Advanced Training Partnership

Sustainable and Efficient Food Production

Postgraduate workshops
and distance learning
for the agri-food industry

Advanced Training Partnership

Sustainable and Efficient Food Production

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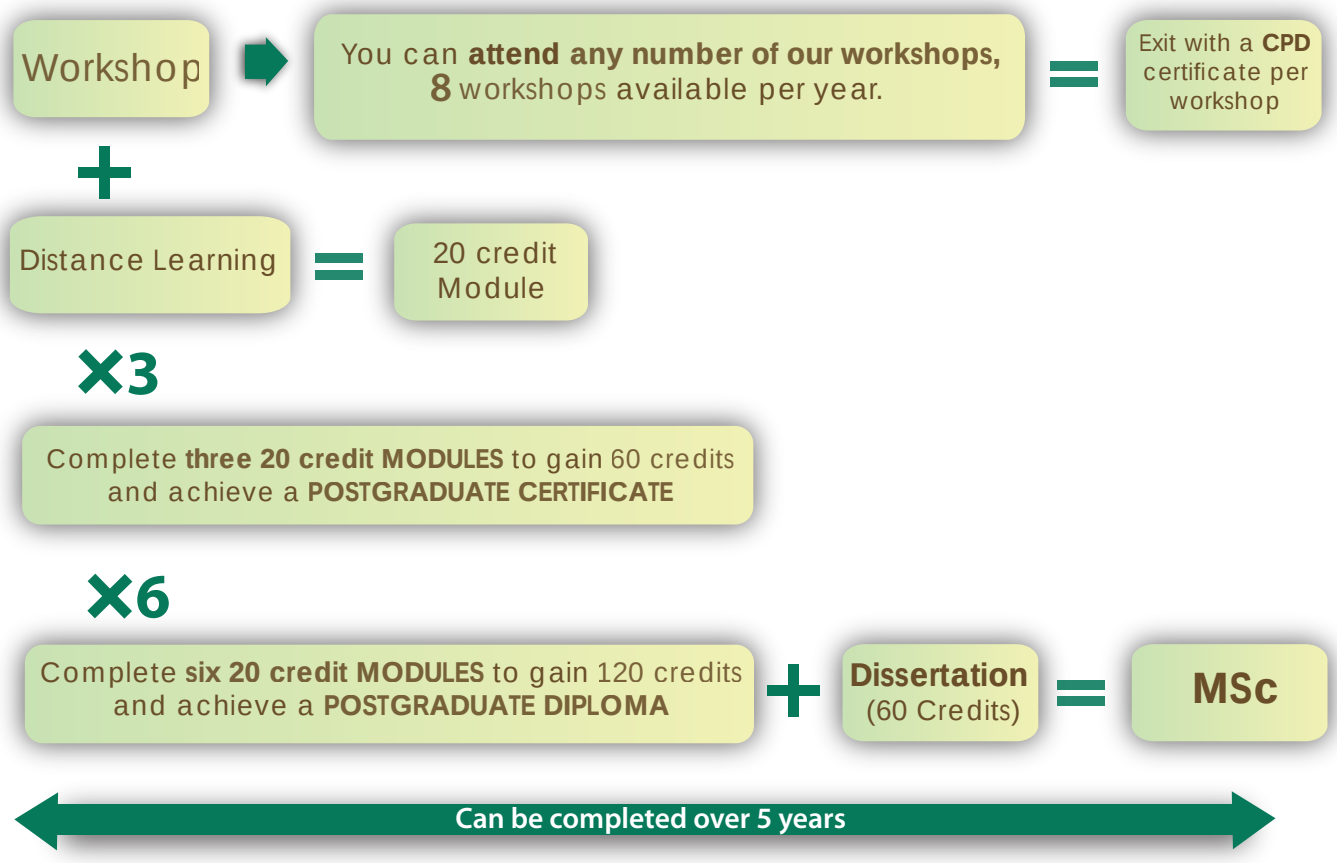
Training Format: All of our training is at **postgraduate level** and we have designed it to be as accessible as possible to those in **full time employment**.

