

UNIVERSITY OF  
NEWCASTLE



# Research Directory

University of Newcastle

*1995-96*





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## Introduction

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### About the University

The University of Newcastle upon Tyne is one of the major research universities in the UK. With over 1600 academic and research staff, the University was able to attract over £32 million in new external research grants and contracts awarded in 1993/94.

The range of expertise at Newcastle is unique. As well as traditional strengths in science, engineering, medicine and agriculture, the University has developed strong departments in the social sciences, arts and education. Thirty four departments at the University were rated of national or international excellence in the recent government assessment of research. This breadth of expertise allows the University to work at the boundaries of traditional disciplines where much leading-edge research is now taking place.

This research expertise is available to industry through collaborative research projects, contract research, consultancy and training schemes. At over £3.2 million in 1992/93, the research income from UK industry is one of the highest of any university in the country, and is evidence of the University's commitment to developing industrial partnerships.

The international nature of research is shown by the many collaborations the University has with virtually every member of the European Union. The University has attracted over £10 million in new awards from Europe over the last 2 years, one of the highest success rates of any UK university.

The *Research Directory 1995/96* provides a summary of research at the University. The departmental entries summarise the expertise and services available in each department; if you are interested in a particular topic there is a keyword index at the back of the *Directory*.

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### Further information/useful addresses

Further information can be obtained from the contact person listed, with telephone number, under each department. You may write to them at the relevant department followed by:

The University of Newcastle  
Newcastle upon Tyne  
NE1 7RU

General queries concerning any aspect of research at the University may be channelled through:

Dr David M Williams  
Research Services Unit  
University of Newcastle  
1 Park Terrace  
Newcastle upon Tyne  
NE1 7RU  
Tel: 0191 222 8631  
Fax: 0191 222 5219  
E-mail: [rsu@newcastle.ac.uk](mailto:rsu@newcastle.ac.uk)

All enquiries relating to undergraduate and postgraduate courses or training, or requests for prospectuses should be sent to:

The Admissions Officer  
University of Newcastle  
6 Kensington Terrace  
Newcastle upon Tyne  
NE1 7RU  
Tel: 0191 222 6138 or 8672  
E-mail: [victoria.wood@newcastle.ac.uk](mailto:victoria.wood@newcastle.ac.uk)

The information contained in this *Directory* is available on-line through the University of Newcastle Campus Wide Information Service (CWIS). Further information on some departments may also be found on the CWIS and through the University World Wide Web (WWW) server. The uniform resource locator (url) for the CWIS is: <gopher://gopher.ncl.ac.uk/>. The url for the WWW server is: <http://www.ncl.ac.uk/>. Information on research expertise may be found on CWIS under the Research or Academic Departments menus. For research information held on departmental servers, follow the pointers on the WWW server.

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## Central Scientific Facilities

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The Central Scientific Facilities comprise six Units which provide a range of imaging, analytical and synthetic services. These Units were created because there was a need to provide the academic community with a range of services and technologies beyond the means of individual departments. Each Unit is listed below with the name of the manager, telephone number, fax number and e-mail address. Specific enquiries regarding the range of services, cost, availability of instruments, feasibility, sample preparation, training, interpretation of results and whether 'hands on' access to instruments is possible, should be directed to the relevant manager. Some Units have entries in the electronic Campus Wide Information Service and in the near future the complete description of the range of services will be available on CWIS.

