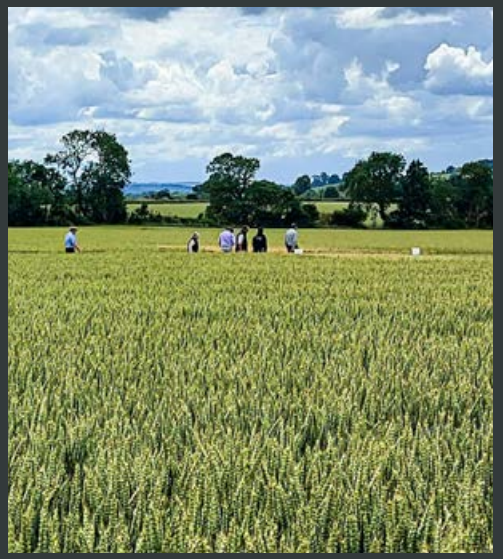
Agri intelligence

Sustainability Strategy








GREEN HORIZONS

PUBLISHED **2023**

Agrii

CONTENTS

FOREWORD – Ronan Hughes

Our vision at Agrii is to be the UK's foremost technically led agronomy services company providing sustainable and profitable outcomes for our farming customers.

What do we mean by sustainable outcomes?

> **To us, sustainability is more than preventing the unintended impact of our practices on the environment. Sustainability is about leaving our food production landscape in a better place than we inherited it in by utilising resources as efficiently as possible.**

We strive to provide services which underpin food security, reduce greenhouse gas emissions, enhance biodiversity, replenish water resources, and minimise waste.

Green Horizons is our delivery framework, bringing together all our research and development and disseminating into practical advice and solutions on farm. Through this framework, we aim to sustain and regenerate the land and lives we operate within.

How do we look to deliver more sustainable solutions?

1. Research – Identify new opportunities and examine their validity and robustness through our research programmes.

2. Digital & Technology – Research findings are then utilised through new and existing technologies to help drive efficiency and capture data on farm. Benchmarking will also enable farmers to understand farm potentials.

3. Action – From capturing the right data, our agronomists and specialists will advise on areas of further improvement, working closely with growers to implement them.

4. Outcome – A low carbon production system that supports biodiversity, enhances water ecosystems and provides healthy, nutritious food.

FOREWORD

Why sustainability matters to us?

It's all about balance. With pressures to maximise crop production, sequester carbon and restore biodiversity levels, the demands on land use have never been greater. Understanding how best to capitalise on each of these is vital to secure the future of our farming sector. Sustainability must remain front and centre of decision making, and we see it as our role to help simplify those decisions by making it business as usual across all agronomy services.

Like every other business in the supply chain, we have a responsibility to take action to mitigate the impact of climate change and feed a growing population. However, unlike many other sectors working towards mutual goals, agriculture has a unique opportunity to act as the solution to many of these global challenges. It is an exciting yet challenging time for food production, and change is integral to remain sustainable for future generations.

Our strategy seeks to address every pillar of sustainability; people, planet and profit. We continue to invest in new research and innovation within each of these pillars, which our five insight reports outline.

OVERVIEW OF OUR MILESTONES

With all of our sustainability targets, we have worked towards the UN Sustainable Development Goals.

SUSTAINABLE DEVELOPMENT GOALS

Relevant SDGS

2020 – 2023:

The use of our **MAP benchmarking project**, to allow farmers to identify areas where improved management will yield the greatest return in farm profit, and benchmark against others.

8 DECENT WORK AND ECONOMIC GROWTH

2020 – 2023:

Increased the use of **low carbon fertilisers** on farm, enabling growers to improve nitrogen use efficiency and reduce greenhouse gas emissions. We have seen a **175%** growth in green product fertiliser sales since 2020.

13 CLIMATE ACTION

Autumn 2020:

Use of our **variety sustainability rating (VSR)** to assist our agronomists and customers in selecting the right variety for the right situation. Since 2020, we have increased the sales of high sustainability varieties by **41%**.

2 ZERO HUNGER

Autumn 2021:

Launch of a new **health and safety software platform** for employees, helping to reduce the risks of incidents occurring.

3 GOOD HEALTH AND WELL-BEING

Autumn 2021:

Throws Farm became a **LEAF innovation centre**, making Agrii a member of the LEAF network.

LEAF
LINKING ENVIRONMENT AND FARMING

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Autumn 2022:

FCN
THE FARMING COMMUNITY NETWORK

Delivered the **FCN's 'Wellbeing in Agriculture' training** to **72** customer-facing employees and are looking to deliver to a further **100** in 2023

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

OVERVIEW OF OUR MILESTONES

Winter 2021/2:

Launch of our **soil resilience strategy (SRS)**, a service to help growers build soil health and maximise crop productivity.

15 LIFE ON LAND

Spring 2022:

Set internal standards for events, ensuring our **events are ran as environmentally friendly as possible.** This includes eliminating plastic-based materials entirely by the end of 2023.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Spring 2022:

Elimination of scope 2 emissions for all Agrii operations, **moving to 100% renewable energy across all sites**. We have also installed solar panels at some of our high energy consumption sites.

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

Autumn 2022:

Advance in data supporting the role of **biological fungicides** in strawberry production as part of an integrated programme.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

2 ZERO HUNGER

Autumn 2022:

Move towards **100% recyclable seed bags**, containing **30%** recycled materials.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Autumn 2022:

Achieved the target of **100% of our trials following IPM principles** increased from 85% in 2020.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Winter 2022/3:

Delivered an accredited environmental training programme for over **50%** of all on farm advisors.

4 QUALITY EDUCATION

8 DECENT WORK AND ECONOMIC GROWTH

Spring 2023:

Agrii joined **the Green Tractor Scheme**, helping to innovate and incentivise farm plastic recycling.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

SUSTAINABLE DEVELOPMENT GOALS

A SUMMARY OF OUR OBJECTIVES

Our primary goal with our sustainability objectives is to ensure we are maximising productivity in a way that is considerate to the environment we operate in. Our objectives help us to ensure we continue operating in line with our vision of being the UK's foremost technically led agronomy services company providing sustainable and profitable outcomes for our farming customers.

SHORT TERM OBJECTIVES

2027

Objective: Build knowledge of employees and growers to support the adoption of sustainable farming methods.

Helping to: Implement our Green Horizons framework.

Status: Green – on track

Objective: Continue to lead the way and promote highly sustainable varieties through or variety sustainability rating (VSR).

Helping to: Maximise food security.

Status: Green – on track

Objective:
Continue to invest in innovation crops and alternative protein sources.

Helping to: Maximise food security.

Status: Green – on track

Objective: Explore financial opportunities to help farmers reduce the GHG intensity of their crops.

Helping to: Reduce GHG emissions.

Status: Green – on track

Objective: To improve our health and safety audit score to 4.63 by 2027, increased from a 2022 baseline of 2.84.

Helping to: Improve health, safety, and wellbeing.

Status: Green – on track

Objective:
To maintain our Reportable Injury Rate (per 1.000 employees) below 3.

Helping to: Improve health, safety, and wellbeing.

Status: Green – on track

Objective: To develop a screening programme to fast track the development of BioSolutions.

Helping to: Enhance Biodiversity.

Status: Green – on track

Objective:
Reduce water usage and improve accuracy of data.

Helping to: Improve water quality.

Status:
Amber – work required

Objective:
Zero waste to landfill by 2025.

Helping to:
Waste reduction.

Status:
Amber – work required

A SUMMARY OF OUR OBJECTIVES

MEDIUM TERM OBJECTIVES

2032

LONG TERM OBJECTIVES

Objective:
Make soil a key part of decision-making processes on farm.

Helping to:
Improve soil health.

Status:
Amber – work required

Objective: Increase the Nitrogen Use Efficiency (NUE) of crops by 20% by 2030, using improved crop nutrition products and precision agriculture tools.

Helping to:
Reduce GHG emissions.

