



# Tetrapartite 2011

## Des Moines, Iowa

Wednesday June 1, 2011

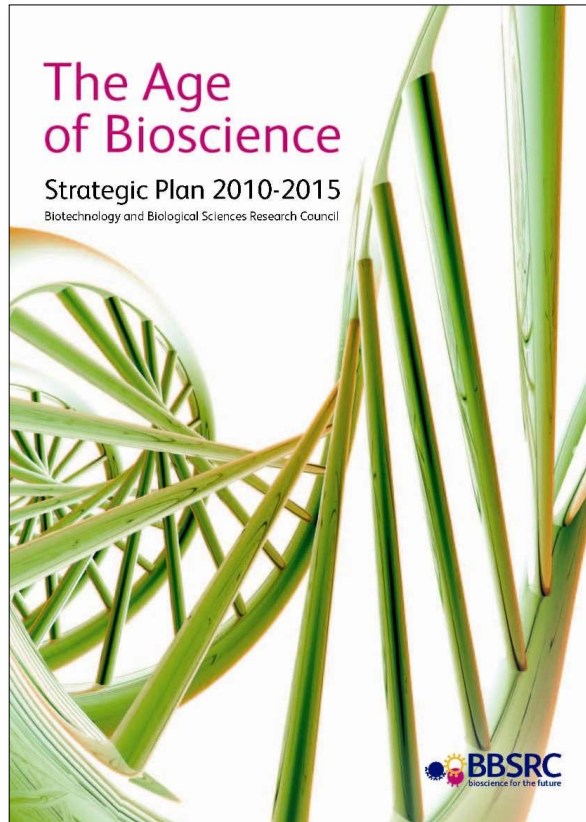


**Janet Allen MD, FRSE**

Director of Research, BBSRC

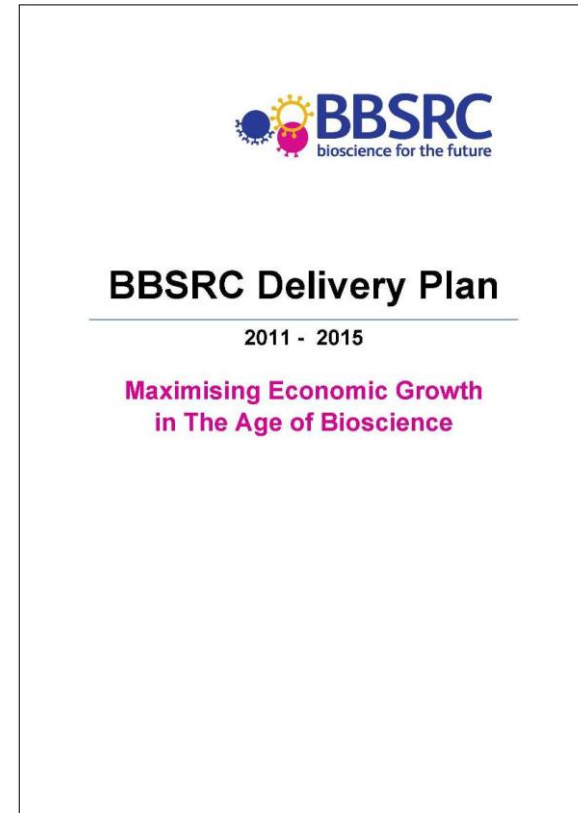
PROTECT - IN CONFIDENCE NOT FOR CIRCULATION

## BBSRC Strategic Plan 2010-2015



**High-level strategic direction  
and priorities**

## BBSRC Delivery Plan 2011-2015



**Explains how BBSRC will  
deliver in light of BBSRC's  
budget allocation**

# 'Mixed economy' of funding

## Universities

- Basic research
- Curiosity-driven
- Shorter-term funding
- Research training



## Institutes

- Strategic research
- Mission-oriented
- Longer-term funding
- Specialist facilities



# BBSRC-funded Research Institutes



## **Institute of Food Research**

Investigating food safety, diet & health, food materials and ingredients



## **Institute for Animal Health**

Working to improve the health and welfare of farm animals



## **Roslin Institute**

Livestock genetics, health and welfare of farm animals



ROTHAMSTED  
RESEARCH

## **Rothamsted Research**

Research on sustainable plant-based agriculture and the environment



## **John Innes Centre**

Research and training in plant and microbial science



## **TGAC - The Genome Analysis Centre**

A world class national facility for the study and application of genomics in animals, plants and microbes

