



INNOVATION  
IS

**GREAT**

BRITAIN



UK Trade  
& Investment



# 67<sup>th</sup> EAAP Conference Belfast Aug-Sept 2016

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CEO UKTI Agri Tech Organisation

and

Lead on Bioeconomy



# BRANDING

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Following the EU referendum and the formation of a new Government, UKTI is now part of the new Department of International Trade (DIT) .At the time of writing and submission of this presentation (4/8/2016) , we do not have clear instructions on branding and emails addresses etc. are still unchanged ([name@ukti.gsi.gov.uk](mailto:name@ukti.gsi.gov.uk))

Within DIT, agricultural technology will be part of the bio-economy alongside Chemicals and later Synthetic Biology will be added as a sector .

We will still be here to support trade and Inward Investors and as a far as we know the ATO team will still be known as ATO

An update will be provided at the event

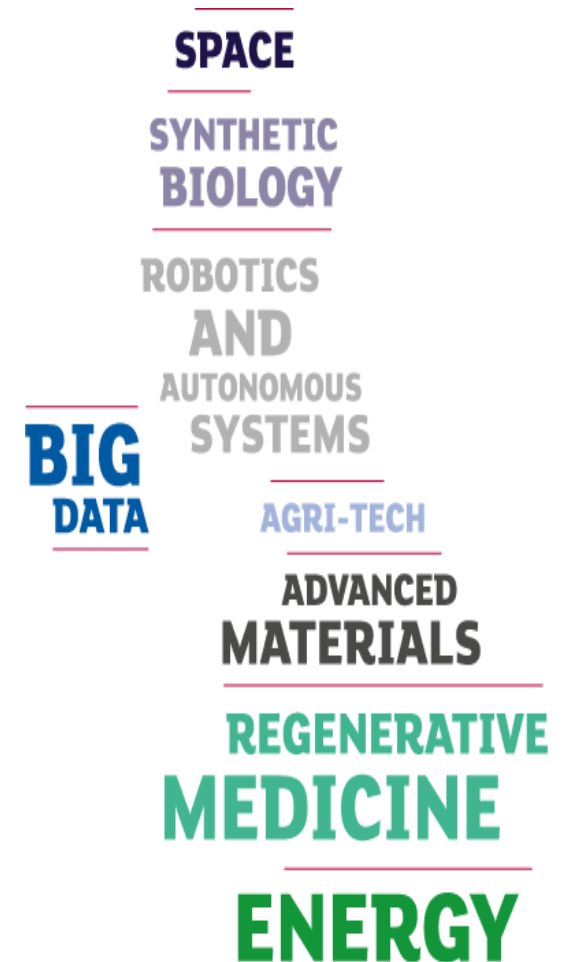




# Contents

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- Overview of the UK Agri-Tech industry
- Introduction to UK Government incentives across Agricultural Technology
- Catalysts and UK Government support
- The support from UKTI



# My Background

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- Medical microbiology then career change to Biochemical Engineering
- Invented 'Use by, sell by'
- Long academic career (Publications/Personal Chair/high level leadership)
- UK and EU regulatory Experience
- 1 Year in Brussels - DG Research
- Member of UK Potato Council and R&D Chair & Founder Member of Agriculture and Horticulture Development Board AHDB
- Member of Research Council Board (Engineering and Physical Sciences)
- Extensive consultancy work - including Innovate UK; EU, Universities
- Extensive experience of grant writing , management and delivery of National and EU funding
- CEO of Small business.
- Now advisor to UK Government on agriculture; co-author of UK Agricultural Technology strategy and member of Synthetic Biology Leadership Council
- Role in UKTI to delivery Innovation leading to Trade and Investment benefits as a specialist advisor to July 2016.