Status: Green – on track

Objective: Reduce GHG emissions across the value chain by 32.5% by 2032, based on a 2019 baseline.

Helping to:
Reduce GHG emissions.

Status:
Amber – work required

Objective:
Work towards net zero across business operations and the value chain by 2050.

Helping to:
Reduce GHG emissions.

Status:
Amber – work required

Objective: Reduce GHG emissions across business operations by 54.9% by 2032, based on a 2019 baseline.

Helping to:
Reduce GHG emissions.

Status:
Green – on track

Objective: Expand the range and use of fertilisers with a low carbon footprint. Aim for 20% of Agrii fertiliser sales to have low carbon footprint by 2030.

Helping to:
Reduce GHG emissions.

Status: Green – on track

Objective: Establish 1,000 miles of 'Wildlife corridors' throughout Great Britain by linking amenity, rural and agricultural land to improve biodiversity by 2030.

Helping to:
Enhance biodiversity.

Status: Amber – work required

Tthroughout this document our specific objectives and measures are set out in red and green boxes as below:

Objective:
the goal we are working towards

Measure:
what steps we are taking to work towards that goal

WHAT WE DO FOR THE ENVIRONMENT

Cost effective food production

Objective:

Continue to invest in innovation crops and alternative protein sources

Agrii continue to explore new innovations that can support the increase the productivity and viability of farming systems.

Crop diversity is a major part of an integrated system, helping to support biodiversity and naturally break pest and disease cycles in fields. Break crops offer the introduction of a new plant species into a rotation, yet in the UK, managing market demands and producing healthy break crops is becoming increasingly difficult.

We have been investigating alternative crop options to help diversify farm rotations, which can be grown in the UK climate. From researching the agronomic benefits of these crops, we then work with end-users to identify markets to offer secure buy-back contracts.

Innovation crops can also help improve UK food security and sustainability. Crops such as Lupins for example can help to provide an alternative, more sustainable animal protein source to Soya in the UK.

Haricot beans, which are the main ingredient in the UK's favourite baked beans, is another crop we have researched, offering the potential to localise production and diversify rotations.

Cost effective food production

Nitrogen Climate Smart (NCS) Project
Along with our in-house research, we partner with industry organisations on large scale projects. The NCS project is a farmer-led research programme looking to increase pulse and legume cropping in arable rotations, to substantially reduce GHG emissions from agriculture. The project will also explore options for home-grown animal proteins, helping the industry move away from soya. This is a four-year project with 18 partners, where we will work with farmers to reduce emissions.

Click here to read more

NCS
NITROGEN CLIMATE SMART

DroneAG®
FARMERS WHO KNOW DRONES

Using technology to maximise efficient use of resources.

Agrii continue to invest in new technologies and innovations which can help improve the efficiency of food production.

Our recent investment in Drone Ag, a cutting-edge drone technology firm, will enable us to further enhance our precision agricultural services. Technologies like this will help growers optimise their operations, improve crop yields, and minimise risk.

Despite our continued investment into improving food security, we recognise that the major fundamental threats to food production include climate change and biodiversity loss. Without nature, farming is not possible, and our strategy looks to sustain, if not further improve our farming environment.

Improve soil resilience

We know the importance of soil; it's provision of 95% of global food supplies, regulation of greenhouse gases and water purification, and support to biodiversity makes it one of the most valuable resources on any farm. Yet its finite nature, coupled with our limited, yet developing knowledge on sufficient management has led to its degradation over time, which affects the quality of our environment and the productivity of food production.

Intensive farming has led to the loss of approximately 50% of soil organic carbon, which has increased vulnerability to compaction and erosion. Our aim is to protect and enhance soil resources in the UK, by helping growers understand and appropriately manage their soils by increasing soil carbon levels, improving structure, and maximising water drainage and retention. This will in turn enhance carbon capture, biodiversity and maximise the resilience of our food production systems to fluctuating weather patterns.

CASE STUDY:

Runner up of soil farmer of the year 2023

Sealands Farm, managed by Richard and Llyn Anthony and their team is one of our Net Zero iFarms, where we are exploring how improving soil health can help them reach net zero and maximise crop productivity. Over the past ten years, their strategy has been to keep as much green cover as possible throughout the year, and doing everything possible to build and maintain soil organic matter.

Mr Anthony's philosophy of 'you need to grow something to take in CO2' has helped to improve the overall resilience and financial stability of the farm over the past decade, with no loss of yield. Their soil organic carbon levels have almost tripled across most of the farm, which has enabled them to offset their emissions from crop inputs.

The Anthony's desire to keep improving soil health is also allowing them to reduce their reliance on artificial inputs such as nitrogen fertiliser, which is the largest contributor to emissions for many arable farms.

This flexibility ensures they are prepared for any new government schemes and legislation such as the sustainable farming scheme.

Improve soil resilience

Soil Resilience Strategy

Objective:

Make soil a key part of decision-making processes on farm

Measure:

Digitalise soil data and enable benchmarking

Changes to any existing system need to be based on sound evidence and measurements. Our soil resilience strategy (SRS) is the starting point to implementing change. Combining physical, chemical and biological soil assessments with scientific interpretation, the SRS identifies underlying issues, potential opportunities for change, and develops strategies that help growers improve the health and fertility of their soil.

By fostering the growing interest in soil health and sustainable management, the SRS will prevent further degradation and help regenerate soil ecosystems.

Our aim is to make soil planning an essential part of an integrated farming system, by providing soil data in an easily accessible and interpretable format. To enable this, data needs to be easily available and integrated into other digital planning tools. Our SRS app provides the ability to capture and record data in once central place, and will enable growers to get the best use out of their data and share with other relevant stakeholders.

Important for establishing baselines for soil health, management planning, and reporting requirements under new schemes, the SRS app will play a role in improving national soil resilience.

"You can't manage what you haven't measured".

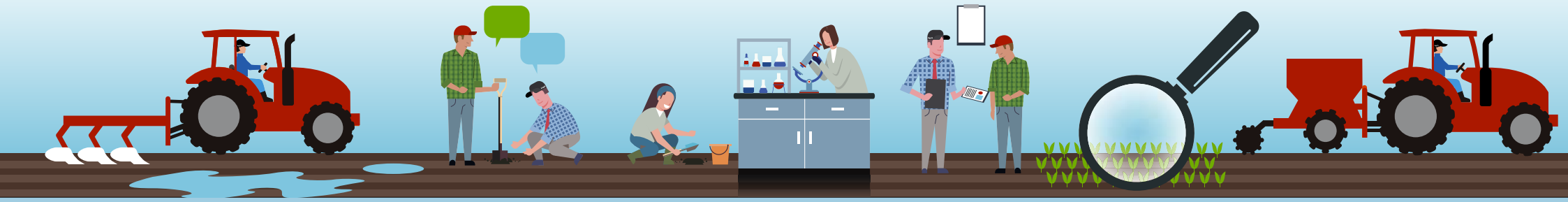
FARM OBJECTIVE
My field is constantly waterlogged over winter. How can I improve infiltration?

INVESTIGATION
Agronomist talks through field history and identifies the appropriate assessments to help identify what the issue is...

ANALYSIS
Assessments undertaken in the field and samples taken for laboratory analysis...

INTERPRETATION
Report is provided and discussed with the grower. An action plan is agreed between farmer and agronomist...

IMPLEMENTATION
Field is monitored for any improvements – timeframe for revisits agreed.



Improve soil resilience

Measure:

Increase the breadth of soil analysis done on farm

Soil health is a combination of physical, chemical, and biological properties. The farm standard for soil analysis in the UK including P,K,Mg and pH only captures one component, which although vitally important for crop health, provides only a snapshot of how healthy a soil is.

Increasing the depth of soil analysis will help to capture a wider picture of soil health and fertility, informing better management decisions.

A 'deeper dive' into soil health can be as simple as upgrading the type of lab analysis to a broad-spectrum approach or can go into the detail of assessing soil structure and infiltration levels.