## **IBERS (Aberystwyth)**

Genetics and breeding of forage crops



## **Babraham Institute**

Research supporting biomedical, biotechnological and pharmaceutical sectors

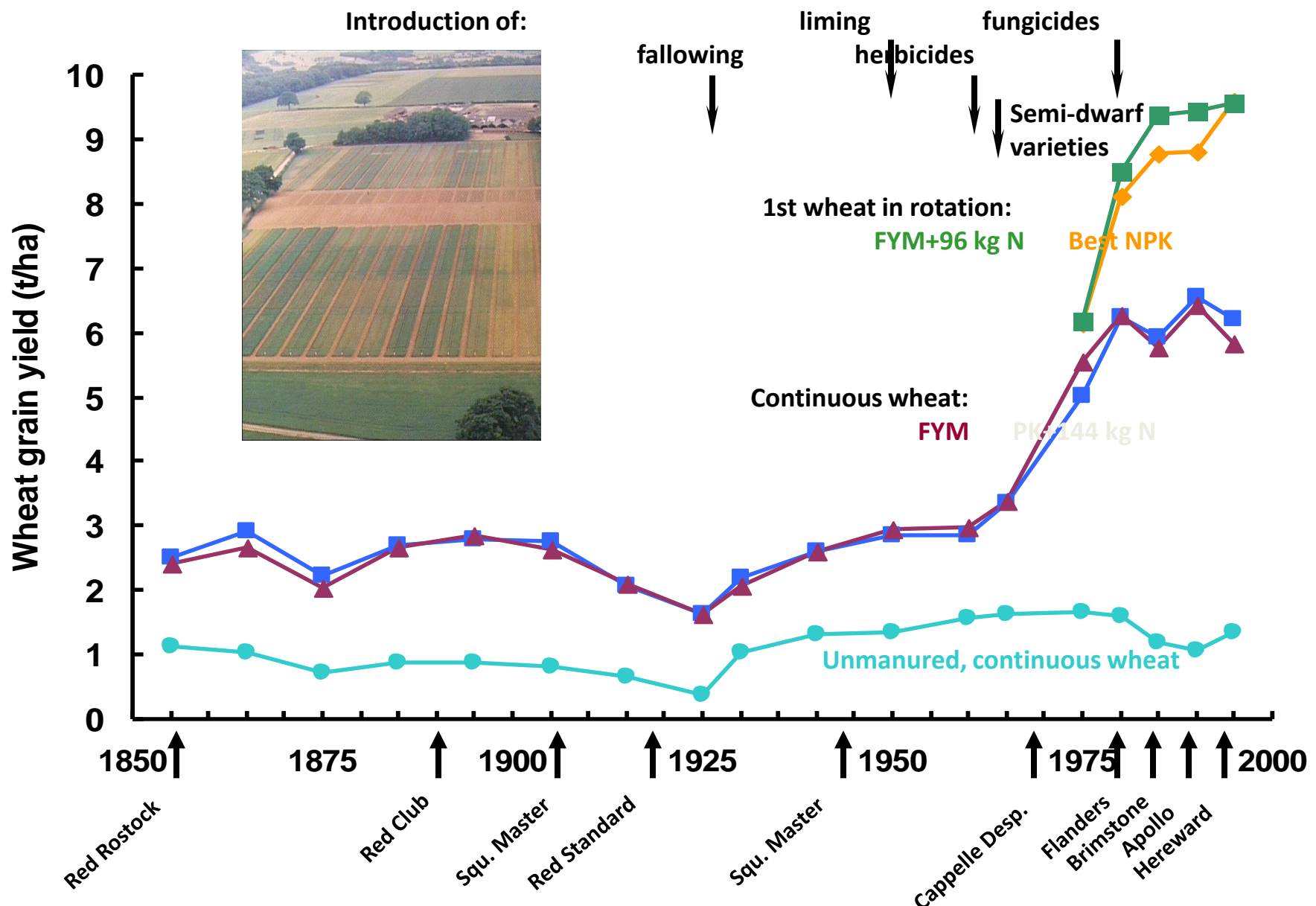
# **BBSRC: Research investment in Global Food Security through BBSRC institutes**

- **5 year strategic programme grants**
  - Plant genetics (John Innes Centre, The Genome Analysis Centre and Rothamsted)
  - Crops (Rothamsted, John Innes and TGAC)
  - Grasslands and forage crops (IBERS, Aberystwyth)
  - Animal sciences (Institute for Animal Health and Roslin Institute)
  - Food Sciences (Institute of Food Research)
- **National Capability – Infrastructure**
  - Containment facilities for livestock (virology). Protection of the national herd and flocks
  - The Genome Analysis Centre
  - Long term studies e.g. Broadbalk
  - Farm platform e.g. North Wyke

