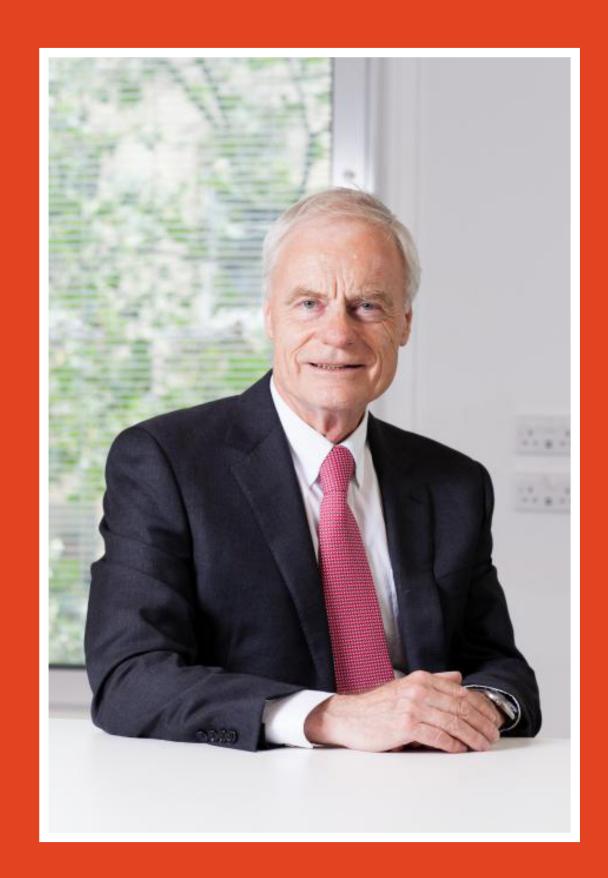
DR WOLFHART HAUSER



FOREWORD FROM THE CHAIR

With over 100 years of excellence, Fera is dedicated to advancing science and delivering unparalleled value to it's customers, empowering them to tackle challenges, innovate, and achieve their goals with confidence.

It is a great privilege to serve as
Chair of an organisation whose
work drives meaningful impact
across industries, communities,
and the environment. Guided by a
commitment to developing enduring
solutions for the world's most

pressing food system challenges, we are dedicated to building a safer, more sustainable future – protecting people, safeguarding vital resources, and strengthening resilience among the businesses we support.

Working hand in hand with our clients, partners, government, and academia to develop cuttingedge products and services. We've achieved an 9% increase in revenue, while simultaneously expanding capabilities, deepening expertise and championing original thinking.

As we move forward, we are eager to embrace new opportunities in advancing our commitment to shaping a sustainable future and leveraging state-of-the-art technology to deliver even greater value to our customers and protect communities worldwide from biological and chemical risks.



DR ANDREW SWIFT



FOREWORD FROM THE CHIEF EXECUTIVE

I am delighted to report that 2024 has been yet another year of strong growth and remarkable transformation at Fera of which everyone in the team is rightly proud.

These pages provide an illustration of how Fera has, once again, delivered strongly on our mission of 'Protecting you what you eat and the world in which we live....' paired with our purpose to reduce the environmental cost of producing safe, nutritious and healthy food.

This success is driven by our market-led strategy, original science and innovation, and our customer service commitment – propelling our growth and positioning Fera as a trusted partner in tackling such global challenges.

With Bridgepoint's backing we've embraced a new phase of strategic expansion, empowering Fera to respond with agility and greater impact to the ever-changing environmental, political and economic landscape in our markets, whilst deriving better financial returns.

Our public good commitment remains paramount. Defra's shareholding and our strategic support for Defra, Natural England, the Food Standards Agency and wider Government continues as central to Fera's purpose.

It ensures our business model stays true to our mission and continues to inspire all Fera staff as they deliver critical support for national resilience as well as innovative science services for tomorrow's challenges. These are demanding yet energising times at Fera, as we navigate a period of significant growth and transformation.

We have made substantial investments in 2024 to expand our capabilities, deepen our expertise and strengthen partnerships to enhance our ability to serve our commercial markets and public sector partners more effectively. This was brought to life at our Annual Science Symposium, "Innovation Through Partnership" where, this year,

we focused on the power of effective collaboration. From new approaches supporting regenerative agriculture to innovations in detection and diagnostics of threatening pests and diseases, through to examining the safety of novel foods – we heard from thought leaders, partners and industry experts about the latest insights shaping their horizons against which we could gauge the quality of our own work.

The success of Fera is built upon the hard work and energy of all our teams from Apprentices all the way through to Principal Scientists and their engagement with our Strategic Growth Plan.

Whilst thanking all in Fera for their contribution, I hope you enjoy reading Fera's Annual Impact Report and the selection of case-studies and achievements from the year.



REFLECTION FROM BRIDGEPOINT

This past year has been transformative for Fera, with the organisation having expanded its capacity and capability to apply its world-class scientific expertise to solve complex public and private sector challenges.

In this first year of partnership with Bridgepoint, Fera has also delivered encouraging financial performance across its business units and we are proud to have supported its success.

From Bridgepoint's perspective, our role in this partnership is clear: to help Fera unlock new opportunities, build on its legacy of excellence, and create the right conditions for sustained growth in both the public and private sectors.

In doing so, Fera will also be able to significantly extend the highly positive impact of its work, 'protecting you, what you eat and the world in which you live'.

As an important first step, we have supported Fera's independence following its decoupling from previous investors, helping ensure a smooth transition to standalone operations and systems over the past year.

This transformation has been vital in positioning Fera as a nimble, future-focused organisation, now ready to respond to the opportunities and challenges ahead, and, importantly, all while maintaining the organisation's inherent science-led and purpose-driven ethos.

We've been wholly impressed by the innovation, resilience and intelligence displayed by colleagues at Fera in the past 12 months. It is a privilege to be involved with a business that is sought after globally for its expertise and world class science.

We continue to see strong growth in demand for its services across a number of areas to which Fera is responding with great agility and enthusiasm.

Bridgepoint

Over the coming year and beyond we plan to build on this momentum by continuing to invest in new capabilities for Fera and extending the platform from which it can perform its work, and therefore make an impact, globally. As such this is a tremendously exciting time to be involved with the business.

Bridgepoint is proud to back Fera's leadership team and its talented workforce in these efforts.

As you will see over the coming pages, it's a partnership that's already making a real difference, helping solve pressing global challenges and creating lasting value for communities and stakeholders around the world.

Bring on the next 12 months!

We should like to take this opportunity to thank our colleagues at Fera for their hard work and commitment in delivering all that has been achieved by the business in this last year.



CONTENTS

BRIDGING THE GAP BETWEEN RESEARCH & IMPACT ACROSS THE WHOLE FOOD SYSTEM

Fera applies Original Thinking to support sustainable global food production. Fera believes there is no singular approach to delivering food systems fit for the future. As the food systems and technology evolve simultaneously there is no better opportunity to help organisations build new capabilities to address the needs of tomorrow.