Since 2019, soil organic matter testing has increased by 253% across RHIZA and Agrii sampling. We expect to see a further increase in this going forward, and believe it is an important parameter to determining soil health.

Soil Resilience Strategy

PODCAST

Focus on Soil Health and Achieve Net Zero

Click here to listen

Tramlines

Improve soil resilience

Regenerative farming

Our purpose as an agronomy provider is to help growers achieve their farming objectives through technically led sustainable advice. Adopting regenerative practices such as direct drilling and cover cropping is recognised throughout the supply chain as a multi-faceted way of restoring our agri-environment. However, the scientific evidence supporting the effective adoption of these approaches is not well established.

Agrii strives to provide the science behind sustainable and regenerative farming. In 2020, we formed a partnership project to look at how to adopt more sustainable farming systems using innovative crop technologies. We have several trial sites looking specifically at adopting sustainable practices, evaluating what that means for soil health, GHG emissions and crop productivity.

Systems based comparison trial

Replicated over two sites nationally, we are comparing how different varieties and programmes perform in a regenerative and a conventional system. From trials like these, we aim to improve our understanding and whether combined with the correct programme, it can help improve crop resilience.

Direct drill and cover crop field | Conventional full tillage field

Integrated approach to soil health and crop productivity

Our long term trial site in Huntingdonshire has been exploring how direct drilling and cover cropping compares to a plough based system on a heavy clay soil. Looking at aspects like nitrogen use efficiency and GHG emissions, we aim to better understand what the impact of different systems are on gross margin and environmental factors.

PODCAST

Taking a Reality Check on Regen Farming

Click here to listen

Tramlines

Improve soil resilience

Cover crops

Cover crops are recognised as a mechanism to improving and regenerating soil health, and where used correctly, can deliver multiple benefits.

Our cover crop mixes are developed based on a rigorous R&D process, understanding what species are best suited to different systems. The opportunities for cover crops to improve farm sustainability is well discussed, but it is important to understand the challenges with establishment and management.

Our research aims to help overcome these challenges, ensuring growers have the best chance in maximising their benefits and maintaining, if not improving, crop productivity.

The benefits of cover crops for farm sustainability

- Capture and recycle nutrients left over from the previous crop, rather than being leached away.
- Protect the soil from erosion by water and wind, by holding soil in place with root and foliage growth.
- Carbon sequestration: cover crops can help draw carbon down into the soil through photosynthesis. This carbon is a good feed source for soil biota.
- In the longer term, cover crops used as an integral part of the farming strategy can improve farm incomes and sustainability by increasing soil fertility and productivity whilst reducing input costs.

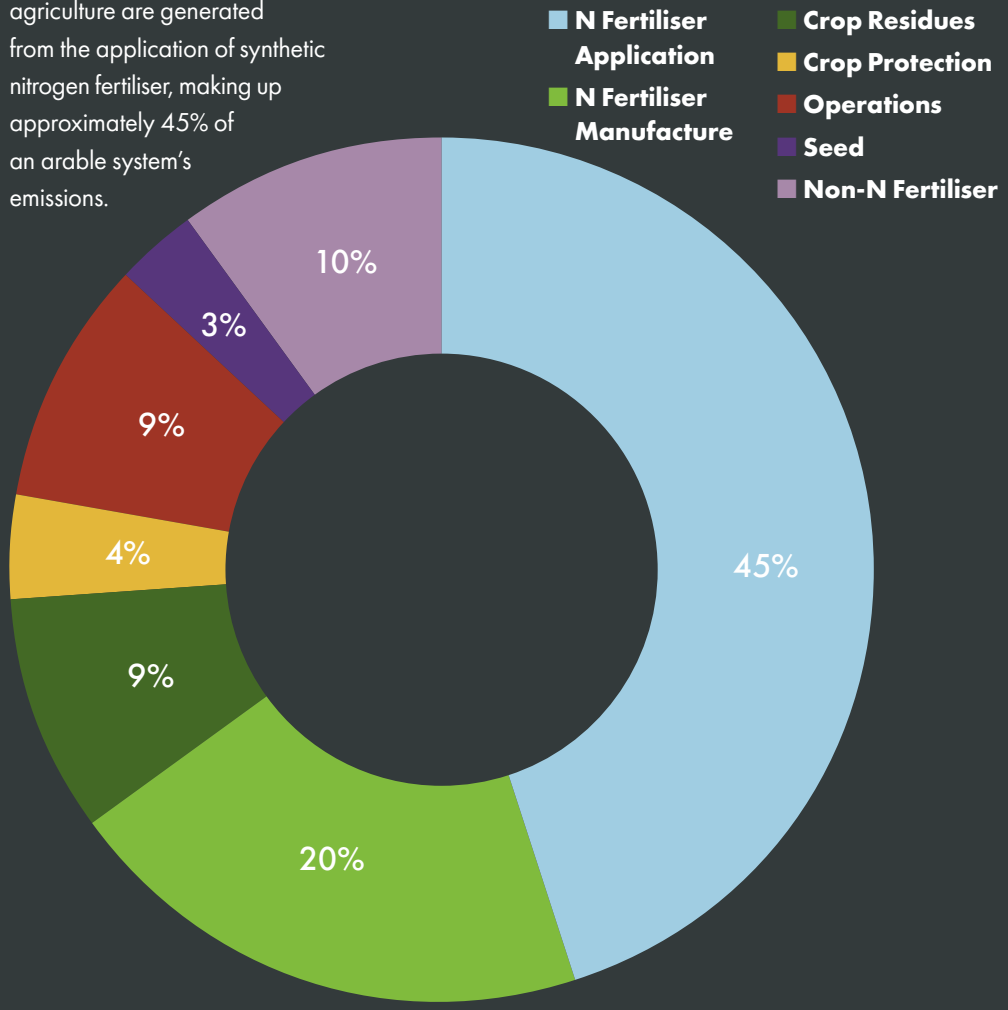
Reduce greenhouse gas emissions

Climate change has direct and indirect impacts on agricultural productivity. The effects of extreme weather events over more recent years are evident, causing disruption to our supply chains and increasing financial pressure on growers. Coupled with these challenges, new opportunities and innovations are evolving to help us reach the UK target of Net Zero by 2050, or 2040 as set out by the NFU.

Reducing the GHG intensity of crop production

Our approach to net zero is to invest in new technologies and innovations which can help to reduce the GHG emissions of our supply chain.

Agriculture contributes approximately 10% of the UK's GHG emissions. There are many factors that contribute to farm emissions, but when breaking it down by gas type, nitrous oxide is the focus point for food production. The main source of Nitrous Oxide emissions in agriculture are generated from the application of synthetic nitrogen fertiliser, making up approximately 45% of an arable system's emissions.



Our response to climate change is twofold:

1. **Adaptation** – growers need to build on farm resilience to cope with the extremes in weather. This can be achieved through improved soil health, genetics and targeting of inputs.
2. **Mitigation –** the food sector needs to prevent further contributions to climate change. This can be achieved by reducing the carbon footprint of the products used and adopting more innovative solutions to improve efficiency. Agriculture also has a unique opportunity to sequester carbon from the atmosphere through good soil management, therefore creating a 'closed loop' system to GHG emissions.