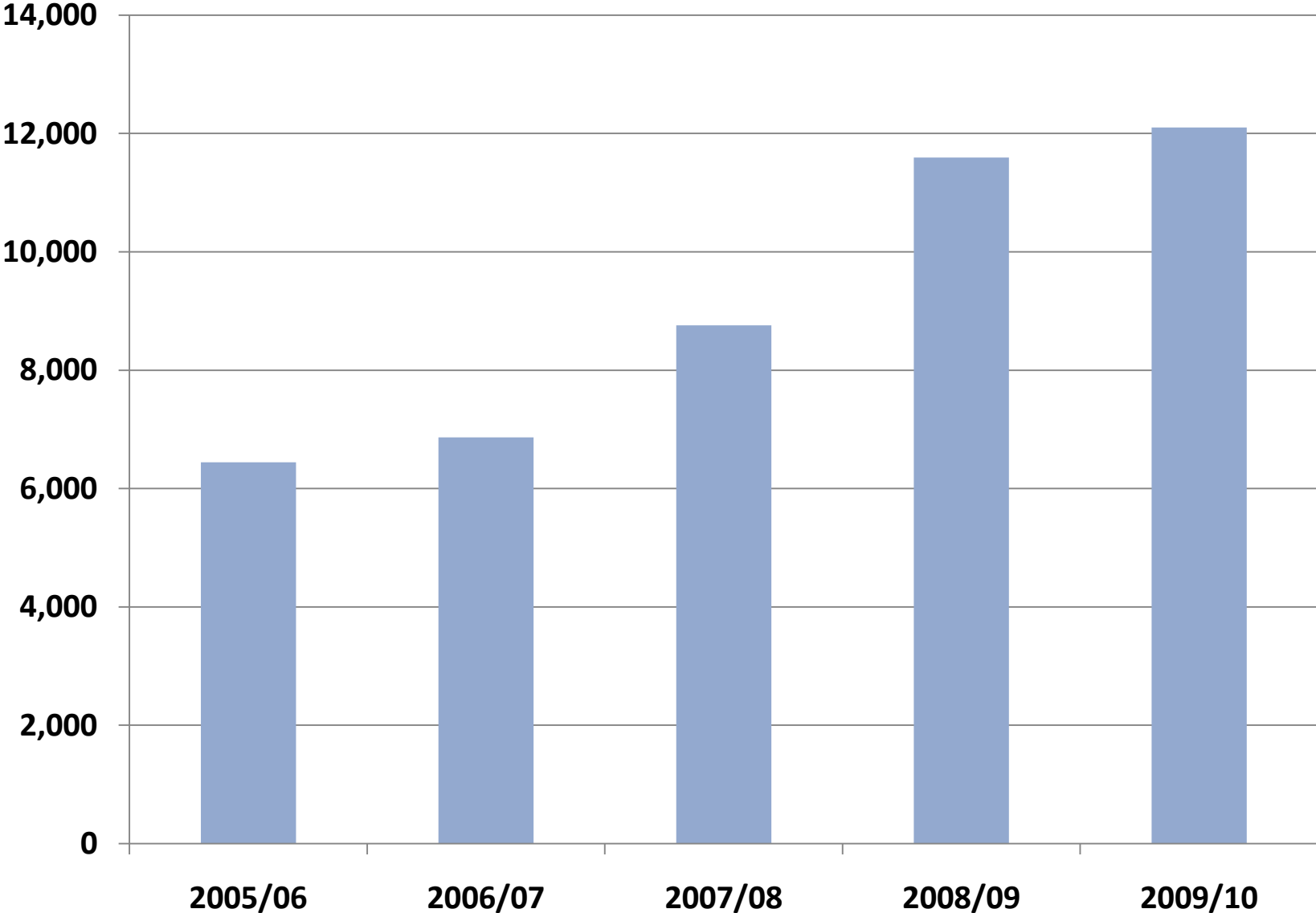
## Update will cover:

- Wheat
- International Partnerships
- Foresight: Global Food and Farming Futures

# Science increasing wheat yields on Broadbalk



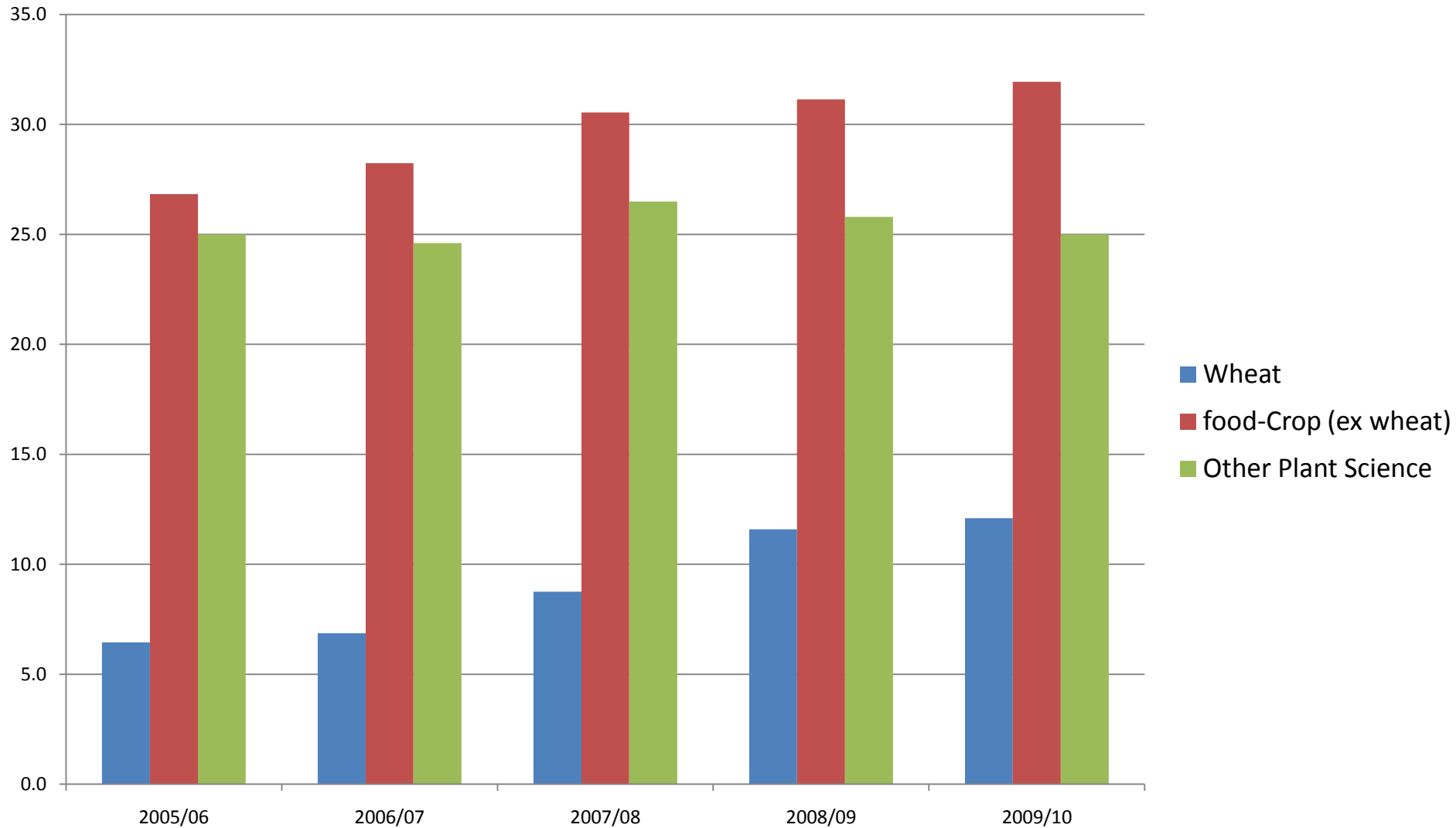
# BBSRC recent spend on wheat (£K)