Workshops - take place over 2 days and provide an interactive blend of academic and industry contributions. Workshops will be provided at accessible locations throughout the UK, and all will feature high profile speakers, as well as providing an opportunity to network with professionals within your own and similar industries. **The workshops can act as stand-alone items or, if you would like to study further, provide the entry point to a 20-credit taught postgraduate module delivered by distance-learning.**

Distance learning - For those who wish to study in more depth, the workshops provide entry to university validated, distance learning modules, worth 20 credits and running for the 12 weeks immediately after the workshop. These include podcast lectures, e-group projects, guided reading and discussion forums, as well as assignments and e-tutorials. **You may wish to undertake just one module; or to build up credits towards a postgraduate qualification.**



Marty Spittle - Coordinator: 01970 823224
Website: www.atp-pasture.org.uk
Email: atp-enquiries@aber.ac.uk

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Sustainable Home-grown Feed

Optimising arable rotations for mixed farming systems

Arable crops are often a key part of pasture-based agriculture, yet their selection and management is likely to be driven by very different requirements compared to intensive arable situations. This module focusses on developing appropriate management approaches to maintain and build soil fertility whilst maximising livestock productivity to deliver a system that is both resilient and sustainable. We will explore rotational farming practices in the context of mixed farming systems and examine the different crop options, their suitability for different situations and regions, their use in the feed ration, and crop management approaches. The environmental and economic implications of different management practices will also be evaluated in context with current UK and European policy.

The Workshop

Our two day workshops function as both stand-alone CPD and/or as an introduction to the distance learning module and to other students. Workshops give you an overview of the topic and the opportunity to discuss the latest research findings with some of the top researchers in the topic areas.

Postgraduate Distance Learning

The training is web based which means, so long as you have an adequate internet connection, you can study where and when it best suits you. The module is split into 10 units, each of which consists of a mix of reading material, videos and podcasts. The module and workshop can be taken together or separately. The module counts as 20 credits towards a postgraduate qualification from the ATP scheme and will comprise of the following:

1. **Overview of mixed farming systems and soil health** - assessing current mixed farming systems, identifying good and bad practice and examining their impact on soil health.
2. **Crop rotation**: regulatory and environmental context - examination of current UK legislation and its impact on crop rotation.
3. **Building soil fertility** - management of crop rotation to ensure soil health is maintained and discussion of the benefits of cover crops.
4. **Cultivation and harvest options** - consequences of cultivation and harvest operations on nutrient and soil management.
5. **Plant health and weed control** - managing crop disease, weeds and pests using crop rotation.
6. **Economic evaluation** - exploring the economic justification for home grown feed.
7. **Maize** - examination of whole crop, corn cob mix and crimped maize.
8. **Protein crops** - evaluation of common protein crops, including red clover, lucerne, lupins and sainfoin.
9. **Cereal and Brassica Crops** - use of wholecrop, crimped grain and grain in the feed ration.
10. **Short term grass lays** - assessment of short term grass lays with focus on Italian ryegrass and Festulolium.

Contributing Researchers: Dr Heather McCalman, Dr Christina Marley, Dr Athole Marshal, Dr Iwan Owen, Dr Malcolm Leitch, Dr Joanna Mathews, Dr Dylan Philips, Ron Stobart, Phil Humphry

Want to know more? **Marty Spittle 01970 823224**

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Sustainable Grassland Systems

This study area looks at the range and distribution of grassland and forage crops. Nutrient management and environmental protection are themes throughout as are strategies for grazing and forage preservation. The role of plant breeding and management is investigated. Trainees evaluate the management requirements of a range of grassland systems and the factors that underpin forage cropping programmes. Current research being carried out in IBERS and NIAB has a significant impact on module content.

The Workshop

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Postgraduate Distance Learning

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1. **Range and Distribution of Grasslands**— assesses UK pastures and examines how the nature of pasture farming may change in the future
2. **Characteristics of Forage Species**— linking morphology and yearly growth patterns to forage quality and how NIRS can be used to assay this
3. **Grassland Composition**— an overview of pasture establishment and how management affects grassland composition
4. **Managing Pests and Diseases in a Changing Environment**—an examination of how climate change may alter the pest and disease load on grasslands
5. **Soil Quality and Low Input Systems**—linking soil health to pasture productivity and how the recommended listing process can be used for low input systems
6. **Grazing**– overview of grazing options will be discussed as well as flushing in sheep and the use of technology for pasture management
7. **Forage Breeding**—a detailed look at the IBERS forage breeding programmes and future prospects
8. **Forage Preservation and Bio-refining**— an examination of the production of hay & silage from pastures & an examination of the prospect using forage in bio-refining
9. **Ruminant Nutrition**– associating pasture quality to animal nutrition, reducing green house gas emissions & altering fat composition in grazing cattle
10. **Grassland Systems**—an examination of upland grazing systems and how lifecycle assessment is used to assess pasture based systems