Reduce greenhouse gas emissions

Reducing the GHG intensity of crop production continued

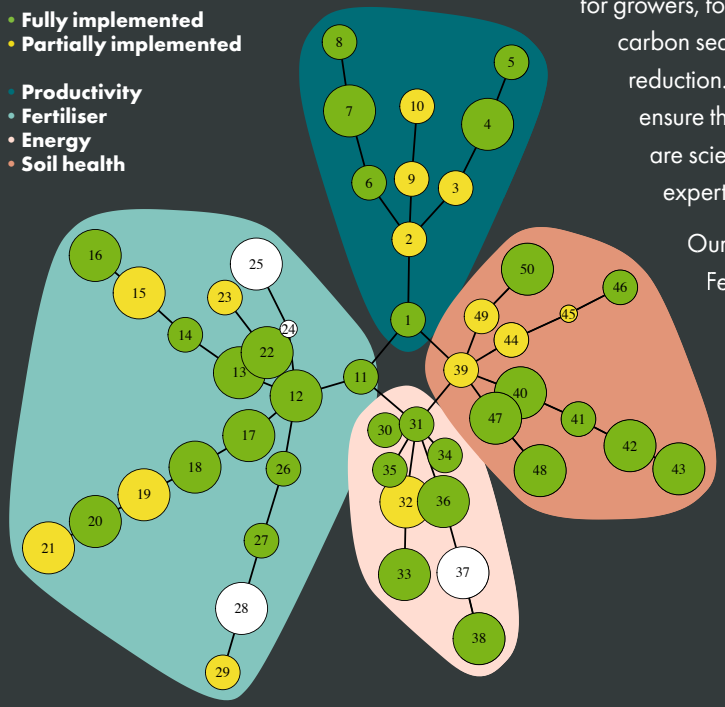
Objective:

Explore financial opportunities to help farmers reduce the GHG intensity of their crops.

Objective:

Expand the range and use of fertilisers with a low carbon footprint. Aim for 20% of Agrii fertiliser sales to have low carbon footprint by 2030.

Using digital tools, we aim to enable farmers to calculate crop GHG emissions and establish mitigation strategies by working with existing toolkits on the market. Our work with ADAS since 2021 on the Yen Zero project has started the process of benchmarking crop GHG emissions, providing unique mitigation strategies on how to reduce the GHG intensity of crops.



Mitigation tree to help farmers identify how they can reduce their emissions as part of the Yen Zero project. The size of the circle represents the size of potential impact, and the distance away from the centre represents the level of difficulty to implement. Example being number 12 – using a nutrient management plan, versus number 16 – using a nitrification inhibitor

As the market continues to evolve, we will continue to explore financial opportunities for growers, focusing on improving carbon sequestration and emissions reduction. It is important for us to ensure that market opportunities are scientifically robust, and that expert advice is available.

Our Enhanced Efficiency Fertiliser (EEF) range is another example of how we aim to reduce emissions from food production, with a lower manufacturing carbon footprint, and reduced in field emissions.

Since 2020, our sales of EEF's have increased by 175%, and we aim to achieve 20% of our fertiliser sales in the future to be from the EEF range.

Our trials have demonstrated the financial and environmental benefit of substituting traditional mineral fertilisers, such as ammonium nitrate, with products such as Enhanced Urea, which reduces both ammonia and nitrous oxide emissions.

We are also working closely with fertiliser manufacturers to explore new low impact technologies for manufacturing fertilisers. The emergence of green ammonia has the potential to reduce the GHG emissions from the manufacturing process. By using renewable energy sources, nitrogen from the atmosphere is combined with hydrogen from water electrolysis to form green ammonia, which can then be used in the production of low carbon fertiliser products.

Reduce greenhouse gas emissions

CASE STUDY:

Net Zero iFarm - Bishop Burton

A review of the carbon footprint at Bishop Burton, one of our Net Zero iFarms in East Riding, Yorkshire, has shown a carbon reduction of 2,441 tonnes of CO2e between 2020 and 2022.

Despite the farm being a net 'emitter' of greenhouse gas (GHG) emissions, its footprint has significantly reduced across the site within the two-year period, putting the 355ha college farm in a stronger position towards meeting its goal of achieving net zero.

In 2022, replacing straight AN for Enhanced Urea has reduced the carbon footprint of applied nitrogen by 1 kg CO_2e per kg of nitrogen.

This equates to a 23.75t CO_2e reduction across the farm without any yield penalty.

Using a more targeted approach has meant that, per tonne of wheat, their GHG emissions are significantly below the UK average of 340 kg CO_2e/tonne* for feed wheat. The important factor to note with figures like these is that they only account for the emissions from the manufacturing of fertiliser from raw material to farm gate. Although within some of our research we are quantifying the nitrous oxide emissions from the application of fertiliser, there are several variables which will affect these, so defining a final figure is very difficult.

Summary table showing the reductions in emissions that have been achieved at Bishop Burton between 2020 and 2022

Type	t CO_2e 2020	t CO_2e 2022	Change
Fuels	103.73	90.31	-13.42
Materials	11.87	7.92	-3.95
Inventory	26.70	22.18	-4.52
Crops	76.79	61.77	-15.02
Inputs	225.82	152.55	-73.27
Livestock	2,855.57	581.56	-2,274.01
Distribution	6.84	3.63	-3.21
Land use	160.78	160.78	0
TOTAL	3,468.09	1,080.69	-2,387.4

*Benchmarking greenhouse gas emissions for the UK arable and horticultural sector, CHAP 2022

Bishop Burton iFarm Improving air quality through product choice

Nitrogen fertilisers in the form of urea are also a major emitter of ammonia. Despite not being a greenhouse gas, ammonia is a major air pollutant. In attempt to reduce ammonia emissions, Defra have introduced new rules on the use of inhibited fertilisers. From April 2024, any urea fertilisers applied after 31st March must be inhibited.

Using a urease inhibitor such as Agrii's N + Enhance enables ammonia emissions to be reduced by up to 80% when compared to straight urea.

Reduce greenhouse gas emissions

How we do business – reducing our GHG emissions

Objective:

Reduce the GHG emissions in our business operations by 54.9% by 2032, based on a 2019 baseline

For food production to reach net zero, we have the responsibility to reduce the emissions of the products and services we deliver on farm. In 2022, Agrii signed up as part of Origin Enterprises to science-based targets, working to reduce our operational and value chain emissions. As part of the group, we are targeting a 54.9% reduction in our business operations and a 32.5% reduction in emissions across the value chain by 2032 from a 2019 baseline. This is part of our work as a Business Ambition 1.5°C member.

Origin ENTERPRISES PLC

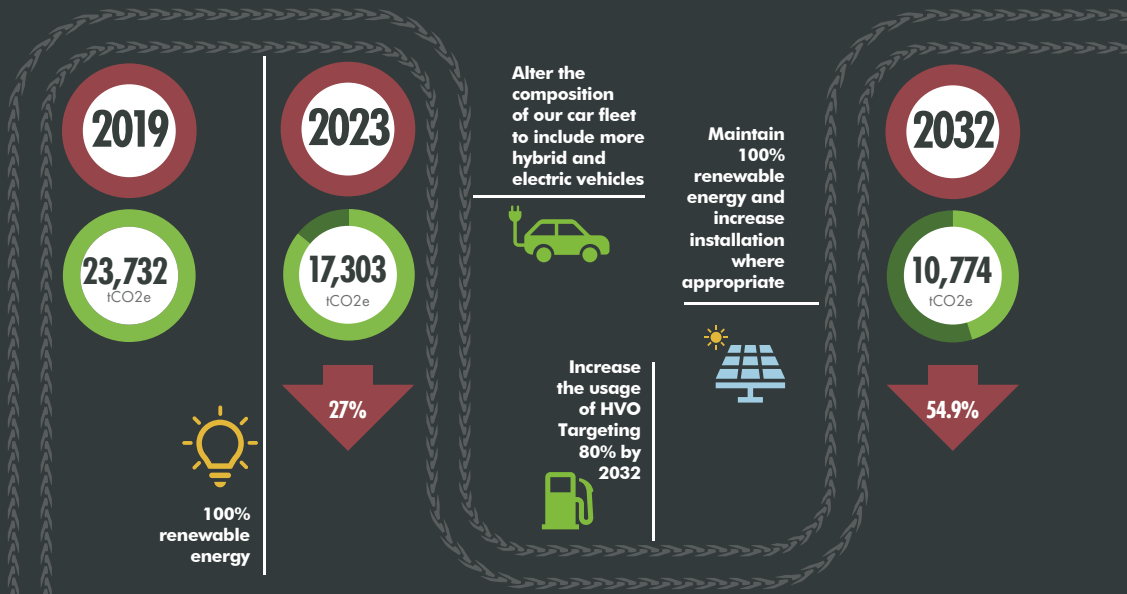
Business emissions

Since our baseline year of 2019, Agrii have eliminated 100% of our Scope 2 emissions across our operations through the installation and sourcing of renewable energy across all our sites.