### Analytical Services Unit:

Location      Bedson Building  
Manager      Dr D E Minnikin  
Telephone    0191 222 7053  
Fax            0191 261 1182  
e-mail    David.Minnikin@newcastle.ac.uk

### Biomedical Mass Spectrometry Unit:

Location      Dental School  
Manager      Mr C Hetherington  
Telephone    0191 222 7423  
Fax            0191 222 5627  
e-mail    C.S.Hetherington@newcastle.ac.uk

### Materials Electron Microscopy Unit:

Location      Old Forge Building  
Manager      Dr J Congleton  
Telephone    0191 222 7910  
Fax            0191 222 7153  
e-mail      J.Congleton@newcastle.ac.uk

### Biomedical Electron Microscopy Unit:

Location      Medical School  
Manager      Dr P M Bradley  
Telephone    0191 222 6971  
Fax            0191 222 5227  
e-mail      P.M.Bradley@newcastle.ac.uk

### Mass Spectrometry Unit:

Location      Drummond Building  
Manager      Dr D M Jones  
Telephone    0191 222 8628  
Fax            0191 261 1182  
e-mail    Martin.Jones@newcastle.ac.uk

### Molecular Biology Unit:

Location      Medical School  
Manager      Dr A Diamond  
Telephone    0191 222 8129  
Fax            0191 222 8129  
e-mail    Austin.Diamond@newcastle.ac.uk

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## Centre for Continuing Education

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The Centre for Continuing Education offers management development programmes to organisations in the public and private sectors. These programmes are designed to fit the particular needs of clients and contribute to the value of their businesses. They include the Certificate in Management Studies, NVQ Level 3,4, and 5 in Management, as well as a number of short courses for developing managers in specific areas of business. A recent example of a course designed for a particular client is the Royal Mail Certificate in Management with NVQ Level 4 in Management. A similar arrangement is under consideration for the University Certificate in Management with IHSM Certificate in Health Management Studies.

The Centre's Executive Development Programme provides and administers a series of professional development workshops and seminars designed for senior managers, directors and executives. These include:

- Investment/project appraisal
- Making successful acquisitions
- Tax planning
- Strategic market planning in the public sector

The Centre also offers a range of Training and Development Lead Body (TDLB) Assessors Awards including the:

- Vocational Assessors Award
- Accreditation of Prior Learning (APL) Advisers Award
- Internal Verifiers Award.

The Centre provides a professional administrative service for conferences, seminars and short courses for University departments and for outside institutions including BNFL, Sterling Winthrop, HESIN, Wilkinson Maughan and the Royal Institute of Public Administration. Whether the event is a large international conference such as the International Symposium on People, Place and Development, with representatives from 27 countries, or an informal seminar, the Centre can provide a comprehensive service, including marketing, publicity, budgeting and accounting facilities. University departments which have used the services of the Centre include:

- Law
- Chemical and Process Engineering
- School of Business Management
- Computing Service
- Social Policy
- Centre for Architectural Research and Development Overseas

The Centre also provides, throughout the north of England, a broad spectrum of courses for adults in modern languages, the liberal arts, counselling and personal development, local and ecological studies. Among the 400 open access courses offered each year are Certificate Courses in:

- Nature conservation
- Countryside conservation
- Environmental Science
- Counselling
- Wine Studies

The Centre staff have expertise in the accreditation of all types of adult education provision.

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### Contact

Michael Bavidge  
E-mail address - M.C.Bavidge@newcastle.ac.uk  
Tel: 0191 222 6796  
Fax: 0191 222 7090



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## Centre for Physical Recreation and Sport

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### About the Centre

Research plans for the period to 1995 focus on the particular interests of individual members of staff.

### Research themes

#### Physical Education

- PE from pre-school through to Key Stage 2

*Mrs C A Jones*

- Investigation into the attitudes of children and young people to PE in schools

*Mr B A Jones*

#### Physical Recreation and Sport

- Influence of participation levels in sport on selection and continuation patterns

*Mrs S Lyle*

- Theorising the aerobics video
- Dance and the elderly in health care
- Dance composition and performance

*Ms P Winter*

### Sports Science

- Sports psychology and student athletes

*Mr V Mayne*

- Human nutrition
- Notation analysis of badminton men's doubles

*Mr M Andrew*

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### Commercially Available Services

The ***Fitness and Performance Assessment Centre*** will conduct test and exercise programmes.