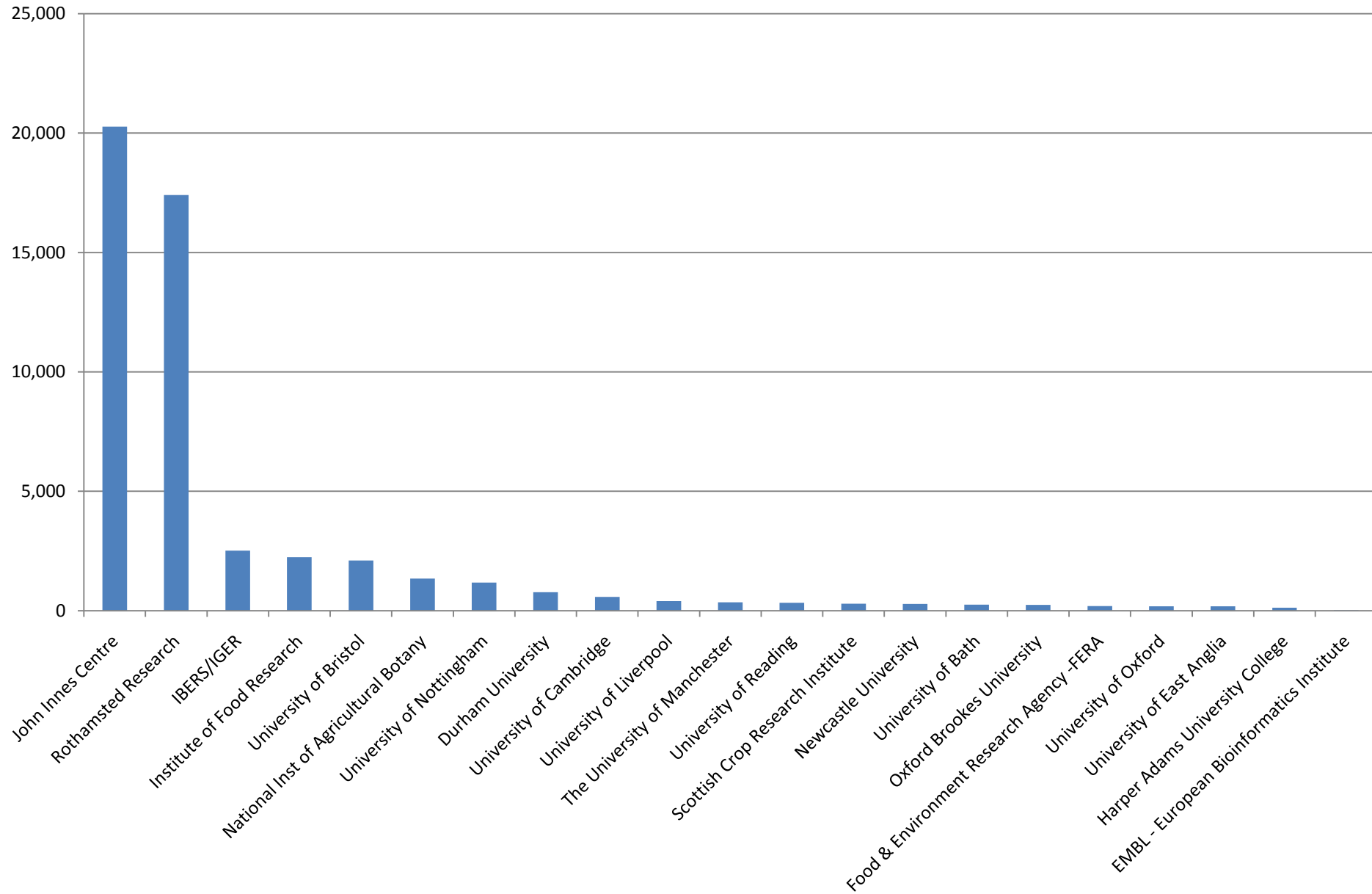


# BBSRC Wheat spend

(with other crop and other plant)  
other crop includes bioenergy crops



# BBSRC spend on wheat by institution (£K, 05-10) *inc SPG*



## Wheat pre-breeding programme – led by John Innes Centre

- The development of wheat pre-breeding germplasm characterised for the generation of key traits and the identification of genetic markers for selecting these traits
- Provides a single coordinated way of generating wheat pre-breeding germplasm
- Will generate long-term populations
- Spreads the risk across the research community
- Provides stimulus to recruit the next generation of researchers
- Strategic grant for £9M over 3 years has been awarded; £9M institutional funding for a further 3 years currently under review



# Crop Improvement Research Club (CIRC)

CIRC • CROP IMPROVEMENT RESEARCH CLUB



CIRC is a £7M partnership between BBSRC (£6M), the Scottish Government (£0.5M) and 14 companies from the crop breeding, production and processing sectors (£0.5M).

CIRC supports excellent quality, innovative research to improve the productivity and quality of varieties of wheat, barley and oilseed rape for food, drink and animal feed uses.

CIRC's remit is based on 6 research challenges identified by industry:

- Nutrient use efficiency
- Biomass production
- Combating pests and diseases
- Seed structure and Composition
- Germination properties
- Spoilage factors



## Update will cover:

- Wheat
- International Partnerships
- Foresight: Global Food and Farming Futures

# International Activities

- new strategic direction for BBSRC International activities
- international activities of the Institutes
- EU – ERA-Nets
- EU – Elixir
- EU Joint Programming - more later
- EU current call published in FP7
- EU what do we want in FP8 after 2013?
- EU – merger of ESF and EuroHORCs
- USA – “ideas lab” with NSF on Photosynthesis
- India – scoping joint activity
- Vietnam – huge potential – two inward visits
- Brazil – opportunities for joint working – agriculture and bioenergy
- food security and bioenergy global priorities – lots of workshops



European Research Area





- EU – ERA-Nets  
EMIDA  