# BUT MOST OF ALL

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**Taking research to commercialisation**

**Delivery of Innovation**



# UK Industry Overview

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## UK agri-food supply chain

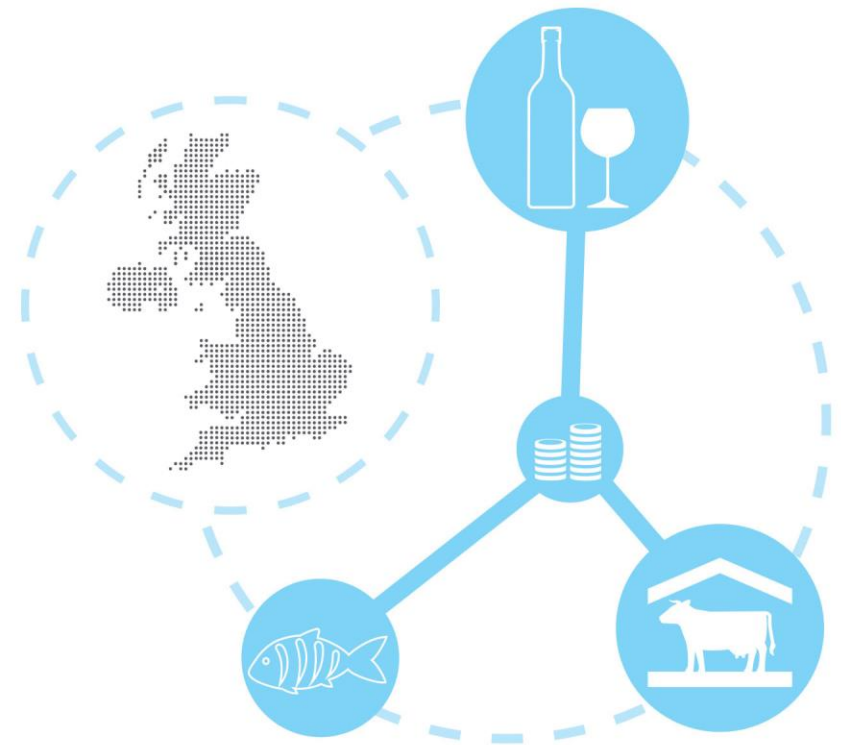
- Agriculture and fishing to final retailing and catering
- Worth £96 billion (7% of GVA)
- Employs 3.8 million people

## UK agriculture

- Employs 450,000
- Contributes £9 billion to economy

## UK exports

- £18 billion of food, feed and drink in 2012
- One of the top 12 food and drink exporters



# UK Industry Overview – Impact of Brexit

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## UK - gateway to Europe

The EU is a major market

- Combined agricultural GVA of €165 billion in 2012

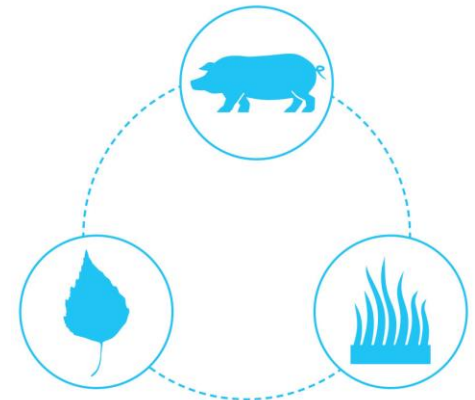
## The EU is a large investor in R&D

- Combined spend on agricultural R&D by 13 western European economies is \$4 billion (the USA spends \$7 billion).
- The European Commission is a significant funder of research
- The European Innovation Partnership on Agricultural Productivity and Sustainability supports closer links between researchers and farmers



UK Government funded bodies (e.g. innovate UK and BBSRC)

- Spent £480 million on R&D (2012-2013)
- Brexit impact upon Funding, Labour, regulation still unknown
- BUT.....it is Business as Usual





# UK Agri-Tech Strategy – A joined-up approach 3 years on

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- ADDITIONAL GOVERNMENT FUNDING –The Key
  - CHAPS for plant science
  - Agri Epi for precision agriculture
- £90 million investment in 4 world-class Centres for Agricultural Innovation
  - Part of the Government’s UK Strategy for Agricultural Technologies
  - Centres are supporting the wide-scale adoption of innovation and technology across key sectors, technologies and skills in the food and farming supply chain
  - CIEL is the Centre focused on Animal Health, Agri metrics - using data from farms, laboratories and retailers to drive innovation, helping the UK exploit the potential of big data and informatics
- ( CHAPS and CIEL are based at Fera )
- Created a £70 million Agri-Tech Catalyst fund
- Over 90 projects commissioned some completed
  - To improve the translation of research into practice/Proof of Concept
  - Includes £10 million to support the transfer of technology and new products to developing countries (DIFID)