Most of our reductions by 2032 will come from Scope 1 emissions. Areas of target include our fleet and logistics emissions, which will involve increasing the proportion of electric and hybrid vehicles and utilising alternative fuel sources such as Hydrated Vegetable Oils (HVO) for our logistics fleet, which have proven lower emissions than diesel.

Read the full Origin Sustainability Report here

Roadmap of scope 1 & 2 emission reduction



*Emissions data and objectives are set at an Origin Enterprises group level, of which Agrii is a subsidiary

Reduce greenhouse gas emissions

How we do business – reducing our GHG emissions

Measure:

Monitor the reductions in CO_2 emissions by vehicle and identify opportunities to roll out HVO at additional sites.

Measure:

Build on the success already achieved, identify further opportunities to increase EV usage & increase mileages, use of improved emissions data & reporting accuracies.

Where the technology is still evolving in electric vehicles, we are piloting fuels with a lower carbon footprint, such as Hydrated Vegetable Oils (HVOs).

HVO's can offer up to a 90% reduction in CO2 emissions compared with regular diesel in our heavy good vehicle fleet.

Coupled with our new fuel management system, which enables us to track fuel usage and efficiency data, the roll out of HVO's will allow a significant reduction in our fleet emissions. Hixon has been the first site where HVO has been introduced, and where feasible, we look to roll out HVO at additional sites.

CASE STUDY:

Electric vehicles

In 2022, Agrii replaced 13% of its van fleet with a combination of fully electric LDV Maxus vans and Renault Zoe E-Tech vans.

We have orders in place to increase the electric van fleet to 25% by the end of 2024. We are also offering schemes to help our employees switch to using electric vehicles, and are installing charging points across 10 of our Agrii sites.

At the start of 2023, our electric fleet covered 150,000 miles, with an anticipated mileage of 400,000 miles by the end of 2023. With the forthcoming implementation of "Geotab" across the fleet we will have access to data to allow us to better manage our fuel usage, emissions data & driver & cost efficiency.

Reduce greenhouse gas emissions

How we do business – reducing our GHG emissions

Objective:

Reduce GHG emissions across the value chain by 32.5% by 2032, based on a 2019 baseline

Objective:

Increase the Nitrogen Use Efficiency (NUE) of crops by 20% by 2030, using improved crop nutrition products and precision agriculture tools.

Supply chain emissions

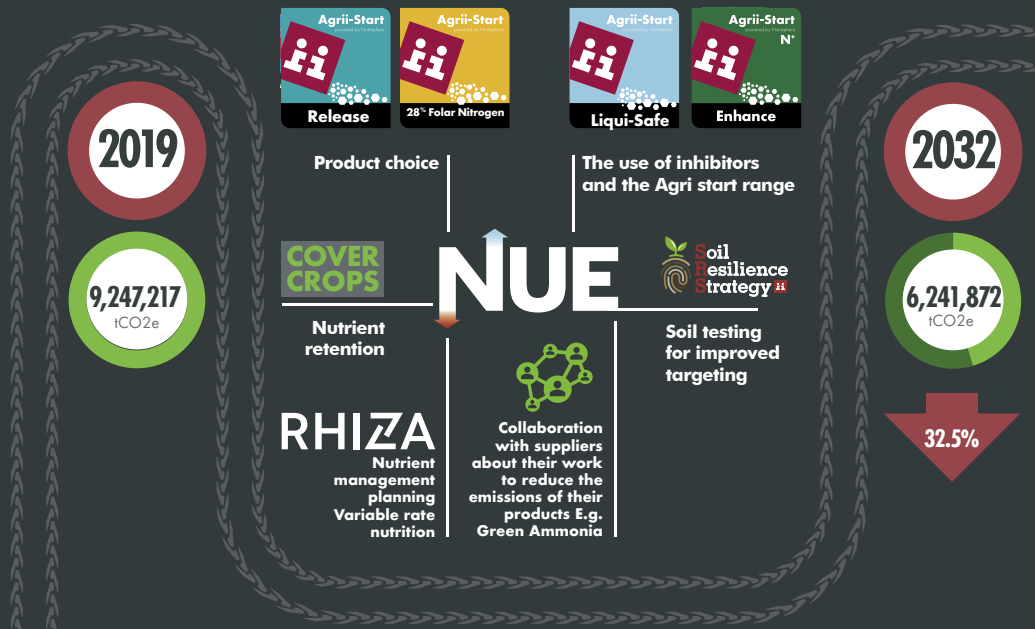
Achieving a reduction in our value chain, Scope 3, emissions will require greater collaboration with stakeholders upstream and downstream. We will continue working with our suppliers to ensure low carbon solutions are considered in the manufacturing of products. Working with organisations such as the Agricultural Industries Confederation (AIC) is also important to ensure with customers, we find ways to reduce delivery frequency and improve reporting consistency.

Our work with organisations close to the consumer continues, as it becomes increasingly important to ensure everyone is working towards mutual sustainability goals.

Concurrently, we will work also with our growers to reduce the GHG emissions from the application of our products. Increasing nitrogen-use efficiency is the single most effective strategy to reduce emissions whilst maintaining, if not improving, yield output.

With NUE on average being 60% in the UK, there is room for further improvement. Increasing NUE is about making incremental changes to farming systems to improve the plants access to the fertiliser applied.

Roadmap of scope 3 emission reduction



*Emissions data and objectives are set at an Origin Enterprises group level, of which Agrii is a subsidiary

Reduce greenhouse gas emissions

How we do business – reducing our GHG emissions

Our research has shown multiple ways of improving NUE on farm, which we have used to develop our own NUE toolbox.

Making improvements starts with measuring, and currently, few growers test their grain to see how much of the nitrogen they applied is being utilised. Our work with the agricultural industries confederation (AIC) has helped define an industry definition and methodology for calculating NUE on farm.

By 2024, Agrii will provide a simplified interface for this methodology through our digital platform, Contour, to enable growers to calculate the NUE of their crops and make changes to improve the utilisation of nitrogen.

Nitrogen outputs	Nitrogen inputs	
N in harvested crop, the amount of N removed in grain, oilseed, grass, etc.	N in the soil N from manures, slurries, digestates, etc. N from fertilisers	N outputs / N inputs x100 =NUE%

Improve water quality

The protection and replenishment of our water resources is important for crop development and habitat provision. Climate change continues to intensify the water cycle, resulting in more extreme flooding and droughts, creating challenges for crop production. With water scarcity likely to increase in the future, we need to improve the efficiency of how we utilise, conserve, and manage water.

Improving water use efficiency

Our Irriquest service assists growers in the efficient use of water for irrigation. By providing a near real-time view of soil moisture dynamics, the probes show where roots are using soil moisture and to what depth rainfall and irrigation infiltrates. These data can then be used to implement precision irrigation as and when required by the crop.

Improving water quality

Since 1995, there has been drastic improvements to water quality in the UK, with a decrease in some of the worst pollutants, and an increase in small animal numbers. However, water pollution incidents still occur and are increasing, caused through a combination of industry practice and the intensifying water cycle.

Our sprayer operator workshops operate with the aim of reducing the risk of plant protection products impacting non-target organisms.

Each year, we run 100 workshops throughout the UK for spray operators, educating on areas such as how to reduce drift and protect water courses by using the correct nozzles and spray additives, and how to reduce water usage though spray volumes.

How we do business – reducing our water consumption

Objective:

Reduce water usage & improve accuracy of data.

As we continue to deliver best practice training to operators to protect water quality and utilise resources efficiently, we are also dedicated to reducing our water consumption across our sites.