ERACAPS (ERA Plant Genomics 2)
- EU – Elixir  
Hub hosted at the European Bioinformatics Institute (investment of ~£70M)
- EU Joint Programming:  
BBSRC and INRA joint lead: Food Security, Agriculture and Climate Change
- EU: What do we want in FP8 after 2013

## Coordinating European research in: Food Security, Agriculture and Climate Change

- BBSRC and INRA co-leading a Joint Programming Initiative
  - *Development of a Common Vision with long term objectives*
  - *Translate it into a Strategic Research Agenda (SRA)*
  - *SRA implementation*
- 19 participating countries – Governing Board
- 12 member Science Advisory Board





- **EU Sub-Committee D - Agriculture, Fisheries and Environment**

conducted an inquiry into how innovation in EU agriculture can be encouraged in the context of new challenges such as climate change, water scarcity and the need to encourage sustainable improvements in output.

- Douglas Kell, Chief Executive of BBSRC

- Marion Guillou, president of INRA





## Enhancing photosynthesis

- Ideas Lab: 5-day intensive workshop to develop multidisciplinary, transformative, and high-risk high-reward proposals
- Outline proposals continually refined through 'real time' peer review by respected academics
- Four high-quality collaborative proposals funded – over £6M awarded
- Parallel standard BBSRC initiative on enhancing photosynthesis: £2M available  
(13 of 30 outlines invited to submit full proposals)

## BBSRC & Brazil

BBSRC is increasing opportunities for UK scientists to interact with Brazilian counterparts, particularly in Food Security (& Bioenergy)

### Existing schemes/ programmes

- BBSRC – FAPESP Joint Agreement
  - *Lead Agency Procedure (BBSRC lead) allows for joint review and funding of collaborative research*
- Brazilian (Embrapa) Fellows to BSBEAC (Defra funded)
  - *Seven exchange projects at five BSBEAC centres*

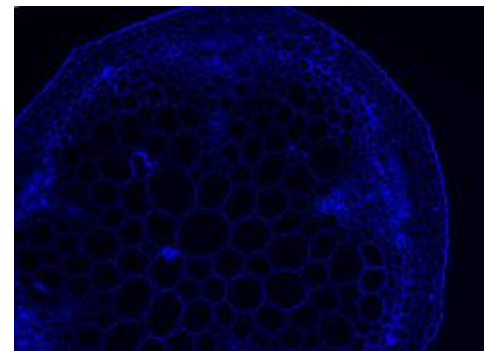
### New schemes (about to be launched)

- BBSRC – CNPq ‘Brazil’ Partnering Award
  - *Facilitate collaboration leading to long-term partnerships*
- BBSRC – FAPESP Pump-priming Award
  - *Generate preliminary data leading to full joint grant applications*