Contributing Researchers: Drs Iwan Owen, Gareth Burns, Saskia Pagella, Jane Thomas, Rosemary Collins, John Warren, Heather McCalman, Christina Marley, Richard Hayes, Jon Moorby, Mike Morris, Mariecia Fraser, David Styles; and Rhun Fychan, Profs Chris Pollock, Mike Christie; and Michael Abberton

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Improved Ruminant Production

The focus of this topic is increasing the efficiency of both intensive and extensive ruminant production systems. It draws upon research within IBERS and elsewhere, and will cover topics from: the basics of financial and physical performance measuring, to the latest research on ruminant genetics; and using this to reduce the environmental impact of production. Students will explore the fundamental genetics and physiology that underpin animal production in terms of: reproductive technology, genetic improvement, dairy cattle production systems, meat production systems, meat and milk quality, disease prevention and management.

The Workshop

Our two day workshops function as both stand-alone CPD; or as an introduction to the distance learning module and to other students. Workshops give you an overview of the topic and the opportunity to discuss the latest research findings with some of the top researchers in the subject areas.

Postgraduate Distance Learning

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1. **Measuring production** - measuring both business performance and animal performance
2. **Extensive production systems** - an overview of extensive systems and a look at the some of the latest research on extensive systems
3. **Intensive production systems** - an overview of intensive ruminant production systems and an overview of the latest research into these systems
4. **Handling systems** - this part of the course will look at the development of more efficient handling systems and the integration of electronic recording systems
5. **Improving nutrition** - a look at the principles of ruminant nutrition and the latest research
6. **Disease prevention and measuring welfare** - looks at the importance of good animal health and welfare and how this can be achieved in most ruminant production systems
7. **Reducing environmental impact** - looks at the latest research into nutrient efficiency and reducing greenhouse gas emissions from ruminant production
8. **Fundamentals of breeding and genetics** - introduces the students to genetics in ruminant production
9. **Livestock genetics of the future** - looks at the latest research into animal genetics and how this could help ruminant production in the future
10. **Production systems of the future** - looks at the policies and the technologies of the future that are likely to shape future ruminant production

Contributing Lecturers: Prof Nigel Scollan, Tony O'Regan, Dr Christina Marley, Dr Basil Wolf, Dr Denis Larkin, Dr Mike Rose, Prof Will Haresign, Dr Neil MacKintosh, Dr Neil McEwan, Chris Warkup

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Carbon Footprinting and Lifecycle Assessment

Benefiting from the latest research at Bangor University, this study area will provide theoretical and critical analysis of the practise and application of Carbon Footprinting (CF) and Life Cycle Assessment (LCA), as key tools in assessing the environmental impact of agricultural systems. Opportunities to use the most recent CF and LCA tools will facilitate the identification of the best strategies for reducing the environmental impact of food production systems.

The Workshop

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Postgraduate Distance Learning

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1. **The role of GHGs in climate change** – quantifying environmental impacts of agriculture and defining the production-efficiency challenge
2. **An introduction to LCA and to CF** – concepts, tools and databases
3. **LCA and CF system boundaries for farms** – goal and scope definition, inventory data compilation
4. **Upstream processes** – agrochemical manufacture, energy sources, feed production
5. **Soil emissions** – calculating emissions from fertiliser and manure applications and residue incorporation
6. **Animal husbandry emissions** – calculating emissions from manure management and enteric fermentation
7. **Land use change and farm level CF** – calculating emissions from land use change in relation to farm management changes, case study of anaerobic digestion
8. **Allocation and consequential LCA** – allocating emissions to milk and meat, accounting for indirect effects of management decisions
9. **Wider impact categories** – life cycle impact assessment methods, water and biodiversity impacts
10. **Practical application of CF** – interpretation, reporting, product labelling, informing management

Contributions from: Dr Dave Styles, Prof Dave Chadwick, Prof Jamie Newbold, Phil Humphrey NIAB TAG, Prof Mike Christie, Campbell Skinner

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Ruminant Nutrition

This training will outline the fundamental physiological and microbiological principles underpinning ruminant nutrition,. We will look at the design of animal nutrition experiments, ruminant ration formulation and evaluation, nutrient digestion and metabolism, microbial populations and their ecology, and metabolism of carbohydrates, protein and lipids in order to modify the characteristics of meat and milk.

