultural and construction products and services to increase your levels of profitability, productivity, reliability and environmental protection.

Contact: Gordon Brookes Tel: 01782 402 000 Twitter:

eMail: agrinfouk@michelin.com
Website: www.agricultural.michelin.co.uk

Micromix UK, now part of the global Olmix Group, is an R&D company specialising in biostimulants, crop nutrition and unique algae technology. Olmix is a world leader in algae biotechnology and green chemistry and a founder of the marine algae industry hub based in Brittany, France.

Contact: Doug Chaplin Tel: 01949 898001 Twitter: @MicromixLtd

eMail: doug@micromix.com

Website: www.micromix.com

Four year research programme funded by the Natural Environment Research Council looking at different natural methods to reduce flood risk. Conservation agriculture is one possible method we are interested in learning about, as improvements in soil health could increase infiltration and soil water storage to reduce surface runoff.

Contact: Cerard Stewart Tel: Twitter: @NERC_NFM

eMail: nfm@reading.ac.uk

Website: www.research.reading.ac.uk/nerc-nfm

The **Nature Friendly Farming Network (NFFN)** is a farmer-led organisation, uniting farmers from all backgrounds (big and small, organic and conventional) who want to manage their land in ways that deliver benefits for wildlife, soil quality, flood prevention and carbon emissions, at the same time as growing healthy food.

Contact: Martin Lines Tel: 07770 266455 Twitter: @NFFNUK

eMail: martin.lines@nffn.org.uk

Website: www.nffn.org.uk/

















































Celebrating its Centenary Year in 2019 **NIAB** is a UK leader in transferring innovation in plant science into practical agriculture through independent field, soils and agronomy research, technical training, precision agronomy, digital products and NIAB TAG membership services. NIAB also manages the Controlled Traffic Farming Network

Contact: Elizabeth Stockdale Tel: 01223 342200 Twitter: @NIABTAG

eMail: elizabeth.stockdale@niab.com

Website: www.niab.com

NRM provides expert analytical services for agriculture, horticulture, amenity and environmental companies within the land based industries. NRM's analytical capability covers all aspects of soil and plant tissue, water, inputs/outputs associated with plant growth and environmental operations

Contact: Duncan Rose Tel: 01344 886 338 Twitter: @NRMLaboratories

eMail: duncan.rose@nrm.uk.com

Website: www.nrm.uk.com

French equipment manufacturer. We build advanced and versatile no till drills, from 3m to 9m. Our openers are hybrid disc/tines, capable of excellent residue handling and fertiliser placement in any no till soil.

Contact: Novag SAS Tel: +33 5 49 24 65 43 Twitter: @NovagTForce

eMail: commercial@novagsas.com

Website: www.novagsas.com

Recycling biosolids to agricultural land in the Anglian region, focusing on crop nutrition and soil health

nutrition and son near

Contact: Megan Ward Tel: 0780 228 0489 Twitter:

eMail: mward7@anglianwater.co.uk

Website: www.nutri-bio.co.uk

Oakbank offer a solution-based approach to cover and companion cropping, carrying out large-scale farm trials to road test ideas in real UK conditions. We supply a complete range of cover crop seed and advice to help you be successful.

Contact: Ian Gould Tel: 0784 337 8701 Twitter: @oakbankgame

eMail: ian@oakbankgc.co.uk Website: www.oakbankgc.co.uk

OASIS offers support for farmers considering organic conversion and provides existing organic farmers with management advice and information. OASIS is a partnership between OF&G and Abacus. OF&G is a Community Interest Company with more than 40 years experience in the organic sector. We certify over 50% of all organic land in the UK. Abacus provides independent advice with a practical, hands-on approach to integrated farm management and agronomy for organic and low input agriculture.

Contact: Steven Jacobs Tel: 0844 8000091 Twitter: @oakbankgame

eMail: advice@organicinfo.org.ukWebsite: www.organicinfo.org.uk

Full range of Dutch Opener Products for the Horsch Drills (Duet Coulters). Crosslot Drill Discs, and Mzuri Leg Conversion For Dutch Opener

Contact: Chris Killingback Tel: 01787 242 740 Twitter: @pananglia

eMail: sales@pananglia.com Website: www.pananglia.com

The Pasture-Fed Livestock Association was set up to promote the unique quality of produce raised exclusively on pasture, and the wider environmental and animal welfare benefits that pastured livestock systems represent.

Contact: Philippa Stagg Tel: 01285 88 98 53 Twitter: @PastureForLife

eMail: membership@pfla.org.uk
Website: www.pastureforlife.org

PlantWorks is the UK's leading producer of mycorrhizal fungi and beneficial bacteria. The company offers biofertiliser products and advice on soil health and management for agriculture and horticulture.

Contact: Natallia Gulbis Tel: 01795 41 15 27 Twitter: @SmartRotations

eMail: natallia.gulbis@plantworksuk.co.uk
Website: www.smart.plantworksuk.co.uk





















Demonstrating Plocher agricultural products that rapidly promote aerobic

Contact: Jon Williams Tel: 01437 532361 Twitter: @thesoilexpert

eMail:

Leading consultancy business specialising in the set-up, design and management of grazing livestock enterprises.

Contact: James Daniel Tel: 07534 930484 Twitter: @PrecisionGraze

eMail: info@precisiongrazing.com Website: www.precisiongrazing.com

Leaders in added value and speciality arable crops, Premium Crops offer growers a complete package from seed supply and agronomic support through to storage and crop marketing. All Premium Crops contracts offer a Premium over the Conventional. Visit our stand for the latest contract terms.

Contact: Sam Bazeley Tel: 02393 632883 Twitter: @PremiumCrops

eMail: info@premiumcrops.com Website: www.premiumcrops.com

Procam invites farmers to challenge conventional approaches to arable cropping and investigate the advantages of integrating alternatives such as cover crops, green manures and livestock into future rotations.

Contact: Richard Rawlings Tel: 07740 406814 Twitter: @procamUK

eMail: richardrawlings@procam.co.uk

Website: www.procam.co.uk

The magazine for today's farmer and contractor. Unbiased new and used farm machinery test reports you can trust. Get the most from your existing machinery with our machinery management articles, time saving workshop tips, and easy to follow maintenance and electronics articles.

Contact: Fran Taylor Tel: 01959 543747 Twitter: @profitractors

eMail: info@profi.com Website: www.profi.co.uk

The Tuckwell family have been selling agricultural machinery for over 55 years and represent leading brands such as John Deere, JCB, Vaderstad, Kverneland and Greggoire Besson.

Contact: Gary Buckle **Tel:** 0771 255 6387 Twitter: @PTuckwellLtd

gbuckle@tuckwellgroup.com eMail:

Website: www.tuckwell.co.uk

QLF Agronomy/Landowner provide a range of conventional liquid fertilisers, Ad Blue and liquid carbon-based fertilisers. Find out about regenerative agriculture and increasing fertiliser efficiency through enhancing your soil biology.

Contact: George Hepburn **Tel:** 0787 687 1382 **Twitter:** @qlfuk

eMail: george@qlf.co.uk Website: www.qlfagronomy.co.uk

Dr Tom Sizmur is Associate Professor in Environmental Chemistry at the University of Reading. Tweeting about Soil Science, Biogeochemistry, Earthworms, Pollution and Biochar

Contact: Dr Tom Sizmur **Tel:** 0118 378 8913 **Twitter:** @tomsizmur

eMail: t.sizmur@reading.ac.uk Website: www.reading.ac.uk

Supplier of award winning, organically certifed, Scotland sourced, REMIN volcano rock dust (REMIN for short) that is a 100% natural SOIL & COMPOST REMINERALISER / REVITALISER, COMPOST ACTIVATOR and TONIC FOR WORMS.

Contact: Jennifer Brodie Tel: 01330 82 09 14 Twitter: @REMIN_rockdust

jennifer@reminscotland.com eMail: Website: www.reminscotland.com

microbiology in soil and organic waste.

agriculturalmarketingwales@gmail.com

Website: www.thesoilexpert.co.uk







































Rural Payments

amaari

sector mentor

Agency

RABI – the Royal Agricultural Benevolent Institution is a grant-making charity that helps farming people of all ages if they are in financial difficulty.

Support is confidential and includes one-off or regular payments, funding for things like essential household items, specialist equipment, relief farm staff, home-help and care costs.

Contact: Lucy Bellefontaine Tel: Twitter: @RABIcharity

eMail: lucy.bellefontaine@rabi.org.uk

Website: www.rabi.org.uk

We make payments to farmers, traders and land owners for the EU's Common Agricultural Policy (CAP) schemes in England including the Basic Payment Scheme (BPS).

Contact: Rural Payments Agency Tel: 0300 020 0301 Twitter: @Ruralpay

eMail: ruralpayments@defra.gsi.gov.uk

Website: www.gov.uk/rpa

UK Importer for Ma / Ag direct low disturbance disc drill for all cereals, peas, beans and small seeds for cover crops. The Ma / Ag SSP drill offers high disc and closing pressure with front and rear mounted coulters for excellent clearance in trash or thick cover crops.

Contact: Mark Harrison Tel: 01944 72 81 86 Twitter:

eMail: info@ryetec.co.ukWebsite: www.ryetec.co.uk

The Virkar direct drill. With the total contour system is the most advanced no tillage system on the market. It can work in the most difficult conditions involving stones, harvest residue and moisture. Hydraulic control of the disc knife combination allows accurate sowing in all conditions with low maintenance costs.

Contact: Stephen Berry Tel: 01256 384208 Twitter: @SamagriLtd

eMail: samagri@btconnect.com Website: www.samagri.co.uk

We are farmers and developers who have built simple software tools to help build ecology, profitability and beauty on farms around the world. **Sectormentor for Soils** is one of our key tools, it helps you understand and build soil health on your farm. Check out our free soil testing guide online and learn how to use the soil as your guide.

Contact: Abby Rose Tel: 07952 005864 Twitter: @sectormentor

eMail: info@vidacycle.comWebsite: soils.sectormentor.com

Easy to install and with a user-friendly application, **Sencrop's** connected rain gauges, anemometers, and leaf wetness trackers provide farmers quality measurements from their fields. Farmers can track real-time data, set alerts, and react in case of risks to crops. Connecting to disease or farm management models, stations collect statistics every 15 minutes and sends them to an app over a low-power, long-range network for connected objects. Sencrop designs the most efficient stations and data collection technology, passing the savings along to farmers. With a community of 5000+connected European farmers, effective and environmentally-friendly precision farming has never been so simple.

Contact: Genevieve Baumann **Tel:** +33 972606440 **Twitter:** @SencropUK

eMail: contact@sencrop.com
Website: www.sencrop.com

Low disturbance inverted T-Slot seed drills. T-Sem & T-Sem Grass for direct, min-till, pasture rejuvination and conventional drilling. Also ideal for establishing & drilling into Cover Crops, models 2.4 to 8m.