# What does the future hold for Agriculture?

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**Unbelievable Innovation is a MUST**  
**New Technologies .....some destructive**

**ICT Enabled technologies :**

**Robotics**

**Big Data**

**Cloud Computing**

**Artificial Intelligence**

**Biologics enabled technologies:**

**Synthetic Biology**

**Bioengineering**

**Epigenetics**

**Microbiome**

**Nanotechnology and novel materials including Graphene**

# UK Strengths - Science Base

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## Private sector research

At least £100 million a year

For example:

- The UK hosts some of the world's leading agri-tech companies, such as Syngenta, Genus, Aviagen, JCB, New Holland and Velcourt
  - Around 25% of Syngenta's research collaborations are in the UK. This includes recent investments in a £2 million glasshouse and a £3.5 million facility for the automated formulation of agri-chemicals
- Several multinational pharmaceutical firms also manufacture animal health products in the UK including Merck, Merial, Lilly and Novartis
- Agricultural Research Trusts and Charities underpin many institutes, such as Rothamsted and NIAB



# AGRI TECH CATALYST FUNDING

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## ROUNDS 1 -4 Largely Complete

<https://connect.innovateuk.org/web/biosciencesktn/agri-tech-catalyst>

Round 5 ..24 projects awarded £15 million

£200,00 - £1.5 million

(With Industry co-investment )

## ROUND 6 Apply Now!!

See <https://www.gov.uk/government/publications/agri-tech-catalyst>

- Agri tech Catalyst funding in developing countries
- Early stage technical feasibility
- Industrial Research Awards
- Late Stage Awards
- CONSORTIA BUILDING EVENT 14th September 2016 on London



# AFTER CATALYST FUNDING - avoiding the 'Valley of Death'

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## The UK offers overseas agri-tech venture capital investors:

- Greater access to new technologies
- Greater access to investment opportunities
- Easier environment to establish proof-of-concept studies
- More Government support to de-risk early stage investment
- VC community
- Charitable sector

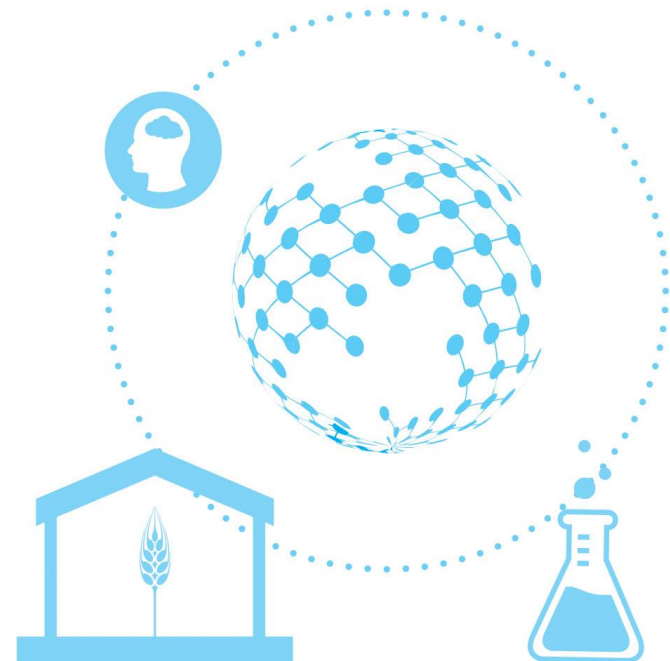




# UK Strengths— Food and Farming Supply Chain

## Informatics and Big Data

- UK Government has established a £10 million Centre for Agricultural Informatics (Agri Metrics)
  - The first of the Centres of Agricultural Innovation to be launched (now all up for business)
  - UK expertise will be a global hub of excellence
  - UK also hosts the European Bioinformatics Institute - one of the world's repositories of new genetic data
- Will aid development of agricultural products, new therapeutics and vaccines
- Big Data from laboratory to farm will drive agri-tech innovation



# Why Invest in the UK ?

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## Benefits for overseas companies and investors

