

From agri-environment schemes to sustainable intensification: Changing priorities for UK agriculture.

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The Challenge: 8.3b by 2030

- Food price spikes in 2008 and 2011-13.
- Climate Change and weather issues
- Nutrition Transition;
- Pressures on key resources such as oil, water, nitrate, phosphates;
- Soil degradation;
- Declining growth in agricultural productivity;
- Pressures on land; Demand to use land for energy production (solar, Wind, biofuels) and carbon storage;













- Continued concern over biodiversity and landscape;
- The new agenda of health and wellbeing;
- Worries over animal and plant diseases;
- Battle-lines drawn over emotional/political issues such as wildlife management and Genetic modification.











Addressing the Challenges in Global Food Security



Agricultural technologies

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Agriculture employs 450,000 people.



A pest management system developed by British and Kenyan scientists has increased yield in parts of Kenya **by up to 100%**.



Agriculture contributes **£9 billion to the UK** economy and underpins the UK's **£26 billion** food and drink manufacturing sector.



The growing global agricultural technologies sector is worth **\$400 billion**, offering export opportunities in emerging markets.

• If **resilience** is the capacity of a system to respond to change, then agriculture and food are confronting an unprecedented resilience test.















- Ensuring global food security is one of the biggest challenges facing humanity and to rise to that requires:
- 1. Behaviour change eating differently, reducing waste and reducing our demands on natural resources; partly through ensuring markets fully take into account non-financial costs of production.
- 2. Improving the governance of natural resources applying the Ecosystem Services approach to decisions about land use allocation.
- 3. The application of agricultural technology and science.





In agricultural technology and science, I would argue there are five priorities:

- 1. Tackling diseases plant pathology.
- 2. Exploring smarter technologies anything from hydroponics to artificial photosynthesis to automated precision farming systems, and within this category exploring some of the claims and possibilities from organics and agro-ecology.
- 3. Improving our knowledge and management of soils.





Agri-Tech Priorities

- 4. Plant breeding seeds, yields, resource use, disease resistance and nutrition.
- 5. Management encouraging innovation, improving performance.











A UK Strategy for Agricultural Technologies, July 2013



- Vision: UK as a world leader in agricultural technology, innovation and sustainability; ... the infrastructure to support industry in applying science and technology to help modern farming ... has declined over the past 30 years. UK agriculture's productivity growth has declined
- Aspects of the current regulatory regime and skills gaps can hinder the UK in developing and using innovation and new technologies.













The underlying goal is **sustainable intensification** of our agricultural sector. This is not a term we should be scared of. It is simply about getting better productivity and yields with reduced inputs and environmental impact. Industry has already shown this can be done by, for example, using GPS and precision farming techniques to ensure more targeted application of inputs. One of the challenges posed in the Strategy is how we translate existing research and scientific know-how so that we move the industry forward as a whole.



The UK agricultural research landscape



Agri-tech centres – underpinning translational research 50:50 gov:ind



Sustainable Intensification Platform – overall structure

		Work-packages		
		a) Understanding the system	b) Designing interventions	c) Socio-economic context
Projects	1. Integrated farm management – led by NIAB	Metrics/indicators	Integrated Farm Management practices	Decision support
	2. Landscape-scale opportunities and risks – led by Exeter	Land typology (capability and risk)	Landscape scale interventions	Collaborative land management Performance benchmarking
	3. Markets and drivers – led by ADAS	Resilience of UK farming	Income streams	Spheres of influence

SIP Case Studies: 3-6 10-20 km² study areas



- Main English and Welsh farming systems represented
- Covers a range of systems (traditional and innovative; conventional and organic)
- Broadly representative of farmed landscapes in England and Wales (upland and lowland)
- Range of agri-climatic zones
- Existing infrastructure/ activities:
 - research farms
 - landscape-scale study areas
- Alignment with other initiatives (e.g. agri-tech)





- The legacy (and continuation of CAP) SFP does not encourage innovation.
- Land prices and other demands on land.
- Market fluctuations do not encourage confidence.
- Downward pressure on commodity prices from retailers.
- Farmers' reluctance to collaborate.
- Long-term lack of investment in appropriate R&D.
- A tendency in parts of the industry to focus only on production.







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