



# Global Science, Lasting Benefits

Our strategy for 2017-2022

**Achim Dobermann**

Director and Chief Executive



**ROTHAMSTED  
RESEARCH**

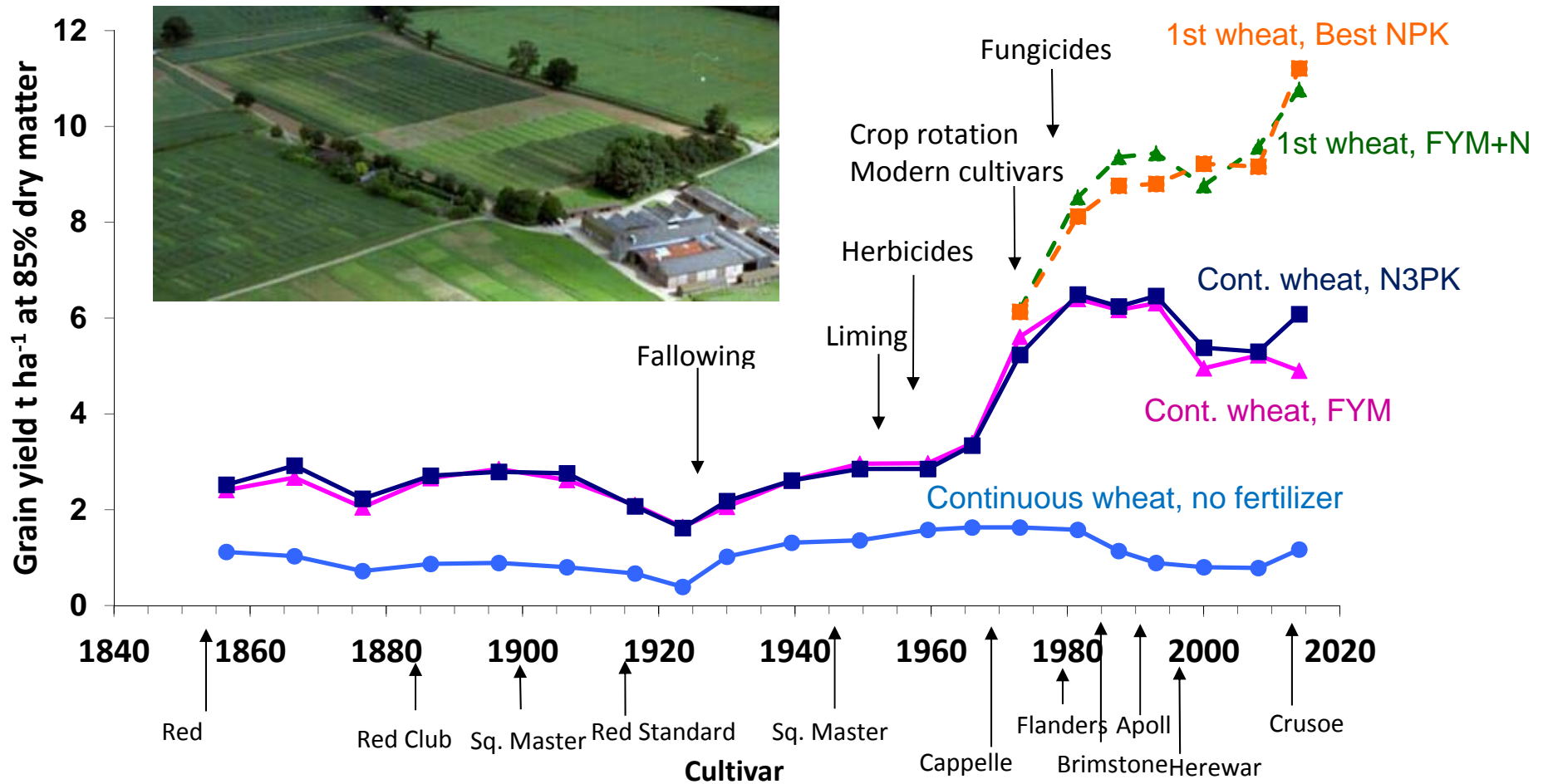


# Our story: Broadbalk – the world’s oldest LTE



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Mean winter wheat grain yields (5-yr averages, 1843-2016)



# Rothamsted Research today



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## Unique science capabilities

2 campuses - 4 sites with >800 ha field environments

3 National Capabilities (NWFP, LTE, RIS)

Specialised science facilities (GM, Phenotyping, Bioimaging, Metabolomics, GHG, Radar, Insectary,.....)