The UK offers overseas investors in the Agri-Tech sector the opportunity to partner with world-class researchers to:

- Improve existing and devise new innovative products and services
- Provide solutions to technical problems
- De-risk research projects by accessing government funding
- Meet changing regulatory requirements
- Develop staff
- Respond to consumer pressures and give credibility to products
- Gain status for the business and credibility for its products
- Gain support from and access to cross-cutting solutions from technologies
- Access to Ministers and policy-makers



# UK Government initiatives – Support

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## UK tax allowances for R&D expenditure

- A generous environment for businesses investing in R&D
- Corporation tax rate (currently 20%), can be halved for businesses investing in, and commercialising, new intellectual property under 'R&D tax credit' and 'Patent Box' allowances.
- Capital spent on R&D equipment also allowable usually at the full rate of 100%

## Robust IP Protection

- UK is the second strongest nation on IP protection globally

## Patent Box

- Reduces corporation tax to 10% on profits attributable to qualifying patents
- **MOST IMPORTANTLY.....UKTI has specialists in these areas to offer advice as the picture changes**

**What do we do? We Deliver to Business**

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## **UKTI ATO – the commercial arm of Government**

**Background policies ever changing but .....**

**For us in UKTI it is all about business support:**

- Trade support for UK companies and
- Investment support helping overseas companies invest
- Making connections and delivering in business time scales



# UKTI Agri-Tech Organisation

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## The Agri-Tech Organisation: Who we are and what we offer

*The UK is renowned globally for its scientific research and innovation ecosystem with its centres of excellence (their researchers and facilities); working closely with industry across a range of disciplines to develop and commercialise a wide range of innovative technologies for use in agriculture.*

The UK led not only the Industrial Revolution, but the agricultural revolution, and today the sector draws upon our history of skills, knowledge, expertise and experience.

Our fully integrated agricultural food supply chain is worth £96bn annually, providing access to a large domestic market for animal feed, livestock farm equipment, genetics and diagnostics.



# THE ATO

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The Agri-Tech Organisation is THE centre of excellence and first port of call for overseas companies looking for trade and investment opportunities in the UK and for UK-based companies seeking to expand.

Help is provided to large scale businesses, SMEs and institutions to entice foreign investment and encourage sales of UK products abroad.

Key areas of focus are primarily:

- Plant sciences
- Animal health
- Aquaculture
- Precision agriculture



# UKTI Agri-Tech Organisation: ANIMAL HEALTH

Development of products and services for the detection, identification, characterisation, management, prevention and treatment of animal diseases and animal health.

## Selling points:

- UK veterinary science ranks worldwide at No2, with 67% increase in funding
- More international animal disease reference centres than any other country
- Edinburgh has largest concentration of animal health researchers in Europe

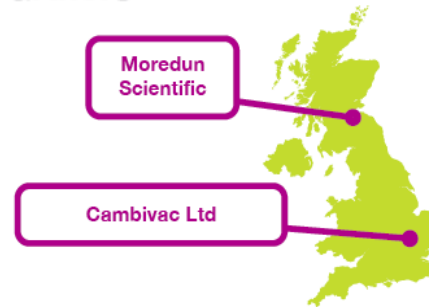
£1bn

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£1bn global production losses as a result of **Porcine Reproductive and Respiratory Syndrome (PRRS)**