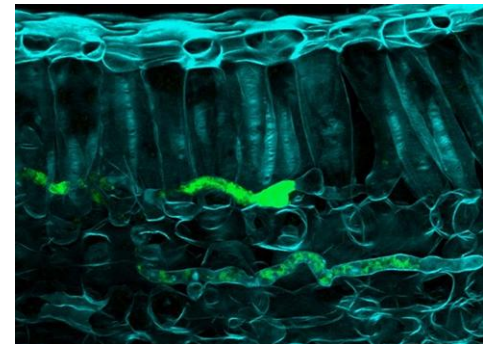
## Brazil Partnering Awards

- To facilitate long term collaboration between top BBSRC scientists and Brazilian counterparts
  - *Similar schemes with China, India, Japan, the US*
- Open only to current BBSRC/ CNPq grant holders
- Run as an annual/ biennial call
- Up to £50,000 each for bilateral interactions
- Up to £100,000 each for large consortia
- Up to 4 years in duration
- Prioritise key areas of mutual interest:
  - *Food Security*
  - *Bioenergy and Industrial Biotechnology*



## FAPESP Pump-Priming Scheme

- Pump-prime interactions between scientists
- Facilitate the preparation of applications under the RCUK - FAPESP agreement
  - *Generate preliminary data*
  - *Workshops*
  - *Visits/ exchanges*
- Open to current BBSRC/ FAPESP grant holders
- Apply at any time
- Single application to BBSRC (from June 2011)
- Up to £35,000 each side (for up to 2 years)
- Maximum 50% for direct lab research costs
- Prioritise key areas of mutual interest:
  - *Food Security*
  - *Bioenergy and Industrial Biotechnology*



## BBSRC - FAPESP Lead Agency Procedure

- Joint research funding for UK/ Brazilian (Sao Paulo state) researchers
- Single UK/ Brazil application to BBSRC through normal responsive mode
- BBSRC leads on the peer-review (with FAPESP assistance)
- Normal funding rules apply: BBSRC funds UK partners, FAPESP funds Brazilian partners

*First grant now funded, others in the system...*



## Project details

- Sequence 30 Vietnamese rice lines selected for:
  - high quality and yield potential,
  - tolerance to submergence, salinity, drought and resistance to diseases
- Use to generate rice varieties resistance to the effects of climate change
- Total project cost £350k:
  - £250 from the UK (BBSRC)
  - £100k from Vietnam (MOST)



## Project Benefits

UK/ BBSRC Benefits	Vietnamese/ Wider World Benefits
Making the UK the partner of choice for a country with a rapidly growing economy	Generation of new rice varieties - resistant to the effects of climate change
Showcases the genomics capability of TGAC	Training of scientific community
Rice is a model crop species	Genetic resource for scientific community
High quality publications/ Publicity	

## Partnership with Department of International Development

- To support research aimed at the Millenium Development Goals

Three schemes run so far:

1. Sustainable Agriculture Research in International Development (SARID)

Partnership with DfID

8 grants awarded. Midterm point now

2. Combating Infectious Diseases of Livestock in International Development (CIDLID)

BBSRC partnership with DfID and Scottish Gov.

16 grants awarded. Total funding £13M

3. Sustainable Crop Production Research in International Development (SCPRID) (current)

BBSRC partnership with DfID, Gates Foundation and India



# Sustainable Crop Production Research for International Development (SCPRID)

- £20M call between BBSRC, DFID, Gates Foundation and Indian Govt
- Tackling abiotic and biotic stresses that constrain food crop production in Sub-Saharan Africa and South Asia
- Focus on staple crops (Cassava, Maize, Rice, Sorghum, and Wheat) but other important crops considered
- Research assessed on scientific quality and development relevance – providing mutually-beneficial scientific partnerships between the UK and developing countries
- Projects for Emerging Agricultural Research Leaders (PEARLs): support for a small number of four-year projects where lead PI is an early-to-mid career scientist from Sub-Saharan Africa or South Asia

## Update will cover:

- Wheat
- International Partnerships
- Foresight: Global Food and Farming Futures