We are working to streamline the number of water providers that service our sites to ensure we have higher levels of support and data accuracy for reporting purposes. By initially targetting sites with higher water usage, we will look for opportunities to reduce the supply in and out from sites. At some sites, we are also undertaking feasibility studies for rainwater harvesting, to help reduce water consumption.

Improve water quality

How we do business – reducing our water consumption

Preserving water resources at any scale can be made possible by the introduction of rainwater harvesting systems. Our drainage and pipes division helps streamline the installation of these systems on farm.

CASE STUDY:

Cambridgeshire farm improves field drainage

Click here to read more

CASE STUDY:

Rainwater pays dividends for Angus farmer

At North Mains of Dun, harvesting rainwater with an Agrii system is saving David and Jenny Warden around a third of the annual mains water bill for their mixed arable, pig and soft fruit business.

Installed 10 years ago, the 10,000 litre aboveground tank system has already repaid the family's investment many times over and still has plenty of life left in it.

"Mains water is expensive," says David Warden. "Especially when you're fattening 3000 pigs a year, each drinking 6-7 litres a day and growing strawberries, blackberries, raspberries and blueberries.

"We have a 4 million gallon irrigation pond filled by natural offline water abstraction from our local watercourse for the fruit we grow as part of Angus Growers.

"Alongside this, capturing rainwater from our 800m2 livestock shed roof is invaluable. With our pigs alone consuming over 1.5 million litres of water each year, we reckon it's saving us buying around a third of what we need."

"Harvesting water from the roof helps restrict the pressure intense rainfall puts on our farm drainage system," he adds. "So, it's good for the environment as well as our business

Being as sustainable as possible in every way is essential for a small farm like ours.

It's all about making the very most of every resource we have and wasting as little of anything as we can – most importantly the water we get free of charge."

Enhance biodiversity

Objective:

Establish 1,000 miles of 'wildlife corridors' throughout Great Britain by linking amenity, rural and agricultural land to improve biodiversity by 2030.

Agriculture relies on healthy natural ecosystems to produce profitable food, yet we continue to see a decline in priority species. It is recognised that most of the decline in farmland wildlife is due to habitat loss, so the simple answer is to put them back. However, biodiversity does not have to be in replacement of crop production.

Our approach to increasing biodiversity on farm is twofold:

1. **Increase the diversity of species in the crop rotation** – more diversity in species can help to support a better diversity of habitats. A broader rotation can also help reduce pest and disease pressure on crops, reducing our reliance on plant protection products.
2. **Select the correct land to allocate for supporting biodiversity** – allocate least productive cropping land to biodiversity in the form of wildflowers margins, winter bird food and hedgerows.

To ensure we maintain a balance between food production and biodiversity, identifying the correct areas for biodiversity is an important process. The utilisation of soil zonal maps and yield maps through contour, our precision farming platform, can help to identify underperforming areas of the farm which may be suitable for habitat creation.

As part of the Origin Enterprises group, we are working with our sister businesses to create a network of wildlife corridors across the UK, with a target of 1,000 miles by 2030. As the group provides solutions to agriculture, amenity, and urban landscapes, it is perfectly placed to create and enhance habitats.

The ambition is to provide a one stop shop for growers, including natural capital advice, digital solutions, and sustainable agronomic advice. Collaboration with industry experts and scientific organisations will enable us to use digital tools. These tools will support the delivery of such services, identify the most suitable places on farm for different environmental land management actions.

Combined with growing expertise in a variety of sustainable agronomic solutions, we will be able to provide a joined up approach to creating a multi-faceted landscape; where productive land is allowed to produce food, and areas of lower productivity to host biodiversity.

Enhance biodiversity

Integrated pest management

Objective:

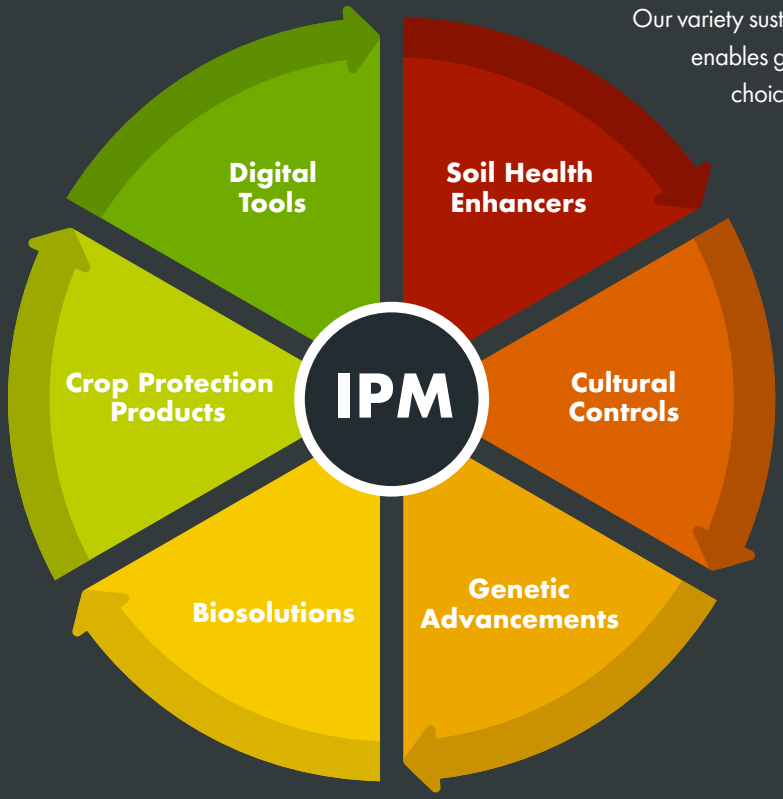
Continue to lead the way and promote highly sustainable varieties through our VSR.

Plant Protection Products (PPPs) remain key to yield and quality protection, protecting 20-40% of yield and reducing food waste globally, whilst only making up 1% of the GHG emissions from agriculture. Impacts on non-target organisms have also been reduced over the years through the evolution of newly modified product formulas and adopting best practice guidance for application.

However, the availability and efficacy of PPPs is gradually declining, and as more products continue to be removed from the market, the cost of replacing them is increasing. This threat to food security is something we must address by looking at more holistic farming solutions.

The adoption of Integrated Pest Management (IPM) can help to reduce dependence on PPP's, by considering other approaches to pest management (see below diagram). Agrii have always supported IPM, and in 2022, achieved the target of 100% of our trials following IPM principles based on 85% in 2020.

Variety choice is an important part of IPM, helping to reduce disease pressures by selecting a variety with a better disease rating. Our variety sustainability rating (VSR) enables growers to make variety choices based on several parameters, ensuring that it is best suited to their system.



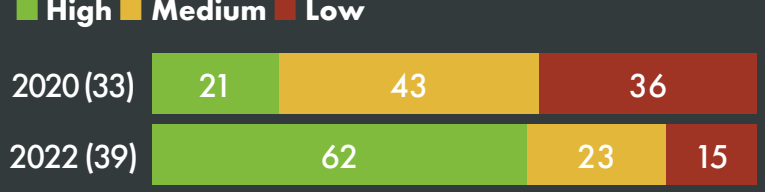
Since 2020, we have increased the sales of high sustainability varieties by 41%, exceeding the industry average.

100% of our trials follow IPM principles

We will continue to evolve and develop the variety sustainability rating to account or new cropping challenges identified in our trials.

Variety Sustainability Ratings 2020-2022

Proportion of varieties rated



Enhance biodiversity

Integrated pest management

Objective:

To develop a screening programme to fast track the development of Biosolutions.

We believe that adopting cultural controls alongside conventional PPPs and naturally derived options, commonly known as 'Biosolutions', is the most sustainable approach for the environment and farm profitability.

Biosolutions are likely to play an increasing role in global food production. Being biologically derived, they offer a solution for maximising plant health whilst being kinder to non-target organisms. However, with large quantities of products entering the market, research and trials are needed for identifying those which are credible.

