afbi Agri-Food and Biosciences Institute

Annual Report and Statement of Accounts 2006-07

Agri-Food and Biosciences Institute

Annual Report and Accounts

For the year ended 31 March 2007

Laid before the Northern Ireland Assembly
under the Agriculture (Northern Ireland) Order, 2004
by the
Department of Agriculture and Rural Development

NIA 115/07-08

Contents

Foreword from the Chair

It gives me great pleasure to introduce the first Annual Report and Accounts for the Agri-food and Biosciences Institute (AFBI).

Our Institute was created by Act of Parliament and became operational on 1 April 2006. We have had a very busy first year and, at the outset, I want to pay tribute to the efforts of staff in ensuring that our science programme was delivered to time, quality and price whilst at the same time managing a complex range of other, non-science issues associated with the creation of AFBI. I consider the creation of AFBI to be a fundamental step forward in the way that scientific services and research are provided in Northern Ireland.

In my view AFBI has enjoyed a successful 12 months and it can look to the future with confidence.

DARD (AFBI's Sponsoring Department) appointed me and my deputy in December 2005 and, subsequently, the other 11 Board members in March 2006. We have had an informative and intensive year familiarising ourselves with the nature and extent of AFBI science programmes and putting in place a number of structures and mechanisms to fulfil our obligations on corporate governance. Progress has been good and, whilst we are at pains to deliver good governance, this has been addressed within the context of delivering good scientific services to all our customers.

I want to stress that the highest levels of corporate governance are being applied to every aspect of AFBI's activities. I see the good governance of AFBI as being set from the top. It's about the tone and the culture of the organisation and about the Board adopting, displaying and promoting the right behaviours and values rather than the simple compliance with a regulatory framework.

As Northern Ireland's public sector enters a period of unprecedented change as a result of the RPA, it is incumbent on chairs and boards to show a steady hand at the wheel if they are to ensure the right outcomes in the long term. For

example, the board's audit committee includes representation from both our internal auditing staff and is attended by representatives from the Northern Ireland Audit Office.

Probity and best practice are at the heart of every activity undertaken by AFBI. Staff morale is high and our ongoing commitment is centred on fully developing their talents while, at the same time, delivering a top rate service to customers and clients.

The board and management are committed to creating an environment in which staff performance and innovation are rewarded. We want to make sure that AFBI becomes synonymous with both the development of new ideas and the reliable delivery of scientific services to support and facilitate local government and industry to help ensure Northern Ireland remains competitive.

The period ahead will see AFBI promoting itself actively both at home and internationally. This is at the core of AFBI policy and strategic business development. I want AFBI to work with a cross-section of organisations within the public and private sectors both at home and abroad.

AFBI represents a unique scientific resource and we will continue to work closely and effectively with all the government departments and public bodies, as well as all sectors of industry in Northern Ireland.

We had set ourselves initial challenging targets but, in the context of increasingly stringent public sector finances, it has not been easy to deliver on all fronts. DARD is our main customer and commissions over 90% of our programme. It is pleasing therefore to note that we have extended our customer base in both the public and private sectors.

I have worked closely with our Chief Executive Dr. George McIlroy and his enthusiasm and commitment are major contributory factors to the progress and successes achieved this year. Our Chief Executive's Office and Business Support Branch continue to develop management systems for all aspects of our business and the Board are grateful for the help and support they have provided to us.

I am very conscious that AFBI has taken on the mantle and heritage of what was the DARD Science Service and the Agricultural Research Institute of Northern Ireland. I believe this legacy is in safe hands and, what's more, we want to build on it for the future. AFBI is a multi-disciplinary organisation applying leading-edge science and technology to a wide range of topics within the agri-food sector. Given progress in this first year, I am confident that we are very well-placed to grow and expand our local, national and international customer base and so ensure AFBI's long-term sustainability.

Seán Hogan
Chair

Chief Executive's Report

I am very pleased to present my first report for the new Agri-food and Biosciences Institute (AFBI).

I have been greatly encouraged by the commitment shown by DARD to AFBI, both in the sense of the extent of the work programme, and the funding arrangements. The new relationship between the Department as the purchaser of scientific services and AFBI as the supplier is developing well.

AFBI has also been charged with maintaining an emergency response capability for DARD and other public bodies for situations such as a re-emergence of foot and mouth disease, potential outbreaks of H5N1 avian influenza or an incident of a chemical, biological or radio-nuclear nature in Northern Ireland.

DARD is to remain a key client, underpinning up to 90 per cent of AFBI's activities over the next couple of years at least. This is crucial to allow the new organisation find its feet. However, I have not the slightest doubt that given the calibre of staff available and the excellent facilities across our seven specialised operational sites, the target of securing a minimum of 10 per cent overall funding from the private sector and government bodies other than DARD, is more than attainable within our formative years.

Not surprisingly, we've spent our first year bedding down the new organisation and ensuring that our customers received the highest quality and reliability of service. A huge effort has been made to amalgamate all our activities in ways that meet the needs of our staff and customers. Setting up an arm's length organisation without having had the benefit of a shadow year has invariably led to a few operational difficulties in getting all our administrative procedures operating to everyone's satisfaction but we are now getting new finance, personnel and procurement systems embedded.

Our scientific research and analytical testing capabilities and facilities are as good as can be found anywhere else in the United Kingdom and Europe. This is our core message

to existing and potential new clients and customers.

The Department's committed work programme gives AFBI a strong base on which to build new markets, where we will seek to promote the high level of skills and expertise that we have. The volume of work that we do for the Department will be strongly influenced by any changes to EU statutory requirements, and also by the likely impact on DARD funding, arising from the overall downward pressure on public expenditure. That is why it is so important for us to grow business from other customers. But the good news is that we have the scientific skills and expertise together with specialist facilities and the flexibility to deliver.