**>500 people, >35 nationalities**

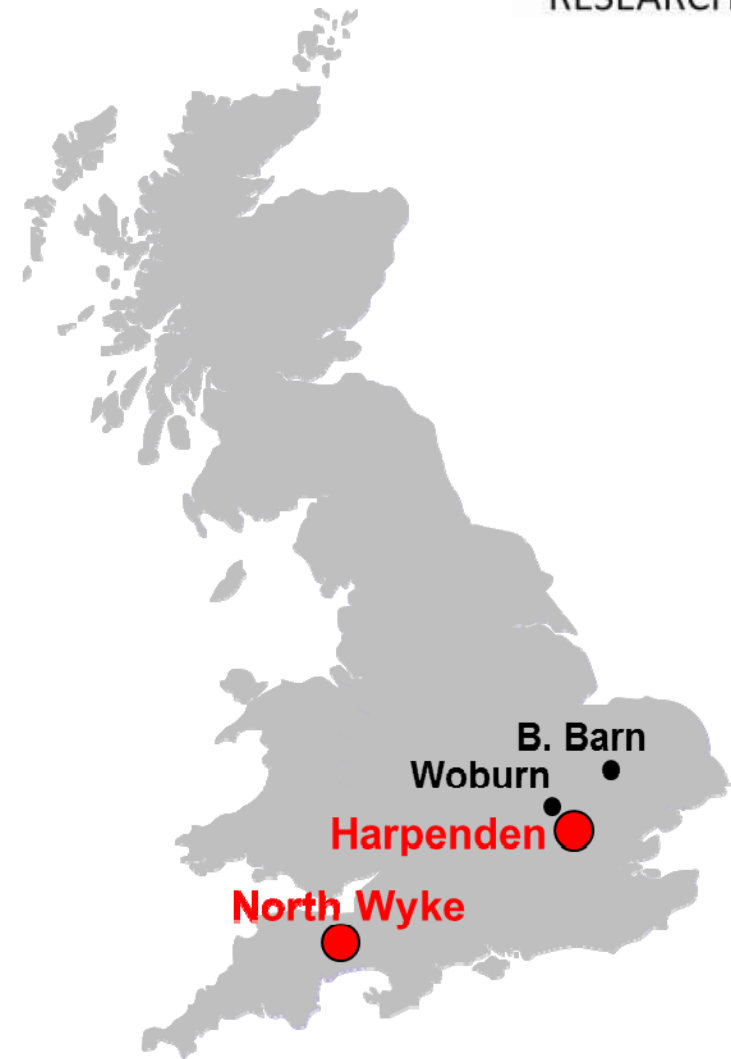
**~£35-37m annual budget**

**Wide range of partnerships**

## Scientific output

~300 journal papers p.a.

20 p.a. in high-impact journals

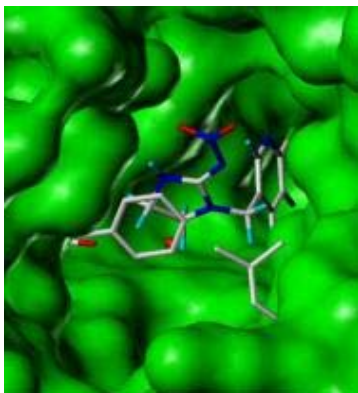


# Science Clusters



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Plant Sciences	Biointeractions and Crop Protection	Sustainable Agriculture Sciences	Computational and Analytical Sciences
Crop productivity and quality	Surveillance and monitoring	Soil biology	Genomics and bioinformatics
Resilience and development	Pesticide resistance	Agronomy and nutrient flows	Statistics and ecoinformatics
Lipid metabolomics engineering and synthetic biology	Pest – host interactions	Systems modelling	Biological physics and engineering
Oilseed metabolism and development	Wheat pathogenomics	Grazing livestock systems	Soil and plant analytics
Plant transformation and genome editing		Atmospheric emissions and mitigation	Molecular discovery
		Environment systems and modelling	Bioimaging



GLOBAL SCIENCE  
LASTING BENEFITS



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2017  
2022



# 3 science portfolios address 6 global challenges



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## Superior Crops

**Challenge 1**  
Accelerate improvements in yield, quality and resource efficiency of wheat and other crops

**Challenge 2**  
Discover or design novel traits that improve the nutritional or industrial value of plants

## Securing Productivity

**Challenge 3**  
Monitor and forecast the spread of pests, weeds and diseases in real time

**Challenge 4**  
Combine genetic, chemical, ecological & agronomic strategies for smart crop protection

## Future Agri-Food Systems

**Challenge 5**  
Enable the majority of farmers achieve at least 80% of the attainable potential

**Challenge 6**  
Create crop and livestock systems with higher performance & nutrient value but lower environmental impact

# Designing Future Wheat ISP



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Challenge 1: Accelerate improvements in yield, quality and resource efficiency of wheat and other crops.