Our commitment is to fully explore the potential of Biosolutions and put sound science behind their development. Across the Origin enterprises group, 117 different products have been tested, and those which have the potential to improve plant resilience identified. We continue to challenge any product lacking scientific evidence, ensuring growers have access to valuable and quality products.

As our trials continue to push plant protection products in a more environmentally sustainable way, we vision Biosolutions complimenting, not necessarily substituting PPPs in the short term. Undertaking large field trials is a costly process, and given the volume of Biosolutions entering the market and the high failure rate, we aim to fast track the testing of these products in a cost effective way.

The installation of a new glasshouse facility in 2024 at our Throws Farm innovation centre will enable small scale screening of new products before putting those which are successful out to field trials. This will allow us to quickly identify Biosolutions which have the potential to make a difference to in farm sustainability.

Waste reduction

From our products and services to our marketing and offices, preventing and managing waste is important.

In 2020, we introduced print standards for our literature, to ensure our brochures are printed on paper from FSC and traceable sources, is carbon balanced, printed using vegetable inks and has Worldland Trust certification.

We expanded on this in January 2023, when we launched and rolled out our new internal events standards to ensure all events are run as sustainably and as environmentally friendly as possible.

We understand the responsibility of everyone in the supply chain to reduce waste and recycle more. Chemical cans, seed and fertiliser bags are just some examples of a waste stream to target on farm.

Since autumn 2022, we have ensured all our master seed bags are made from polypropylene that contains at least 30% recycled materials and are 100% recyclable, making them recyclable through any waste provider.

In 2023, Agrii joined the Green Tractor scheme. The scheme is led by a group of environmentally focused, forward-thinking businesses that are positively affecting UK agriculture, by lobbying for and inspiring innovation within farm plastic recycling. By working with Green Tractor, we are subsidising the cost of recycling on farm, offering a 5% discount to the recycling of waste associated with product bought from Agrii. As a member of the scheme, we are helping the industry work towards all farm plastics being recycled by 2030.

SCOTLAND
+ Agri.Cycle
+ Solway Recycling
+ W&W Mackie

NORTHERN IRELAND
+ Emerald Isle Recycle

NORTH WEST
+ Solway Recycling
+ Farm XS

WALES
+ Heritage & Sons
+ Farm XS

WEST MIDLANDS
+ Agri.Cycle
+ Heritage & Sons
+ Farm XS

SOUTH WEST
+ Grassroots Recycling
+ Farm XS
+ Kitson Recycling

SOUTH EAST
+ Agri.Cycle
+ Grassroots Recycling
+ Farm XS
+ Kitson Recycling

Find out more about the Green Tractor scheme here

NORTH EAST
+ Agri.Cycle
+ Solway Recycling

YORKSHIRE & HUMBER
+ Agri.Cycle
+ Solway Recycling
+ GWilliam Recyclin
+ Farm XS

EAST MIDLANDS
+ Agri.Cycle
+ Heritage & Sons
+ Harby Agriculture
+ Farm XS

EAST OF ENGLAND
+ Agri.Cycle
+ Kelshall Plastics
+ Farm XS

LONDON
+ Agri.Cycle
+ Farm XS

All highlighted specialists are able to offer a 5% discount

Waste reduction

How we do business – waste reduction

Objective:

Phased roll out of zero waste to landfill by 2025.

Agrii's goal is to prevent waste wherever possible in our operations and supply chain. However, recognising that not all waste is preventable, we aim to ensure all waste is recycled or re-used, targeting zero waste to landfill by 2025. Currently recycling less than 50% of our waste, we understand that more work is required to accelerate our rate of progress.

In 2023, Alconbury introduced two mill sized balers to process waste cardboard & plastic generated in the warehouse which has enabled us to recycle more cardboard & plastic than previously. We have conducted several site surveys assessing opportunities to introduce balers at various sites and will soon begin to introduce these at key locations.

We are moving away from certain waste providers currently supporting several sites, and replacing with zero landfill providers that further enhance our commitments to be zero waste to landfill by 2025.

We have identified opportunities to increase our recycling across several sites supported by on site training for the site teams.

PODCAST

Post-Harvest Farm Clean Up: How Green is your Farm?

Click here to listen

Tramlines

WHAT WE DO FOR OUR PEOPLE

Improve health & safety

Objective:

To improve our health and safety audit score to 4.63 by 2027, based on a 2022 baseline of 2.84.

Objective:

To maintain our Reportable Injury Rate (per 1,000 employees) below 3.

The health, safety, and wellbeing (HSW) of our employees, coupled with the quality of our products and services, is a key priority. Through implementation of our HSW strategy, we aim to continually improve on our health and safety management system audit score year on year with an aspirational target of 4.63/5 by 2027. We continue to develop initiatives and programmes to help improve the health, safety and wellbeing of our employees and minimise our risk of work-related injuries and illness.

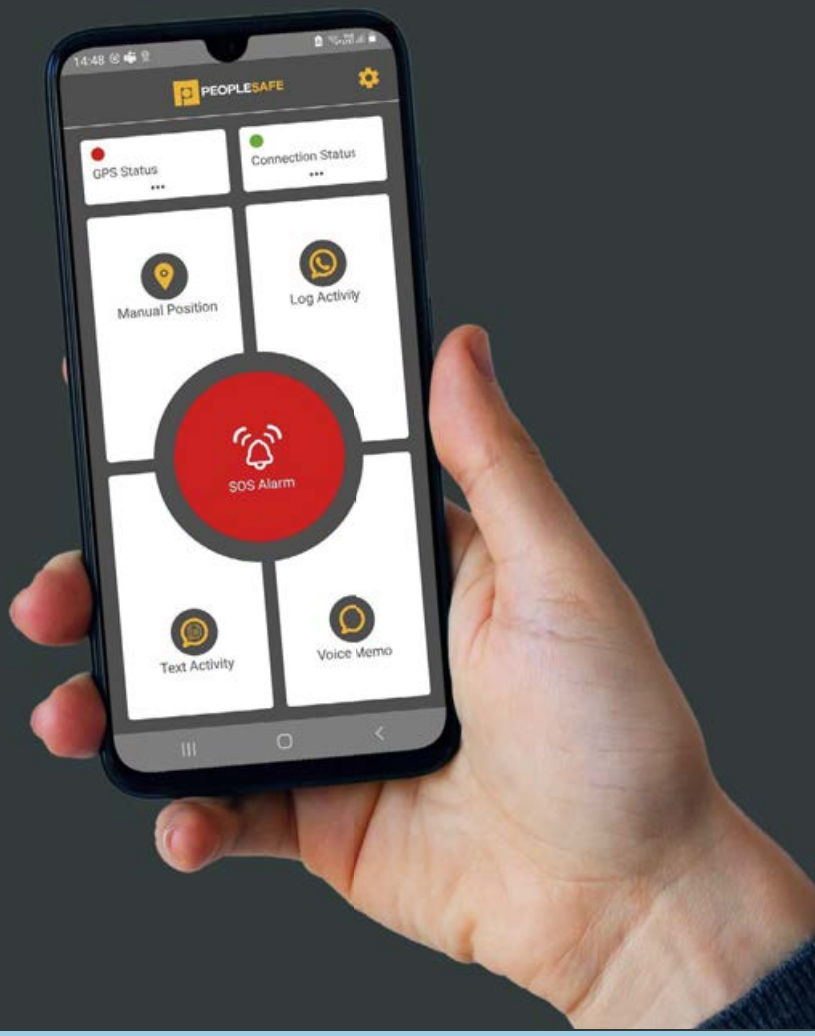
By focusing on our key risks, we are working to minimise potential for serious injury or illness and ensure our reportable incidents are minimised. The Reportable Injury Rate (RIR) is calculated as number of incidents reportable under RIDDOR per 1000 employees.

Lone working

PEOPLESAFE

For many of our employees, lone working is part of their role, often working in a dynamic, and therefore, high risk environment. To reduce the risks of these practices, we provide those employees who may be required to work alone with the tools they need to remain safe.