The Workshop

Our two day workshops function as both stand-alone CPD; or as an introduction to the distance learning module and other students. Workshops give you an overview of the topic and the opportunity to discuss the latest research findings with some of the top researchers in the areas.

Postgraduate Distance Learning

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1. **Fundamentals of Ruminant Nutrition** - looks at the anatomy and function of the ruminant gut and the metabolic pathways in ruminants
2. **Research methods used in ruminant nutrition -** introduces the different research methods used to understand ruminant nutrition
3. **Ecology of the Rumen** - describes and explains what we know about the microbial ecology of the rumen
4. **Managing the Rumen** - looks at ways to manage the rumen to increase productivity
5. **Altering product composition through nutrition** - looks at the research into altering meat product composition and dairy product composition through the animals nutrition
6. **Feed sourcing and alternative feeds** - looks at feed sourcing, feeds from by-products and on how feed markets work
7. **Home grown feeds -** discusses the use of home grown feeds and looks at some of the alternative home grown feeds being currently researched
8. **Nutrition and meeting product quality** - provides a look at how biological research can help the industry meet market demands and looks at how industry and government influence the market
9. **Nutrition and the Environment** - looks at the environmental issues surrounding ruminant production and how ruminant nutrition can be used to mitigate these issues
10. **Ruminant Genetics** - looks at past/present breeding strategies that are linked to ruminant nutrition and looks at genomics and its future potentials to animal breeding and improving nutrition

Contributing Researchers: Drs Mike Rose, Christina Marley, Mike Lee, Neil McEwan, Gareth Griffiths, Sharon Hughes, Eli Saetnan, Jon Moorby; and Denis Larkin; Profs Jamie Newbold, Nigel Scollan, Noel Ellis

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Silage Science

This study area will develop your knowledge of modern forage and grain ensilage systems, and give you the skills to integrate recent research into your work. The course will examine: silage evaluation, fermentation, microbiology, inoculant development, pathogen transfer and food safety. Focus will be on pasture based systems, although processes for grain and non-arable crops will be described and evaluated.

The Workshop

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Postgraduate Distance Learning

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1. **Fundamentals of Silage Production** - an overview of the ensiling process and an assessment of the environmental impact of silage production
2. **Pasture Management for Silage** - an assessment of grassland management and grazing systems for pastures destined for ensiling
3. **Harvest and Storage Options** - a look at the technology of harvest and an examination of the various storage and sealing options
4. **Silage additives** - evaluation of the different additives and their appropriate use
5. **The Biochemistry of the Ensiling Process** - a detailed look at the biochemical changes that occur during the ensiling process
6. **The Microbiology of the Ensiling Process** - an overview of the key microbes responsible for ensiling and an examination of contamination by undesirable microbes
7. **Chemical Analysis of Silage** - the common methods of determining silage quality will be considered
8. **Ensiling Alternative Forages** - the challenges of the ensiling of legumes, including red clover and whole crop cereals will be discussed
9. **Silage in the Feed Ration** - an assessment of the feed value of various silages and their inclusion in the ration
10. **Future Developments in Silage** - an exploration of the next big things in silage science

Contributing Lecturers: Dr Dave Davies, Rhyn Fechan, Dr Dylan Philips, Prof Jamie Newbold, Dr Iwan Owen, Dr Heather McCalman

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Soil Management

This module will draw on the expertise of Bangor University and NIAB to provide a practical and theoretical overview of soil management. Sustainable soil management is reviewed in relation to increasing food production efficiency, whilst limiting the environmental impacts and decline in soil quality and services. The dynamic function of the soil system will be explored, including ecosystem services, nutrient budgets, carbon cycling, greenhouse gases and mitigation.

The Workshop

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Postgraduate Distance Learning

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1. **Soils, understanding the basics** - the making of soil, basic properties of soils, major soil types in the UK, the EU Soils Directive.
2. **Soil quality and Ecosystem Services** - soil as a resource, major threats to soil functions, indicators of quality, principles of sustainable use.
3. **Managing Soils as a Resource** - soil degradation, erosion risk planning, soil conservation practices.
4. **Managing Soils for Food Security – Soil Fertility** - constructing a nutrient budget, efficient management of nutrients.
5. **Managing Soils for Food Security – Soil Structure** - soils as a rooting medium, managing soil compaction, role of organic matter, composts.
6. **Managing Soils for Biodiversity** - the living soil, soil biota and their functions, improving soil biodiversity.
7. **Managing Soils for Water Security**– soils and water pollution, runoff generation and flooding, mitigating water quality impacts.
8. **Managing Soils to Mitigate Climate Change** - greenhouse gases (GHG) emissions, carbon sequestration in soils, constructing C/GHG budget.
9. **Soils and Human Health** - risks to human health (pathogens, metals), bioresource quality, current regulatory standards.
10. **Managing Soils on the Farm** – Guidance and legislation, Current Codes of Practice, Cross Compliance, Countryside Stewardship, options for multiple gains.