## Partners



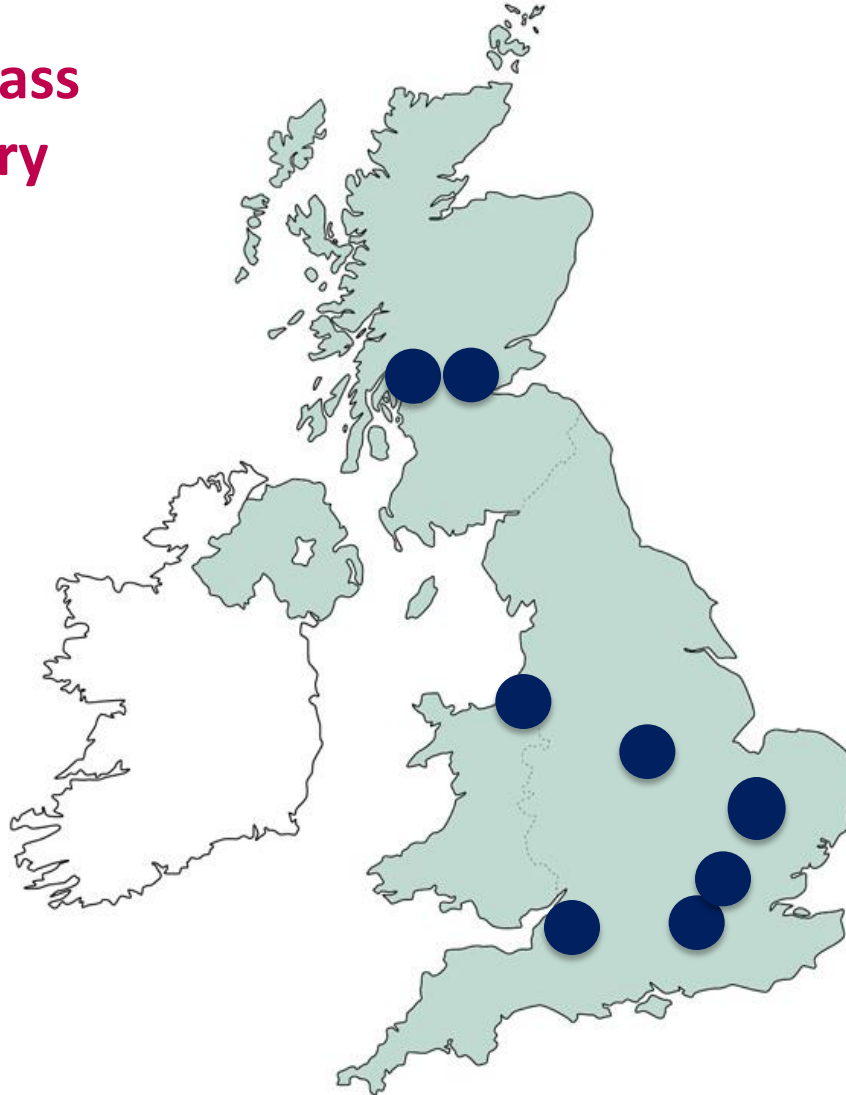
This project aims to **develop technology** to **produce vaccines** that more **effectively control** the PRRS disease

#agritech

**Industrial Strategy**  
Securing jobs and a stronger economy

# UKTI Agri-Tech Organisation: ANIMAL HEALTH

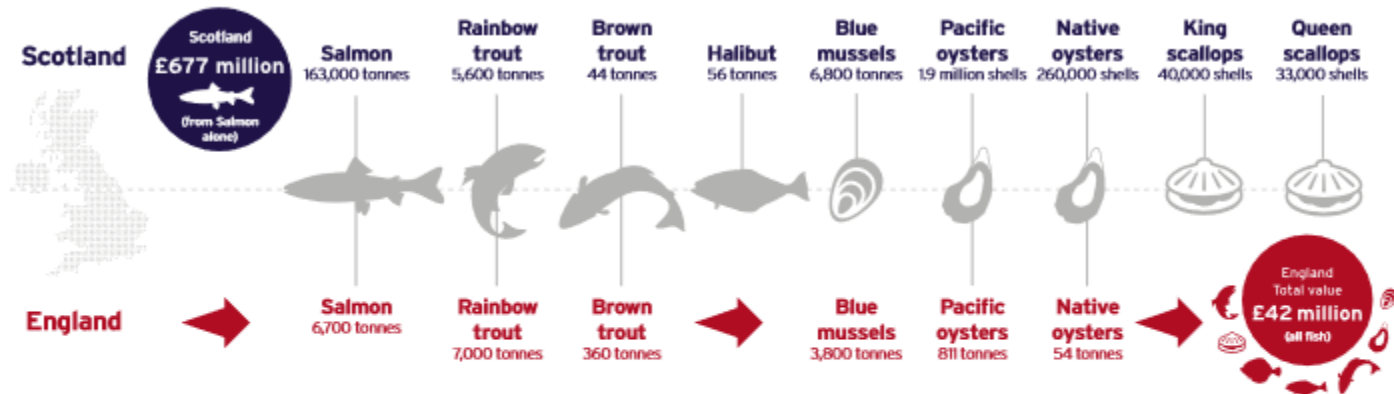
**World Class  
Veterinary  
Schools**



- Bristol
  - Cambridge
  - Liverpool
  - London (RVC)
  - Nottingham
  - Surrey
  - Edinburgh (R(D)SVS)
  - Glasgow
- 
- Offering skilled graduates and workforce
  - World-class research base
  - Other universities with considerable expertise in animal health inc QUB, Reading, Aberdeen, Aberystwyth, York