BRIDGING THE GAP BETWEEN RESEARCH & IMPACT ACROSS THE WHOLE FOOD SYSTEM

Fera's science is responsive and market-led.
Our cohort of scientists across multiple
disciplines set the agenda, their approach
agile and adaptive to the changing world.







THE ENGLAND ECOSYSTEM SURVEY

Fera continues to lead a consortium of 11 contractors to deliver the second year of the pioneering England Ecosystem Survey (EES).

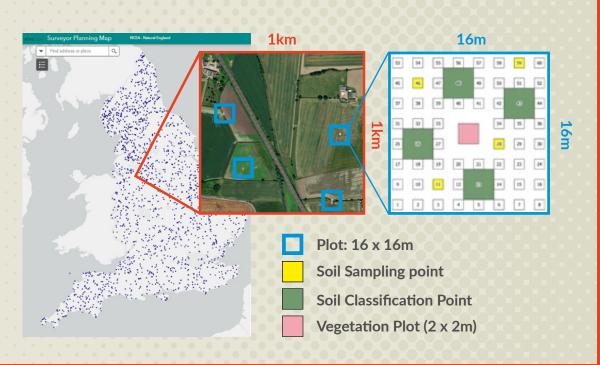
The EES is designed and led by Natural England and is funded by the UK government through Defra's Natural Capital and Ecosystem Assessment programme (NCEA). The NCEA is delivering a nationwide survey of England's land, coast, and seamapping the location, extent and condition of our ecosystems.

The results will enable England to better understand and manage its 'natural capital' – which brings so many diverse benefits to people.

The EES will provide a comprehensive and long-term dataset of England's terrestrial ecosystems through which change can be monitored over time. It comprises hundreds of survey sites distributed across England in a variety of different habitat and land-use types, which will be re-surveyed on a 5-year cycle. In a 'first of its kind' survey, data for both above and below ground ecosystems, is being collected

from up to six plots within each site comprising measurements of soil characteristics (physical, chemical, and biological) plus vegetation and landscape biodiversity. Fera's role is to lead a network of in-field teams of ecologists and soil scientists and to provide laboratory analysis of biological soil health. Soil samples collected across the country are being sent to Fera for cutting edge

DNA analysis of the biodiversity that constitutes the soil-food web, from microbes to mesofauna. The integrated dataset will be used in research across the UK to further develop understanding of soil health and facilitate the development of tools and policies that will be key in our transition towards more environmentally sustainable land management and agricultural practices.



BARCODING AT THE BORDERS

Barcoding at the Borders is a Defra funded project supporting their key objective to ensure smooth trade flow whilst maintaining secure borders. The project aims to produce better and wider uses of DNA barcoding in support of the UK's border biosecurity.

DNA barcoding identifies a pest or disease by comparing its DNA 'barcode(s)' to a reference library and allows us to identify it to species level. For difficult to identify organisms (e.g. fruit fly larvae) this can speed up the process significantly, allowing timely action to be taken on pest and diseases that we want to stop from entering the country. The project has three main focuses, improving diagnostics, knowledge exchange with other expert laboratories and environmental sampling at border inspections.

IMPROVING DIAGNOSTICS

A key restriction on accurate identifications is comprehensive, reliable reference sequences and this project presents a step change in the number of samples we added to internal Fera reference DNA datasets, using our culture collections and upscaling barcoding of intercept samples. To 'future-proof' the data, we used whole genome sequencing for bacterial culture specimens, and assayed genome skimming approaches for fungal samples.

These datasets were made fully searchable, better utilising the existing data and ensuring even unidentifiable sequences could be linked to previous interceptions. We looked in greater depth into the within-species variation in the barcode sequence data, assessing whether there are informative patterns in that variation about e.g. geographic origin or host species.

The project is also boosting methodological improvement to remove some of the barriers to routine barcoding. These include a deployable protocol for extracting DNA from insect samples without destroying the sample, innovative approaches to retrieving the barcode sequence from problematic species, and better ways to sequence fungal culture samples.

SHARING BEST PRACTICE

Fera is undertaking a series of study visits to other plant health expert laboratories across Europe, Australia, and New Zealand. In December a team of 5 Fera scientists from out diagnostics teams visited Australia and New Zealand. They discussed a range of plant health topics from current diagnostic testing, inspection process and implementation of policy. This was a valuable visit to learn about different approaches to Plant Health issues and view technology being implemented in these countries.

A second visit in December was undertaken to Switzerland to review their application of frontline diagnostics at border inspections. This included a visit to the Zurich airport plant inspection team and their laboratory facilities. We discussed their key factors to success and the process undertaken to implement testing. We also visited the Swiss NPPO, Agroscope to discuss their role in supporting statutory testing and diagnostics.

There are further study visits planned in early 2025 to France, Belgium and Netherlands.

ENVIRONMENTAL SAMPLING

Hundreds of plant samples, including plants for planting and fresh produce, pass through border control points (BCPs) for inspection. Environmental sampling at these BCPs could help support the inspection and surveillance activities being undertaken, by identifying previously unknown risks, and helping target inspections accordingly.

To assess the feasibility of this approach, air samples, insect traps and dust samples have been collected from Manchester Airport and Port of Liverpool BCPs over a six-week period. These samples will be tested using a metabarcoding method, which is a means of applying

the barcoding approach used throughout this project to complex, mixed samples. The bacteria, fungi and insects identified in the environmental samples will then be assessed for concordance to the results of conventionally inspected samples, and to look for any patterns associated with imports passing through the BCPs.

For example, are some taxonomic groups more commonly seen when particular types of plants are imported, or produce from particular geographical areas? If this approach proves successful, then in the future this kind of approach could be used to guide inspection effort, and future proof the UK against novel risks.

The project is already creating some exciting new opportunities and work from this project will continue to enhance our capabilities and application of diagnostics to support future plant health challenges.







For over a decade Fera has been an international pioneer responding to the opportunities to prove and develop the potential of insect bioconversion for upcycling biomass residues to valorised inputs in a circular agrienvironment-food system.

Our state-of-the-art insect bioconversion unit enabled us to scale up our applied research and contract support to partners and innovators in this sector. This facility allows us to meet the diverse needs of industry clients by demonstrating technical and economic viability at a pilot scale. During 2024 we've been supporting both national and international projects while reinforcing our commitment to advancing this field through ongoing investment in PhD student support enabling our cutting-edge initiatives linked to insect bioconversion.

INTERNATIONAL RESEARCH

Insect Bioconversion - Driving the Circular Economy in the Gulf Region - In collaboration with the Foreign Commonwealth Development Office (FCDO) in Abu Dhabi.

Fera has been commissioned to produce a Bioconversion Roadmap and Investor Toolkit which will demonstrate the transformative potential of insect farming for addressing regional challenges in food security, sustainable agriculture, and waste management.