Contributions from: Prof Paul Withers, Dr Dave Styles, Prof Dave Chadwick, Dr Ron Stobart (NIAB)

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Upland Farming Systems

This study area examines the environmental, economic and social viability of alternative upland farming systems in the UK. Upland environments and land use are examined in the context of the production and marketing of food from upland farming. The impact on biodiversity and ecosystem service provision (e.g. regulated flooding, water quality, greenhouse gas emissions) is reviewed along with drivers of future change.

The Workshop

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Postgraduate Distance Learning

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1. **Intro. to the UK uplands** - what are the Uplands? Upland Soils and Upland Climates
2. **Upland Vegetation and Ecology** - moorland and bogs; natural and cultivated grasslands
3. **Land use in the Uplands** - historic uses of the Upland; Contemporary uses of the Upland from production to conservation; Alternative land use scenarios
4. **Socio economics** - socio-economics of Upland Britain; Government support measures: Agri Environment schemes; Social Ecology: People and landscape in Upland Britain
5. **Animal Production**: Hill and upland beef and sheep production; improved sustainable grazing systems; current and emerging issues
6. **Alternative Land use** - alternative foods and crops; Bioenergy and industrial crops; Forestry
7. **Ecosystem services** - ecosystem services provided by the Uplands- provisioning and supporting; Ecosystem services provided by the Uplands- regulating and cultural
8. **Pressures 1** - effects of drainage, burning and overgrazing on soils and biodiversity; Effect of increased demand for renewable energy and recreation.
9. **Pressures 2** - likely effects of changes to UK/EU Upland policy; Climate change effects; Change in Marketing
10. **Appraisal**: Ecological; Economic

Contributions from: Dr Phil Hollington, Prof Dave Chadwick, Dr Dave Styles, Dr Mariecia Fraser , Tony O'Reagan, Prof Iain Donnisson, Dr Mark Reed (Birmingham University)

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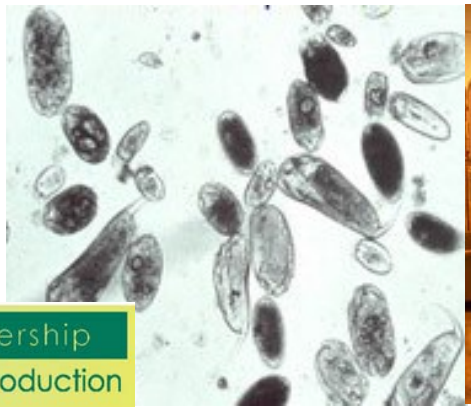

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Ruminant Gut Microbiology

This training will explore the anatomy and environmental conditions of the rumen, covering the negatives and positives of rumen digestion on productivity. We will explore the function and importance in the rumen of: bacteria, protozoa, fungi and archaea. The study area will investigate both traditional culture based and modern molecular based methods used to investigate rumen microbiology together with a review of ways of manipulating rumen fermentation to improve productivity whilst decreasing the environmental footprint of ruminant agriculture.

The Workshop

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Postgraduate Distance Learning

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1. **Anatomy and environment** - looks at the conditions within the rumen of major ruminants
2. **The importance of rumen fermentation to the host** - positive and negative aspects of fermentation on animal productivity and the environment
3. **Bacteria within the rumen** - the diversity and importance of bacteria to the rumen environment and function
4. **Fungi within the rumen** - diversity and importance of fungi to the rumen environment and function
5. **Protozoa within the rumen** - looks at the diversity and importance of protozoa to the rumen environment and function
6. **Archaea within the rumen** - looks at the diversity and importance of archaea to the rumen environment and function
7. **In-vitro methods of rumen study** - culture based in-vitro based models to study rumen fermentation
8. **Molecular based techniques to study the rumen** - looks at the use of modern molecular based methods to study rumen microbial diversity and function
9. **Rumen manipulation part 1** - the use of biotic agents to manipulate rumen fermentation
10. **Rumen manipulation part 2** - the use of abiotic agents to manipulate rumen fermentation