Contact: Simon Clarke Tel: 07711 409740 Twitter: @Simtech_TSEM

eMail: simon@simtech-aitchison.co.uk
Website: www.simtech-aitchison.co.uk















Sencrop





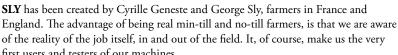
The **Sky EasyDrill** is the product of 39 years worth of product development which started after a chance meeting between two agricultural machinery manufacturers. Sulky and Moore worked together for many years to evolve the UniDrill which has since become the EasyDrill. At first Sulky provided the seed metering part of the drill and Moore the coulters but gradually an integrated design evolved to provide a drill which would work in arable conditions as well as grassland. At the start of 2013 Sky Agriculture was born as a specialist company to sell, support and develop trailed drills manufactured by Sulky including the EasyDrill.

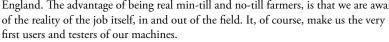


Contact: Sky Agriculture Tel: 01778 42 11 11 Twitter: @SkyAgriculture

eMail: ask@opico.co.uk

Website: www.sky-agriculture.co.uk





Contact: Sly Europe Ltd Tel: 01945 44 09 99 Twitter: @Slyagri

eMail: mwoods@slyagri.com Website: www.slyagri.com



Small Robot Company is re-imagining farming with robotics and artificial intelligence. Its vision is to make food production sustainable, by creating an entirely new model for ecologically harmonious farming. Its no-till farmbots Tom, Dick and Harry will plant, feed and weed arable crops autonomously, with minimal waste.

Tel: 07941 470 406 Contact: Sarra Mander Twitter: @smallrobotco

eMail: sarra@smallrobotcompany.com Website: www.smallrobotcompany.com





Society for the Environment

SHUTTLEWORTH

OIL FERTILITY SERVICES LIMITED

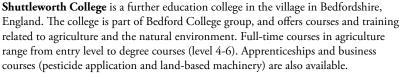
COLLEGE

The **Society for the Environment (SocEnv)** is comprised of 25 Licenced Bodies, with over 500,000 members between them. It has Royal Charter to regulate the Chartered Environmentalist (CEnv) and Registered Environmental Technician (REnvTech) professional registrations. There are now over 7,000 environmental professionals registered committed to delivering sustainability through environmental professionalism.

Contact: Society for the Environment Tel: 0345 337 2951 Twitter: @SocEnv_HQ

eMail: enquiries@socenv.org.uk Website: www.socenv.org.uk







eMail: mhorne@bedford.ac.uk Website: www.independentsoils.co.uk

Lecturer in Agriculture



Biological Farming is here NOW! It's the life in your soil that will feed your crop or eat your crop. Make sure you have healthy soild loaded with beneficial microorganisms that will release locked-up nutrients direct to plant roots.

Contact: Keryn Middleton Tel: 01366 384899 Twitter: @SoilFertilityUK

eMail: info@independentsoils.co.uk Website: www.independentsoils.co.uk



The UK's leading precision crop production service provider offering innovative technology, expert advice and technical support to improve growers' economic, agronomic and environmental performance.

Contact: Rebecca Kearsey **Tel:** 01635 204 194 Twitter: @SOYLprecision

eMail: rebecca.kearsey@soyl.co.uk

Website: www.soyl.com







Straight Line Nutrition Ltd

ustainable Soil

TT ENGINEERING

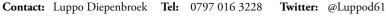
FABRICATION

UNIVERSITY OF LINCOLN

GROWING BUSINESS

Management

Offering independent consultancy into change management on your Farm. Specialising in Soils, Grassland, Nutrition and Financial performance. Regenerative and resilient farming methods a speciality. Currently Facilitating AHDB Grazing Group and Strategic Farms; Organic Groups and Vertical Grazing Groups. On farm advice on practical application and interpretation of Soil Sectormentor and Agrinet Grassland Software. Translator of Soil Signals and Grassland Signals.



eMail: luppod@gmail.com Website: www.improvingfarming.uk

Sustainable Soil Management (SSM) Leaders in the field of detailed soil analysis and practical interpretation of results. Delivering sound, practical, independent and cost effective soil management advice covering all aspects of the soil: Physical, Chemical

and Biological

Tel: 01506 42 09 50 Contact: Ian Robertson **Twitter:** @GlensideGroup

eMail: enquiries@glensidegroup.com Website: www.glensidegroup.com

Here at TigerFert, we aim to provide you with the best deal possible from start to finish. We pride ourselves in sourcing and supplying cheap alternative fertilisers to the UK, Ireland and Overseas that are £££'s below the current market. And with over 40 years' experience in the fertiliser industry we're the BEST at what we do!

Contact: TigerFert Limited Tel: 1427629155 Twitter:

eMail: Rebecca@tigerfertuk.com Website: www.tigerfert.co.uk

TT Engineering Fabrication designs and builds latest cutting edge liquid applications systems.

Contact: Trevor Tappin Tel: 07837 743371 Twitter:

eMail: ttapengineering@icloud.com Website: www.ttapplicators.co.uk

The University of Lincoln is engaged in collaborative research projects including autonomous control of crop sprayers and vision-based assessment of crop quality. It also provides BASIS and FACTS training.

Contact: Simon Goodger **Tel:** 01522 835295 Twitter: @unilincoln

eMail: sgoodger@lincoln.ac.uk Website: www.lincoln.ac.uk

Weaving Machinery have been specialising in the development of no-till equipment for over 20 years, with the launch of the GD drill in 2015 soon becoming one of the premier global no-till drills. The GD is adequately placed to cope with the environmental and sustainable challenges facing future food production.

Weaving Machinery Tel: 01386 49155 Twitter: @Weaving_Mach Contact:

eMail: info@weavingmachinery.net Website: www.weavingmachinery.net

Woodland Trust – incorporating trees into farming systems supports a more sustainable and productive agricultural sector. From simple hedgerow plantings to fully integrated agroforestry systems, trees help address issues by contributing to; shade, shelter, soil, water and pollution management, integrated pest management and product diversification.

Contact: Helen Chesshire Tel: 0343 770 5804 Twitter: @WoodlandTrust

eMail: helenchesshire@woodlandtrust.org.uk

Website: www.woodlandtrust.org.uk

Importers and distributors of Guttler GmbH cultivation machinery including the SuperMaxx tined cultivator, closing ring for direct drills, and a full range of presses and rollers.

Contact: Geoffrey Wox **Tel:** 01670 78 90 20 **Twitter:** @WoxAgriServices

eMail: info@woxagriservices.co.uk Website: www.woxagriservices.co.uk



















Food and Drink at Groundswell

Join the Evening Pasture-Fed Open Fire Beef Roast at the Earthworm Arms from 6pm on Wednesday 26th June at Groundswell.

This is a collaboration between the famous open fire chef Richard Wedlake from Devon and Luppo Diepenbroek from Straight Line Nutrition. The PFLA certified beef is marinated in stout, rum and cherry brandy before being slow roasted on a spit and served in a wholemeal bun. Accompanied with new season potatoes, coleslaw and a range of salads, this feast will be a hearty treat washed down with a local real ale from the Earthworm Arms Bar.

Meat proudly supplied from Boyd Farms Cotswold Beef and Deersbrook Farm Butchery & Farm Shop

Don't miss the evening's light-hearted entertainment: a session on "The Courage to Change" with Ruby Wax in conversation with Sam Watson Jones in the Conference Barn at 7pm.

The cost of the meal is £15 and tokens can be purchased from the Straight Line Nutrition Stand. Food will be served from 6pm to 7.30pm and the bar is open till late!

























Dale Drills have been helping farmers to drive down the cost of crop establishment for over 20 years. Founded by Lincolnshire farmer, John 'Edward' Dale, the company has been a long term advocate of low impact cultivation – recognizing the importance it has for improving soil structure and the associated benefits of improved fertility and increased yields.

Now run by Edward's two sons, Tom and James, who grow 3500 acres of combinable crops (utilising No-Till and CTF techniques) in North Lincolnshire, the



company pride themselves on their technical expertise and practical understanding.

The companies Eco-Drill assembly combines technology with a versatile but simple design to ensure accurate, effective and low cost establishment. Fitted with two 12mm wide, low disturbance tines, the Eco-Drill assembly can be quickly adjusted to provide 5"(12.5cm) or 10"(25cm) row spacings. Attached to the



pressure, allowing operators to set the drill to the conditions.

Dale Drills have always maintained its tine opener offers greater versatility as well as number of other benefits over disc openers. The additional weight disc openers require in order to gain penetration is avoided when utilising the Eco drilling assembly, reducing the amount of compaction caused by the drill. This is amplified by the fact that a lower HP and therefore lighter tractor can be used to pull the drill or alternatively a

preserve moisture in a dry period whilst also avoiding smearing in wetter soils.

With increasing interest from overseas, Dale Drills recent developments have focused on wider machines with a new Eco-XL being tested this spring to great success. The machine features a new layout with an 8500Litre (6t) Hopper followed by a toolbar fitted with the companies proven Eco Drilling assemblies.

Low ground pressure, 710mm wide land wheels are located towards the front of the

DALE DRILLS

THE FUTURE OF EFFICIENT CROP ESTABLISHMENT

drills main chassis via a parallel linkage, and followed by a depth setting press wheel, the drilling assemblies are able to independently contour follow ensuring very accurate seeding depth even at the company's widest working width offering of 13.5m. Each assembly is pressurised into work via a hydraulic ram which is supplied with an adjustable hydraulic

wider drill can be used reducing the amount of ground trafficked. The simplicity of a tine opener removes the need for expensive bearings as well as reducing downtime for repairs. The Eco opener will avoid 'hair pinning' of residues ensuring positive seed-soil contact for rapid germination. The narrow, forward facing point of the Eco opener will

toolbar, followed by two rows of drilling assemblies which remove any surface compaction. Wider models are fitted with wing stabilising wheels, located on the same axis as the main land wheels to avoid the need for expensive and complicated caster wheels.

The Eco-XL is available in widths from 9 – 13.5m, all of which hydraulically fold down to less than 3m wide and 4m high for road transport.



Engineered specifically with Controlled Traffic Farming systems in mind the Eco XL can provide unbeatable output with the same unrivalled accuracy and efficiency common across the entire Dale Drills product line.

Featuring the same 12.5mm tine, adjustable row spacing and parallel linkage mounted drilling assemblies as the S, M and L model Eco Drills, the Eco XL can also boast even greater tool bar clearance to further improve its capabilities in heavy trash situations.



Sly was founded by two farmers with a passion to develop innovative equipment to help farming become more efficient, sustainable and profitable. Through our

extensive network of farmers and contractors we have listened, learned and formed partnerships to offer our customer tools to solve the ever-growing challenges in agriculture.

Our products include Strip tillage for row crops such as Maize, Sugar Beet, Vegetables & OSR. Our Boss drill for no tillage of a wide range of crops with what we believe to be the most reliable, robust

and adaptive coulter on the market today. Liquid and dry fertiliser systems for side dressing crops as well as precision planting plating products to give active coulter down pressure and seed spacing.

After years of experience in conservation tillage machinery, we have travelled the world to find a no-till coulter design we could adapt for European conditions. Weather and climate is constantly changing, conditions change, residue levels change, so choosing the correct coulter is vital to your success.

We quickly found out that the no-till drill which could fix most of these issues, is available in Australia, pioneers of the No-till technic, and made by BOSS. Cyrille and George then proposed to BOSS, a partnership whereby Sly and BOSS share experiences and technology.

We have then successfully combined years of BOSS's experience in the toughest conditions, with our knowledge of the European requirements and we end up with a new and innovative no-till drill.

