

# NU Farms

Agrisystems Innovation Platform



# Welcome

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NU Farms is our research, teaching and engagement platform based across our two sites, Nafferton and Cockle Park.

Agriculture has more than 125 years of history at Newcastle. Our sites are key assets for the UK and international agricultural community. Our unique combination of world-class research, facilities and staff allows us to work at all scales in the agri-system.

Our work tackles major challenges, whether at the global or molecular scale:

- food security
- herbicide resistance
- environmental change
- nutrition
- rural energy

Here are some of our highlights.

“ Our Palace Leas meadow hay plots are the world's longest running grazing and hay-cutting experiments ”

## Farrow-to-finish pig unit

Integrating commercial and research activities, our Pig Unit is used to **assure research translates to farm operations**. 150 sows are managed farrow-to-finish on a three week batch system. The Unit is where we developed the crate-free farrowing system PigSAFE.

- flexi-penning to allow small-group growing pig trials
- environmental monitoring and networked video through all buildings
- slatted and straw-based buildings
- finishing building with individual pen slurry collection
- facilities for taking and processing biological samples
- experienced technical team



## Herbicides

Weeds account for higher yield losses and greater input costs than all other pests and diseases. **Our expertise extends from the control of wild grasses in UK and European cereals to global weed control issues** in maize, rice, and soybean.

In Northern Europe, weed control in cereal crops has become one of the greatest challenges to sustainable intensification. The most problematic weeds are the wild grasses, notably black-grass, which has become steadily more difficult to control over the last 30 years due to the evolution of herbicide resistance.

Studies include:

- herbicide metabolism using radioisotopes and high resolution mass spectrometry coupled with ultra-performance liquid chromatography
- mode of action studies of herbicides and safeners
- biochemical mechanisms of multiple resistance in weeds including associated molecular diagnostics

## Crop and Soil Sciences

Our goal is to deliver innovative agri-systems that meet the demand for quality foodstuffs from a growing global population. We investigate how agronomic approaches **manage abiotic and biotic stresses** in crop production systems.

A focus of our work is modifying gene-environment interactions (G x E). Long-term field trials allow us to identify:

- practices that improve yield and quality
- varieties which express high lodging, pest and disease tolerance at higher fertiliser levels
- fertilisation regimes which improve crop performance and minimise negative environmental impact

## IAFRI - Institute for Agri-Food Research and Innovation

A joint venture between Newcastle University and Fera Science Ltd, IAFRI exists to deliver sustainable solutions across the agri-food supply chain.



Guided by an expert industrial advisory group, priority research areas of the Institute are:

- **agri-diagnostics and biosecurity** - to develop precision approaches and smart surveillance systems to help protect agriculture and the natural environment from pests and pathogens
- **agri-food production and protection** - improving the productivity and health of our crops and livestock
- **food safety and nutrition** - ensuring our food and feed is safe and nutritious and that our supply chains are resilient

## Agritech Innovation Centres

We are part of two of the Government's Agritech Innovation Centres.

Our role in the Centre for Innovation Excellence in Livestock (CIEL) is to **lead the Centre for Digital Innovation Applied to Livestock (C-DIAL)**, a multi-disciplinary initiative between veterinarians, animal and computer scientists, engineers and mathematicians.

Based at Cockle Park Farm C-DIAL brings the latest sensor-based and automated technologies to precision livestock farming. The **purpose-built facility allows for continuous monitoring** of the performance, health and welfare of livestock.

The **Centre for Crop Health and Protection (CHAP)** provides field laboratories for the evaluation and testing of ecologically friendly pesticides and biocontrol agents.

We designed and commissioned four trailers that are fully **autonomous 'in-field' laboratories**. The trailers demonstrate scientific equipment and **undertake on-farm testing and diagnostics** throughout Europe. We believe that **engaging the farming community in the field** will improve research, collaboration and trust between farmers, researchers and industry.



### Cockle Park Farm

- 307 Hectares
- 18 miles north of Newcastle
- Primary activities: dairy, pigs, beef, arable, rural energy



### Nafferton Farm

- 498 Hectares
- 12 miles west of Newcastle
- Primary activities: arable, dairy, beef, hedgerow, dry stone wall and field-edge management

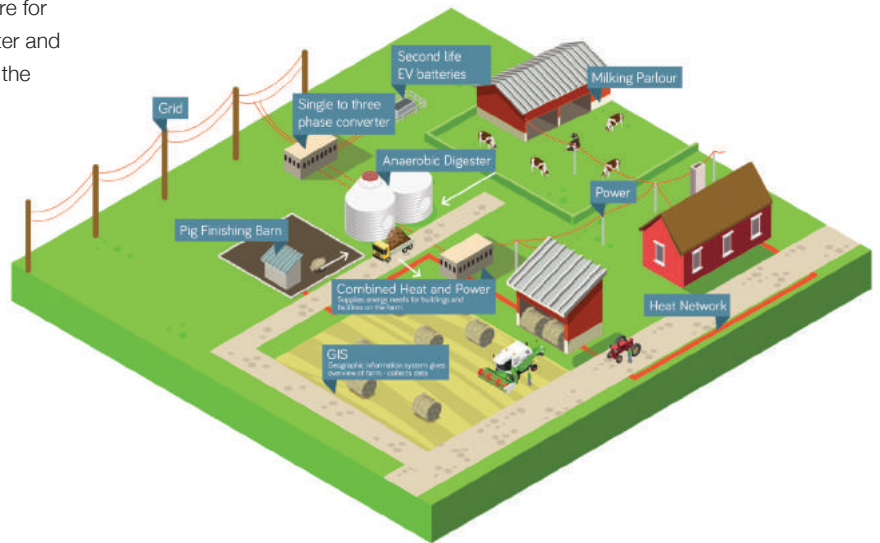


## Rural Energy

Cockle Park is a demonstration site for the National Centre for Energy Systems Integration (CESI). The Anaerobic Digester and Combined Heat and Power Unit meet more than 50% of the farm's energy needs and supply heat to nearby buildings and greenhouses.

As well as energy, anaerobic digestion produces organic fertilisers as a co-product and closes the nutrient cycle. Digested materials are used at field, farm and landscape scale and life cycle analysis compares productivity and environmental footprints of alternative production scenarios.

- 'whole systems' approach to rural energy
- 75 kW anaerobic digester plant
- farm microgrid and thermal network
- grid connected, using single to three phase converter



## Conferences and Meetings at Cockle Park

With easy access to the A1 and on-site parking, Cockle Park is an ideal venue for meetings, conferencing and product demonstrations. The Seminar Room is a modern barn conversion that can hold up to 60 people. The room can be arranged for boardroom, theatre-style and small group meetings. The Lodge is a versatile, spacious, open plan room with capacity for 35 people and includes a reception area and kitchen facilities. Catering is also available upon request.

## Contact

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