The success of our collaboration with the FCDO relies upon Fera's commitment to innovation, coupled with our vision to reduce the environmental cost of food production and desire to keep advancing this emerging industry.

With research between Scientists, industry leaders, and technology providers, we seek to unlock new opportunities that not only benefit the UAE but set a global benchmark for sustainable agri-food systems.

INSECT BIOCONVERSION

Fera joined forces with Wern Heulog Farm, supported by the Welsh Government in an ongoing initiative to restore river health in the Wye Valley catchment.

Poultry farmers in the region face the challenge of managing waste sustainably whilst meeting supply demands and maintaining environmental standards. This project assesses the potential of insect

bioconversion to upcycle biomass waste (such as poultry slurry) into valuable resources, including insect oils, bio-fertilisers and innovative technical non-feed products.

Adopting this cutting-edge approach, the partnership seeks to create replicable sustainable solutions that benefit both agricultural productivity and the environment.



DRIVINGREGULATORY CHANGE

Driving Regulatory Change to Realise the Economic Growth Potential of Insect Bioconversion -Food Standards Agency

It is widely accepted that £100m GDP value to the UK economy is being held back by out of date regulation for Insect Bioconversion and its applications presenting the UK with a unique competitive disadvantage to the EU and most other countries who are capitalising upon the potential of this "biotech industry".

So Fera is keen to support any studies which help the relevant bodies address this regulatory challenge.

 \rightarrow

CLICK HERE TO READ THE ARTICLE.



In 2024 we finalised Fera's research into assessing the safety of currently non-permitted waste streams in the rearing of insects for feed.

The Food Standard Agency commissioned the research to provide chemical and microbiological data from a model insect rearing system using black soldier fly.







PROFICIENCY TESTING

ADVANCING INDUSTRY STANDARDS:

Fera's Expanded Proficiency
Testing Capabilities and
Innovation for 2025.



As part of our ongoing commitment to scientific excellence, innovation and raising standards we work hard each year to deliver new and relevant Proficiency Testing (PT) schemes to market.

2024 was no exception with 44 new schemes new schemes released. As a translational science industry, we're focused on science for impact and for public good. These new initiatives are designed to support diverse industries, enhance the quality of analytical testing and drive forward best practices in laboratory services and ultimately consumer safety.

One major development of 2024 was the introduction of new cosmetics proficiency tests, which builds on our established expertise of Fera's Fapas® programme (renowned for its global leadership in food and water schemes). Our transition from food to cosmetics proficiency tests is underpinned by our understanding of the complexity of both matrices.

These materials require similarly sophisticated testing methods and our expertise ensures the same test material quality. Furthermore, FAPAS provides the same commitment to data integrity and performance assessments that reflect real-world laboratories.

The new scheme was launched with five chemistry rounds and two microbiology rounds, in order to provide a comprehensive approach. These rounds cover key areas such as heavy metals and formaldehyde analysis — substances that are critical to safety and regulatory compliance within the cosmetics sector but also specifically requested by participants.

The initial market response to this initiative has been exceptionally positive with over 20 laboratories registering for the heavy metals and formaldehyde tests trusting FAPAS as their partner in ensuring product safety and regulatory compliance in this sector.

FERA / IFRA COLLABORATION

Fera is also driving industry thought leadership through a white paper in collaboration with the International Fragrance Association. This document aims to influence improvement in industry practices, offering insights that will inform future decision making.



The International Fragrance Association

Looking ahead to 2025, Fera is set to introduce Virtual Proficiency Testing, which represents a pioneering shift in how we provide alternative proficiency tests.

Initially focusing on microbiology, virtual proficiency testing will allow images of colonies to be shared remotely for colony counting, facilitating this specific skill development separately to culturing the organisms.

This alternative approach eliminates the need to physically send samples across the globe, significantly reducing both environmental costs and the logistical challenges of microbiological sample importation.

It also prioritises data integrity over physical sample handling, further enhancing the accuracy of the colony counting process.





Aligned to is purpose of reducing the environmental cost of food production, Fera supports innovators in the development of alternative proteins and Novel Foods – where one of our key roles is to ensure their safety.

Our active collaboration across key stakeholders in this domain deepens our understanding of the latest developments. This collateral allows Fera to offer crucial support to sector pioneers helping them navigate and meet the necessary regulatory requirements for cost-effective compliance and market access.

THE WORLD'S POPULATION IS PREDICTED TO REACH

9.7
BILLION
BY 2050.



Ensuring that everyone has access to safe and nutritious food whilst protecting natural resources represents a serious challenge. Alternative sources of proteins including, for example, milk prepared by precision fermentation or insect protein, are thought to have potential in helping to tackle this challenge.

Demonstrating that such innovative foods are safe, requires a profound knowledge of novel foods and their production processes combined with advanced chemical, microbiological and molecular analysis techniques.

One important safety aspect is related to food allergy, where we've worked closely with the Food Standards Agency (FSA) in 2024 to review processing methods of how novel foods production can impact allergenicity.

This work has also needed to investigate whether current testing methods can detect allergens in novel food products. We have performed preliminary testing to understand how routine tests for dairy milk allergens perform when applied to milk which has been produced on an industrial scale by precision fermentation.

Insect protein is consumed extensively in Asia, Africa and Latin America, often as intact insects for snacking, or as a flour. Insects are known to share some of the allergens found in shellfish.

Scientists at Fera have challenged testing methods currently used to detect allergens in shellfish to understand whether these technologies can also be applied to detect allergens in insect protein food products.

Based on these preliminary studies, Fera has made recommendations to equip FSA with the required knowledge to respond to enquiries and incidents involving allergens in novel foods containing alternative proteins, which could increase as these products grow in popularity.

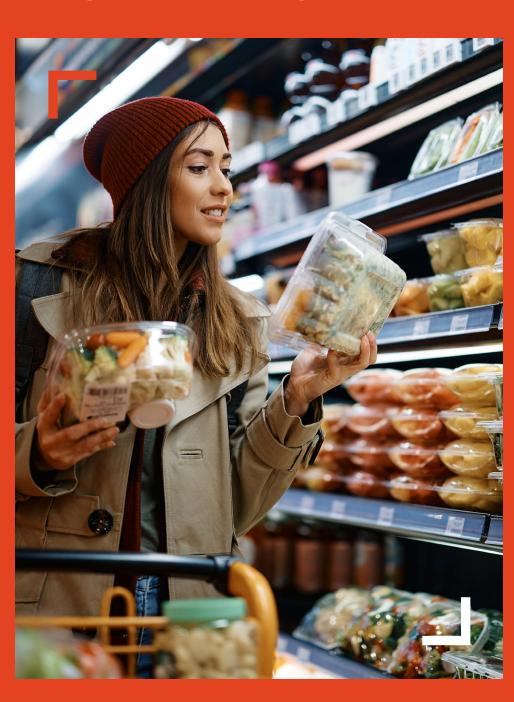








World Forest ID, Geographical origin testing of Food and Timber.