Crucial to AFBI's future success will be the forging of good working relationships with other centres of research and scientific excellence. We have already signed memoranda of understanding with Queen's University Belfast and the University of Ulster. However, we now want to reach similar agreements with universities and other scientific institutes in the Republic of Ireland, Great Britain and internationally. Partnerships of this nature represent the way forward and the EU Framework 7 funding programme is a case in point. This will make significant levels of funding available for co-ordinated research projects. If we can join forces with other organisations that complement our own specific areas of expertise, then we stand a much better chance of getting such additional funding into Northern Ireland. However international research work and the forging of business links with other centres of scientific excellence will only be carried out on the basis that it benefits the economy of Northern Ireland as a whole.

I look forward to leading AFBI in tackling all of these challenges and opportunities, and I am confident that, building on our already high reputation, we will maintain and enhance the reputation of AFBI as a centre of excellence for agri-food science in the UK and beyond.

George McIlroy MVB MSc PhD MRCVS
Chief Executive and Accounting Officer

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Management Commentary

1.1 Scope

Boundary

The Agri-food and Biosciences Institute (AFBI) presents its accounts for the financial year ended 31 March 2007. The Institute was formed on 1 April 2006 with the amalgamation of the Department of Agriculture and Rural Development (DARD) Science Service and the Agricultural Research Institute of Northern Ireland, which was a separate Non-Departmental Public Body funded by DARD. AFBI is established under the Agriculture (Northern Ireland) Order 2004.

Accounts Direction

The accounts have been prepared under the Accounts Direction given by the Department of Agriculture and Rural Development, with the approval of the Department of Finance & Personnel, in accordance with the Agriculture (Northern Ireland) Order 2004.

Mission Statement

AFBI's mission is to further develop a reputation as a world class scientific institute, delivering proven value to Government and to customers.

Aims

The corporate aims of AFBI are:

- to deliver statutory scientific programmes in the area of agri-food, animal and plant health and the environment;
- to pursue scientific programmes for DARD and other customers which are designed to:
  - improve performance in the market;
  - safeguard animal and plant health;
  - maintain and invest in the environment;
  - build a successful rural economy and society;
- to ensure AFBI's resources are adequately equipped to meet the challenges of change;
- to provide high quality cost-effective services;
- to correct market failure in agri-food R&D, particularly where commerce finds such work difficult and unattractive by virtue of specialist facilities and skills required and their long term maintenance;
- to provide access to specialist expertise and facilities for both industry and public sector bodies for contracted scientific services;
- become the partner or contractor of choice for local, national and international scientific programmes and contracts in chosen areas of expertise;
- to maintain a critical mass of appropriate skills and resources to be able to provide an emergency response capability for DARD.

AFBI has an important role in assisting DARD to achieve its objectives. DARD's objectives are:

Objective 1: Improving performance in the market.

Objective 2: Safeguarding animal fish and plant health.

Objective 3: Maintaining and investing in the environment.

Objective 4: Building a successful rural economy and society.

AFBI supports DARD's objectives by delivering:

- statutory, analytical and diagnostic work,
- research and development,
- specialist scientific advice,
- an emergency response capability in the context of animal and plant disease outbreaks and other emergencies in the food and environment areas.

Funding

AFBI is an NDPB sponsored by DARD and is funded through Grant-in-Aid. The Grant-in-Aid is voted in DARD's Estimate and will be subject to Assembly control. AFBI's current and capital expenditure form part of DARD's Resource DEL and Capital DEL respectively. AFBI also raises funds through receipts generated in the course of its operating activities. In 2006/2007 the grant-in-aid amounted to £40.5m.

Relationship with DARD

AFBI's main point of contact with DARD is the AFBI Sponsor Branch in the department. Regular meetings are held with the Sponsor Branch where matters relating to corporate governance, performance measurement, budgets, financing and accountability matters are discussed.

AFBI's responses to the quarterly monitoring rounds, Comprehensive Spending Reviews and other finance related matters are all routed through the Sponsor Branch.

Relationships with other Government Departments and agencies

AFBI has signed Service Level Agreements to provide services to DCAL and FSA NI. It also does a lot of work with DEFRA and its agencies and other NDPBs.

Relationships with educational establishments

AFBI continues to co-operate on a number of projects with Queen's University. AFBI has also embarked upon developing close working relationships with the University of Ulster and universities in the Republic of Ireland, Scotland, India and the United States of America.

Marketing

AFBI has also embarked upon strengthening its marketing team in order to enable it to look for wider markets for its services and expertise and to widen and strengthen its income stream.

1.2 Performance

AFBI agrees its grant-in-aid resources with the Department of Agriculture and Rural Development for Northern Ireland and sets out its planned activity and targets in a business plan. The plan is agreed by senior management and approved by the AFBI Board and DARD Sponsor Branch. The Business Plan targets are monitored during the year at Divisional level and Internal Audit reviews the achievement of the annual targets.

In 2006/2007 the targets and performance were as follows:

Target	Assessment of achievement	Additional/ Supplementary narrative*
Maintain and develop 7 main economic models each for Northern Ireland, England, Wales and Scotland.	Achieved	These models are now being used to support policy analysis for the four United Kingdom (UK) administrations.
Investigate the CSFs associated with the development of rural businesses, identify any constraints on rural business growth and examine the factors influencing rural resource productivity by 2007.	Achieved	A range of farm business models is now being employed to help develop industry strategies and public policies.
Ensure that 95% of long-term plant varieties and seeds statutory testing is completed and technical reports produced within the agreed timescales.	Not achieved	Only 90% achieved due to problems with variability in certain field trials because of wet spring conditions.
Launch Pig Benchmarking and Dairy Cow fertility applications for interactive farmer access through Rural Portal website.	Achieved	Both applications completed on time and now available to the industry.
Improve electronic communication of scientific results by upgrading the computer link between AFBI HQ and Dundonald House from 2 Megs to potentially 10 Megs.	Achieved – to 100 Meg level	