Developing novel wheat germplasm for the next generation of key traits which will underpin sustainable and productive agriculture.

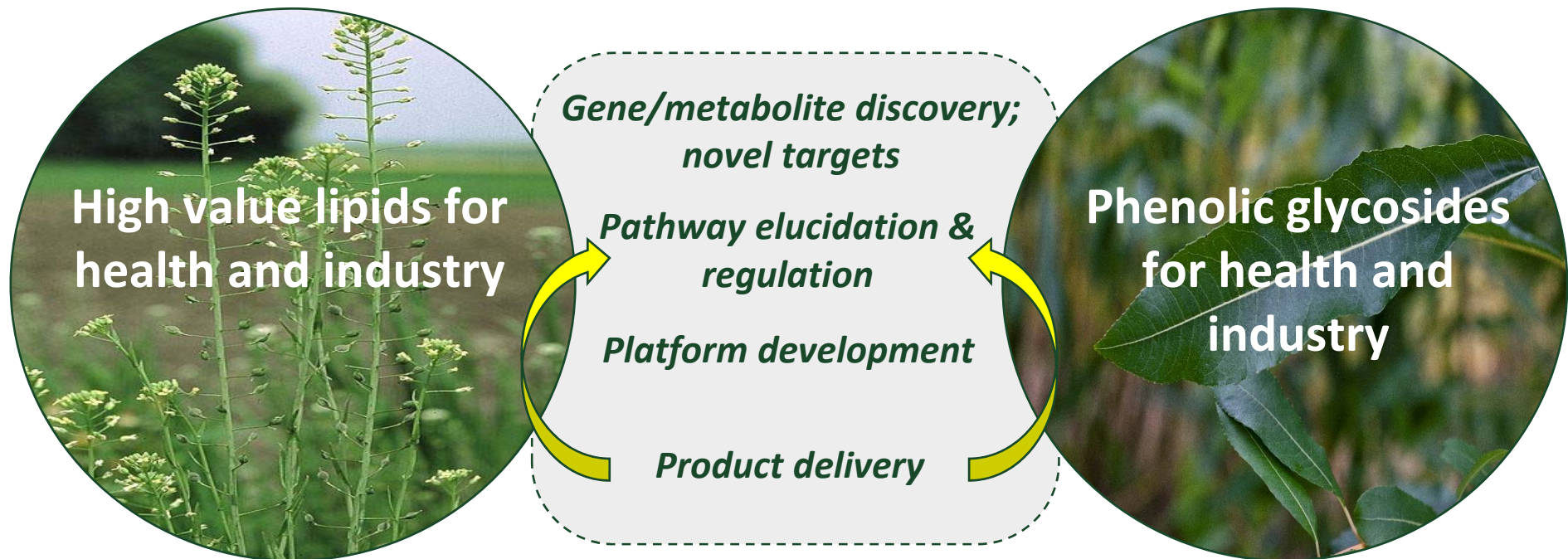


# Tailoring Plant Metabolism ISP



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Challenge 2: Discover or design novel traits that improve the nutritional or industrial value of plants.



**“From metabolite to gene to field”**



# Smart Crop Protection ISP



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A gene to landscape approach to deliver more targeted and sustainable control of insect pests, weeds and diseases in agroecosystems.

Challenge 3: Monitor and forecast the spread of pests, weeds and diseases in real time.

Challenge 4: Combine genetic, chemical, ecological & agronomic strategies for smart crop protection.