Testing the authenticity of food is crucial for ensuring the integrity of our food supply, protecting consumers from fraud and maintaining trust in the food industry.

Fera's pioneering work is verifying that food products are accurately labelled, meet regulatory standards and align with consumer expectations for quality and origin.

Uncovering issues like mislabelling, adulteration and contamination, food authenticity testing at Fera safeguards public health, supports fair trade and promotes transparency across the global food chain.

In response to rising demand in this sector, in 2024 Fera re-introduced and upgraded its Elemental Analysis and

Stable Isotope Ratio Mass Spectrometry (IRMS) capability which is an essential laboratory tool for determination of origin.

Our goal is to ensure accurate food labelling and safeguard the integrity of brands, including those with **Protected Designation of** Origin (PDO) status.

A major driving force in this work is the burgeoning interest in product origin and traceability brought about by the incoming EU Regulation on Deforestation-free Products (EUDR).

INTERNATIONAL ORGANISATIONS

Working with international organisations including World Forest ID and Royal Botanical Gardens Kew, we deploy cutting edge analysis, including IRMS and trace element analysis to prove origin.

This work supports development of datasets for determining the provenance of various food and feed commodities such as soy, cocoa and palm oil as well as other goods like rubber, timber and their related products.









During the year, we also published an important paper reviewing the current status of methods for the verification of country of origin for food and feed. Jointly commissioned by the **Food Standards Agency and** Defra, this review

ARTICLE.

provides key insights into the current and future analytical techniques that are used to verify product origin and makes recommendations to future-proof geographical origin testing to protect consumers.









Biostimulants are at the forefront of modern crop production, offering ground-breaking advances to enhance crop productivity, resilience and nutrient use efficiency with a much lower impact on the natural environment than conventional interventions.

The impacts of global warming are forcing innovations to find ways to support consistent, high-quality farm yields under unpredictable environmental conditions. Biostimulants are proving to be a vital tool for climate resilient agriculture.

These products are made of substances that improve plant vigour, nutrient uptake, stress tolerance and quality.
Under a pioneering new study Fera and SugaROx Ltd are exploring the feasibility of using a game-changing biostimulant

technology to improve tomato crop resilience to climate change, whilst also reducing the carbon footprint of tomato production in the UK.

Plant growth, fruit set and yield are optimal in tomato production, at day/night temperatures of 21°C to 29.5°C and 18.5°C to 21°C, respectively.

An increase of just a few degrees can damage reproductive organs, leading to drastic decreases of fruit setting.

As a result of climate change, high temperatures are becoming more frequent, longer lasting and more intense in the UK.

The summer of 2022 marked a new milestone in UK climate history, with 40°C recorded for the first time in the country.

Biostimulants are a relatively new class of crop input and are gaining rapid attention as one of the most promising tools to increase crop resilience to climate change.

SugaROx are set to disrupt this space with formulations based on active ingredients (Als) inspired by powerful plant molecules, boosting plant processes with a level of precision not seen before.

This 24-month project aims to explore the viability of adapting SugaROx's technology, originally tested on wheat, to boost the ability of tomato plants to cope with heat stress.

Fera's new high-throughput phenotyping capabilities allow this to be tested in an effective and efficient way. "By using digital phenotyping tools, such as hyperspectral imagery, we can now detect changes in plant status, in response to environmental stress, much earlier than using traditional methods", explains Dr Aoife Dillon, Principal Scientist for Crop Protection at Fera. "In addition, digitalisation reduces the need to destructively sample plants, so is more efficient in terms of time, space and energy usage".



Using the Phenospex PlantEye Technology, we are producing 3-D scans of miniature tomato plants under abiotic stress (heat and drought) with and without the SugaROx biostimulant to investigate the extent to which these biostimulants can mitigate the stress.

SUGAROX'S INNOVATIVE RESEARCH HAS EARNED THEM SEVERAL AWARDS.

- Prestigious 'Innovation Prize' at the Biostimulants World
 Congress 2024 in Miami.
- + Innovation & Excellence Award 2024 for Agricultural Chemical Manufacturer of the Year.
- + Top 5 UK Biostimulant Ventures to Watch in 2024.

Fera's role in this Innovate UK project reflects our unwavering commitment to develop and deploy cutting-edge technologies to support companies looking to bring 'green technologies' to market which can drive crop productivity and help growers and food producers to reduce their environmental cost of production.



MEASURING OUR SUCCESS

Our Science Key Performance Indicators (KPIs) are a set of quantitative metrics taken from internal datasets and external databases established to present an unbiased in-year assessment of Fera's scientific performance. These metrics feed into a KPI dashboard to provide an overall performance score and are sub-divided into three pillars: Quality, Impact and Innovation. These KPIs are reported and reviewed annually by Fera's Science Committee for our own measures but also as required by Defra on behalf of our Public Sector clients an partners.

Originally set out to reflect the structure of the Research Excellence Framework (applied nationally to UK universities to assess their research performance) we have developed a new set of KPIs devised to align more closely with Fera's JV business model as an expert testing, contract research and advisory services organisation to the commercial and public sectors.

Our Science Quality is measured by a demanding set of bespoke performance metrics. These include generation of a strongly cited, high impact peer-reviewed publication record, authorship of various grey literature and thought leadership pieces, as well as our success rate in competitive R&D bids. In addition, our commercial client satisfaction is assessed through customer feedback reports and annual c-NPS survey.



MEASURING OUR SUCCESS



Science Impact at Fera is measured by both commercial and research performance metrics. The commercial impact of our science is measured by the launch of new products or services using Fera's research and curated IP, whilst the Field-Weighted Citation Impact metric is used to benchmark the impact of our peer-reviewed publications in the fields of Agricultural and Biological Sciences.

BIO YORKSHIRE

As one of its founding partners, Fera has continued its active engagement in BioYorkshire, our regional cluster supporting the national and international Bioeconomy.

2024 saw the election of York and North Yorkshire's first Mayor – David Skaith – and the formal establishment of a mayoral combined authority. It also saw a general election and a change of Government.

Both of these presented new opportunities for Fera and the BioYorkshire project, with the new Prime Minister stating his ambitions to see economic growth, a green economy, and a thriving skills and investment ecosystem delivered hand in hand with mayors.

BioYorkshire has been working closely with the new mayor as he develops his local growth plan, and the mayor has put the bioeconomy at the heart of his priorities for the region.

As a long standing partnership between the education sector in both HE and FE (University of York and Askham Bryan College); support for science and technology spin outs and scale ups (Fera Science Ltd); businesses large and small; investment partners (including Aviva); and a close relationship with the York and North Yorkshire Combined Authority, we think BioYorkshire is now a prime example of how these commitments to growth, especially in the bioeconomy, can be made tangible demonstrate real results.