Produce an implementation strategy for delivery of the agreed outcomes of the Plant Science Horizons exercise by 31 March 2007.	Not achieved	Implementation deferred until the DARD Scientific Adviser is in place.
Ensure that 80% of the 18 individual seeds and plant health statutory tests covering approximately 5,000 entries are completed within agreed timescales for each.	Not achieved	Achieved for seed testing and plant disease testing but not for Potato Cyst Nematode (PCN) testing.
Complete analytical testing of veterinary drug residues and report 95% of samples submitted under the Meat Inspection Scheme, which have correct submission information, within 5 working days.	Not achieved	The Branch was engaged in an Emergency Response to findings of nortestosterone in casualty animals, which necessitated a massive increase in testing. A consequence of this additional workload was only an 83% achievement of this target for the Meat Inspection Scheme.
Complete 90% of diagnostic post-mortems and have initial report ready in 5 working days.	Achieved	The results assisted private vets and farmers to control disease outbreaks. Quarterly surveillance reports were published in the veterinary literature.
Complete and report to APHIS 95% of all samples for Brucellosis serology, which have correct submission information, in 3 working days (negatives); or in 5 working days (non-negative).	Achieved	This testing was an important component of DARD's brucellosis eradication programme.

Issue reports on 90% of samples submitted for bacteriological investigation for Brucella abortus within 3 weeks of receipt.	Achieved	This testing was an important component of DARD's brucellosis eradication programme.
Samples for BSE and Scrapie, those cattle and sheep that are required to be tested under TSE legislation (currently estimated at 110,000 samples per year).	Achieved	This testing required shift pattern working with reporting of results of "human consumption" samples before 7 am the following morning.
Ensure at least 95% delivery and reporting of appropriate chemical analytical testing in relation to food and environmental samples under the accredited procedures within the specifically agreed time-frames.	92% achieved at VSD Achieved at AFESD	Work carried out under AFBI-FSANI Service Level Agreement (SLA), for DARD QAB (through QAB-FSANI SLA), and PSD (Defra) achieved within allocated time-frames in AFESD.
Ensure at least 95% delivery and reporting of appropriate microbiological analytical testing in relation to food and environmental samples under the accredited procedures within the specifically agreed time-frames.	Achieved	Work undertaken for DARD QAB (through QAB-FSANI SLA) achieved within allocated time-frame within AFESD and VSD.
Ensure at least 95% delivery and reporting of appropriate radionuclide analytical testing in relation to food and environmental samples under the accredited procedures within the specifically agreed time-frames.	Achieved	Work carried out under AFBI SLA with FSANI and for DARD QAB (through QAB-FSANI SLA) achieved within allocated time-frames.
Deliver appropriate data from commissioned long-term surveillance programme in the Irish Sea.	Achieved	Mapping surveys in Irish Sea/Celtic Seas successfully completed.

Deliver surveillance data for toxin producing phytoplankton in coastal waters under EU Directive.	Achieved	Work carried out as part of AFBI-FSANI SLA achieved within agreed time-frame.
Deliver fish stock assessment surveys in Loughs Erne, Neagh and the MacNean system.	Achieved	Survey programme achieved in full.
Produce implementation strategy for the Renewable Energy programme, including manpower plan for RE, project manager and project board.	Achieved	Implementation strategy for Renewable Energy produced and accepted where appropriate by DARD, AFBI-SMT and Project Board. Economic Appraisal approved by DFP.
Initiate the implementation of the DEL funded Science & Skills programme.	Achieved	Programme of short-term courses currently on offer by AFBI.
Achieve at least 80% of the targets for DARD commissioned R&D contracts.	Not achieved	Some delays due to resource difficulties and adverse weather conditions.

Footnote

* *Additional/supplementary narrative is provided in order to aid the reader and is provided for information purpose. As such it has not been subject to validation/verification by Internal Audit.*

1.3 AFBI Board

AFBI is managed by a Board which has responsibility for providing strategic leadership for the organisation, ensuring that it fulfils the delivery objectives agreed with the Department of Agriculture and Rural Development (DARD) and for promoting the efficient and effective use of staff and other resources by AFBI.

The main responsibilities of the Board are:

- to ensure that AFBI meets its agreed objectives and targets as set by the DARD Minister, and set down in the Management Statement and Financial Memorandum;
- to provide strategic leadership in the formulation of AFBI's strategy for the discharge of its responsibilities, taking account of the Minister's and DARD's priorities, as outlined in the science and technology strategies and in Service Level Agreements (SLAs) set by DARD and other AFBI customers;
- to ensure that effective arrangements are in place to provide assurance to DARD and the Minister on risk management, governance and internal control;
- to communicate AFBI's strategy and services to stakeholders in NI and beyond;
- to understand and articulate science and research and development needs and advise the Chief Executive on drawing these requirements into the formulation of a strategic plan for AFBI;
- to oversee AFBI's functions, including encouragement of the highest standards in the disbursement of finance, and the efficient and effective use of staff and other resources throughout AFBI;
- to represent AFBI to its key audiences, for example industry, academic institutions and other research providers, locally, nationally and internationally;
- to engage with the Minister and DARD on matters pertaining to the work of AFBI and its strategic direction and input to the overall DARD strategic objectives;
- to identify and assess current and future developments in the agri-food and rural economy sector, and to recommend opportunities to expand into new markets and innovations to meet customers' needs.

Role of the Chairperson of AFBI

The Chairperson is responsible to the Minister. The Chairperson shall ensure that AFBI's policies and actions support the wider strategic policies of DARD and that AFBI's affairs are conducted with probity. The Chairperson shares with other AFBI Board members the corporate responsibilities set out in the MSFM, and in particular for ensuring that AFBI fulfils these aims and objectives agreed with DARD and approved by the Minister. The Chairperson also sets performance measures for the board corporate and individual board members.