Contributing Researchers: Prof Jamie Newbold, Dr Eli Saetnan, Dr Neil McEwan, Dr Gareth Griffiths

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Resource Efficient Farm Management

Benefiting from the latest research at Bangor University, this module will demonstrate application of a quantative systems approach to select priority farm management practices that optimise the resource efficiency and minimise the environmental impact of food production on pasture based farms

The Workshop

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1. **Food Sustainability** – environmental hotspots of pasture-based food production; challenges for supply chain improvement
2. **Systems Approach to Farm Management** – life cycle assessment and carbon foot-printing, water foot-printing, energy and resource flows.
3. **Nutrient Use Efficiency 1** – soil testing, farm, field and crop nutrient budgeting
4. **Nutrient Use Efficiency 2** – manure storage and application timing, trailing shoe/hose application, legumes
5. **Soil Resource Management** – exclusion zones and animal stocking densities, organic amendments and cover crops, conservation tillage
6. **Feed Efficiency** – animal breed selection and health, efficient silage management, feeds and additives to reduce enteric fermentation
7. **Energy Efficiency** – fertiliser selection and use, anaerobic digestion and alternative energy, farm energy consumption
8. **Water Resource Management** – nutrient management, buffer zones, efficient animal watering systems
9. **Biological Resource Management** – local productive animal breeds, land management, integrated pest management
10. **Conclusions** - priority management practices and indicators

Contributions from: Dr Dave Styles, Prof Dave Chadwick, Campbell Skinner

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Agriculture and Society

Agriculture is more than an economic activity; it is a way of life. Changes mandated to agricultural practices need to be carefully considered for economic and social viability. Study of this module will provide farmers and agri-food businesses, non-governmental organisations and government agencies an in-depth insight into farming enterprises' current perspectives on ethical issues surrounding food production at the local, regional and global scale. Another ATP module, 'Agricultural Economics and Policy', provides in depth detail that would support students in either prior or post study of Agriculture and Society.

The Workshop

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1. **Political drivers, economic realities, social needs, and environmental constraints:** An examination of sustainability and efficiency from the perspective of conflicting needs.
2. **Agriculture and climate change:** Investigation the effects of agriculture on climate change and of climate change on agriculture including mitigation and adaptation.
3. **Agricultural practices and environmental degradation:** Soil, water and air quality will be included.
4. **Global food security, global food sourcing:** The roles of developed and developing worlds will be considered.
5. **Livestock protein vs. plant protein:** A discussion of economic needs, cultural perspectives and ethical views.
6. **Organic farming:** A debate including the cost/benefit and measurements of costs vs. production.

Contributions from: Toni Fisher, Prof Dave Chadwick, Dr Dave Styles, Neil MacKintosh.

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Ecosystem Services Assessment of Sustainable Intensification

Benefiting from the latest research at Bangor University, this course will introduce students to the ecosystem services framework to assess pasture-based food production, with an emphasis on considering landscape context and scale factors and question whether growing demand for food can be met through 'sustainable intensification'

The Workshop

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1. **An introduction to Ecosystem Services** – provisioning services, Regulatory Services, supporting and other services
2. **Assessing Ecosystem Services** – scales, interaction with other metrics (eg LCA), challenges
3. **Basic GIS for Ecosystem Services** – an introduction to GIS (Geographic Information System) datasets for ES and case studies of applications
4. **Valuing Ecosystem Services** – economic valuation methods, spatial scales and local context
5. **Global Perspective** – global demand implications for ES, Land sparing versus land sharing, accounting for indirect ES effects
6. **Ecosystem Services for Water Quality** – agriculture and water provisioning, flood regulation and water quality
7. **Water Case Studies** – Extensive livestock farm and intensive lowlands farm (provisioning, flood regulation and water quality regulation)
8. **Ecosystem Services for Climate Change** – soil and biomass carbon, agricultural GHG emissions
9. **Climate Change Case Studies** – Extensive dairy farm and intensive dairy farm; including indirect effects
10. **Capturing Soils and biodiversity effects** – soil quality and functions

Contributions from: Dr Dave Styles, Toni Fisher, Dr Tim Pagella, Prof Mike Christie.