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### Contact

Mrs C A Jones  
Tel: 0191 222 7222  
Fax: 0191 222 7220

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## Language Centre

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The Centre is carrying out research in a variety of areas, all linked by their concern with improving the effectiveness of classroom language teaching for academic or business purposes. It has particular strength in developing the use of educational technology (video, computers, language laboratories) in support of language learning. Its service functions within the University mean that much research is done on adult learners, their needs and learning processes.

### Research themes

Use of modern technology in language teaching

- Computer assisted language learning  
*Mr S Windeatt, Mr P Fox*
- Video use in classroom teaching and materials design  
*Ms M Fernandez Toro, Ms T Lausevic*

### Second language teaching and learning

- Written English in academic research  
*Ms A Okamura, Dr P Shaw*
- Translation  
*Mr F R Jones*
- Teach-yourself language learning  
*Mr F R Jones*
- Listening processes  
*Ms M Fernandez Toro*
- Languages for business (English, German, Japanese)  
*Mrs E Dow, Dr M Ogden, Ms Y Nakanishi*
- Testing (English, Japanese)  
*Mr S Windeatt, Mr I Yasuhara*

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## Services

The Business Language School is a section within the Language Centre which exists to fill the needs of the local business community in terms of language learning. It provides:

- Language audits/needs analysis - company visits where the staff of the Business Language School assess the current language competence and the language learning needs of the workforce.
- Course design and delivery
- The design and delivery of foreign language programme either on site or at the Business Language School.
- Cultural briefings - short seminars on the history, politics, society and culture of European and Far Eastern countries

Initial contact should be made with the Manager, Dr M R Ogden, tel: 0191 222 6862.

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## Contact

Dr P M Shaw  
E-mail address - p.m.shaw@newcastle.ac.uk  
Tel: 0191 222 7535  
Fax: 0191 222 5239

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## Nuventures

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Nuventures was formed in response to the increasing importance of universities producing advancements in technology for transfer to industry in a manner which generates wealth. This wholly-owned subsidiary of the University has the independence and skill to transfer technology to industry. With a team of executives, consultants and directors predominantly from industry, Nuventures is commercially motivated to generate wealth for industry, the University and academic staff.

Nuventures also assists academics in marketing their commercial consultancy activities.

Licensing Intellectual Property - Nuventures can:

- Advise and arrange patent applications
- Arrange non-disclosure or confidentiality agreements
- Identify and approach potential licencees of technology
- Advise on the value of technology to be transferred
- Negotiate technology development, transfer and royalty sharing agreements
- Advise on infringement problems
- Interface with industry on their requirements
- Monitor licence agreements

Company Formation and Consultancy - Nuventures can:

- Carry out market research
- Establish marketing strategy
- Prepare business plans and raise commercial finance
- Assist with all aspects of company formation for on- and off-campus companies

- Assist with negotiating commercial contracts
- Provide professional indemnity and product liability insurance
- Provide professional services - invoicing, debt collection, accounting

### Quantum Fund

This independent £500,000 fund provides risk finance to enhance the commercialisation of know-how and intellectual property, usually in exchange for a share in sales revenue. Funds can be invested either in the University in an effort to develop technology or in a SME which is seeking to commercialise technology and where there is a *bona fide* link with the University. The fund is managed by Nuventures.

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## Contact

Companies or research organisations seeking technology or consultants should contact:

Mr Roland Tate (Chief Executive) or Dr Neil Sullivan (Business Development Manager)  
Nuventures  
18 Windsor Terrace  
Jesmond  
Newcastle upon Tyne NE2 4HE  
Tel: 0191 230 4450  
Fax: 0191 221 0074

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## Robinson Library

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The University Library occupies a Design Award-winning building opened in 1983. An extension is being planned to incorporate the latest developments in information technology, in keeping with a long-standing tradition of technical innovation. There are separate divisional libraries for Medicine and Dentistry, and Law. In keeping with the University's aim that any regional research library should be based on the Robinson Library, the Library is one of the best funded academic libraries in the UK and its holdings provide a wide coverage of the disciplines currently being taught and researched at the University.