Our lone worker app 'Peoplesafe' means individuals can always raise an alarm in an emergency; the app can also be used to act as a buddy system or to detect falls for those working in the field. Tools like this are important to ensure lone workers can continue providing quality service but at a reduced risk to their safety.



WHAT WE DO FOR OUR PEOPLE

Improve health & safety

Training on health, safety and wellbeing

Agrii collaborate closely with organisations throughout the industry to help upskill the agricultural workforce. In 2023, we worked with BASIS to sponsor and help develop two health, safety, and wellbeing modules on the BASIS classroom.

Our work with charities who understand the pressures growers are under and provide support to the agricultural community continues. The Farming Community Network (FCN) deliver workshops to those who work within the industry to help recognise the symptoms and provide support for mental health.

In 2022, we delivered the FCN's 'Wellbeing in Agriculture' training to 72 customer-facing employees and are looking to deliver to a further 100 in 2023. By providing this training, we aim to challenge the stigma around mental health, ensure employees have access to support, and enable our customer-facing employees to spot the signs of poor mental health in others so they can signpost to the appropriate support.

BASIS

FCN THE FARMING COMMUNITY NETWORK

Community

Agrii is a company that takes our responsibility seriously, investing to support UK agriculture and the rural community. We operate in a way that respects the environment and we strive to be a company that both our staff and our customers are proud to relate to.

As a member of Linking Environment and Farming (LEAF), we are keen to promote British food and farming to a wider audience. The Open Farm Sunday is a great opportunity for growers to showcase the work they do to produce sustainable and nutritious food. To support initiatives like this, Agrii provide goody bags for growers to hand out to visitors, to help explain the journey from farm to fork.

Charity figures

Each year, Agrii selects three charities to support through various initiatives. We encourage our employees to support their local communities and charities, to help give back to our society. In 2022, Agrii raised £13,400 for their chosen charities; RSABI, Farm Safety Foundation and FCN Charity.

With the inflation of food prices, supporting lower income families has never been more important. The Health, Safety and HR team pooled together in 2022 and raised £250 worth of food to donate to the local Trussell Trust food bank in the lead up to Christmas.

Miles in May – Mental Health awareness

As part of our focus on wellbeing, we challenged our teams to 'Get Active' for the month of May.

For every mile recorded, Agrii donated 25p to their chosen charities. In 2022, we raised a total of £12,000 for RSABI, Farm Safety Foundation and FCN Charity.

RSABI Supporting People in Scottish Agriculture

MIND YOUR HEAD YELLOWWELLIES.ORG

FCN THE FARMING COMMUNITY NETWORK

Training

Objective:

Build knowledge of our employees and growers to support the adoption of sustainable farming methods.

Our employees play an essential role in the delivery of our Green Horizons strategy. We ensure individuals' needs for personal development are met across the business. Our Agrii iq umbrella for learning and development enables our employees to grow and develop within the business to meet the needs of our customers.

In our 2020 manifesto, we set out to expand our Agrii environmental training programme to ensure 'public money for public goods' was fully embraced within our agronomy services.

In 2023, we delivered the first round of accredited training, delivering the BASIS Principles of Sustainable Land Management qualification to over 150 employees across our sales, agronomy, and research teams.

Soil resilience, habitat provisions and nutrient use efficiency were just some of the topics covered on the course, providing an insight to what opportunities there are following the loss of our single farm payment.

Knowledge transfer is a crucial part of successfully improving the sustainability of food production. Throughout the UK, we have a network of 24 iFarms and technology centres which we open up to growers each year, attracting 2,000-3,000 growers. These sites demonstrate cutting edge innovation on genetics, soil health and integrated practices, and enable us to translate science into practical farm knowledge for growers to implement.

GLOSSARY

Biosolutions - A biological or naturally occurring solution to a problem. In this context – the possibility of utilising naturally occurring organisms for pest control.

Carbon markets - These are marketplaces through which regulated entities can obtain or surrender emissions permits or offsets to meet regulatory targets. They are a mechanism by which carbon emitters can offset their unavoidable emissions by purchasing carbon credits emitted by projects set up to actively sequester carbon or reduce emissions.

Carbon sequestration - Carbon dioxide is the most commonly produced greenhouse gas. Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change.

Climate change - long-term shifts in temperatures and weather patterns.

Ecosystem services - The many and varied benefits to humans provided by the natural environment – for example natural pollination of crops, clean air, human mental wellbeing and mitigation of extreme weather events.

Enhanced efficiency fertilisers - Forms of fertiliser, including nitrogen fertilisers, designed to reduce nutrient losses to the environment and increase nutrient availability to crops.

Food security - as defined by the United Nations' Committee on World Food Security, food security means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.

Greenhouse gases (GHG) - Gases that contribute to the greenhouse effect (or warming of the earth's atmosphere) by absorbing infrared radiation. Greenhouse gases trap heat – they let sunlight pass through the Earth's atmosphere, but prevent the heat that the sunlight brings from leaving the atmosphere. Many GHGs occur naturally in the atmosphere, while others are synthetic. Carbon dioxide, methane and nitrous oxide are all naturally occurring greenhouse gases, however human activity has led to their rapid release into the atmosphere – accelerating the greenhouse effect.

Hydrated Vegetable Oils (HVOs) - a biofuel derived from animal, plant or algae remains. Unlike traditional liquid fuels like fossil petroleum, natural gas and coal, biofuels like HVO are considered to be renewable energy sources.

Integrated Pest Management (IPM) - is the careful consideration of all available plant protection methods and subsequent integration of appropriate measures that discourage the development of populations of harmful organisms, while keeping the use of CPCs and other forms of intervention to levels that are economically and ecologically justified. (European Commission definition)

Measure - what steps we are taking to work towards that goal

Nitrogen Use Efficiency - NUE is the proportion of available nitrogen from the soil, fertilisers and manures that is removed by the harvested crop, expressed as a percentage.

Objective - the goal we are working towards

Reportable injury rate - mathematical calculation that describes the number of employees per 100 full-time employees that have been involved in an OSHA-recordable injury or illness.

Regenerative agriculture - is all about regenerating degraded soils to improve soil biology, enhance the water cycle, increase carbon drawdown and improve nutrient cycling. There are five key guiding principles to regenerative agriculture: keep the soil surface covered as much as possible, try to limit physical soil disturbance, integrate grazing livestock into the system, keep living roots in the soil for as much of the year as possible, and encourage a wide diversity of plants and crops to increase soil biodiversity

SCOPE 1 emissions - all direct emissions from owned or controlled sources (eg. fuel consumption for company vehicles).

SCOPE 2 emissions - all indirect emissions from a third party (eg. purchased electricity).

SCOPE 3 emissions - all other indirect emissions that occur in the supply chain (e.g. purchased goods, investments, transportation and distribution).

Soil Organic Carbon (SOC) - This refers only to the carbon component of organic compounds in the soil. SOM is difficult to measure directly, so laboratories tend to measure and report SOC.

Sustainable - sustainability means different things to people throughout the supply chain. To us at Agrii, sustainability is more than preventing the unintended impact of our practices on the environment. Sustainability is about leaving our food production landscape in a better place than we inherited it in by utilising resources as efficiently as possible.

Variety Sustainability Ratings - Variety Sustainability Ratings provide an unbiased way of comparing the overall robustness and resilience of varieties. Through collating and analysing 'real-time' data, they help us to answer the following questions:

- Are the varieties technically robust?
- Which varieties offer consistent yields and quality and reduce agronomic risk?
- Do they provide the flexibility to use crop protection products more efficiently?

Scores are also added for traits which reduce pesticide usage in the crop, e.g. wheat orange blossom midge, BYDV, TuYV and pod shatter resistance.

GREEN HORIZONS

www.agrii.co.uk

For more information on anything in this document, please email **info@agrii.co.uk**

PUBLISHED **2023**

Agrii™