All the products at Sly are focused on reducing soil degradation, compaction and to reduce energy inputs and maximising profit to farmers and contractors.





Simtech Aitchison

Seed drills for direct drilling and pasture rejuvenation

Simtech T-Sem for true versatility

Simtech T-Sem inverted T-slot tine coulter drills are probably the most versatile of all the direct drills on offer today. Their heritage is from the inverted T-Slot coulter, initially developed in New Zealand for establishing new seed into living grass, which is probably one of the most difficult direct drilling challenges. From Simtech importing these drills, the European T-Sem was born and has progressed from a simple 3m machine to the wide range of drills we see today.

The unique T-Slot coulter creates a perfect environment for seed to germinate and develop. At only 10mm wide at its leading edge it is designed to cause as



little surface disturbance as possible. Preceded by a vertical cutting disc, that creates a path through surface trash, the inverted T-slot coulter ensures that the seed is always placed on a firm base, with

the vibrating tine creating the tilth to cover it. In soil held together with a large amount of root material the T-slot coulter creates a void in the soil, which is like a mini greenhouse, maintaining humidity to enhance the speed of germination, but at the same time allowing sunlight to penetrate through the partially open slot. This scientifically proven feature allows small seeds to be placed deeper than would normally be viable into an environment which is much less likely to result in poor germination or seedlings drying out.

The T-Sem is the ideal drill for a farmer in the early stages of converting to direct drilling. Versatile enough to cope with all the other drilling tasks, such as min-till or ploughed surfaces, but none the less a dedicated and powerful direct drill able to handle large amounts of surface trash and hard or wet ground conditions. The heavy duty 30mm square double coil tines are strong enough to direct drill crops such as Beans to a depth of up to 10cm (4") in most soils, once again ensuring that the seed is always placed in the correct

environment for its development, not at a depth limited by the drills capability.

The T-Sem is also uniquely placed for the establishment of cover crops, which is enabled by its ability to work in high levels of crop residue and at a time of year when the soil can be quite hard to penetrate. The subsequent drilling of the cash crop into the cover crop is also a job that suits the T-Sem's ability to work in large amounts living vegetation, once again placing the seed in the best environment for its rapid development.

T-Sem drills are now available for all situations. There is a range of 4 Vineyard models from 1.1m to 1,8m and two pasture rejuvenating models of 2.4m and 3m. T-Sem arable drills start with 3.0, 3.5 & 4.0m fixed frame models, progress through 4.8m & 6.0m mounted folding models. A new range trailed drills starting at 6.0m, was due to be launched this year, but this has now been put back to Spring 2020. All drills are available with liquid and granular fertiliser options.





Groundswell is a great opportunity to speak & learn more about the forgotten art of soil management and the latest no-till equipment to make the most of the soils we have and wish to improve.

At Ryetec we are pleased to be part of Groundswell, a refreshingly different opportunity to the normal machinery



show or agricultural conference which being farmer led offers what famer want and not what exhibition organisers think farmers want.

We have a great opportunity to show of the Ma/Ag no-till disc drill alongside other machines on the market. It is easy to see (or not!) the minimal ground disturbance of the single straight serrated disc and smaller angled opening disc which allow the seed to be perfectly placed in the ground at a uniform depth, thanks the independently floating coulters. Depth is controlled by the following press wheel with individual depth adjustment and the high closing pressure of the concave rubber press wheel closes the slot completely and firms the seed for excellent soil to seed contact with rapid and even germination.

Minimal disturbance drilling has many advantages, the first being minimised germination of dormant weed seeds, the more ground you "work" the greater the problem. Second is moisture retention, especially in a dry drilling season where the seed can strike into moist soil below the surface and be firmed in quickly to conserve limited moisture for a quick germination and growth. Next, the Ma/Ag drill is low draught, minimising the tractor size saves on

fuel, compaction and depreciation and keeping establishment costs to a minimum. Effective weed control associated with minimal disturbance drilling reduces the requirement for expensive chemical control and any effect it might have on the environment and of course less competition for the growing crop should translate into greater yield.

The Ma/Ag has many great design features to make it easy to use and effective at its job for consistent and reliable crop establishment, come and see it at work on our plot at Groundswell, a warm welcome and some cheerful banter await!

Below: The MAAG SSP range of drills have been developed to offer a simple and robust solution to virtually every agricultural crop establishment situation.





The Sky EasyDrill is the product of 40 years' worth of product development which started after a chance meeting between two agricultural machinery manufacturers. Sulky and Moore

worked together for many years to develop the UniDrill which has since evolved into the EasyDrill. At first Sulky provided the seed metering part of

Stand D2

the drill and Moore the coulters but gradually an integrated design evolved to provide a drill which would work in arable conditions as well as grassland. At the start of 2013 Sky Agriculture was born as an independent specialist company to develop, sell and support trailed drills manufactured by Sulky including the EasyDrill.

The EasyDrill is one of very few direct drills that can truly be advocated as a direct, a mintill, a grassland and a cover crop drill. Furthermore, on well consolidated ploughing it can also be used in conventional systems. It's low

disturbance disc coulter and press wheel not only ensure minimal weed seed germination, they also keep hp requirement to a minimum. A 6m EasyDrill typically takes 180hp to pull which reduces fuel consumption, tractor weight and damage to the soil structure when drilling in damp conditions.

The EasyDrill now benefits from the 10 series coulter line. This retains all of the attributes which built the drills reputation over the last few decades but with these added features;

Sealed disc and press wheel bearings to improve longevity.

Central support arm has been made more curvaceous to aid the flow of debris.

New skim coulter and coulter tube design for more accurate seed placement.

New manufacturing process means there are fewer parts and easily replaceable wearing parts.

These new features make the EasyDrill the most versatile seed drill on the market and its adaptability to any condition means it excels in all fields.



HORSCH

Farming with passion

The Avatar SD is a compact seed drill that is ideal for direct seeding or catch crop populations. In cases of black grass

resistance, the Avatar's low disturbance of the seedbed when sowing with the single disc coulter helps prevent the black grass from germinating.



The Avatar SD is available in 3, 4, 6, 8 and 12m working widths and due to its high tare weight, the new single disc coulter is ideal for direct seeding. The Avatar SD in 4m working width weighs 5,800kg, 9,300kg at 6m and 19,160 kg at 12m working widths. Despite the high weight necessary for a direct seed drill, the horsepower requirement of the Avatar SD is low as the SingleDisc coulters are arranged in two bars.

Avatar SD uses the well-proven hopper and metering components of the Pronto DC seed drills. Depth control of the coulters is carried out via the well-proven rubber suspension of the Pronto in a larger and stronger version which is required due to the high coulter pressure.

The coulter pressure of up to 310kg guarantees penetration into the soil. The strong coulter frame eliminates sideways movement, which ensures that the coulter keeps to the set sowing depth even on uneven soils. A press wheel then closes the seed furrow and consolidates the seed row.

A 2,800-litre hopper can be replaced with a double hopper version (3,800 litres) for grain and fertiliser and a 200-litre microgranular unit is available with either hopper version. The machine is controlled and monitored by a standard ISOBUS terminal.

When we thought about a perfect slogan for HORSCH, there was one that quickly came to mind: "Farming with passion". For this passion can be found in each of our products and also in the actions of every single HORSCH employee. Everyone in the company - from the management to the mechanic - lives the passion that makes a simple product a unique one that excels due to innovation and uncompromising quality and can be adapted perfectly to the requirements of every single farmer in every country. We have always been and will always be farmers who intensively deal with a sustainable cultivation of the soil. Farming has a future and it is worth it to work hard - for the farmer as well as for the manufacturer of agricultural machinery. Each time a farmer looks into the rear-view mirror of his tractor and sees red he is to know that he opted for uncompromising quality.

The Avatar 6 SD features a 3,500 litre hopper and 26 coulters, with the option of a 200 litre micro granular unit.



John Deere 750A All-Till drill gets new ProSeries opener

John Deere's new ProSeries opener for the 750A All-Till drill can now be retrofitted to existing machines. This replaces the 90 Series opener that has been a feature of the drill since its introduction in the mid-1990s, with global sales of over two million units.

The new opener is designed to provide even less soil disturbance, more consistent seeding depth, better seed to soil contact and improved slot closure, and features



only one grease point for minimal annual maintenance. In addition for 2019, John Deere offers new, fully ISOBUS compliant software for both the 750A All-Till and 740A Min-Till drills.

The 6, 8 and 9m 740A Min-Till and 3, 4 and 6m 750A All-Till cover the range of drilling systems from conventional to zero tillage. A key benefit of the 750A is the extremely low soil disturbance created at the point of drilling, which fits well with cultural methods for controlling grass weeds, particularly blackgrass.

The ProSeries opener further reduces soil movement by utilising a narrower seed boot that fits tighter to the disc, creating less soil throw and providing 40 per cent more consistent seeding depth. Wear life is increased, as the seed boot is hidden more behind the opener disc and subjected to less soil contact.

The flexible press wheel is both narrower and larger in diameter, so it fits in the seed

trench better, and now features a doublerow bearing for twice the service life. This redesign helps to improve seed to soil contact and keeps each seed at a consistent depth, for more even crop emergence and potentially higher yields. Better emergence is also provided by a more aggressive serrated closing wheel, which has improved the closing function by 50 per cent.

The seed boot mounting bolt is now replaced by a flag pin which keeps the boot from moving, to increase accuracy and reduce wear. The seed tab, which prevents seeds bouncing out of the trench, has been redesigned to better fit the trench and provides twice the wear life of the previous version. Discs can be changed 45 per cent more quickly to further reduce time spent on maintenance.

The new, fully ISOBUS compliant software works with both John Deere and third party displays. As well as managing features such as section control, the software prevents overdosing in tramlines and provides a predosing function.



In addition, the predosing function prevents gaps in the field when setting off from a standing start. The operator presses a



Previously when drilling with tramlines the system simply divided the same amount of seed to fewer openers, which led to slight overdosing in the drilled rows. This latest software reduces the total amount of seed to maintain the correct seed rate across the whole field.

button on the display and the metering system starts immediately, filling the system with seed and preventing any areas being missed.

For further details of the John Deere drill range visit www.deere.co.uk/en/drills.





P Tuckwell are a family firm providing quality machinery and the latest in farm technology across Suffolk, Essex, Hertfordshire, and Bedfordshire.

We provide farming solutions which reflect the challenges and opportunities that farmers face today through continually exploring the relationship between machinery and technology in agricultural production systems.

The 750A drill is an all-till solution that easily handles high organic environments while giving you exceptional depth accuracy and emergence with a single pass. With

minimal soil disturbance, it also helps to protect and improve soil health by encouraging biodiversity, reducing weight and trafficking,



and improving chemical efficacy. Together with John Deere's industry-leading technology, you have the data to improve

decision making and reduce overall establishment costs.

The 750A requires a minimum of 100 to 175hp and can work with speeds up to 15km/hr depending on conditions, at seeding depths from 13 to 90mm. The seed is applied at a rate of 1 to over 400kg/ha via a central 1000 litre hopper and single metering system on the 3m version, 1800 litre hopper and a single metering system on the 4m unit, or 2300 litre hopper and twin metering units on the 6m model, which folds down to 3m for transport.