The Library provides access to:

- the holdings of all three libraries via its own on-line catalogue
- Catalogues of other libraries in the UK and overseas via JANET and INTERNET
- Locally held bibliographies in hard copy and bibliographic, textual and statistical datasets on CD-ROM
- Remotely held datasets via national and international subscription services such as BIDS and First Search, and by mediated on-line searches of hosts, such as DIALOG and DATASTAR.

The Library offers:

- Membership, without charge, to teaching, research and administrative staff of the Universities of Durham, Northumbria and Sunderland
- A wide range of services to consultants and researchers in hospitals within the Northern Regional Health Authority, by agreement with the Authority
- Membership, on payment of an annual fee, to graduates of the Universities of Newcastle and Durham
- Membership to staff of other institutions with an established agreement and also to individuals and institutions with particular needs on application to the Librarian and subject to the payment of an agreed fee
- Reference facilities only to students of the Universities of Durham, Northumbria and Sunderland at all times, and to students of other universities during the Newcastle University vacations.

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### Consultancy

- Management, library automation  
*Mr I R M Mowat*
- Evaluation and performance indicators  
*Mr K Webster*

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### Contact

Ian R M Mowat  
E-mail address - [ian.mowat@newcastle.ac.uk](mailto:ian.mowat@newcastle.ac.uk)  
Tel: 0191 222 7587  
Fax: 0191 222 6235

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## Agricultural and Environmental Science

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### About the Department

The department provides the opportunity to carry out interdisciplinary research relating to agriculture and the environment, both rural and urban. Research activity is based on the disciplines of biochemistry, biology, engineering, microbiology and soil science, and benefits considerably from the practical expertise of its staff in both fundamental and applied science.

The department hosts the **Centre for Land Use and Water Resources Research (CLUWRR)** which was established to capitalise on, and link expertise in ecology, hydrology, agriculture and countryside management with the economic/social sciences, and facilitate cross-disciplinary collaboration within the department as well as cross-Faculty and cross-institution collaborations

### Research themes

#### Ecology, Biodiversity and Conservation

- methodologies and computer systems for assessing land management
- metapopulation and population dynamics at the landscape scale
- modelling of ecosystem and spatial processes using GIS
- conservation and the biogeography of terrestrial islands

*Dr S P Rushton*  
(s.p.rushton@newcastle.ac.uk)

#### Physiological Ecology/Ecophysiology

- stable isotope analyses ( $^{13}\text{C}$  and  $^{18}\text{O}$ ) to quantify photosynthetic efficiency and productivity
- the interactions between  $\text{CO}_2$  and  $\text{O}_3$  on growth of natural vegetation and crops
- photosynthetic  $\text{CO}_2$  concentrating mechanisms
- use of  $^{15}\text{N}$  stable isotopes to trace inputs and metabolism of N in plants and soils
- tropical ecophysiology in rainforest canopies and epiphyte interactions

- performance and selection of agroforestry species for intercropping

*Dr H Griffiths*  
(howard.griffiths@newcastle.ac.uk)

#### Environmental Protection and Climate Change

- pathology of air-borne pollutants on plants
- ozone/ $\text{CO}_2$  interactions and the determination of critical loads
- the effects of  $\text{CO}_2$  at low temperatures
- effects of deposited nitrogen on semi-natural systems and the impact on plant-herbivore interactions
- the effects of climate change on evolution
- genetics of ozone resistance

*Prof A W Davison*  
(a.w.davison@newcastle.ac.uk)

#### Environmental Systems Engineering

- application of CAD and visualisation techniques with GIS for planning land-based operations such as drainage, irrigation and waste disposal
- environmental management and modelling of environmental systems
- development of TDR techniques for soil moisture and salinity monitoring
- measurement and modelling of physical properties of biomaterials
- harvest and processing
- use of plant materials for fibre production and insulation

*Prof J R O'Callaghan*  
(karen.leitch@newcastle.ac.uk)