A YEAR OF RECOGNITION

Fera was proud to be recognised across many parts of our national and international community in 2024. Our team enjoyed receiving multiple awards, embarking upon new partnerships, as well as invitations to present thought-provoking lectures at key meetings, amongst which included:

- + Jodie Roebuck, our Chief Financial Officer, won the CFO of the Year for PE Backed Business at the Yorkshire Finance Leaders Awards.
- + **Dr Adrian Fox**, our Principal Plant Virologist, brought the sector up to speed on Enigma II – our collaborative R&D project at the 2024 British Tomato Conference.
- + Principal Food Scientist, **Dr Adrian**Charlton delivered a keynote talk
 "Examining Current and Emerging Trends
 for Novel Foods in the UK"
 at the Westminster Food & Nutrition
 Forum.
- + Fera entered into partnership with Albert Bartlett in a bid to control aphid numbers and combat the viral infection levels in seed potato crops across Scotland.

- + We enjoyed featuring in the Blue Horizons Series produced by BBC StoryWorks for our ongoing work with Nestlé Purina PetCare Europe on regenerative agriculture.
- + We launched two new Enigma projects;
 Enigma IV: Improving predictive
 diagnostics for Tobacco Rattle Virus
 in the potato sector, and Enigma V:
 Improving control of Cabbage Stem Flea
 Beetle on oil seed rape.
- + Our **Proficiency Testing Group**launched Virtual Proficiency Testing
 and introduced 44 new products and
 a new service for cosmetics –
 chemistry and microbiology.
- + Our CEO, Andrew Swift was invited to speak at the Foresight Frontier Forum at the Eden Project and Food Integrity Global.
- + At the start of the year

 BBC's Farming Today devoted an
 entire programme to our work on
 insect bioconversion, hosted by
 Dr Maureen Wakefield (Principal
 Scientist Circular Economy).

FERA WINS PRESTIGIOUS THE APPLES LAB OF THE YEAR AWARD

Following speaking at the international event Food Integrity Global in Amsterdam, we were delighted to receive the Apples award of Lab of the Year. This award recognises Fera's role and impact in helping to reduce the environmental cost of food production and how our work helps shape the future of food safety, authenticity and quality.





WINNER 2024

FERA'S ANNUAL SCIENCE SYMPOSIUM

Held annually and hosted by Fera, the Science Symposium remains an integral part of our science strategy. It provides an excellent environment to stimulate creativity across all of our scientist population, develop original thinking and produce better innovation and scientific output.

We recognise the importance of effective partnerships amongst key actors across the food system and this was the central focus of our 2024 Science Symposium: themed "Innovation Through Partnership".

Keynote speakers from industry and academia to policy makers and regulators, shared key insights, blended with scientist contributions from both Fera and Newcastle University.

Our CEO Andrew Swift delivered an inspiring and thought-provoking opening, followed by impactful conversations from leading sector experts including Cécile Doinel (Regenerative Agriculture Program Manager, Nestlé Purina Europe) and Dr. Chetan Parmar (Senior Vice President Europe & Asia, FoodChain ID).



Our industry sessions comprised of a panel featuring, Enigma Partners, James Warner (Managing Director, United Oilseeds), and Adam North (Pearce Seeds).

Other guest speakers included thought leaders, innovators and experts from across sectors including: Mark Cunliffe-Lister (Earl of Swinton), Professor Clare Mills (The University of Surrey),

Richard McIntosh
(Assistant Chief Plant
Health Officer, Defra)
and Justine Bejta
(Deputy CSA, Science
and Analysis Group).

CLICK HERE
TO WATCH
SYMPOSIUM
HIGHLIGHTS &
SESSIONS.





MEASURING OUR SUCCESS



INNOVATION

Innovation

Our approach to Innovation is also measured by our annual investments in R&D projects, infrastructure and facilities, as well as in the year pipeline of intellectual property for commercial translation.

We also assess our Science Innovation through the number of PhD studentships in which we invest.

These studentships aim to generate fundamental/discovery knowledge aligned to the priorities of our science strategy. Providing data to support existing products and services, to drive the development of innovative products for new markets.

ENIGMA

PIONEERING INNOVATION AND ORIGINAL THINKING FOR SUSTAINABLE GLOBAL FOOD PRODUCTION.

Enigma is Fera's novel collaborative R&D model designed to drive strategic research innovation and knowledge transfer in the agri-food sector. Launched in 2022, Enigma establishes cost-effective collaboration between Fera and industry partners. Co-sponsored projects enable Fera to deliver science and to develop solutions that tackle key sector challenges in the short term.

ENIGMA I SUSTAINABLE WIREWORM IPM

Our first Enigma project responded to an increase in wireworm damage in potato, salad, root vegetables, cereal, onion and other crops across the UK.

Co-funded by Industry leaders, this project completed phase 1 in 2024. Representatives from Syngenta, G's Fresh, Elveden Estate, Pearce Seeds, Inov3PT, and Blackthorn Arable worked with Fera scientists to gain a deeper understanding of wireworm and its evolving patterns of damage.

OUTCOMES

Its outcomes will risk assessments and inform the most efficacious targeting of IPM measures:

- + Produced a visual key for main species of concern in the UK.
- + Upskill workshops improving the identification of click beetles and wireworms and how to differentiate these from similar insects.
- + Produced DNA barcodes to facilitate identification of wireworm larvae.
- + Proved the concept that it is possible to simultaneously identify several wireworm species at once in soil samples using DNA metabarcoding.



- + Validated a method to use DNA analysis to identify wireworm gut contents.
- + Produced current and future (2040's) geographical range predictions.
- + Population responses, modelled at different temperatures.

PHASE 2 WILL PROGRESS TO:

+ Assess risk and make recommendations specific to local conditions, soil type, crop, wireworm species present, enhancing natural control e.g. carabid beetles, and SFI seed mix options.

ENIGMA V IMPROVING CONTROL OF CABBAGE STEM FLEA BEETLE ON OIL SEED RAPE

The latest Enigma project exemplifies how our studentships drive research progress and foster science to address some of the most urgent Agri food challenges.



Enigma V was born out of Hannah Fenton's PhD research, where the connection was made between the current oil seed rape (OSR) landscape and the need for new pesticide solutions.

Focusing on the escalating problem of Cabbage Stem Flea Beetles and their destructive impact on UK oilseed rape crops, Enigma V seeks to bridge the knowledge gap created by the ban on neonicotinoid seed treatments and the over-reliance on pyrethroid insecticides.

In partnership with, United Oilseeds, Frontier Agriculture, ADM International, Limagrain UK and Frito-Lay we aim to develop a sustainable solution to safeguard crop yields and support agricultural resilience.

CLICK HERE TO LEARN MORE ABOUT ENIGMA AND HOW WE'RE WORKING PARTNERS, WATCH OUR 2024 SYMPOSIUM SESSION.





As a translational science organisation, Fera is focussed on science for impact. Therefore, we invest in partnerships with leading academic institutes and industry to support early-stage innovation and to nourish our own talent resources and ingenuity. We also participate in selected national and international applied research and development for translation to market impact.