A single 46cm angled disc opens the furrow at 16.6cm row spacing's, and has a depth gauge wheel mounted alongside, providing excellent seeding depth control. A semi-pneumatic press wheel pushes the seed to the bottom of the furrow for a perfect seed to soil contact and a serrated cast iron closing wheel to complete the job.

There are 18 openers on the 3m model, 24 on the 4m and 36 on the 6m version. There

is also adjustable hydraulic down pressure of up to 250kg, although typically this would be below 50kg for most situations, which independently control each seeding assembly to handle the toughest soil and crop residue conditions. This means the drill delivers consistent seed depth and excellent seed to soil contact for maximum germination.

Fore to aft clearance is 1.2m, and underframe clearance 60cm, to allow a virtually unobstructed flow of crop stubble and soil residues through the machine. In operation, the 750A creates very little soil disturbance, outside of the small slot opened by the single disc. This makes it ideal for drilling into stale seedbeds created for Black grass control, where unnecessary soil movement could encourage further competitive weed seed germination and subsequent yield loss.

Updates for the model year 19 machines include the new pro-series opener offering even less soil disturbance, easier slot closure, a wider working window and many durability improvements

Other features include row marker and automatic tramline systems, micro metering for fine seeds, and an integral two-point hitch. All models incorporate hydraulically actuated brakes or an optional air braking system.

Below: Ultimate precision for robust yields. Engineered for the toughest conditions and maximum area performance, the 740A pneumatic drill for minimum tillage and the all-round 750A pneumatic drill from John Deere.



Weaving's introduction to zero-till crop establishment began over 20 years ago and has adapted to meet the demands of the UK farm. With continuous refinements and futureproofing since, Weaving has now developed the GD coulter, a disc coulter design which satisfies all drilling systems. The GD coulter provides remarkably low soil disturbance, has a

very low draught requirement of 40HP per metre along with an excellent service life.

Stand D5

The major advantage of the GD Drill is its

adaptability to satisfy all drilling systems, soil types and conditions. This provides users with the flexibility to approach zero-till alongside traditional crop establishment methods. A skilled team of service engineers and a committed parts department ensure that Weaving products will meet their customers every expectation over the extended period of its working life.

The principal behind the GD coulter design is based on a double disc arrangement, mounted on a 25° angle off the vertical which is able to pivot around a central kingpin mounted within the coulter body. The larger leading outer disc cuts an opening slice in the soil whilst the smaller inner disc is in effect undermining the 'upper' side forming an opening for the seed to be placed precisely.

This process means that only one side wall is created and the seed is placed onto a ledge enabling the roots to grow vertically downwards and allowing it to grow up through the flap in an inch band. This method minimalizes hair-pinning and double-smeared side walls whilst also preventing vertical soil compaction because the disc is not driven into the ground vertically.



The lifted wall of the soil is firmed down onto the seed by a single press wheel. The press wheel also acts as a depth regulator for the disc coulters. Drilling depth is adjusted by moving a single pin through a bank of holes with a depth range of 16-144mm in 16mm increments. Coulters are individually pressurised by a hydraulic system providing up to 200Kg of downwards pressure helping to maintain consistent contact with the ground and follow contours and undulations. This refined design aided by an inter-row clearance of 1 Metre has resulted in a coulter that is able to work in extremely trashy conditions and cover crops.

Since Groundswell in 2018, the range of drills has had a facelift; which includes a reconfiguration of the tool bar which is now positioned below the front tank. This adjustment significantly improves visibility of the coulters from the cab, making lighter work for the operator. Other changes mean that tighter headland manoeuvres are now achievable with the utilisation of a 2-point linkage hitch, a small seeds hopper and applicator have been incorporated into the main tank and the downwards coulter pressure for weight transfer has been greatly improved.

The 3 Metre mounted GD Drill is an affordable, flexible and manoeuvrable drilling system for all farm sizes. A slim line 1,600 litre hopper provides operators with ample capacity. To meet the demands of large farmers and contractors, Weaving offer a range of 4 to 8 Metres trailed models which run on flotation tyres coupled with low power requirements from 35HP per metre, which result in reduced compaction. A two section hydraulically folding toolbar maintains transport widths of under 3 Metres.

All models are fitted with an easily accessible pneumatic metering unit accompanied by a range of RDS controls. making calibration fast and simple. A closed hydraulic circuit provides individual coulter pressure (of up to 400Kg), helping to maintain consistent ground contact across undulations with an accurate sowing depth.





Cross Slot® No-tillage systems

Seed and fertilizer drills that carry the Cross Slot® brand are widely recognized as the pinnacle of no-tillage systems, but only farmers who have one know that their crops are established with the lowest input cost, have the highest seed germination rates, increase organic matter in their soil, and achieve consistent optimal crop yields.

Nothing beats a Cross Slot when it comes to seeding arable crops.



Cross Slot has faced a number of barriers to wide adoption by UK farmers, but those who

operate our machines know they provide superior performance, and respect their rugged engineering and reliability.

For many years, the key benefits of Cross Slot have not been valued by most UK farmers and the brand has become recognized as the "Rolls Royce" of seed and fertilizer drills, priced accordingly, and purchased by few.

But this is changing, and with entry prices now starting from £25,000 per metre of drill width, Cross Slot now offers the best value for money seed and fertilizer drill in UK.

Over the last eighteen months the New Zealand based Baker No-Tillage has been restructured and is now trading as Cross Slot IP Limited (CSIP).

During this time CSIP has been focused on rationalizing supply and reducing manufacturing costs by out-sourcing components sub-assemblies, and complete machines at internationally competitive prices, and built to the Cross Slot specification.

Given the reality of climate change and its adverse effects on agriculture the only notillage technology farmers should invest in is the one that out-performs all others by a significant margin when measured against a list of essential functionality of the opener – and that technology is Cross Slot.

The effectiveness of generic opener types has been scientifically analysed, and are reported on in the Guide on page ? The Cross Slot opener, which has a single disc

and winged side blades, offers significantly superior performance to any other disc or tine based opener.

And farmers should not be misled in thinking that an inferior copy of the Cross Slot opener performs just as well as the original.

Cross Slot is also the only technology that has been scientifically measured to sequester carbon back into soil and increase organic matter, which has been seriously depleted worldwide from tillage and excessive use of inorganic fertilizers.

CSIP is in the early stages of building a global network of licensees and has established a separate and dedicated replacement parts operation to co-ordinate and manage the sourcing and supply of parts.

Cross Slot Europe Limited (CSE) has been established to service the EU, Ukraine, Russia, and other CIS countries.

In UK, Primewest's efforts have largely been responsible for Cross Slot technology being recognized as the "best in the business", and in continuing to work in co-operation with CSE, we anticipate that Cross Slot technology will be adopted by an increasing number of farmers in future.

Distribution arrangements are in place covering Central and East European countries and following a recent no-tillage conference in Kiev, and the shipment of 2 x 10 metre machines to Russia there is a

growing interest in Cross Slot technology from large scale farmers.

CSIP has appointed a new licensee for North America that is producing its own machines fitted with New Zealand assembled openers and plans are being implemented to have opener components manufactured and assembled in locations close to the major markets of Europe and North America.

Unlike any other brand of no-tillage machine, Cross Slot has evolved over 30 years through dedicated efforts of soil scientists and engineers who first asked the question at Massey University in New Zealand "what is the soil environment required by seeds to optimize germination and crop yield?"

Answering that question is what led to the evolution of Cross Slot as we know it today. And there is more to come with refinements of the present opener, and a new precision planter for crops such as sunflower and corn.

Dr John Baker, who lead the team at Massey University and continues to oversee all R & D will be speaking at Groundswell 2019, and where Cross Slot will be demonstrating its superior in-field performance. So come and see for yourself.

Below: Primewest 5m drill into flint ground in the UK.



VIRKAR

Samagri Ltd are machinery importers and farmers based in the South of England. We are a family business, farming 700 hectares of Arable. Alongside this we run a machinery import business. We are the sole importers for the well-known Kockerling brand and have recently

secured the import rights for the Spanish Virkar Seed Drill. While looking at direct seeding to reduce cost and our carbon footprint on the farming side of the



business, Sam Berry head of farming, came across the Virkar Dynamic Seed Drill. It appeared to have the features we were looking for in a direct drill which was not available on any other manufactures machine. After dialog with the Spanish company and a visit to Spain to see the machine working. It was an easy decision to sign up and import the machine to the UK. And so here we are showing the seeder in the UK for the first time.

The Virkar Dynamic drill is available in 4.5/5/6 meter working widths with bigger sizes in development for the future. The drill is semi mounted and has a hopper capacity of 5300lts. The drill comes on flotation tyres 550/45 22.5 which ensures compaction in field is kept to a minimum.

Sowing rate from 2 to 380 kg/ha is achievable from one feed roller. Row width is dependent on customers preference and can be either 19cm or 25 cm row. The modular coulter design consists of a turbo cutting disc, which is on a hydraulically pressured arm which ensures the turbo disc can cut a clean slot in the soil and create a micro tilth in front of the following seeding tine. Working independently from the turbo disc is a low disturbance seeding tine that not only places the seed at a very even depth, but because of its design the seeding tine cleans the slot of any trash leaving only clean soil in the slot, this means great seed to soil contact. Following the seeding tine

is a v shaped double press wheel which closes the slot. The drilling coulters are pressurised via a large accumulator. All the coulters are linked together, this allows for very effective ground contour following with every coulter being able to travel up to 35 cm. This means an even seed depth is achieved even in the most uneven terrain. Having the drill working off this accumulator means it is easy to change the pressure of the coulters, by in cab control, this allows each coulter to apply 0/280kg of pressure to the ground. The seed depth is easily adjusted, the v shaped double press wheels are adjusted by a simple pullout spring-loaded pin meaning the wheels can then be lifted, up or down for easy change of seeding depth.

The 5300ltr seed hopper has the option of splitting the tank 65% seed 35% fert running through 2 metering systems. In addition, liquid Fert can be specified as option.



Novag

Next Generation Farming

In periods of climate change and economic pressure, farmers cannot do business same as usual. Only healthy soils will lead to healthy lives – and healthy profits. Novag takes farmers into the future: Modern notillage seed drills designed and produced in

France ensure greater yields, reduced costs in machinery and healthier soils. That's no-tillage the Novag way.



Gaining ground

NOVAG drills are unique in Europe. They stand apart because of their opener design and the seed micro environment obtained by the combination of 2 winged blades, one at each side of a central notched disc.

The slot holds the moisture in the soil in a micro-environment which is ideal for the seeds.

Our openers handle dense residues very well thanks to the blade/disc combination. The seed placement by the blades, on the side of the slot, prevents hairpinning problems which are otherwise common with disc drills. They also band fertilizer very effectively at 2-3cm from the seed, without putting it in contact with the seed.

Our machines give you a wide choice in crop sown, residue management, and crop rotations. They help you to succeed in conservation agriculture. Soil disturbance is kept low, thus minimizing weed growth, even at high speeds.

Novag offers its no-tillage drills in different working width. No matter what your task is — we've the perfect solution. The drills come in an array of working widths for different uses: 3 m, 4 m, 6 m, 8m, 9m or higher upon request. One of the key advantages of Novag direct drills is the significant time saving — a bonus in terms of productivity

and when there is only a short window for drilling.