#### Soil Processes and Sustainable Land Use

- soil microbiology and the assessment and exploitation of biodiversity
- soil micromorphology and mineralogy
- sustainable land management in the tropics
- soil pollution and remediation
- soil physics and mathematical modelling
- nutrient flux and carbon turnover
- soils in archaeology

*Dr A G O'Donnell*  
(tony.o'donnell@newcastle.ac.uk)

## Pest Management and Biological Control

- control of pests by physical means such as storage conditions and heat disinfestation
- search and evaluation of novel biocontrol agents and evaluation of new application technologies
- biological control of pests based on an understanding of the lifecycles, basic biology and behaviour of the pest and its target
- the development of decision support systems as a means of minimising environmental contamination by pesticides

*Dr G R Port*  
([gordon.port@newcastle.ac.uk](mailto:gordon.port@newcastle.ac.uk))

## **Centre for Land Use and Water Resources Research (CLUWRR)**

CLUWRR was established to co-ordinate the research effort of those working in the University on ecological modelling of plant and animal communities, economic modelling of farm and national agricultural enterprises, land use and management practice and hydrological processes.

In late 1989 CLUWRR was awarded a large six year research contract by the Natural Environment Research Council and the Economic and Social Research Council for NELUP (North East Land Use Programme), to support decisions relating to patterns of land use using consistent projections from economic, ecological and hydrological models. In addition to further developing multidisciplinary research in land and water resources, CLUWRR is also undertaking interdisciplinary research in the areas of sustainability and climate change as two new major research developments.

The University departments co-operating in NELUP are Agricultural Economics and Food Marketing, Agricultural and Environmental Science and Civil Engineering.

*Prof J R O'Callaghan*

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## **Services and specialist facilities**

- isotope ratio mass spectrometry
- automated carbon analyses
- preparation of soil thin sections
- computer controlled drying, cooling, chilling and frosting facilities
- atmospheric pollutant fumigation and monitoring facilities including open field fumigation systems
- Walz minicurette climate chambers
- controlled environment facilities

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## **Contact**

Dr J H Ollerenshaw  
E-mail address - [j.h.ollerenshaw@newcastle.ac.uk](mailto:j.h.ollerenshaw@newcastle.ac.uk)  
Tel: 0191 222 6899  
Fax: 0191 222 5228



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## Agricultural Economics and Food Marketing

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### About the Department

The Department of Agricultural Economics and Food Marketing is the largest of its kind in Britain. Its staff are specialists in economics, management, marketing and sociology with considerable experience in analysing real world problems in the agricultural, food and rural sectors. The department has good links with industrial users and sponsors of research, and staff act as advisors and consultants to national and international organisations. Their expertise encompasses the advanced and less developed economies, as well as global trade and regulatory questions. The department includes the **Centre for Rural Economy** and is also involved in the *Centre for Land Use and Water Resources Research*.

### Research themes

#### Food Markets and Consumer Behaviour

- Consumer research related to food, drink and other goods
- Marketing research techniques
- Media, advertising and public relations
- International agrifood marketing

*Dr M R Ness*

#### Agricultural Commodity Marketing

- Forecasting agricultural policy decisions
- European Community marketing policy for agricultural products
- Alternative marketing methods
- Econometric and quantitative modelling of commodity markets
- International commodity marketing

*Dr J P Dawson*

#### Policy Analysis

- Food policy in the UK
- Policy modelling (Newcastle Common Agricultural Policy Model) and development
- Natural resource accounting
- Rural environment policy
- Rural planning

*Prof D R Harvey*

#### Rural Economics

- The economics of land use
- Evaluation of projects and policies
- Value of user benefits of recreation and wildlife
- Management agreements for environmental benefits

*Prof M C Whitby*

#### Agribusiness Management

- Financial analysis and performance measurement of agribusinesses
- Communication and agriculture
- Business enterprise analysis and development
- Farm economics and agricultural/environmental interactions