Board Members

Members are appointed in accordance with the Office of the Commissioner for Public Appointments (OCPA) NI Code of Practice. The terms of appointment of members are for either two or three year periods, with the Chair appointed for four years. The Chair receives an annual remuneration of £24,000 and is expected to commit approximately 40 days per annum to the post. The Deputy Chair receives £10,000 and has a commitment in the region of 20 days per annum. Members are expected to commit in the region of 15 days per year and receive £3,600.

In 2006/2007 the members were:

Chairperson Mr Seán Hogan lives in Newry. He has an MSc in Organisational Management from Queen's University and qualifications in Management Studies from the Chartered Management Institute. Mr Hogan is currently a freelance marketing consultant and is also the Chair of the Newry and Mourne Health and Social Services Trust. He is also a current member of the Warrenpoint Harbour Authority.

Deputy Chairperson Professor David McDowell lives in Carrickfergus. He has a PhD from the University of Ulster and is a Chartered Biologist. Professor McDowell is currently the Head of Food Microbiology at the University of Ulster. He is also a member of the Food Standards Agency NI Advisory Committee and Vice-Chair of the Safefood Scientific Advisory Committee, a voluntary position.

Mr Keiran Campbell lives in Newry. He has an MSc in Corporate Leadership and is a chartered accountant with 20 years' experience in senior finance and management roles. He is currently principal within property development and property management companies. Mr Campbell is also a member of the Warrenpoint Harbour Authority.

Dr Christine Kennedy lives in Donaghadee. She has a PhD from the University of Ulster. She is a partner in a dairy and beef farm. She also serves as an Independent Assessor for the Office of the Commissioner for Public Appointments (OCPA) and for management consultants PricewaterhouseCoopers and is an assessor for the Department of Agriculture and Rural Development (DARD), 'Peace and Rural Development Projects'. Dr Kennedy holds numerous voluntary positions, including membership of the UFU's Board. She is a present member of the Food Strategy Implementation Partnership Board.

Mr John McKinley lives in Ballycastle. He has a BAgr and Postgraduate Certificate in Education from Queen's University; completed a Business Start Up programme through the University of Ulster and a Corporate Manager programme with the Industrial Development Board. Mr McKinley runs his own beef and sheep farm and is also a consultant in food products, marketing, and tourism and environmental projects. He also works as an agri-environment skills instructor via the Department of Agriculture and Rural Development (DARD) organised workshops.

Dr Michael Hollywood lives in Belfast. He holds a PhD in Atomic Physics, from Queen's University. Dr Hollywood is a self-employed management consultant. He is the recently retired Head of Scientific Research at the Gallaher Ltd Group.

Mr Nicholas Mack lives in Newcastle. He has an MSc in Agricultural and Rural Policy and over 20 years' experience in rural development in Scotland, the Republic of Ireland and Northern Ireland. He is currently the Director of the Rural Development Council's (RDC) Policy and Innovation Research Unit and has worked with the RDC for the last 10 years.

Professor Grace Mulcahy lives in Co Wicklow. She qualified as a veterinary surgeon from University College Dublin (UCD), from where she subsequently gained a PhD. She is currently Professor of Veterinary Microbiology and Parasitology at UCD and is a Foundation Diplomate of the European College of Veterinary Parasitology. Professor Mulcahy is also a member of the Veterinary Council of Ireland, a voluntary position.

Professor Stewart McNulty lives in Belfast. He qualified in veterinary medicine from Trinity College, Dublin, from where he also gained a PhD. Professor McNulty retired as Chief Veterinary Research Officer with DARD Science Service in 2001. He is currently a member of the Health Promotion Agency Board, NI, a voluntary position.

Mr James Noble lives in Newtownards. He has an MSc from Queen's University and several qualifications in dairying. Mr Noble is currently a Non-Executive Director with the Manufacturing Technology Partnership. He has previously held a number of public appointments.

Mr John Rankin lives in Newtownards. He has run his own dairy farm for over 40 years and is also Director of both NFU Mutual and Farm Family Development Ltd. Mr Rankin is a former ARINI Trustee, a voluntary position, and is currently a member of the Agricultural Wages Board.

Mr Michael Walker lives in Newtownabbey. He has an MSc from Queen's University and is a Fellow of the Royal Society of Chemistry (RSC). He holds the RSC's Masters degree in Food, Drugs and Water. He is a self-employed consultant on food and water issues, civil and criminal litigation. Mr Walker has held a number of public appointments in recent years.

Mr James Stewart lives in Lurgan. He has a BSc in chemistry from Queen's University and an MA in Strategic HR Management. He is Managing Director of Training Solutions NI and currently holds two public appointments: Chair of the Warrenpoint Harbour Authority and Chair of the Green Park Health Care Trust.
(Mr Stewart resigned from the Board on 31 March 2007).

Board Sub-committees

There are two sub-committees of the Board.

Remuneration Committee

The Remuneration Committee is a non-executive advisory committee whose role is to advise the Chair of the AFBI Board in respect of remuneration of the Senior Executive Officers. Whilst the terms and conditions of employment and remuneration of AFBI employees are within the overall NICS terms and conditions of employment, any proposed changes within this overall framework will be subject to review by the Remuneration Committee. During the year, the membership of the Remuneration Committee was:

Non-executive Chair
Professor David McDowell

Non-executive Director
Dr Christine Kennedy

Non-executive Director
Mr Kieran Campbell

Audit and Risk Committee

The Audit Committee advises the Board and Accounting Officer on issues of risk, internal control, governance and any material items affecting the accounts. The Audit and Risk Committee is a sub committee of the AFBI Board and is an independent advisory committee with no executive functions. During the year, the membership of the Audit and Risk Committee was:

Audit Committee

Non- executive Chair
Dr Michael Hollywood

Non-executive Director
Mr John Rankin

Non-executive Director
Mr Kieran Campbell

Other Attendees

Head of Internal Audit
Ms Cara McCrory

Chief Executive AFBI
Dr George McIlroy

Head of Business Support
Mr Stephen Dolan

Head of CE's Office
Dr Robin Boyd

Northern Ireland Audit Office
Ms Karen Beattie

1.4 Management Board

The Management Board of the Institute was as follows:

Chief Executive Officer	**Dr G S McIlroy**
Deputy Chief Executive Officer	**Dr S Neill**
Deputy Chief Executive Officer	**Dr M Camlin**
Deputy Chief Executive Officer	**Dr S Kennedy**
Head of Chief Executive's Office	**Dr R Boyd**
Head of Business Support Unit	**Mr S Dolan**

The Management Board meets at least monthly with a standing agenda covering resources, operational management, health and safety and business development. The minutes of these monthly meetings are available on the AFBI intranet.

Role of the Accounting Officer

AFBI's Chief Executive is designated as the Institute's Accounting Officer by the DARD Accounting Officer and as such is accountable to Northern Ireland Assembly for AFBI's use of resources. His responsibilities, as the designated Accounting Officer of AFBI are set out in paragraphs 3.6.2 and 3.6.3 of the Management Statement. In particular, the Accounting Officer shall ensure that:

- AFBI's strategic aims and objectives support DARD's wider strategic aims and current PSA objectives and targets;
- the financial and other management controls within AFBI are appropriate and sufficient to safeguard public funds;
- AFBI's compliance with those controls is effectively monitored ('public funds' include not only any funds granted to AFBI by the Assembly but also any other funds falling within the stewardship of AFBI);
- the internal controls applied by AFBI conform to the requirements of regularity, propriety and good financial management; and
- any grant-in-aid to AFBI is within the ambit and the amount of the Request for Resources and that NI Assembly authority has been sought and given.

Details of significant interests held by the Management Board members

The Management Board Members do not hold any other directorships nor any other significant interests which may conflict with their management responsibilities.

1.5 Financial Matters

Remuneration of auditors

The auditors did not carry out any non-audit work.

Financial results for the year

AFBI's operating cost statement shows a net operating cost of £38,703k. Within this net position AFBI raised income of £6,194k. During the course of the year AFBI identified additional income streams from existing partners by clarifying the commercial relationship between AFBI and its customers. Service level agreements are agreed with FSANI and DCAL enabling funding to be secured in these important areas of work. AFBI presented monthly financial reports to the AFBI Board and reviewed expenditure against budget at the Senior Management Team Meetings to ensure that AFBI's expenditure did not exceed its budgeted resources. This reporting mechanism is subject to review. A number of improvements were identified in year and a business transformation project established to implement a new time recording and costing system and a new HR system.

At the year end the net assets of AFBI are £9,441k.

Events Since the End of the Financial Year

There have been no significant events since the end of the financial year which would affect the results for the year or the assets and liabilities at the year end.

Future Funding

Over the next three years AFBI faces a reducing budget from central government funds in the context of the Comprehensive Spending Review and increasing costs arising from the agreed pay deal. The dual impact of these factors requires AFBI to realise increased income from other sources and to increase the efficiency of its operations. AFBI is embarked upon a review of its asset usage and partnered with the Strategic Investment Board is developing a strategy to increase AFBI's commercial presence. AFBI will increasingly seek to establish commercial relationships and partnerships with a wider range of public and private sector organisations both within and external to Northern Ireland. Through the establishment of these relationships and an increased focus on commercialisation within AFBI, the adequate funding of AFBI will be realised.

A review of procurement will yield improvements in purchasing and contract management providing savings in AFBI's resource budget. Allied to improvements in procurement and the management of resources the development of improved management information for senior managers will assist in focusing AFBI efforts on improved service delivery.

1.6 Other Matters

Career Development

This year has seen considerable success for staff in terms of career development with a total of 25 staff in the scientific discipline achieving promotion.

As an accredited Investors in People organisation, AFBI demonstrated its commitment to staff development by providing Aids to Study for 14 staff in addition to a wide range of training courses and seminars.

Recruitment

There has also been considerable development in recruitment with a total of 67 permanent appointments and an additional 31 casual appointments, covering both the Industrial and Non-Industrial disciplines.

There were a further 97 appointments arising from the transfer of staff as a result of the dissolution of the Agricultural Research Institute of Northern Ireland (ARINI).

AFBI is committed to providing work experience opportunities for students at all levels to assist them in developing the key skills which are essential in today's workplace.

Four students were accepted onto sandwich course schemes which offered them the prospect to gain key work-related skills through a relevant, supervised work placement programme. The students were given the opportunity to work within the Biometrics Branch assisting in the development and implementation of software applications.

An additional 29 students were given work placement experience covering a range of areas such as Veterinary Science, Pathology, Aquatics, and Food Microbiology.

Environmental

AFBI has set targets for the use of energy from sustainable sources. AFBI recently undertook an audit of the disposal of clinical waste to ensure that it complied with environmental best practice.

Social

AFBI has completed a disability action plan and a publications scheme.

Internal Audit

AFBI uses the services of an independent firm of auditors to provide assurances to the AFBI accounting officer and to provide senior management and the AFBI Audit and Risk Committee with assurances of the adequacy of AFBI's systems of internal control and risk management. The DARD Internal Audit unit also carries out audits of AFBI to provide assurances the DARD Accounting Officer, DARD Sponsor Branch and the DARD Audit and Risk Committee that AFBI complies with the terms of the Management Statement and Financial Memorandum and other relevant legislative requirements.

Risk Management

AFBI has a risk management strategy and associated risk registers subject to scrutiny by the Institute's Internal Auditors. Risks are reviewed monthly at a divisional level and reported monthly on an exception basis to the SMT and the AFBI Board. The corporate risk register is reviewed quarterly by the Audit and Risk Committee and Internal Audit reviews the risk management process every year.