PRINCIPAL SCIENTIST LEADERSHIP TEAM

With our mission to tackle global challenges through innovative science and deliver practical solutions for the future, the Principal Scientist Leadership Team (PSLT) plays a critical role in driving Fera's success. The Principal Scientist role at Fera is a hybrid function that combines scientific domain leadership with strong commercial acumen.

The team plays a pivotal role in driving revenue growth across all business units by leveraging each Principal Scientist's portfolio of projects, network of partners, and connections across public and private sectors.

In 2024, as part of our commitment to achieving the objectives outlined in our Five-Year Growth Plan (5YrGP), we undertook a strategic initiative to double the size of the PSLT through open competition and targeted recruitments.

This expansion is designed to enhance our capacity, build resilience, and ensure we have the expertise needed to meet the challenges of a rapidly evolving landscape while continuing to deliver impactful science and innovation.

CURRENT PRINCIPAL SCIENTIST LEADERSHIP TEAM (PSLT)



DAVID PHILLIPS CHIEF SCIENTIFIC OFFICER



PHIL NORTHING HEAD OF SCIENCE STRATEGY

DR MAUREEN WAKEFIELD

CIRCULAR ECONOMY



DR ADRIAN CHARLTON NOVEL FOODS



DR GLYN JONES ENVIRONMENTAL ECONOMIST



DR AOIFE DILLON

CROP PROTECTION

MARK SYKES PROFICIENCY TESTING

NEW JOINERS IN Q1 2025



PAUL BROWN NATURAL CAPITAL



DR LARISSA COLLINS ENTOMOLOGY R&D



DR ED HAYNES MOLECULAR BIOLOGY & MICROBIOLOGY



PROFESSOR NEIL BOONHAM PLANT & BEE HEALTH





Fera submitted 476 bids and quotations in 2024, at a cumulative value of £40.8m. We enjoyed a success rate of 63% on all submissions; 33% for grant funding, 56% for commercial tenders and 82% for R&D projects. As these projects progress, their outputs will underpin our ability to deliver competitive, innovative and high-value solutions to our clients in to the future.

Fera continues to partner with industry leaders and, from North America to the Middle East to South-East Asia, we forge strategic international alliances across our scope of expertise. In the UK we continue to partner with our core founding partners of BioYorkshire and we are now mobilising a partnership with Rural Solutions to pilot new land-use strategies.

Meanwhile at home in the public sector our largest R&D partners include Defra, Natural England and the Food Standards Agency across multiple themes protecting you, what you eat and the world in which we live and demonstrating our commitment to advance applied research for public goods.

We were delighted to extend our delivery support to Natural England under the England Ecosystem Survey, further develop our collaboration with Defra partners in the Barcoding at the Borders project and see our Animal Health team secure a major win with the University of Oxford, and a range of other clients through the innovative Ghost SentinelTM system.

We've also achieved a significant milestone by joining the Research and Insights Dynamic Purchasing Framework (Crown Commercial Services), paving the way for expanded collaborations with further government framework clients.

BID SUBMISSIONS 2024



INTERNATIONAL REACH

2024 was an important year for Fera advancing its international strategy by strengthening partnerships in key regions, expanding its scope of certifications and enhancing consultancy services.

Our strategic partnership with Food Chain ID deploying HorizonScan in the USA for emerging risk in global food commodities was accompanied by new collaborations in Saudi Arabia, the UAE and the USA. In addition, we made notable progress in Canada with Purity-IQ, with 17 Asset Management in the USA. In New Zealand a DNA verification program for Kiwi growers, and in Tanzania through advisory roles for the Ministry of Agriculture and the Horticulture Trade Association. Proficiency Testing and FAPAS® products also continued to grow strongly, cementing Fera's reputation for quality in measurement globally.

Looking ahead Fera will focus on deepening its impact in strategic territories. Efforts will include advancing the below collaborations:

- + Expanding our FAPAS® operations in China and our collaboration with Biofront in the USA.
- + Executing consultancy agreements in the Middle East to strengthen food safety and sustainability.

Fera will also scale its global certification and traceability services while maintaining active participation in international trade shows and scientific events.

- + Mobilising key initiatives in North America with Purity-IQ and market partners.
- Fostering advisory roles in Africa to enhance regional capacity for export.
- + Mobilising advisory role for 17 Asset Management in USA and Caribbean.

With a commitment to leveraging expertise and innovation, Fera is poised to deliver sustainable, science-driven growth across key markets and geographies.

DRIVING IMPACTWITH **17 ASSET MANAGEMENT**



Fera is proud to announce its role as the science advisor to 17 Asset Management (17 AM), a transformative partnership that aligns with our mission to deliver positive, science-led change.

This collaboration has focused on driving sustainable solutions within global food systems, with a particular emphasis on regions like the Caribbean.

Our shared efforts have centred on addressing critical challenges such as food security, sustainability, and environmental resilience. Fera has brought its expertise in food safety, environmental analysis, and Agri-Tech innovation to support 17 AM's pioneering initiatives, including their newly established funds aimed at empowering local food enterprises.

The USD 100 million growth capital fund and USD 25 million innovation fund promise to catalyse economic growth while fostering ecological and social resilience across the region.

By providing scientific consultancy and leveraging our global network, Fera has played a key role in mapping investment opportunities, ensuring compliance with safety standards, and enhancing the value of sustainable practices.

Together, we aim to elevate both the financial and environmental outcomes of investments, fostering innovation and local livelihoods.

This collaboration exemplifies
Fera's commitment to partnerships
that address systemic challenges,
delivering science-backed solutions
that create a lasting impact.

We look forward to continuing our journey with 17 AM to redefine the future of food systems in the Caribbean and in other geographies.





ACADEMIC COLLABORATIONS & IAFRI



Fera has a successful history of supporting PhD students. Working in collaboration with several research-intensive universities around the UK, we are currently sponsoring over 30 students.

We recognise and actively play our part in addressing the urgent need for the UK to 'up-skill' in Engineering Biology, Food and Environmental Science amongst other inter-related disciplines and are an industrial partner in multiple UKRI funded doctoral programmes, for example:

North East England Doctoral Landscape in Biosciences (NEEDL) – a BBSRC funded partnership involving the universities of Durham, Northumbria, Teesside, Sunderland and industry where "The vision is to train the next generation of scientists in technical and professional skills for diverse careers in modern, sustainable, biosciences in areas such as chemical biology, food security and neuroscience and ageing".

ECOSOLUTIONS

Transforming chemical management for a non-toxic future doctoral focal award – an NERC funded partnership with the Universities of Sheffield and York that "will train transdisciplinary, solution-focused PhD students who can apply systems-thinking to facilitate the delivery of a non-toxic UK environment and sustainable chemicals products sector".

Yorkshire Bioscience DTP- a BBSRC funded partnership with the Universities of Leeds, Sheffield, York, Bradford, Hull, Leeds Beckett, Sheffield Hallam and Teesside.