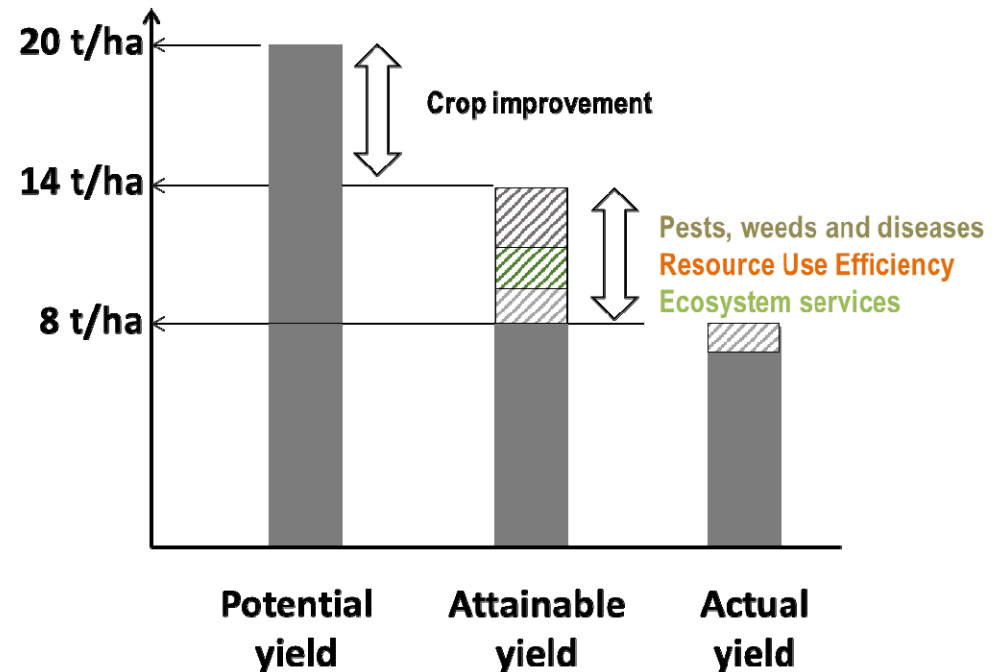
# Achieving Sustainable Agricultural Systems ISP



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Challenge 5: Enable the majority of farmers achieve at least 80% of the attainable potential.

Developing and testing innovative farming systems that increase food production and resilience to future perturbations, while reducing the environmental footprint of agriculture.



# Soil To Nutrition ISP (S2N)



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Challenge 6: Create crop and livestock systems with higher performance & nutrient value but lower environmental impact.

Advancing farming systems through an enhanced mechanistic understanding of nutrient use efficiency, productivity and resilience from soil to food product.



Grassland systems can be designed and managed to deliver optimal sustainable production per unit area, whilst minimising negative impacts on other ecosystem services.



**Our vision** is to make the Farm Platform a globally recognised model for systems research in sustainable food and farming.