Performance Assessment of the AFBI Board

Arrangements are in place for an annual self assessment exercise by the AFBI Board to review and refine the objectives of the Board. The Chair of the AFBI Board also sets targets for the AFBI Board and assesses the performance of the individual Board members on behalf of DARD Sponsor Branch. The Performance of the AFBI Chair is assessed by DARD Sponsor Branch.

Compliance with HM Treasury Code of Good Practice on Corporate Governance

AFBI complies with the HM Treasury Code of Good Practice on Corporate Governance and generally complies with the Combined Code on Corporate Governance 2003.
All the directors of the AFBI Board are non-executives and the audit and risk committee and the remuneration committee chairs and members are all non-executives.

Supplier Payment Policy

AFBI shall endeavour to pay 95% of all matured and properly authorised invoices in accordance with the terms of contracts or within 30 days, as provided for in Section 16.3 of Government Accounting Northern Ireland. AFBI shall comply with the British Standard for Achieving Good Payment Performance in Commercial Transactions (BS 7890), and with the Late Payment of Commercial Debts (Interest) Act, 1998 as amended and supplemented by the Late Payment of Commercial Debts Regulations, 2002. DAO (DFP) 12/98 and DAO (DFP) 19/02 refer. (NOTE: Under the 1998 Act creditors are allowed to claim statutory interest and compensation on late payment of commercial debts). In 2006/2007, 87% of the invoices were paid in accordance with the terms of the contract or within 30 days.

Disabled Employees

It is the Institute's policy to give equality of opportunity when considering applications from disabled persons. The Institute complies with all existing legislation in respect to its disabled employees and has recently completed a Disability Action Plan.

Equality of Opportunity

The Institute's policy is to give all eligible persons an equal opportunity for employment and advancement on the basis of their ability, qualifications and aptitude for the work.

Employee Involvement

AFBI maintains regular communications and contact with staff and managers through meetings, team briefings, seminars, bulletins and postings on the intranet. It also has well established arrangements for formal consultation with recognised Trade Union representatives on all significant developments affecting staff.

Health and Safety

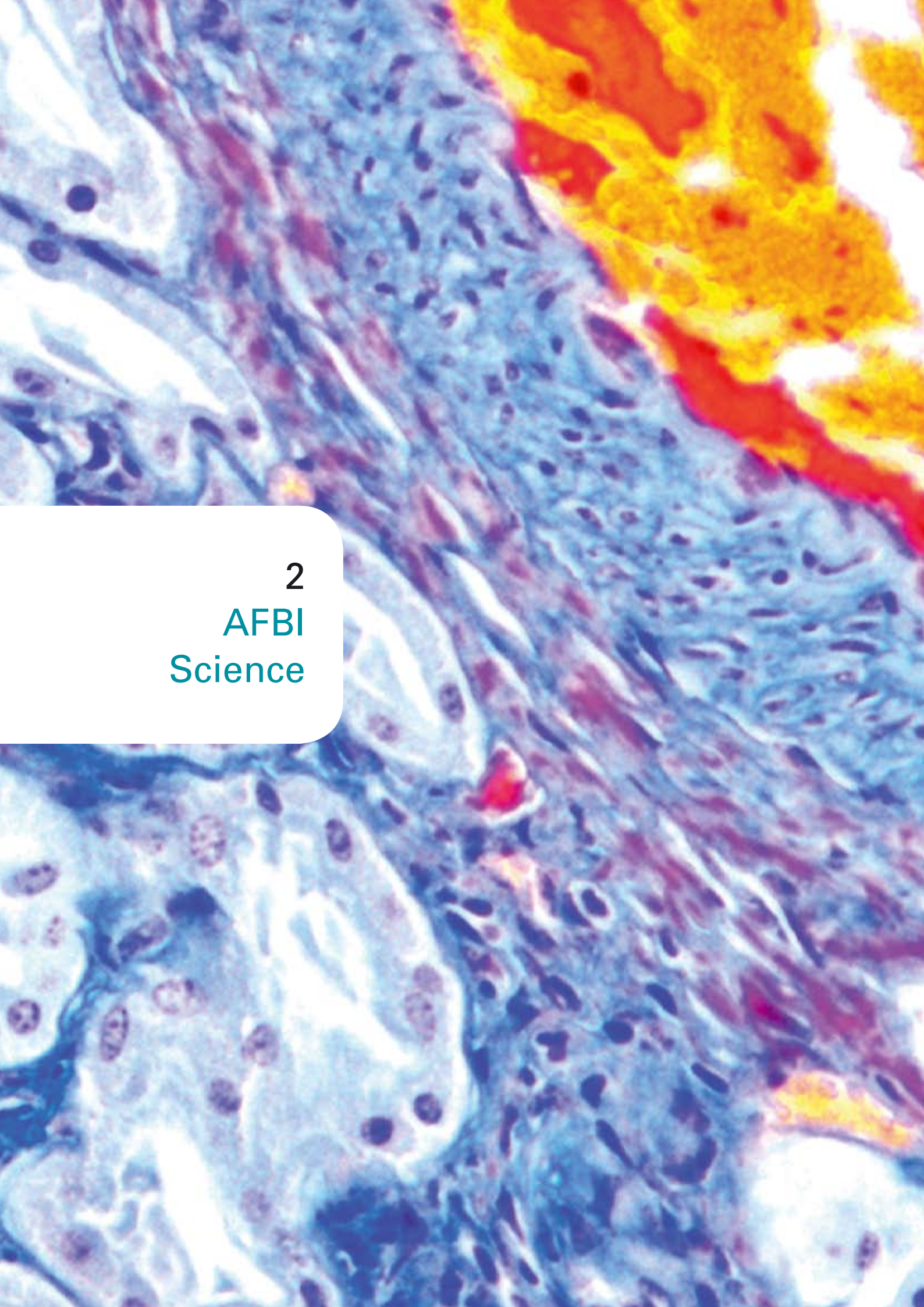
AFBI complies with all relevant health and safety legislation and where practicable with all health and safety best practice. AFBI has a team of dedicated health and safety advisers and a system of health and safety committees throughout the Institute.