Government  
Office for  
**Science**

Foresight



**The Future of Food and Farming:**  
Challenges and choices for global sustainability

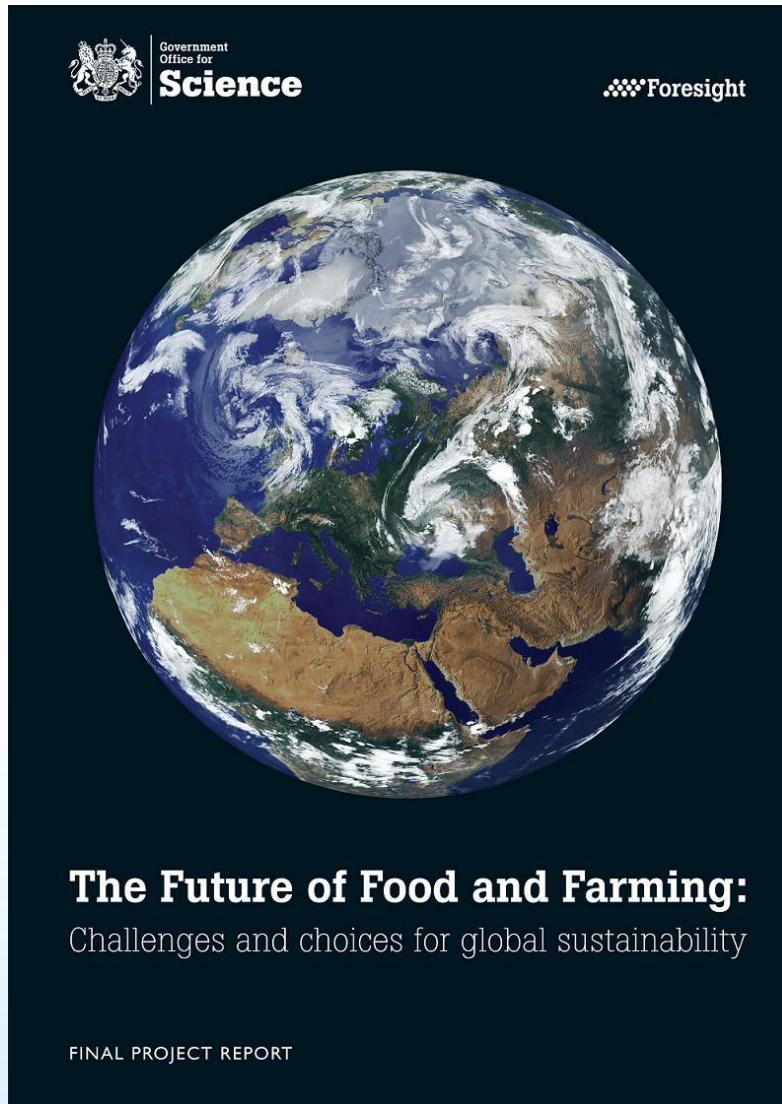
FINAL PROJECT REPORT

## Why this report now?

The global food system is experiencing:

- Increasing demand
- Threats to supply
- One billion hungry
- Lack of sustainability
- ... and new volatility

# Five Challenges

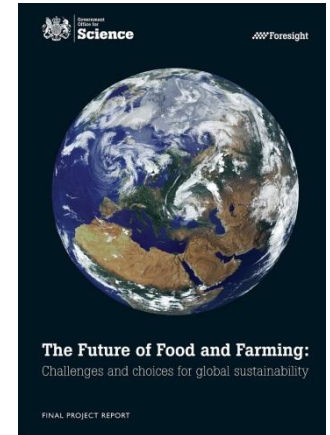


- A **Balancing future demand and supply sustainably**
- B **Addressing the threat of future volatility in the food system**
- C **Ending Hunger**
- D **Meeting the challenges of a low emissions world**
- E **Maintaining biodiversity and ecosystem services while feeding the world**

<http://www.bis.gov.uk/foresight/our-work/projects/published-projects/global-food-and-farming-futures/reports-and-publications>


## Behind the summary

- 13 Synthesis Reports around the 5 challenges
  - Sustainable Supply and Demand
  - Volatility
  - Hunger
  - Climate Change Mitigation
  - Maintaining biodiversity
- 22 Drivers Reports: Examining changes and stress in the global food system out to 2050
- 7 Regional Reviews
  - UK, China, Africa Nile, India, Brazil, Mekong, Eastern Europe
- Many Workshop reports and Reviews
- 56 Special Reports commissioned





Government  
Office for  
**Science**

 Foresight



## **The Future of Food and Farming:** Challenges and choices for global sustainability

FINAL PROJECT REPORT

## Three key high-level messages

- A radical redesign of the global food system is needed
- Doing nothing is not an option
- Food must move much more centre stage in global policy development



# The Global Food Security Programme



- Coordinated multi-funder programme
- Together spend ~£420M per annum on food research
- Multidisciplinary across the food system
- Long-term



Engineering and Physical Sciences  
Research Council



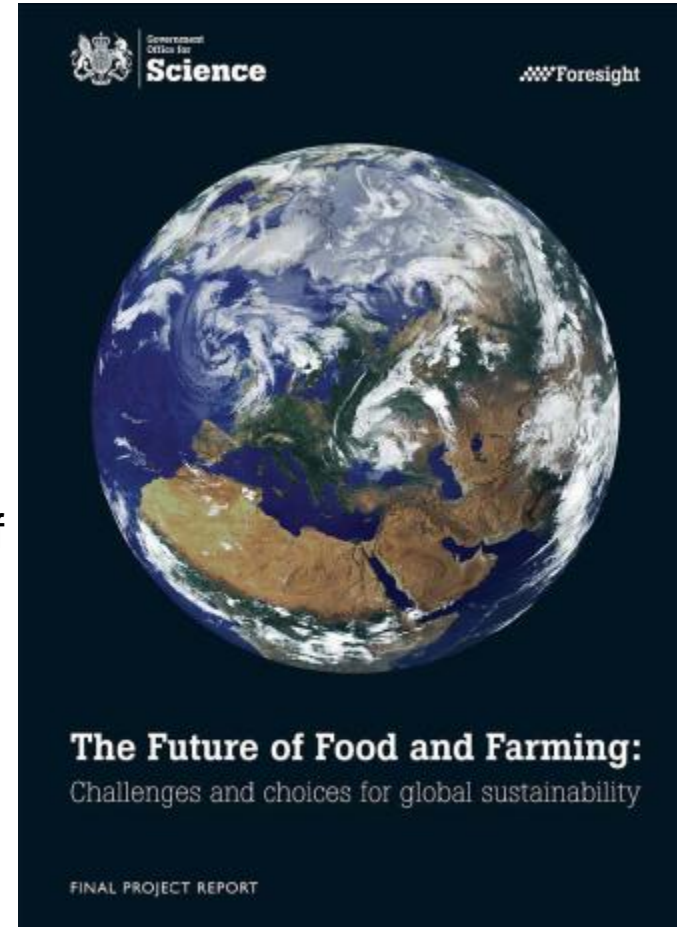
Llywodraeth Cynulliad Cymru  
Welsh Assembly Government