All models feature the IntelliForce depth control system as standard. This allows the drill to automatically adapt to changes in the soil type. Our electronic system is entirely designed in house. Our monitor provides a refreshing user experience, combining our exclusive depth control system, up to 4 product delivery and seed rate monitoring all in one place.

Novag frames are extremely robust. They completely match our heavy-duty openers. Their layout is the answer to both weight distribution on the openers, and load transfer on the tractor for improved traction.

Where we are coming from

Our founders Antoine Bertin and Ramzi Frikha met each other 10 years ago, in New Zealand. Both were deeply interested in no tillage farming equipment. There, they noticed that most yield record farmers were using very advanced systems in order to be

so successful. At the same time, more and more European farmers seemed to realize conventional farming had reached a wall.

The first idea of Novag was a partnership with a New Zealand company around their no tillage openers. This cooperation came however rapidly to an end, and our team decided to develop our unique opener, with agronomical advantages and efficiency in mind.

The first complete drills were delivered in France in 2012, and they have been followed by many others. Our team never stopped working closely with the Novag users, always improving our openers, systems, and machine design.

In 2017, for the first time, NOVAG took part in Agritechnica, the world leading farm machinery tradeshow, showcasing the newest addition to the product line: The T-Force 840, a powerful implement on tracks.

All our machines are assembled in our factory and tested around our hometown of Fressines, in the west of France.





KUHN Group is specialised in the design, manufacture and distribution of quality machines, parts and services adapted to tomorrow's agriculture.

Present on 5 continents and with over 190 years of experience, KUHN Group is the world's leading supplier of agricultural machinery for hay and silage



making, baling and wrapping, bedding and feeding, soil preparation, seeding, fertilisation, spraying and landscape maintenance.

KUHN Farm Machinery are now entering the conservation agriculture market with the introduction of the the AUROCK all till drill. The AUROCK gives the operator a flexible approach when it comes to crop establishment. The AUROCK seed drill offers a working width of 6 m fitted with a single (R) or

dual metering unit (RC). It is therefore possible to mix two different varieties in one seeding unit or to sow one row in two whilst managing the seeding depth independently. Provided with remarkable modularity, the AUROCK seed drill can be equipped with an integrated cutter roller with adjustable pressure to operate efficiently in all cover types. The transport wheels are positioned between the opener disc and the coulter bar. The machine can also be equipped (optional) with a whole-width wheel train for seeding within a min-till cropping system. The offset press wheels prevent soil from building up at the front and amplify the versatility beyond direct drilling. They facilitate the passage of plant residues and reduce pull power requirement. Their large diameter of 900 mm also reduces rolling resistance.

The furrow is created at the front of the AUROCK seed drill by two rows of

opener discs. In order to adapt to various situations, two types of profiles are available:

- A corrugated disc of diameter 460 mm for work on prepared soil with possible soil mixing,
- A 430 mm diameter embossed disc for cutting residues efficiently and minimising soil ejection.

Seed establishment is carried out by the double-disc seeding unit mounted on the parallelogram for optimum delivery, accuracy and perfect ground following. A central pivot point between the coulter bar and the chassis ensures seed placement in the furrow, both on a slope and in a bend as well as perfect following of the seeding unit behind the opener disc on curves. The opener disc and seeding unit assembly form the triple disc that KUHN have been loyal to for over 40 years.



The AUROCK seed drill is an ISOBUS compatible machine, available with CCI 1200 or CCI 50 terminals (ISOBUS certified by the AEF). For comfort, a joystick is also available as optional equipment. Regardless of the selected control terminal, the operator has a userfriendly and intuitive interface developed especially by KUHN. A simple press of a button at the headland activates the lifting of the front tools, whilst stopping the metering unit(s), ensuring perfect seeding to the edge of the field. No seed remains on the surface, a problem often encountered in the practice of direct seeding.

The AUROCK also offers a new KUHN feature, VISTAFLOW tramlining valves, which provides universal tramlining and blockage detection system, giving the operator a very flexible approach to any drilling situation.



DIRECT DRILL COMPARISON CHAR

Unique Features:Low horsepower requirement as the SingleDisc coulters are arranged in two bars.Avatar 12 SDTrailed12m25cm5800 litres Unique Features: Compact machine with working widths of up to 12 m at less than 3 m transport width

Seed & Fert

11240

48

£139,470

Ξ	СТ	D	RI	LL	C	10	1P/	AR	ISC	1C	1 C	H	AR	T																						
		H	0R	SC.	H						<u></u>	Јон	IN D	EEF	RE								W	Ξ/	11	MACH	I G					V	/IF	RK	Α	R
	Avatar 8 SD	Unique Features:	Avatar 6 SD	Unique Features:	Avatar 4 SD	Unique Features:	Avatar 3 SD	Model	HORSCH	Unique Features:			750A	Model	JOHN DEERE	Unique Features:	GD8001T	Unique Features:	GD6401T	Unique Features:	GD6001T	Unique Features:	GD48001T	Unique Features:	GD4001T	Unique Features:	GD3000M G&F	Unique Features:	GD3000M	Model	WEAVING MACHINERY	Unique Features:		Dynamic	Model	VIRKAR
-	Trailed	200-litre micro-	Trailed	Hopper can be	Trailed	Up to 310 kg co	Trailed	Format		7 degree disc a			Trailed	Format		Compact, simple	Trailed	Compact, simple	Trailed	Compact, simple	Trailed	Compact, simple	Trailed	Compact, simple	Trailed	Compact, simpl	Mounted	Compact, simpl	Mounted	Format	NERY	Virkar total contour system	Trailed	Trailed	Format	
	8m	granular unit is av	6m	replaced with a de	4m	ulter pressure - ru	3m	Width		ngle requires min	6.0m	4.0m	3.0m	Width		to use and set up.	8.0M	to use and set up.	6.0M	to use and set up.	6.0M	Compact, simple to use and set up.	4.8M	Compact, simple to use and set up.	4.0M	le to use and set u	3.0M	le to use and set u	3.0M	Width		tour system	6.0m	6.0m	Width	
- !	16.7cm	200-litre micro-granular unit is available with either hopper version	16.7cm	Hopper can be replaced with a double hopper version (3,800 litres) for grain and fertiliser	16.7cm	coulter pressure - rubber buffer suspension	16.7cm	Rows Spacing		7 degree disc angle requires minimal power requirement	166mm	166mm	166mm	Rows Spacing		1.5m between rows for trash	166mm	1.5m between rows for trash	166mm	1.5m between rows for trash	166mm	1.5m between rows for trash	166mm	1.5m between rows for trash	166mm	up. 1.2m between each row	166mm	up. 1.2m between each row	166mm	Rows Spacing			190mm	250mm	Rows Spacing	
	3500 litres	version	3500 litres	00 litres) for grain and fertil	2800 litres		2800 litres	Hopper			2300 litres	1800 litres	1800 litres	Hopper		clearance and ease of mainte	5,000 Litre	clearance and ease of mainte	5,000 Litre	clearance and ease of mainte	5,000 Litre	clearance and ease of mainte	5,000 Litre	clearance and ease of mainte	5,000 Litre	w for trash clearance and	1,600 Litre (50:50 split)	w for trash clearance and	1,600 Litre	Hopper			5300 litres	5300 litres	Hopper	
	Seed & Fert		Seed & Fert	iser	Seed & Fert		Seed & Fert	Seed/Fertiliser			Seed	Seed	Seed	Seed/Fertiliser		nance. Full iSOCAN control	Seed only	nance. Full iSOCAN control	Seed with fert option 9,300Kg	nance. Full iSOCAN control	Seed with fert option 9,000Kg	nance. Full iSOCAN control	Seed with fert option 8,300KG	nance. Full iSOCAN control	Seed with fert option 8,000KG	ease of maintenance. Sim	Seed & Fert	ease of maintenance. Sim	Seed	Seed/Fertiliser			Seed	Seed	Seed/Fertiliser	
	9900 48		9300 36		5800 24		4620 18	Weight			6300kg	4500kg	2900kg	Weight		Is and iSOBUS	10,800Kg	Is and iSOBUS	9,300Kg	Is and iSOBUS	9,000Kg	Is and iSOBUS	8,300KG	Is and iSOBUS	8,000KG	nple electronic	3,000Kg	nple electronic	2,500Kg	Weight			6000kg	6000kg	Weight	
	0 48		36		24		18	Coulters			2 rows - 36 x 457mm	2 rows - 24 x 457mm	2 rows - 18 x 457mm	Coulters		Compact, simple to use and set up. 1.5m between rows for trash clearance and ease of maintenance. Full iSOCAN controls and iSOBUS ready metering system with GPS forward speed sensor.	48 coulters over 2 rows	Compact, simple to use and set up. 1.5m between rows for trash clearance and ease of maintenance. Full iSOCAN controls and iSOBUS ready metering system with GPS forward speed sensor	38 coulters over 2 rows	Compact, simple to use and set up. 1.5m between rows for trash clearance and ease of maintenance. Full iSOCAN controls and iSOBUS ready metering system with GPS forward speed sensor.	36 coulters over 2 rows	1.5m between rows for trash clearance and ease of maintenance. Full iSOCAN controls and iSOBUS ready metering system with GPS forward speed sensor.	28 coulters over 2 rows	1.5m between rows for trash clearance and ease of maintenance. Full iSOCAN controls and iSOBUS ready metering system with GPS forward speed sensor	24 coulters over 2 rows	Compact, simple to use and set up. 1.2m between each row for trash clearance and ease of maintenance. Simple electronic RDS metering system with GPS forward speed sensor.	18 coulters over 2 rows	Compact, simple to use and set up. 1.2m between each row for trash clearance and ease of maintenance. Simple electronic RDS metering system with GPS forward speed sensor.	18 coulters over 2 rows	Coulters			32 Tine coulters	24 Tine coulters	Coulters	
	£121,770		£94,430		£68,050		£55,180	Price (+ VAT)			£117,311	£84,793	£65,089	Price (+ VAT)		sensor.	£73,000	sensor.	£68,600	sensor.	£64,400	sensor.	£56,600	sensor.	£53,800	peed sensor.	£40,960	peed sensor.	£32,000	Price (+ VAT)			£85,000	£82,000	Price (+ VAT)	