# UKTI Agri-Tech Organisation: AQUACULTURE

## Aquaculture production



The UK is the leading aquaculture producer by value, within the European Union



£10.5m

Every new fish farm contributes an average of £10.5 million per annum to the UK economy

The UK has the world's largest algal bio-fuel project (£26 million) to develop transport fuels from algae by 2020

£26m

Fresh salmon is exported to over 50 countries



# UKTI Agri-Tech Organisation: PRECISION AGRICULTURE



## UK strengths

GNSS positioning devices, Earth observation devices



### Space

**Rezatec** combines satellite data and weather information before applying modelling techniques to forecast and optimise crop yields

Composites, Graphene, nanotechnology, 3d printing

### Advanced Engineering and Materials

3D x-ray imaging is being used at the **University of Nottingham** to understand root phenotyping in order to improve water and nutrient uptake in plants

Unmanned aerial systems (UAVs), aerial photography



### Aerospace

**ASTRAEA** is focusing on the technologies, systems, facilities, procedures and regulations that will allow UAVs to operate in civil airspace over the UK

Robotic milkers and feeders, electronic ear tags, heat detection devices

### Autonomous systems and robotics

Advanced robotics are being used by **Shadow Robotics** to develop automated fruit harvesters

Driverless tractors, autonomous systems for fertilisers and pesticides

### Automotive

**Cranfield University** is a world leader in automotive system design and manufacture

ICT Farm management software, smartphone applications

### ICT: Big Data

A new £97m **Met Office** supercomputer will cement the UK's position as a world leader in weather and climate prediction



Precision Agri-Tech

INNOVATION IS GREAT

GREAT

BRITAIN & NORTHERN IRELAND



# UKTI Agri-Tech Organisation: PLANT SCIENCE



## Plant science in the UK: An investment opportunity

*The UK leads the world in the scientific study of plants, including their growth, structure, physiology, reproduction, ecology and pathology. The UK is at the forefront of studying their economic use, ensuring they are fit for purpose, and their cultivation in farm management systems. Innovation in horticultural, arable and bio-energy crop production is developing new, high yield, quality and value plants to enable growers to meet the needs of their customers.*

**2<sup>nd</sup>**



The UK ranks second in the world for plant science publication impact after USA.

UK universities generate **15.9%**



of the world's most highly-cited scientific papers (second only to the US).

**40x**



In the UK, wheat, barley and forage maize breeding produces a 40-fold return on investment.

**88%**



at least 88% of yield increases for the major crops in the UK are estimated to be due to plant genetic improvement.

# What has ATO achieved

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- Supported the wider Government initiative
- Worked with all the new Centres of Excellence
- Identified key markets
- Trained our staff in those overseas markets and regional UK staff
- Helped UK companies bring in £140m trade in Agri-Tech
- Secured major inward investments from US, Switzerland, Portugal, Germany, Turkey, New Zealand and many other countries
- Currently working with over 100 potential investments
- Specialist staff including 2 in USA

# Animal Health priorities

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## Opportunities for growth

- Animal breeding
- Animal health
- Rapid Diagnostics
- Animal feed
- Agri-engineering
- Water management
- Aquaculture
- Waste

## The UK boasts three specific strengths

The Government's UK Strategy for Agricultural Technologies will ensure these elements work together to enhance the UK's world-leading position.

- 1 World-class science
- 2 Progressive food and farming supply chain
- 3 Dynamic business environment

The strategy excludes forestry and equine

# So in summary.....

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**The opportunities are there**

**The support is there**

**We are here to speak to you and help**



# Please contact me.

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Thank you!!