Audit of Accounts

The financial statements are audited by the Comptroller and Auditor General for Northern Ireland. As Head of the Northern Ireland Audit Office, he and his staff are wholly independent of the Institute and findings are reported to Parliament. The annual fee for the audit of financial statements for 2006-2007 was £45,000.

Disclosure of Information to the Auditor

All information deemed by the auditor to be relevant to their investigations is made available. The Chief Executive, as AFBI's Accounting Office, has taken all steps to make himself aware of any relevant audit information and to establish that the auditors are aware of and have access to that information.



2

AFBI Science

2.1 Agriculture, Food and Environmental Science Division (AFESD)

AFESD undertakes basic, strategic and applied multidisciplinary research, relevant to achieving efficient and responsible practices in sustainable farming, food, fishing and aquaculture industries, whilst conserving and enhancing the terrestrial and aquatic environments and thus supporting Northern Ireland's rural communities.

The Division's research areas include sustainable and welfare-sensitive livestock systems; non-food crops and renewable energy systems for the agri-food sector and farming communities; management & protection of natural land resources, fish stocks and aquatic ecosystems; improving competitiveness in the agri-food industry by improving quality, safety and process development. All R&D is quality assured and certified by ISO9001:2000.

The Division provides evidenced-based scientific advice, to government policy makers, to regulators and to industry, on agriculture, food, fishing and environmental issues.

The Division also provides various statutory, regulatory and commercial analytical services. Our sophisticated analytical facilities operate with quality-assured accreditation in the areas of microbiological and chemical contaminants in food, food products and animal feed; environmental contaminants; fish stock assessment; soil and grass analyses.

The Division maintains specific scientific preparedness for emergency responses in areas such as food, terrestrial and aquatic environments and public safety, where directly commissioned by 'customers', as well as the general need to handle risk and uncertainty.

Sustainable livestock systems and biodiversity

AFESD's research on sustainable livestock systems is a programme embracing fundamental and applied research for the Northern Ireland's dairy, beef, sheep, pig and poultry sectors. The research programme aims to improve the competitiveness of livestock production through development of systems designed to produce animal products of superior quality and safety. The research also endeavours to reduce any adverse environmental footprint of such farming practices, being conscious of water quality and biodiversity associated with farmland and it focuses also on maintaining high standards of animal welfare in all systems The programme encompasses research on animal genetics; dietary components and feed conversion; reproduction and infertility; animal welfare studies and studies on reducing phosphorus and excretion mitigation of methane. The Institute based research is complimented by on-farm studies to ensure farmer involvement, and local relevance and potential direct uptake of research outcomes.

Renewable energy

Farming and the agri-food sector have recently seen considerable changes largely driven by EU Directives, increasing energy costs and concerns about global warming and climate change. AFESD is therefore establishing a Centre of Excellence at our Hillsborough site to demonstrate the potential of renewable energy options for local farmers and the wider Agri-Food Sector in Northern Ireland. Our current energy research programme builds on AFBI's internationally recognised pioneering research on the potential of short rotation willow production as a biomass energy crop, but has extended this research to evaluate also the potential of other locally available biomass sources for energy production. Supplementing this, the use of anaerobic digestion treatment of waste animal manures as an energy source has been undertaken. The use of non-food crop alternatives for liquid biofuel production forms part of the overall programmes to a lesser extent, as does the use of solar energy.

Fisheries and marine ecosystems

AFESD has a research programme that provides evidence-based science to underpin sustainability of marine fishery resources in the Irish Sea and elsewhere. This ranges from specific assessments of exploited fish stocks, supporting management decisions made under the European Common Fisheries policy, through research into wider sustainability aspects of marine ecosystems and the marine environment. The Division is now taking an international lead in initiating research to develop management advice on an ecosystem basis. The Division is also actively investigating climate change impacts on marine bio-resources. The RV Corystes, AFBI's 53 metre marine research vessel, plays a central role in this research programme.

Management of the coastal zone

AFESD provides significant scientific advice to a range of Government Departments and other stakeholders in support of integrated coastal zone management in Northern Ireland. This is executed via our extensive GIS databases on biodiversity, fishing and aquaculture activities and the ecosystem impacts of these. This work is supported by an environmental monitoring programme using *in situ* instrumentation. The Division is further developing ecosystem based models to assess ecological carrying capacity of Northern Ireland's sea loughs in order to facilitate sustainable development of shellfish aquaculture, a developing industry in Northern Ireland.

The agri-environment

AFESD undertakes environmental research through a programme aimed at making more appropriate and efficient use of resources, while protecting the environment. This is executed primarily by focussing on land and nutrient management issues. This integrated research effort includes studies on the impact on air, soil and water quality of nutrients used in farming. This research has provided most of the scientific evidence underpinning the development of the Northern Ireland Action Plan necessary for farmers to comply with the EU Nitrates Directive. The Division is also involved in long-term ecosystem monitoring and research through the UK Environmental Change Network. This network is designed for the detection, interpretation and prediction of long-term environmental change, the purpose being to help mitigate and adapt to climate change.