Want to know more? **Marty Spittle 01970 823224**

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Research Methodologies (20 credits)

This module aims to develop investigation skills and provides training relevant to the Masters dissertation. The module equips students to answer such questions as: were the research questions clearly stated, what additional information could have been collected, is the literature review systematic and comprehensive, how could the material have been presented differently, were the limitations of the study clearly outlined, what improvements could be made to the sampling strategy, are the conclusions valid, what further information could have been given so as to judge the credibility of the measures. In quantitative evaluation, the student will use statistical methods and demonstrate their use numerically.

Students will learn about:

- conducting a scientific literature reviews,
- principles of research design,
- evaluating and planning data collection,
- ethical considerations in research,
- qualitative, quantitative OR spatial analyses .

The module will culminate with each student designing a research proposal in collaboration with their employer and supervisor, which they can use as the basis for their dissertation.

Dissertation (60 Credits)

The Master's Dissertation module builds on the research proposal developed in the 'Research Methods' module and allows research to be conducted in an applied, work-based agri-food context. Whilst the focus of the module is on the completion of an advanced piece of research, embedding this research within their place of work will contribute to the educational aim of the MSc programme and provide potential for direct and effective knowledge exchange with the company.

is intended that the skills and discipline required to write a scholarly paper or report on a specified subject will be developed to an advanced level. The module will provide the opportunity to specialise in a particular aspect of the discipline. By the end of the dissertation students should have demonstrated:

self-direction, motivation and originality in pursuing a line of research;
comprehensive understanding of their area of research, including a practical understanding of the relevant research techniques;
an ability to critically evaluate current research in the same area;
an ability to draw valid conclusions from systematically-collected information and data, even if these are incomplete;
an ability to communicate research findings clearly and comprehensively, in writing, to a specialist readership.

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Advanced Training Partnership
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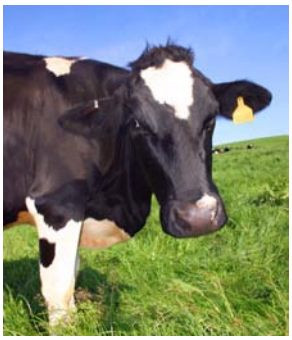
Modules Under Development

Ruminant Health and Welfare



The first half of this course will look at ways of managing ruminant health and maintaining good welfare levels. The second half offers the students the option to take one of three specified pathways: dairy, beef or sheep. Each of these pathways will cover the latest research on the diseases of most concern to each of the three sectors of agriculture, before looking at how systems can be adapted to reduce the risk from these diseases.

Genetics and Genomics in Agriculture

This module is designed to give those with little understanding of genetics a practical knowledge of the underlying principles and technologies that underpin breeding programmes. The programme will focus on the challenges facing land based production in the 21st century and the role of emerging technologies to meet these challenges sustainably. It will consist of a series of lectures initially detailing the broad objectives and methodologies involved in breeding programmes. Later units will allow students to follow a crop or animal breeding pathway. The module will give students an understanding of the methodologies applied in molecular and population genetics and in related disciplines (e.g. proteomics, metabolomics, etc), allowing them to conceptualize and apply them to further agricultural production.

Low Input Ruminant Production

This course looks at the concepts behind ruminant production in a low input or organic system. It will examine alternative methods of production, from unique forages and sward mixtures to interesting animal breeds that could provide a more tailored product for niche markets. The course will also look at natural methods of disease control that can be adopted by low input or organic systems.

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2013-2014 Distance Learning Delivery Timetable*

20 Credit Postgraduate Modules delivered over 12-14 weeks

Block 1 Starting **January**	**Block 2** Starting **May**	**Block 3** Starting **September**
Improving Ruminant Production	Ruminant Gut Microbiology	Sustainable Home-Grown Feeds
Ruminant Nutrition	Genetics and Genomics in Agriculture	Sustainable Grassland Systems
Silage Science	Low Input Farming (from 2015)	Ruminant Health and Welfare
Carbon Footprinting and LCA	Agriculture and Society	Soil Management
Upland Farming	Resource Efficient Farm Management	Ecosystem Services
Research Methods	Research Methods	Research Methods

*** May be subject to some adjustment**

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Bespoke Training

The **Advanced Training Partnership** for Sustainable and Efficient Food Production is well placed to develop tailored training packages to meet the needs of your company. These can be anything from a workshop to whole module, or a suite of modules. For this to be viable the following criteria should be considered:

- Training must be at postgraduate level (see eligibility criteria) and fit the scope of the partnership
- Courses must be available to the wider public at a later date
- The commissioning company must guarantee a minimum of nine delegates with fees paid up-front

Scope of the partnership:

Want to know more?