DIRECT DRILL COMPARISON CHART







11						
Agri	Sicult	Vire (
Unique Features:	EasyDrill	EasyDrill	EasyDrill	EasyDrill	Model	SKY EASYDRILL
All EasyDrills wo diameter cast clo	Trailed/Folding 6m	Trailed/Folding	Trailed	Trailed	Format	
ork on a tandem sosing wheels. All one of the most v	6m	4m	4m	3m	Width	
ystem consisting of a Farm machines have the option ersatile drills on the marke	36/16.6cm	24/16.6cm	24/16.6cm	18/16.6cm	Rows Spacing	
All EasyDrills work on a tandem system consisting of a FarmFlex front depth wheel followed by a pair of staggered seeding disc with skim coulter and diameter cast closing wheels. All machines have the option of up to 3 hoppers with 2 outlets allowing two seperate drilling depths to ensure product Unique Features: The EasyDrill is one of the most versatile drills on the market being as equally well suited to direct drilling as it is to working in a cultivated seedbed.	41001	29001	28001	20001	Hopper	
owed by a pair of stagg utlets allowing two sepo ed to direct drilling as it	Seed + Fert	Seed + Fert	Seed + Fert only	Seed + Fert only	Seed/Fertiliser	
ered seeding of state drilling do is to working i	7100kg	5680kg	4450kg	3500kg	Weight	
All EasyDrills work on a tandem system consisting of a FarmFlex front depth wheel followed by a pair of staggered seeding disc with skim coulter and leading to a pair of staggered large diameter cast closing wheels. All machines have the option of up to 3 hoppers with 2 outlets allowing two seperate drilling depths to ensure products are placed at their most suitable depth. The EasyDrill is one of the most versatile drills on the market being as equally well suited to direct drilling as it is to working in a cultivated seedbed.	single disc with tungsten faced skim coulter	Coulters				
of staggered large most suitable depth.	£114,084	£87,936	£69,083	£56,698	Price (+ VAT)	

Ma/Ag SS M 30 T Trailed		Ma/Ag SS P 60 T Pneumatic	Ma/Ag SS P 40 T Pneumatic	Unique Features: Fore and	Ma/Ag SS P 30 T Pneumatic	Model Format	RIEIEC
3m		ic 6m	ic 4m	aft mounted coulters for disc options with closing	3m	nat Width	
1/ @ 1/6mm		33 @ 182mm	23 @ 174mm	Fore and aft mounted coulters for maximum clearance in high trash or press disc options with closing force from both sides of open slot.	17 @ 176mm	Rows Spacing	
	600 litres	2500 litres	2500 litres	Fore and aft mounted coulters for maximum clearance in high trash conditions and best weight or press disc options with closing force from both sides of open slot.	1200 litres	Hopper	
	Seed with fertiliser option	Seed with fertiliser option	Seed with fertiliser option	est weight distribution, lov	Seed with fertiliser option	Seed/Fertiliser	
c	3100ka	6250kg	5380kg	disturbance	3100kg	Weight	
	Staggered coulters with 450mm serrated single disc opener and angled plain disc with parallel arm independent ground following, independent seed depth control by following press wheel or press discs	as above	as above	distribution, low disturbance opening and full slot closure thanks to high pressure press wheel	Alternate fore and aft mounted coulters with 450mm serated single disc opener and angled plain disc with parrallel arm independant ground following, independant seed depth control by following press wheel or press discs	Coulters	
	£30,950	£69,495	£55,950	n pressure press wheel	£40,950	Price (+ VAT)	

Model	Format	Width	Rows Spacing	Hopper	Seed/Fertiliser	Weight	Coulters	Price (+ VAT)
T-Sem 300	Mounted	3.0m	20 or 16/150 or 187.5mm 900 litres	900 litres	Seed	1760kg	(see below)	£22,600
T-Sem 300P	Mounted	3.0m	20 or 16/150 or 187.5mm 1000 litres	1000 litres	Seed	1850kg	(see below)	£29,37
T-Sem 400P	Mounted	4.0m	22/182mm	1000 litres	Seed	2250kg	(see below)	£34,97
T-Sem 480AP	Mounted/ Folding 4.8m	€ 4.8m	26/184.5mm	1700 litres	Seed	3250kg	(see below)	£43,17
T-Sem 600AP	Mounted/ Folding 6.0m	၉ 6.0m	32/187.5mm	1700 litres	Seed	3550kg	(see below)	£51,500
T-Sem 600AC	Trailed	6.0m	32/187.5mm	4100 litres	Seed & Fert	5550kg	(see below)	£73,000
All drills - 3 row: Unique Features: Liquid Systems	All drills - 3 rows	of Double Coil	All drills - 3 rows of Double Coil tine mounted Inverted T-Slot coulters, preceeded by straight Disc Openers. Liquid Systems.	coulters, preceeded by	straight Disc Openers. A	II drills availab	All drills available with a range of fertiliser options, including Micro Hoppers and	ling Micro Hoppers an

Independent coulter depth control with high closing pressure from both sides of slot with choice of press wheels or press discs. Staggered coulters with 450mm serrated single disc opener unique Features: and angled plain disc with parallel arm independent ground following, independent seed depth control by following press wheel or press discs.

Ma/Ag SS M 40 T

Trailed

4 m

22 @ 182mm

600 litres

Seed with fertiliser option

3650kg

as above

£35,750

DIRECT DRILL COMPARISON CHART



Unique Features: cleaners. Active down pressure system optional. Individual parallelogram with hydraulic down force

Side gauge wheel for active mud cleaning and the ability to gauge the depth in two different places depending on conditions. Closing wheel angle adjustable without tools. Pneumatic row





KUHN

Aurock 6000 RC Model Trailed Format 6.0m Width 150mm or 187mm **Rows Spacing** 5000 litres Hopper Seed & Fert Seed/Fertiliser 8700-9300kg 32 or 40 Weight Coulters Price (+ VAT) £Contact us roach

Boss Boss	5 8 8 9		5		Boss		SL	Un	YMEPS CC	WURE OF E	Moteviro	RILLS		, DA	Un			va ‡			Un			enerati g	on	NO	Uni
	38	\$S	S	Unique Features:	S	Model	SLY (STAND D3)	Uniq	Eco XL 12m	Eco L 8m	Eco M 6m	o S 3m	Model	DALE DRILLS (STAND D2)	Unique Featur	T-Force Plus 940	Unique Features:	T-Force Plus 840	Unique Features:	T-Force Plus 640	Unique Features:	T-Force Plus 440	Unique Features:	T-Force Plus 340	Model	NOVAG	Unique Features:
	Trailed	Trailed	Trailed	Undercut disc wi ability to gauge t down pressure s	Trailed	Format		Individual drilling	Trailed	Trailed	Trailed	Mounted	Format	AND D2)	; stem ; اا	Trailed	Track system; li	Trailed	Inverted T-Slots	Trailed	Inverted T-Slots	Trailed	Inverted T-Slots	Trailed	Format		AUROCK also offers a to any drilling situation.
	9.0m	6.0m	4.0m	ith double angle s he depth in two d ystem optional. Ir	3.0m	Width		assemblies mou	12m	8m	6m	3m	Width		Inverted T-Slots;	9m	nverted T-Slots;	8m	, IntelliForce Plus	6m	, IntelliForce Plus	4m	Inverted T-Slots , IntelliForce Plus	2.85m	Width		ffers a new KUHN uation.
16.7cm/18.	16.7cm/18. 75cm/20cm/25cm	16.7cm/18. 75cm/20cm/25cm	16.7cm/18. 75cm/20cm/25cm	Undercut disc with double angle single disc, this means we can penetrate in dry co ability to gauge the depth in two different places depending on conditions. Closing adown pressure system optional. Individual Parallelogram with hydraulic down force	16.7cm/18. 75cm/20cm/25cm	Rows Spacing		nted via parallel linkage giv	Variable 125mm/250mm	Variable 125mm/250mm	Variable 125mm/250mm	Variable 125mm/250mm	Rows Spacing		IntelliForce Plus Downforce control as series	45 rows@20cm	Track system; Inverted T-Slots; IntelliForce Plus Downforce control as series	41 rows@19.5cm	Inverted T-Slots, IntelliForce Plus Downforce control as series	31 rows@19.3cm 24 rows@25cm	Inverted T-Slots, IntelliForce Plus Downforce control as series	21 rows@19cm 23 rows@17.5cm	Do	15 rows@19cm 17 rows@17.5cm	Rows Spacing		l feature, VISTAFLOW trai
2000 Litre, 1, 2 or 3	2000 Litre 1, 2 or 3 tanks	2000 Litre, 1, 2 or 3 tanks	2000 Litre, 1, 2 or 3 tanks	can penetrate in dry condition conditions. Closing when hydraulic down force	2000 Litre, 1, 2 or 3 tanks	Hopper		Individual drilling assemblies mounted via parallel linkage given adjustable hydraulic pressure for	8500litre	4200litre	2800litre	2000litre	Hopper		e control as series	4500+3500 / Opt 2x160I	e control as series	4500+3500 / Opt 2x160I	es.	2200+2000 / Opt 2x120I	es	2200+2000 / Opt 2x120I	es	2200+2000 / Opt 2x120I	Hopper		AUROCK also offers a new KUHN feature, VISTAFLOW tramlining valves, which provides universor any drilling situation.
Seed and/or	Seed and/or Fertiliser	Seed and/or Fertiliser	Seed and/or Fertiliser	ons without the need of el angle adjustable with	Seed and/or Fertiliser	Seed/Fertiliser		essure for accurate seed placement.	Seed& Fertiliser	Seed& Fertiliser	Seed& Fertiliser	Seed& Fertiliser	Seed/Fertiliser			Seed & Fert		Seed & Fert		Seed & Fert		Seed & Fert		Seed & Fert	Seed/Fertiliser		des universal tramlining
	8000KG	6000KG	4500KG	high vertical vout tools. Dep	4000KG	Weight		d placement.	11000	8000	6250	2100	Weight			22t		20t		11t + opt. 2.5t		8t + opt 1.5t		6.5t	Weight		and blockage
angled undercut with side gauging wheel	Two rows of single disc openers, double			Undercut disc with double angle single disc, this means we can penetrate in dry conditions without the need of high vertical weights/load. Side Gauge wheel for active mud cleaning and the ability to gauge the depth in two different places depending on conditions. Closing wheel angle adjustable without tools. Depth adjustment without tools. Pneumatic row cleaners. Active down pressure system optional. Individual Parallelogram with hydraulic down force	Two rows fo single disc openers, double angled undercut with side guaging wheel to give active cleaning	Coulters			11000 96 coulters over 6 rows	8000 64 coulters over 6 rows	6250 48 coulters over 6 rows	24 coulters over 6 rows	Coulters			Hybrid Disc + 2x T-Blades		Hybrid Disc + 2x T-Blades		Hybrid Disc + 2x T-Blades		8t + opt 1.5t Hybrid Disc + 2x T-Blades		Hybrid Disc + 2x T-Blades	Coulters		sal tramlining and blockage detection system, giving the operator a very flexible approach
Starting at 125,000	Starting at 105,000 Euro	Starting at 70,000 Euro	From 55,000 Euro	mud cleaning and the w cleaners. Active	From 45,000 Euro	Price (+ VAT)			From £119,000	From £88,500	From £61,500	From £39,500	Price (+ VAT)			£235,000 (EUR based)		£220,000 (EUR based)		£145,000 (EUR based)		£110,000 (EUR based)		£85,000 (EUR based)	Price (+ VAT)		ery flexible approach