This is the successor to the White Rose DTP and will focus on supporting bioscience and biotechnology projects that will underpin the development of a vibrant bio-economy in the Yorkshire region.

IAFRI



THE INSTITUTE FOR AGRI-FOOD RESEARCH AND INNOVATION (IAFRI) - OUR JOINT INSTITUTE WITH NEWCASTLE UNIVERSITY.

IAFRI continues to deliver research and innovation in the disciplines of agriculture, food and environment and translates outcomes into real world application for the benefit of society. Its mission supports Fera's Science Strategy seeking to:

- 1. Generate and apply new knowledge to practical problems in Agri-Food-Environment.
- 2. Generate, manage, and exploit intellectual property to drive Fera's commercial growth.
- 3. Develop a talent pipeline of expert scientists for recruitment by Fera or NU.

NEW PARTNERSHIPS





ALONGSIDE OUR IAFRI RELATIONSHIP WE HAVE CREATED NEW PARTNERSHIPS IN YEAR WITH BOTH HARPER ADAMS UNIVERSITY AND THE UNIVERSITY OF SURREY.

Our 2024 cohort of students have begun research into:

- + The Application of Multiplex-Amplicon Sequencing for Broad Spectrum Targeted Detection of Plant Viruses and Vectors – Yue Lin Loh (Newcastle University)
- Lifecycle assessment of alternative trees outside woodlands systems -Elise Webb (Cranfield University)
- Detection and management of root-knot nematodes (Meloidogyne spp.) infecting potatoes in Great Britain - Celestine Odouri (Harper Adams University)
- + Building below ground invertebrate trophic networks for soil health monitoring using metagenomics and ecoacoustics Will Dawson (Newcastle University)
- + A targeted enzymatic treatment for control of Xanthomonas campestris pv. campestris, the cause of black rot of brassicas - Tom Gill (Newcastle University)
- Optimising the safety and nutritional quality of insect protein ingredients - Laurie Stevenson (University of Surrey)



Fera's Science Strategy is devised and delivered by our scientists guided by our Board of Directors and its <u>Science Committee</u>. We are also focussed on social inclusion and direct our efforts at ensuring our talent resourcing maximises ethnic diversity and inclusion. We maximise the opportunities for 'in-house' progression and deploy a strategy of recruitment and regional community engagement to construct a development pipeline providing attractive career progression to new joiners.







Since introducing the Laboratory
Technician apprenticeship in 2011,
we have harnessed new talent,
on-boarding and progressing
apprentices to help Fera develop its
next generation of scientists. We are
extremely proud of all our apprentices
and their wide-reaching achievements.

Fera continue to support and encourage our staff to achieve their best potential through our apprenticeship programmes in Science and in Corporate roles and our membership of this trailblazer group further demonstrates our commitment to developing the occupational standards at national level.

SUPPORTING DOCTORAL STUDIES

Fera is dedicated to developing the next generation of scientists to drive innovation and build the critical expertise required to address global challenges across our disciplines.

Central to this mission is Fera's focus on collaborations with leading academic institutions. Through these partnerships we translate ground-breaking 'discovery' research into practical solutions that support national and international food security and sustainable global food production. Through academic partnerships, Fera co-sponsors 20–30 PhD students annually, helping them contribute to cutting-edge research while aligning their work with the industry and public sector needs.

Fera has supported doctoral training of existing staff and in 2024 we worked with several universities to established a PhD by publication program for Fera scientists.

This provides a route to a PhD for our employees who have built up a portfolio of publications through their professional practice and are experienced in undertaking and delivering research projects.

This blend of academic routes for progression are now available across Fera to support their career development from school leavers' entering our level 3 apprenticeship programme, through to degree, masters and PhD.

PHD SPOTLIGHT: YUE LIN LOH

"The most rewarding part of my PhD so far has been learning how to make each decision critically, based on the research results of each experiment, guiding my journey towards my research outcomes".

Prior to my PhD, I started my journey at Fera as an assistant scientist, progressing to become a method validation scientist in the Plant Health Molecular Diagnostic unit.

During that role, I developed a strong interest in the application of portable instruments and the development of new diagnostic methods for plant health.

When this PhD project was advertised, it seemed to fit really well with my research interests and the type of work I find engaging. I thought it was the right research topic at the right time and a great opportunity for me.



I have made good progress over the first year of my study thanks to the laboratory technical knowledge and project management skills which I established in my previous role.

I am currently at the end of my first year of PhD study. The journey has been challenging. With the enormous support from my supervisors from Virology Team and other expertise at Fera as well as resources from Newcastle University, I firmly believe I will have a great research experience and the skills to complete my PhD successfully.

APPRENTICE SPOTLIGHT: HOLLY STEEL

"Over the past three years, I've worked across digital marketing and events, from creating content to managing exhibitions. A highlight was the SETAC 2024 event, which I feel was my best yet. Taking on early responsibility during my apprenticeship allowed me to develop key skills, such as stakeholder management, and make a real impact".

One of my proudest achievements was independently launching a new Fapas® program this year, applying everything I'd learned to deliver a successful campaign. Balancing workbased learning with my university studies gave me the opportunity to apply academic knowledge to realworld projects.

The apprenticeship culminated in a final project and End Point Assessment, showcasing the skills and behaviours I'd developed throughout. I'm incredibly proud to have graduated with First-Class Honours and to have made meaningful contributions along the way.

During my apprenticeship, I completed three work-based projects, which turned out to be the most rewarding part of the experience. These projects allowed me to explore, learn and create positive changes that had a lasting impact on the business. Knowing that the work I've done during my time at Fera has been both useful and valuable to others is incredibly fulfilling. Having completed the apprenticeship, I am now a Marketing Executive at Fera. I'm excited to build on my apprenticeship experience by managing my own campaigns, taking on more leadership responsibilities, and working on new and exciting projects within the business.

"I look forward to continuing to grow in this role and contributing to the company's success".







At Fera, we are dedicated to conducting our business in a sustainable and responsible manner. This commitment extends to complying with all applicable laws and regulations while safeguarding the wellbeing of our employees, clients, partners, local community and the wider world.

PUTTING COMMITMENT INTO ACTION.

DRIVING PURPOSETHROUGH SCIENCE:

Our products and services are guided by our core purpose:

Protecting you, what you eat, and the world in which we live. This vision is embedded in our Science Strategy, ensuring a forward-thinking approach to every aspect of our work.

MINIMISING CLIMATE IMPACT:

We run our operations in a way that is mindful of our own climate impact. To achieve this we have baselined out carbon footprint, created a carbon reduction plan and made a commitment to achieve Net Zero by 2050.

ENSURING FINANCIAL

SUSTAINABILITY:

Delivering value to our shareholders is vital to our success. Financial sustainability ensures we can continue creating positive outcomes aligned with our purpose. This focus is defined in our 5-Year Strategic Growth Plan and approved by our Fera Board of Directors.