*Mr S Challinor*

#### International and Development Economics

- International agricultural policy interaction and adjustment
- Agricultural marketing in developing countries
- The Common Agricultural Policy and less developed countries
- Agrarian reform and agrifood marketing in Eastern Europe

*Dr J Lingard*

#### Land Use and Environmental Interactions

Members of the department are involved in the University's *Centre for Land Use and Water Resources Research (CLUWRR)* (see index)

- Development of systematic models of land use and management practices
- Prediction of land use change
- Analysis of agri-environment measures

*Dr B White*

## ***Centre for Rural Economy***

The ***Centre for Rural Economy*** is committed to applied research of the highest quality, oriented towards the achievement of a sustainable rural economy. Its work raises fundamental questions of social science analysis but also of considerable policy relevance. It draws together contributions mainly from policy and institutional analysis, resource and environmental economics, rural sociology, regional geography and countryside planning and management. The Centre conducts its studies in a British and European context. It disseminates the results through publications, policy advice and advanced training activities. Areas of special expertise include:

- Rural regional economics, policy and planning
- Environmental valuation and policy analysis
- Green accounting
- European environmental policy
- Land use planning
- Farm structural analysis

*Prof P D Lowe*

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## **Services**

Consultancy and short research or advisory assignments in the following areas:

- market research
- market analysis
- survey design, implementation and analysis
- project appraisal
- environmental valuation
- cost-benefit analysis
- econometric and quantitative modelling
- policy analysis
- green accounting
- environmental impact assessment
- land use survey
- rural planning

*Ms H Talbot*

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## **Contact**

Hilary Talbot  
E-mail address - [h.c.talbot@newcastle.ac.uk](mailto:h.c.talbot@newcastle.ac.uk)  
Tel: 0191 222 6720  
Fax: 0191 222 8272

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## Agriculture

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### About the Department

The Department of Agriculture maintains a broad-ranging programme of applied research which is aimed at improving the technical and economic efficiency of progressive farming practices.

### Research themes

#### Farm management

- Profitability studies of different farming systems
- Analysis of the effects of agricultural policy on farm incomes and structure
- Application of microcomputers to farm management

*Dr P J Cain, Miss C A Venus*

#### Animal production

- Genetics, livestock selection indices and breeding
- Animal behaviour and welfare studies
- Nutritional influences on lactation in dairy cows
- Automated oestrus detection in dairy cattle
- Milk production in non-conventional species
- Treated straw and whole crop cereals for ruminants

- Impact of nutrition on lamb performance
- Improvement of reproductive performance of ewes
- Parasitology studies in ruminant livestock
- Drug delivery systems for endo and ectoparasite control on ruminants
- Nutrition of growing and breeding pigs
- Factors affecting carcass and meat quality

*Dr M B Willis, Dr P Rowlinson,  
Dr J P Chadwick, Dr G M Webster,  
Dr S L Bell, Mr B M Heal*

#### Crop Production

- Agronomy of cereals, oilseeds and pulses
- Sulphur nutrition of oilseed rape and wheat
- Development of high erucic acid genotypes of rapeseed
- Novel character evaluation in winter and spring oilseed rape
- Industrial cropping
- Agronomy of root crops and field vegetables
- Land restoration techniques
- Grassland production and utilisation
- Reduced input farming systems
- Maintaining the productivity and species diversity of traditional hay meadows

*Dr E J Evans, Dr A Younger,  
Dr S J Wilcockson*

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### Services

Testing and evaluation services include:

- Cropping: agronomic requirements of crop varieties, major crop inputs, growth regulators and crop protectants
- Livestock: genotype testing, nutrition including feed additives and growth promoters, carcass composition and meat quality, parasitology trials.

The **North of England Arable Centre** which is established at Cockle Park (the University's research farm) provides growers with technical information and advice on more effective use of inputs.

Consultancy services are available across the range of staff expertise and particularly in farm business management, land restoration, crop production, livestock improvement schemes and livestock nutrition.

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