# Foresight project: Global Food and Farming Futures

## Five Challenges:

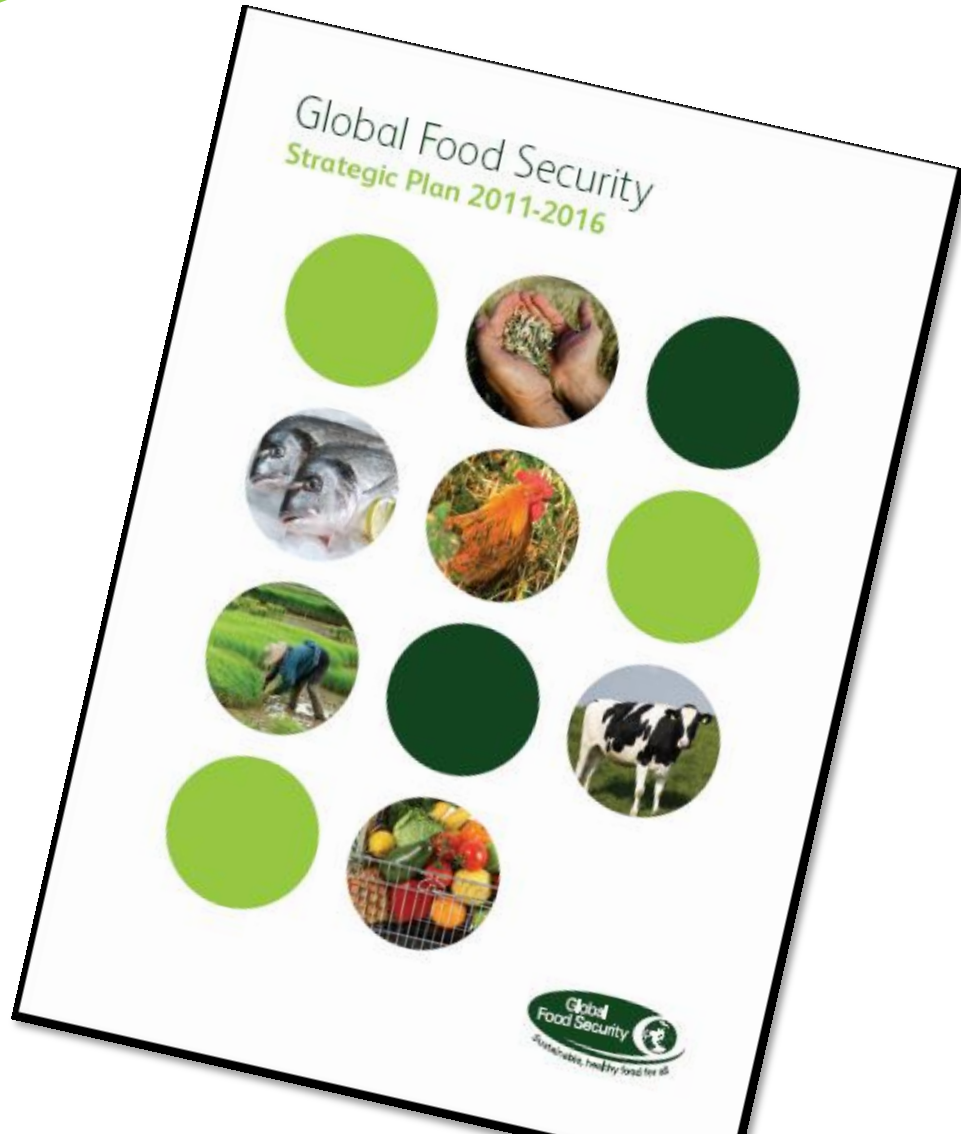
1. Balancing future demand and supply sustainably
2. Ending hunger
3. Meeting the challenges of a low emissions world
4. Addressing the threat of future volatility in the food system
5. Maintaining biodiversity and ecosystem services while feeding the world

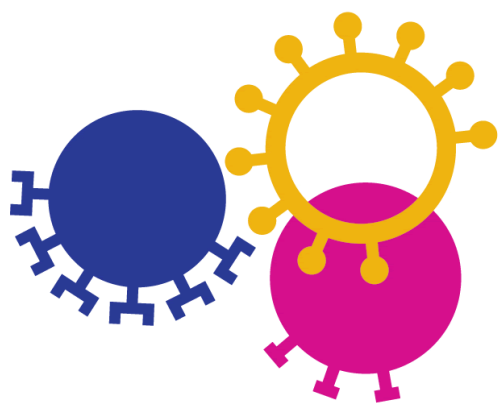




# GFS Strategic Plan, 2011-2016

Published: <http://www.foodsecurity.ac.uk/assets/pdfs/gfs-strategic-plan.pdf>





**BBSRC**  
bioscience for the future