Marty Spittle
01970 823224

atp-enquiries@aber.ac.uk
www.atp-pasture.org.uk

We will work closely with you to develop training to match your company's developmental aspirations.

For more information contact Marty Spittle.

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Entry Requirements

Workshops are taught at a postgraduate level but are open to all. **Distance Learning** candidates must hold at least a second class honours degree in agricultural or biological science, or a closely related discipline. However applications from mature candidates with relevant experience will be considered on a case by case basis.

Fees:

	Fee*	With 80% Bursary
Two Day Workshop	£580	£116
20 Credit Distance Learning Module	£750	£150
Workshop and Distance Learning	£1,200	£240
MSc Dissertation	£1,800	£360
Doctorate (annual fee, not including workshops)	£1,966	£393

*Non UK residents may be subject to higher fee levels.

Bursaries

As shown above, generous fee bursaries are available. These are currently set at 80% but will fall to 60% in 2014. To qualify for a bursary, candidates must be employed in the UK agri-food industry, e.g. agricultural suppliers' technical teams, feed advisors, agronomists, vets, agricultural consultants, supply chains advisors, levy boards, farmers and farm managers. We regret that those employed in publicly funded posts do **NOT** qualify for bursaries.

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Professional Doctorates

Part of the ATPs' remit is to support Professional Doctorates. In the case of the ATP for Sustainable and Efficient Food Production, students graduate as a Doctor of Agriculture (DAg). The aim of this Professional Doctorate programme is to produce a qualification which, whilst being equivalent in status and challenge to a PhD, is more appropriate for those pursuing professional rather than academic careers. Our DAg programme comprises taught modules and two work-based research projects, carried out through two-day workshops, distance learning and a mixture of live and virtual supervisory meetings. The programme requires the involvement of the candidate's employers in determining the focus of the work-based projects.

Format - The ATP DAg is delivered in two parts:

Part I is undertaken for a minimum of two years and is in total worth 180 credits. During this time candidates follow a taught programme of study (three 20 credit modules from the ATP menu) together with producing a portfolio of work or a research thesis (approximately 20,000 words in length) equivalent to a further 120 credits. The taught elements will equip students with the necessary knowledge and skills for in-depth study and critical research, to this end the 'Research Methodologies' module must be one of those taken. The short **Part 1 thesis** should involve analysing existing data from the candidate's workplace. For example: *Reviewing historical mineral deficiency data by species and region; analysing and interpreting the findings.*

Part II is undertaken for a minimum of three years and comprises a longer portfolio of work or a research thesis (up to 60,000 words). It will involve experimentation and must embody the methodology and results of original research. It should, ideally, be built upon the Part 1 thesis. Thus, from the example above, could be something like: *Changing practices and introducing innovation to combat mineral deficiencies.*

Fees - The DAg requires a minimum of five years and a maximum of seven years. Fees are currently set at £1,966 per year which includes the taught distance learning modules. There is an additional fee of £580 per workshop. Generous fee bursaries are available to those within the UK agri-food industry who are not working in government-funded positions.

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This **Advanced Training Partnership** provides a unique opportunity for professionals working with and within the extensive beef, sheep and dairy supply chains to access the latest relevant research from **IBERS** - Aberystwyth University, **Bangor University** and **NIAB-TAG**, in a format most suited to their needs. All of our training is at **postgraduate level** and comprises **workshops** and **flexible distance learning**

Generous BBSRC funded **bursaries** are available for **eligible delegates**.

Bangor University is a leading UK centre for research in **land use, environmental sciences** and related areas of biology. It is at the forefront of UK research on **sustainable production, soils** and **agroforestry**; and works closely with the UK food industry in providing **carbon footprinting** and **lifecycle analysis**.

IBERS carries out internationally important research in: **plant, animal and microbial sciences, agriculture, cell biology and physiology, genomics, ecology, plant breeding** and **animal reproduction**. IBERS' integrated expertise enable holistic and systems approaches.

NIAB-TAG's research programmes in **Genetics and Breeding** and **Crops and Agronomy** span basic, applied and translational research in a wide variety of crops. It is uniquely placed to take new genetic developments through appropriate agronomy to the farmers' field with a degree of integration between science and practice.