FOSTERING

A SUPPORTING WORKPLACE:

We are committed to a diverse, fair and inclusive workplace where every colleague is encouraged and empowered to thrive.

STRONG

GOVERNANCE:

Our Board's skills and experience align closely with Fera's mission. The Board's governance ensures that our company operates responsibly and strategically plans for long-term sustainability in service of all stakeholders.

SUSTAINABLE

PROCUREMENT:

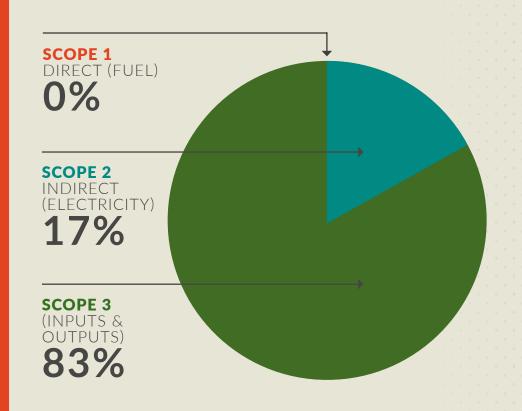
We evaluate the sustainability credentials of our suppliers, considering the full lifecycle of our production processes. Including inputs like consumables for our scientific work and downstream factors such as waste management and transport.

ENVIRONMENTAL

Carbon Neutrality Objective: Carbon Neutral by 2050.

Fera 2023 emissions for Scopes 1, 2 and 3 have been externally validated as 15,145 metric tonnes of CO2 equivalent.

2023 - SPLIT BETWEEN SCOPES



Fera have set SBTi aligned reduction targets across all Scopes:

SBTI ALIGNMENT TARGETS:

- + Fera commits to reduce Scope 1&2 emissions 42% by 2030 from a 2023 base year
- + Fera commits to reduce Scope 3 emissions 52% by 2030 from a 2023 base year







Fera remains committed to innovation and to nourishing our own talent resource, and its ingenuity.

In January, Fera introduced the Early Career Network (ECN), a group designed for early- to mid-career staff to foster a sense of community, share ideas, and expertise across business units through different activities.

VOLUNTEERING

All fera staff can spend one day per year volunteering to support an initiative of their choice.

Fera is an employer partner with York Cares to support community projects.













Fera also actively supports national and local charities.

In June, Fera launched a fundraising campaign in support of **St. George's Crypt**, with staff enthusiastically participating in the **Leeds 10k** run.



Not only did the team successfully complete the course, but they also exceeded their fundraising target.



July saw Fera staff take on the **Yorkshire Three Peaks Walk**, conquering the challenges of Whernside, Pen-y-ghent, and Ingleborough.

York against Cancer is a local charity set up in 1987 supporting those affected by cancer. The charity offers key care and support to funding ground-breaking and internationally valuable research, and Fera undertook a charity fundraising event in 2024 to raise funds for this charity.

St Leonard's Hospice is based in York and provides support and care both in the hospice and at home. For the past two years, Fera staff have taken part in the Moonlight Walk to help raise funds for the hospice.

Fera sponsored and presented the Business Innovation Award at the York Business Awards in November 2024.

Fera was also proud to sponsor **The Press Community Pride Awards in York in 2024**.

The Community Pride Awards recognises special individuals and groups in our local community of York.





In December, Fera supported **Save the Children**, as part of their Christmas
Jumper appeal with all proceeds going to the charity.

HEALTH & WELLBEING

Fera supports staff through several initiatives focused on their health and wellbeing, such as an **Employee Assistance Programme**, **Mental Health First Aiders**and training for managers, dedicated occupational health provider and a wellbeing hub with a wealth of resources.



QUALITY STATEMENT

We are a caring and responsible company committed to making the world a better, healthier, and safer place. Fera's approach to quality demonstrates our commitment to the highest standards to meet the requirements of the highly regulated international scientific business world.

WE ACHIEVE THIS BY:

- + Having a management team committed to showing leadership, bearing responsibility to ensure standards are met and for creating, implementing, and maintaining the Quality Management System.
- Continually improve the effectiveness and implementation of the QMS.
- Complying with the relevant regulations and standards including Good Laboratory Practice (GLP); ISO 9001:2015; ISO 17025:2017; ISO 17043:2010; International Seed Testing Association (ISTA).

- + Having clear quality objectives, providing a fundamental basis for all our processes and activities.
- + Ensuring that Fera personnel are aware of and have a clear understanding of their responsibility to comply with the management system and its processes as well as regulatory requirements.
- Driving continual improvement and innovation based upon efficient business processes, validated methods, well-defined measurements, best practices, and customer surveys.
- Maintaining the quality management system through a process of continual improvement supported by annual reviews and audits.

- Working continuously to strengthen our industry relationships, working closely to develop new and far-reaching products and services, and conducting research that will drive innovative products and solutions across the agri-food industry.
- + Continuing to apply original thinking to develop new products and services that make our customers and us successful.

OUR COMMITMENT TO INNOVATION IN THE SCIENCE SPACE IS EVIDENCED BY THE FOLLOWING WHICH HAVE OCCURRED IN THE LAST YEAR:

Fera has secured 2 extensions to our UKAS ISO17025 scope of accreditation and we have three applications in progress.

 We underwent a successful routine compliance inspection by the UK Medicine and Healthcare Regulatory Agency GLP Monitoring Authority confirming continued compliance with the OECD Principles of Good Laboratory Practice. We have applied our flexible scope 6 times resulting in 4 new methods added to the schedule.

We have continued to demonstrate their commitment to achieve the highest standards of data Integrity as showcased by the 'Believe in NEW Better Data Campaign'.



2023 FULL YEAR

REPORTED REVENUE OF

£54M

H13%

2024 FULL YEAR

REPORTED REVENUE OF

£58.6M

1NCREASE OF **49%** ON 2023



GROWTH SEEN ACROSS
MOST BUSINESS UNITS
AND THROUGH BOTH
OUR PUBLIC AND
PRIVATE SECTOR

Particularly strong performance across our Plant business unit as we continue to successfully support our government customers with R&D.

CUSTOMERS.

Within our Proficiency Testing business unit we have continued to see strong growth supported by our new tests which have landed well with the market.

SIGNIFICANT CAPITAL INVESTMENT IN 2024 OF

E1.5M,

WITH ADDITIONAL GRANT FUNDED CAPITAL ASSETS DEPLOYED WORTH

£1.0M.





13%
OF FERA REVENUE
QUALIFIED FOR
R&D TAX CREDIT.

INCREASE OF C. 40 HEADS IN 2024, NOW EMPLOYING OVER 500 STAFF.





Fera Science Ltd, York Biotech Campus Sand Hutton York, YO41 1LZ United Kingdom

www.fera.co.uk

Tel +44 (0)300 100 0321

- @FeraScience
- /ferascienceltd
- in /fera-science



Original thinking... applied