# Agricultural Research & Innovation Accelerator

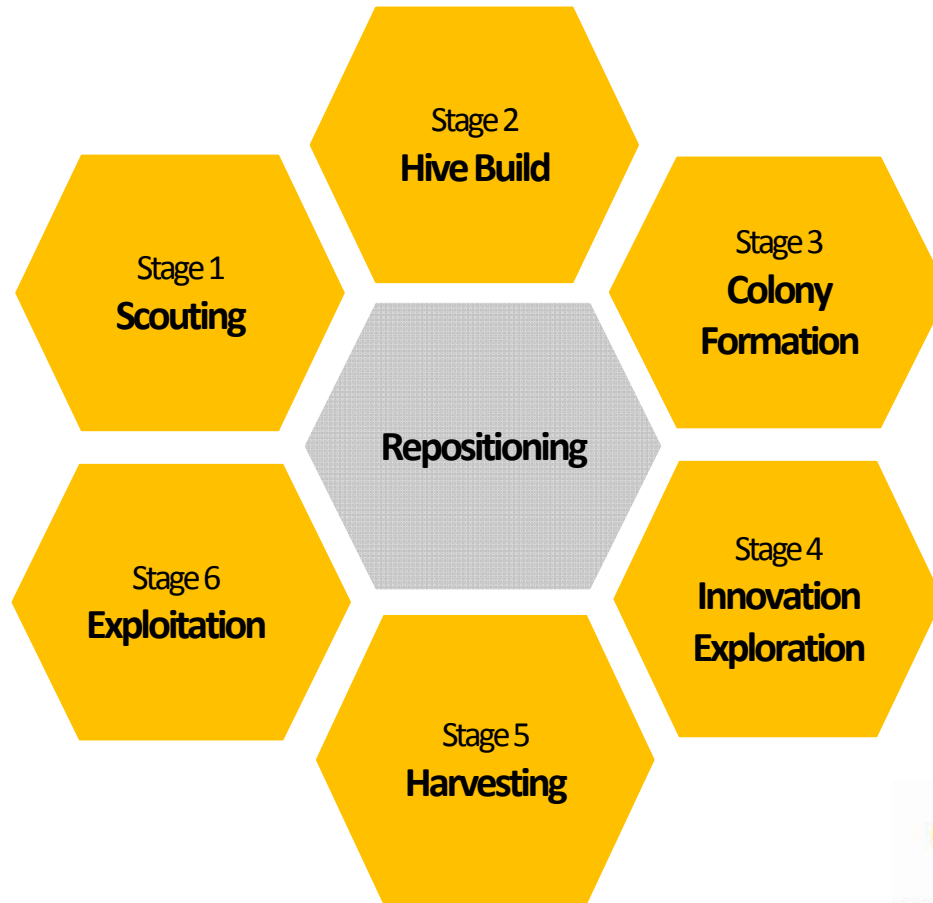


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An Ideas fast start, fast stop engine, helping new Innovation reach commercial viability

## AgRIA

1. Short leap projects  
6 -12 months,
2. Young entrepreneur MSc or PhD studentships  
1-4 years,
3. Longer leaps of faith  
5-10 years.



Customer Journey



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University of  
Hertfordshire **UH**

**Evidence base for  
more informed  
decision making**



**Big data solutions for  
agri-food**

**Making disparate data more accessible**

**Facilitating sharing of data**

**Making data more valuable**

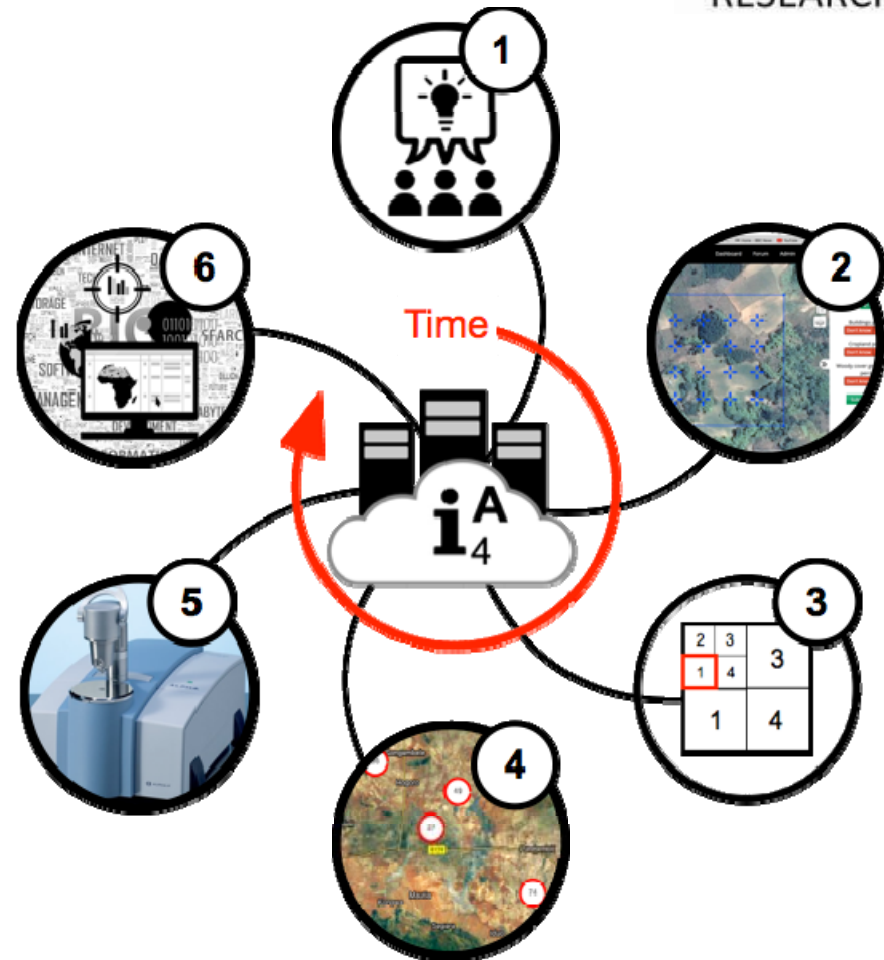
# Africa Soil Information Service (AfSiS Project/Ltd.)



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Developing evidence-based agronomy for Africa through novel geospatial technologies

Africa Soil Information Service  
[africasoils.net](http://africasoils.net)



THE EARTH INSTITUTE  
COLUMBIA UNIVERSITY

BILL & MELINDA  
GATES foundation



# **The Future of Long-Term Experiments in Agricultural Science**

International Conference

**21-23 May 2018, Rothamsted Research, Harpenden, UK**



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