

Developments since the APPG 2010 report

'Support for agricultural R&D is essential to deliver sustainable increases in UK food production'

Introduction

The 2010 report provided a summary with recommendations on the state of UK agricultural research which had been highlighted in a series of meetings hosted by the All Party Parliamentary Group in 2009/10.

The stimulus to these meetings had been the decline in capability of applied R&D for the agricultural industry over a period of 25 years. This had resulted from the closing of several agriculturally-related research institutes, the loss of ADAS Experimental Husbandry Farms and advisory services, and the concentration of government research funding into basic science research and away from applied research.

The consequences were less translation of excellent UK basic science research into practice, less innovation at the applied research level, and a loss of communication in both directions along R&D pipelines. Not surprisingly the UK had fallen behind other countries in rate of growth in agricultural productivity and hence in the competitiveness of agricultural production.

Below is a brief assessment of policy developments in the public sector which have taken place since the APPG 2010 Report in five major areas of concern highlighted in the report recommendations.

Report recommendations and subsequent developments

'Government develops a clear strategy on the role of the public sector in funding R&D aimed at increasing food production and productivity sustainably'

Since 2010 the government appears to have accepted that the excellent UK science base was not being translated satisfactorily into increased productivity and economic growth, and has developed new strategies on the role of the public sector in funding R&D.

The UK Strategy for Agricultural Technologies published in 2013 was a major development, and the first time the UK government, the science base and the farming industry had come together with the objective of making the UK 'a world leader in agricultural technology, innovation and sustainability'. Also, it has recognised agricultural technology as one of the eight great technologies in which the UK can lead the world.

The strategy outlines a range of actions to deliver the vision including:

- Improve the translation of research into practice through a £70m Agri-Tech fund for projects
- Provide £90m support for four Centres for Agricultural Innovation (Agrimetrics, Crop Health and Protection, Innovation Excellence in Livestock, and Engineering Precision Innovation)
- Provide strong leadership for the sector through the Agri-Tech Leadership Council
- Build a stronger skills base to attract and retain the agri-tech workforce

The Industrial strategy issued in 2017 included a strong commitment to put the UK 'at the forefront of a global move to high efficiency agriculture', and to grow markets for innovative farming technologies such as drones and robotics, with agriculture singled out as one of six target sectors for a new Government Office for Artificial Intelligence.

A recent organisational development has been the Higher Education and Research Bill 2017 which followed the Nurse Report on Research Councils. The resulting UK Research and Innovation (UKRI) organisation will incorporate Innovate UK with the seven Research Councils and will commence as a body in April 2018.

The information provided by UKRI confirms its role in research translation indicating that 'the world is changing fast and the UK needs a research and innovation system that is fit for purpose' and 'commercialising new ideas will ensure that we maximise the economic benefit we gain from our world class research'.

Bringing together the science base of the research councils and universities with the business-led Innovate UK, will hopefully address many of the problems that have been faced by agricultural R&D.

'In view of the priority being given to increasing agricultural production and productivity sustainably that information is provided on public sector support for these priorities'

Increasing agricultural production and productivity sustainably can only be achieved with a more integrated approach to delivering these objectives.

BBSRC has responded with a new strategic plan (www.bbsrc.ac.uk). Agriculture and Food Security (AFS) is one of three key strategic research priorities covering 'arable, horticultural, forage and non-food crops, farmed animals (livestock, poultry and aquaculture) and agricultural systems including soil and related food chains'. The breadth and depth of the R&D activity in the AFS area and the key policy changes are outlined as:

- Greater recognition that productive, competitive and sustainable agriculture is essential for both food and non-food uses in a wider bioeconomy
- Reflection of the need to gain a deeper understanding of the concept of 'sustainable intensification' in agriculture
- Additional emphasis on tackling key challenges for livestock health and welfare, such as understanding antimicrobial resistance and developing next generation vaccines
- Commitment to BBSRC's role in delivering the UK Strategy for Agricultural Technologies, to ensure that the UK's world-leading agricultural research is translated into practice

‘Changes in approach to funding of research should also include a reconsideration of how research grants/contracts are structured, and this may entail the provision of longer term awards than currently offered’.

The 2014 BBSRC Strategic Plan prioritised three cross-cutting enabling themes aimed at maximising the social and economic benefit of the research it funds. These are:

- *Enabling innovation*: maximising the impact of our science and skilled people in boosting the UK economy, informing policy and improving quality of life
- *Exploiting new ways of working*: enabling innovative working practices in an era of rapid technological advancement, multidisciplinary research, high throughput technologies, the next generation internet, and quantitative and computational approaches to bioscience
- *Partnerships*: working with our many stakeholders, including other funders and the public, nationally and internationally, to deliver our exciting vision for global impact from UK bioscience

BBSRC has accepted that the funding of research utilising these enabling themes will require a change of approach to funding. Hopefully these themes aimed at exploiting innovation, new ways of working and partnerships will lead to a more strategic direction for agricultural R&D and closer linkages between research and practice.

‘Recognition (of applied research) should be reflected not only in funding policies, but also in the types of scientists appointed and the career objectives, recognition and reward for scientists in the public sector’

It is essential that high calibre scientists are involved in the applied R&D process.

Encouragingly, BBSRC have stated that ‘to ensure that the UK's world-leading agricultural research is translated into practice will require scientists with the ability to understand the translation processes and the agricultural systems to which the research is being translated.’

However, to be successful, recognition, career progression and rewards for scientists engaged with applied R&D will need to be comparable to those working solely in basic science research.

One of the key stated priorities of BBSRC is to ‘address skills shortages in areas of specialist research expertise and translational skills, working with industry, learned societies and other stakeholders’. The intention is therefore in place and will be an essential component for success.

‘Projects funded from within the public sector of agricultural research should be within themes’

The BBSRC Strategic Framework for AFS has done this by dividing the research into six ‘focus areas’ (or themes), although it is stressed they naturally overlap, with the final two focus areas being applied across the first four:

- Sustainable agricultural systems
- Crop and farmed animal health
- Food safety and nutrition
- Reducing waste

- Understanding and exploiting genomics
- Precision agriculture and smart technologies

These focus areas appear to adequately cover the breadth of agricultural systems.

Conclusions

Since 2010 there has been a major shift in approach by government and relevant agencies to agricultural research with a clear acceptance that increasing productivity and competitiveness of UK agriculture is a priority, of which improving the translation of the excellent UK science research base into practice is an essential component.

New frameworks and policies have been put in place with these objectives. However, it is much too early to conclude whether these have resulted in improvements either in the rate of translation of research into practice or in the rate of growth in agricultural productivity. It will inevitably take a period of time for these changes to feed through into practice and be recorded.

The key to success in achieving the objectives will be how these frameworks and policies are implemented and managed.

One crucial area for success will be in *'the career objectives, recognition and reward for scientists'* working in the applied research areas. Whilst there is a stated policy of BBSRC to utilise scientists with *'translational skills, working with industry, learned societies and other stakeholders'* it is essential that such scientists receive the same recognition, and opportunities for career progression and reward for their work as scientists working solely in basic science research.

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