		DIRECT DRI	ILL COMPA	ARISON CH	IART - CROS	SS SLOT
Generic Opener type	Combina-tion vertical disc & winged-tine side blades* eg.CROSS SLOT	Double or triple disc SEVERAL BRANDS	Single angled disc SEVERAL BRANDS	Narrow tine SEVERAL BRANDS	Wide tine or sweep** SEVERAL BRANDS	*CROSS SLOT is in fact a combination of a disc and winged tines. So it is not accurately described as either a pure disc or pure tined opener.
Slot shape	Inverted T shaped slot	V shaped Slot	U shaped Slot	NarrowU shaped slot	Wide U shaped Slot	*Debatably, wide tines are regarded more as minimum or strip strip tillage than direct drilling or no-tillage.
Freedom from blockage in residues regardless of whether or not hairpinning occurs	Almost unlimited residue handing ability including in narrow rows; long, short, lying, dry, wet standing or chopped. (5)	Good residue handling within limits.(3)	Good residue handling within limits. (3)	Limited residue handling ability. Needs wide rows, chopped straw, or standing stubble to avoid blocking. (1)	Limited residue handling ability. Needs wide rows, chopped straw, or standing stubble to avoid blocking.(1)	Residue handling and Minimum soil disturbance are the joint most important functions that define low disturbance direct drilling if regenerating soil health is the primary objective.
Residue retention on ground surface after passage of the openers	Retains 70-100% residues over slot, which decompose and restock soil with carbon and trap water vapour in the slot.(5)	Retains 70+% residues, but open V-shaped slot allows slot water vapour to escape. Stand failures are common. (3)	Retains 70%+ residues in favourable conditions but this is dependent on speed and slope.(3)	Retains very little residue. Pushes most of it aside where it has less value than over the slot.(1)	Retains very little residue. Pushes most of it aside where it has less value than over the slot.(1)	Retained crop residues are the main source of soil carbon for rebuilding soil health as well as trapping soil moisture vapour in the slot that virtually guarantees germination, even in dry soils and encourages earthworms to aerate the slot in wet soils.
Slot aeration, compact-ion or smearing	Optimal sub- surface soil aeration, that is not greatly affected by speed or slope. No slot compaction and any slot smearing in wet soils stays moist.(5)	Low soil aeration. Compacts slot walls on both sides. Not particularly affected by forward speed, but smearing dries to form slot wall crusts.(1)	Some soil aeration, which is speed and slope dependent. Compacts and smears one side wall only.(3)	Extensive soil aeration. which is affected by speed and moisture content. Does not compact but can smear slot walls and base.(3)	Creates excessive and un-necessary slot disturbance that stimulates weed seed germination. More aptly regarded as strip tillage.(1)	Too much soil aeration oxidizes soil carbon that is lost to the atmosphere along with water vapour, which compromise regeneration of soil health. But loose soil generated by disturbance is a better seed cover that no cover at all.
Traps soil moisture vapour in slot zone	Only known opener to deliberately trap soil moisture vapour in the seed zone, ensuring seedling emergence, seldom fails regardless of conditions.(5)	Does not trap soil moisture vapour in the slot and therefore has the highest failure rate of all openers in dry & wet soils.(1)	Traps some soil moisture vapour. So failure rate is between inverted T and V shaped slots and similar to tines.(3)	If loose soil is available, some moisture vapour is trapped. Similar in this respect to single disc. (3)	If loose soil is available, some moisture vapour trapping occurs but not always enough to germinate seeds. (3)	In-slot soil moisture vapour trapping often makes the difference between establishment success or failure in direct drilling.
Hairpins (tucks) seeds into uncut folded straw within the slot	Can hairpin straw from time to time but places seeds to one side of (not within) hairpins, so there is no negative effect on germination.(5)	Hairpins more regularly than any other opener, especially in wet soils. This has negative effects on seeds & seedlings.(1)	Regularly places seeds in hairpins causing emergence failures in both wet & dry soils.(1)	Does not create hairpins, thus avoiding the problem. (5)	Does not create hairpins, thus avoiding the problem.(5)	Hairpinning is a major cause of failure of many disc openers (except Cross Slot) but is not a problem with tined openers.
Fertilizer banding at the same time as seeding while ensuring the two do not mix.	This is a standard function in all CROSS SLOT openers. Effective with wet, dry, gaseous, inorganic, or biological fertilizers.(5)	Separation of seed and fertilizer is not possible unless additional & separate fertilizer-only openers are used.(1)	separation of seed and fertilizer is not possible unless additional & separate fertilizer-only openers are used.(1)	Separate banding is possible with most tined openers.(5)	Separate banding is possible with most tined openers.(5)	Fertilizer banding can be a major determinant of crop yield in no-tillage. The alternative of broadcasting fertilizer is often ineffective because much soluble fertilizer runs preferentially down old earthworm and root channels and bypasses juvenile roots altogether. Separation distances should not exceed 50 mm (2") in untilled soils.
Auto-adjustment of opener downforce to match soil hardness	Original auto downforce system (ADF) was invented by CROSS SLOT. It ensures that opener downforces always match soil hardness.(5)	No known copies of the NZ system on double or triple disc openers, except on some corn planters.(3)	At least one brand has copied the NZ system but also uses springs that vary with length.(3)	No known copies with narrow tined openers.(1)	No known copies with wide tined openers.(1)	This system allows openers To maintain a consistent Seeding depth regardless of changes in soil density, which occur in even the flattest and most consistent-looking untilled soils because of natural soil settling processes over time.
Seed-to-soil contact	Seeds come to rest on horizontal slot shelves and covering flaps are folded back by the opener's press wheels. (5)	Seeds are wedged in the narrow base of vertical V shaped slots giving good germin-ation, but seedlings often die before emergencefrom lack of cover.(3)	Next best to Cross Slot.(3)	Often similar to single disc but inferior to Cross Slot.(3)	Better than narrow hoe because there is usually more loose soil available.(3)	CROSS SLOT is the only opener that creates horizontal seed shelves. All other slots are vertical and therefore difficult to cover or trap water vapour within.
Mitigating slot shrinkage (opening) in damp soils that dry after drilling	Best of all openers. Seeds are placed on horizontal shelves to one side so they are never exposed even if the central disc slit shrinks open.(5)	Worst of all openers. Seeds are placed into centre of V-shaped slots formed by a wedging action and they continue to shrink wider as soil dries.(1)	Some loose soil provides some protection from slot shrinkage but not as effectively as Cross Slot.(3)	If loose soil covers the seeds, slot shrinkage is less of an issue than if loose soil is not available because of slot smearing when the seeds were sown.(3)	The abundance of loose soil makes slot shrinkage rare, which is also the case when soils are fully tilled.(5)	Slot shrinkage is caused by windy and dry conditions following seeding into an otherwise damp soil. This is a common cause of stand failure with vertically-formed slots and invites bird and insect damage and exposes seeds to desiccation.



What are we?

Hummingbird is an Artificial Intelligence business based in London that provides advanced crop analytics to its customers using proprietary Machine Learning algorithms applied to remotely sensed imagery.

Get in

touch:

Mission Statement

By pushing the boundaries of science and technology, our mission is to improve the efficiency of global crop production, and to feed the world's growing population sustainably.



AivaFertiliser

Stand E7

Aiva Fertiliser is a UK manufacturer & distributor of Biostimulants, Microbes and Liquid Fertiliser ranges developed to support agronomic solutions for sustainable farming systems in aid of increasing efficiency, quality and crop utilisation.

- Standard & multi-nutrient complex liquid fertilisers
- Fulvic/humic acids & alternative molasses materials
- Biological consortiums & microbial blends





Bio Farming Ltd, evolved organically from the positive synergies found within the amenity and agricultural sectors. Utilising science based innovative products to supplement mineral nutrition and microbial nutriments that support and promote the rich microbiome within a living soil and plant towards higher, cost effective crop values and carry over soil health benefits.

NUTRIMUS

Liquid carbon high purity humic substances liquid formulations

Granular & Powder grades available

EXALT Naturally occurring Bio-Nutrients. Crop specific formulations CONCORDIA

Feeds and increases the abundance of indigenous beneficial

microbes (Mycorrhiza Fungi & Bacteria)

PROTOS 30% Potassium Phosphite solution

AMINO-E Short chain peptides & L-amino acid-based foliar liquid

Microbial inoculants as liquid and powder formulated grades with

very high content levels of colony forming units (cfu)

Micronised Mineral Nutrition

VELOX

High nutrient contents. Available as liquids & wettable powder/micro granules. High efficacies supplying plant nutrient requirements and addressing deficiencies, boosting crop potential

PARVUS SILICON high purity 12.9% Si (27.6% SiO₂) with/without boron

CAL-S 13.64% CaO 18.2% SO₃

CAL-C 36% Ca (50% CaO) Calcium carbonate for crop sensitive

requirements

NORDOX AGRO Cuprous oxide

> Verno 30% Cu₂O 30% ZnO Verno Manganese 34% MnO

www.bio-farming.co.uk

Enquiries: call: 0800 083032 info@bio-farming.co.uk



RURAL | PROPERTY | INTERNATIONAL | ARCHITECTURE & PLANNING

INNOVATIVE ADVICE FOR YOUR FARMING BUSINESS.

To help you maximise your business potential speak to one of our specialists.
Find your local advisor at brown-co.com.



HEALTHY SOIL . HEALTHY CROPS . HIGHER PROFITS

World leader in Humic Acid Technology







SUSAN WILSON OUR SOIL SCIENTIST

Susan Wilson holds a B.Sc. (Honours) in Soil Science from the University of Newcastle Upon Tyne. She is also a FACTS qualified adviser and a member of both the International Fertiliser Society and the British Society of Soil Science. Susan will work with you throughout to develop a programme designed to satisfy your specific needs, and help you increase your yields and improve profitability.

You can call Susan direct on 07745 575569.









Aphaeas Agriculture



ENQUIRIES & SALES

SUSAN WILSON B.Sc. Soil Science, Facts Qualified Advisor FE/5250

tel: 01505 871955 / 028 2556 8409 | www.aphaeas-agri.co.uk



Cover and Companion Crops Cost-effective Results



Oakbank has a great deal of experience in growing many of the species that are now used for Cover and Companion Cropping. For a fresh, personalised approach aimed at delivering the greatest benefits for your farm, talk to Oakbank.

www.oakbankgc.co.uk

Oakbank Game and Conservation Ltd
Unit 18 Brook Farm, Ellington, Cambs, PE28 0AE

Tel. 01480 890686 info@oakbankgc.co.uk





Nutri-bio is the market leading supplier of biosolids to agriculture.

Benefits of nutri-bio include -

- ✓ Large savings on phosphate fertiliser
- ✓ Good source of nitrogen and sulphur
- ✓ Boosts soil organic matter
- ✓ Increased yields
- ✓ FACTS qualified advisors
- ✓ Fully accredited under Biosolids
 Assurance Scheme

Visit our website for more information and to find your local Products Advisor www.nutri-bio.co.uk





Future-proof your business and discover unmissable insights into the latest knowledge, services and products available to remain profitable at The CropTec Show when it returns this November.

- More than 170 exhibitors
- Extensive seminar programme
- Over 30 leading speakers covering a wide range of technical, practical and business issues
- Opportunities to collect BASIS & NRoSO points
- 10 of the latest sprayers in the market to test-drive and experience on a one to one basis
- Knowledge hubs Biosolutions, Black-grass, OSR, Slug, and Spraying Technology

CropTec has come into it's own as an event with strength through quality, technology based stands. **Very informative** but informal

Mark Oldroyd, Farm Manager, 2018 visitor

Proudly sponsored by



















Interested in exhibiting? Contact us now, stands are selling fast!









Livestock Mineral Auditing

A specialist company supplying a wide range of services to support ruminant mineral nutrition.







Working with livestock farmers and veterinary practitioners to give the best possible advice.

Supplying product specifications and application plans which complement the requirements of ruminants.

Find out about the range of services offered at stand number WW4

Peter Bone

Contact: Mobile 00 44 (0) 7785 368591

Office 00 44 (0) 1285 711122



PROVIDING A WELL BALANCED APPROACH TO AGRONOMY

- Complete agronomy services
- Nutritional consultancy
- Soil fertility consultancy
- Testing and analysis
- Focus on sustainable agriculture



Find out more & visit us on stand E6

+44 (0) 1235 834 997 www.edaphos.co.uk



Agrii offers:

- Agronomy services
- Certified Seed
- ♣ Farm Saved Seed
- Game Cover & Cover Crops
- ♣ Fertiliser & Nutrition
- Crop Marketing
- ♣ RHIZA Digital Agronomy

Come and visit us at the **Groundswell event in June**

For more information please contact our Customer services on 0845 6073 322

www.agrii.co.uk









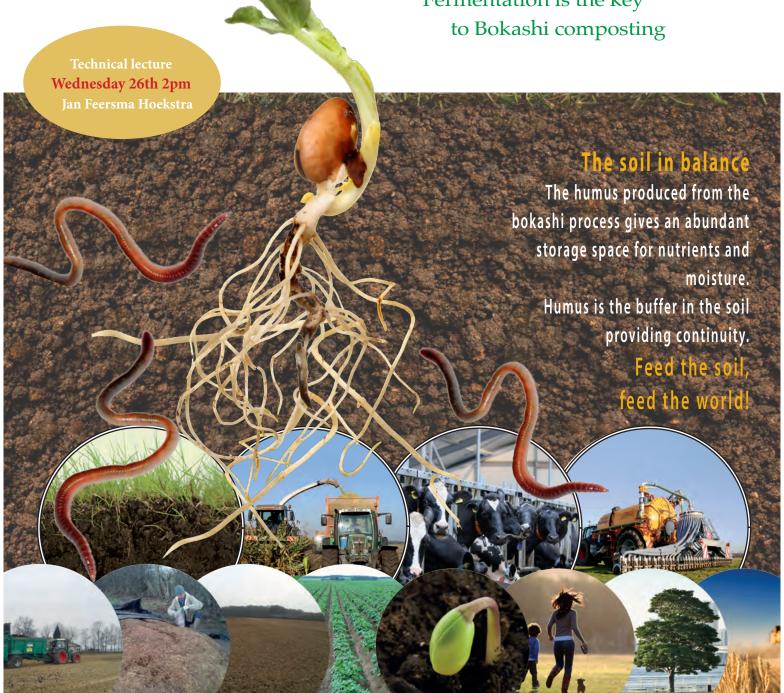
visit our stand number **A6** and demo plot

Bokashi Fermenting organic matter

Advantages of making and applying Bokashi

- Optimal nutrition for soil life.
- Increases the organic matter balance.
- Has a disease suppressing effect on the soil.
- Vital soil provides vital plants.
- Environment friendly no CO₂ and NH₃ emissions
- Recycle own waste streams.
- Savings in disposal costs for organic material.
- Can be made on site.

Fermentation is the key





METOS®UK

(DMETOS MobiLab









Protect the Environment

Prevent Over-fertilization

Save Money





- ★ www.metos.at✓ david.whattoff@metos.at♦ 07752 426006
- Money





Regenerate your land.

Verify it's improving.

Be in demand from brands that care.

Meet us and our brand partners in Stand SB8.

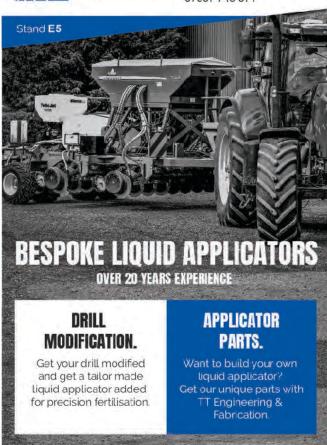








ttapengineering@icloud.com www.ttapplicators.co.uk 07837 743 371





TerraLife from **DSV**smarter thinking for soil

RRA/III

TerraLife cover crop mixes are the ultimate green solution for enhanced soil structure and fertility. They retain moisture and nutrients for follow-on crops whilst suppressing weeds and pests. Increased biomass and root yields increase biodiversity and reduce compaction.

Come and find us in **Pasture Field** on **Stand E11**.



SolaRigol DT Specially

Specially developed with potatoes in mind.

BetaMaxx DTSpecially

Specially developed with sugar beet in mind.

BetaSola

Helps reduce nematodes for following root crops.

N-Fixx

Rapid soil coverage and nitrogen fixation.

Rigol DT

Strong, deep roots break down compacted soils.

VitaMaxx DT

Helps livestock farmers recycle nutrients in manure.



www.dsv-uk.co.uk



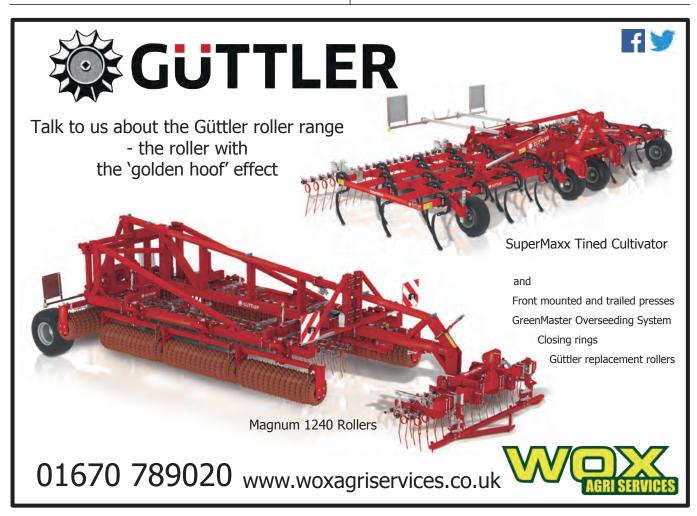
Innovation for your growth

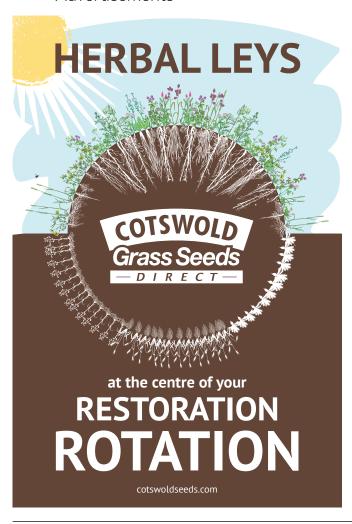












If you would like to be a part of Groundswell 2020, please get in touch with a member of the Groundswell team.

contact@groundswellag.com
 +44(0)162 790 219
 www.groundswellag.com









LandFamilyBusiness



Strategic Tax Advisers to Farms and Estates

Our unique range of services goes beyond the usual accountancy advice and into strategic tax planning and wealth management that considers family dynamics within modern business structures.

Contact Gary Markham on 07970 794495 gary.markham@landfamilybusiness.co.uk www.landfamilybusiness.co.uk



Tax Planning | Family Agreements | Family AGM | Succession | Accounts Wealth | Generations | Diversification | Property | Mediation



ProCam brings you practical precision farming solutions that create true value to you and your business. It's about dialogue and experience not just data, downloads and images.

01763 245223

WWW.PROCAM.CO.UK | @ @



Unit 6, Wireless Station Park, Chestnut Lane, Kneesworth, Royston, Herts SG8 5JH





The UK's leading provider of speciality arable crops, Premium Crops, are the experts in securing real added value for our growers.

From HEAR Oilseed Rape, High Omega-3 Linseed and High Protein Bread Wheat to Home Grown Birdseed, every crop in our portfolio offers a premium over the conventional.

To see the full Premium Crops portfolio, visit: www.premiumcrops.com



Whitedale Farm East Street Hambledon Hampshire PO7 4RZ

02392 632883 info@premiumcrops.com www.premiumcrops.com



Soil health Plant health Yield

for Winter Wheat Dual spray application

Bacteria inoculant

Autumn & Spring

£30p/ha

Produced in the UK by PlantWorks Ltd Unit 930 Cornforth Drive, Kent Science Park, Sittingbourne, Kent,

T: 01795411527 E: info@plantworksuk.co.uk

Follow us @smart_rotations





Now available from your agronomist



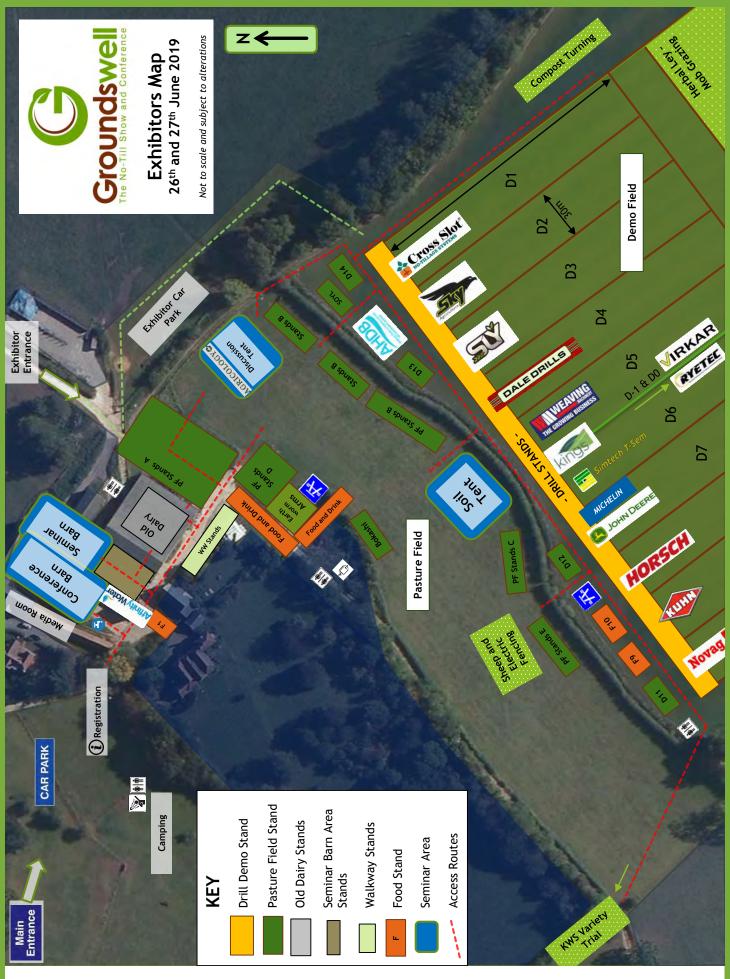
Dishing the dirt

New soils resources are available at: ahdb.org.uk/greatsoils

- Introduction to soil biology
- Biological tests for soil health factsheet
- Measuring and managing soil organic matter
- · 'Which nutrient management system to use?' factsheet
- Field drainage guide



For general soil management resources and content visit: ahdb.org.uk/greatsoils



Join the conversation:

@groundswellaguk #GW19