Food Science

AFESD, in relation to food and animal feed, undertakes statutory analyses for microbial pathogens and spoilage organisms and for chemical contaminants. The Division fulfils national reference laboratory functions in several areas. Research is carried out with, and for, the local and national agri-food industries through programmes to underpin their knowledge-base, improve competitiveness and increase consumer confidence and choice. The Division's expertise in food chemistry and food microbiology provides government regulators and the different sectors of the industry with appropriate advice. The focus of the Division's food research includes optimising the eating quality and nutritional value of various foods; developing and evaluating novel production and processing methods, such as non-thermal treatment of foods e.g. using high pressure; eliminating food-borne pathogens and minimising food spoilage organisms and determining the impact of agri-chemical contaminants. The Division's food scientists work with our agricultural production scientists and industry, thus involving the complete supply chain for maximising research outcomes.

2.2 Applied Plant Science and Biometrics Division (APSBD)

The Division undertakes basic, strategic and applied research in the plant sciences which, taking into account implications for the environment, aims to underpin sustainable economic growth and development in the countryside of Northern Ireland. It also provides a professional Statistics and ICT service for the Institute as a whole.

The Division has three Branches, Plant Production & Ecology, Plant Biotechnology & Protection and Biometrics & Information Systems.

Research areas include plant breeding, horticulture, agronomy, weed, disease and pest problems of economic importance and research with regard to the introduction, ecology and management of more environmentally sensitive farming practices, the biology of alternative land use options and diversification opportunities.

The Division also provides:

- Specialist Advice on weeds, crop plants, varieties and disease problems of agricultural, horticultural and forestry crops;
- Statutory Services, including certification and monitoring, for DARD on pasture, horticultural and agricultural crops.
- APSD promotes links with the agri-food industry by means of commissioned research and technical services.

Plant Production and Ecology Branch

This branch works across several core business areas, Plant Breeding, Horticulture, Plant Varieties & Seeds and Ecology & Land Use.

Plant Breeding

The Division's Plant Breeding programme based at AFBI Loughgall provides a research base for the breeding of new varieties of grass and potatoes. This has established links with leading plant-breeding organisations in the UK and abroad. It also provides technical support to the local seed sector, seed growers and industrial partners.

Horticulture

AFBI Loughgall carries out research in horticulture which is structured to reflect the needs of the industry and concentrates on the major disciplines of mushrooms and top fruit. Other strategic areas addressed include the recycling of wastes, in particular spent mushroom substrate and integrated crop production and pest management. The branch offers a contracted service for research and specialist advice to external customers.

Plant Varieties & Seeds

This unit is based at AFBI Crossnacreevy (incorporating the Northern Ireland Official Seed Testing Station), and undertakes research and technical support for various functions across plant variety and seed technology and crop and grassland agronomy. This includes statutory work and specialist advice at local, national and international levels.

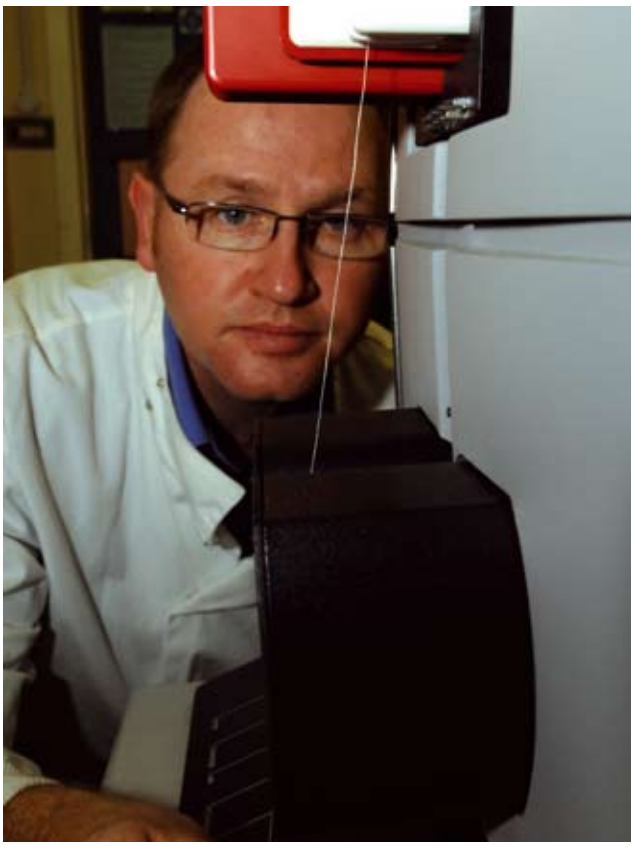
Ecology & Land Use

Research is undertaken into the ecology of grassland management practices which optimise utilisation of resources and increase bio-diversity in areas including those that are "Environmentally Sensitive". Research also includes the biology and application of short rotation willow coppice and the output from, and ecological interactions within farm woodland systems.

Plant Biotechnology & Protection Branch

Molecular, Biology and Biotechnology

Molecular, Biology and Biotechnology, based at AFBI Headquarters, Belfast, aims to provide a centre of excellence in Northern Ireland for plant, pest and pathogen molecular biology, molecular diagnostics, biotechnology, biofarming and plant fibre technology. These research skills are used to enhance the quality of existing crops as well as to provide new crops for the future.



Plant & Environmental Protection

Plant and Environmental Protection, based at AFBI Headquarters, Newforge Lane, Belfast, conducts research on the study and control of fungal, bacterial and viral diseases; vertebrate and invertebrate pests and weeds of arable, horticultural, grass, forestry and sustainable energy crops. Current emphases are on integrated pest and disease management and use of reduced rates of agrochemicals. This unit is also responsible for the provision of advice and other statutory plant and public health functions.

Biometrics and Information Systems Branch

This is a specialist branch which provides a professional statistical consultancy service for the design and analysis of agri-food trials and surveys, along with statistical training courses tailored to meet the needs of the customer. This statistical expertise, combined with in-house computing skills, leaves the branch uniquely placed to develop agri-food modeling and benchmarking computer applications.
The branch also serves AFBI through the provision, development and management of computer resources. These resources include the AFBI network and associated IT business systems, information systems and systems for the collection and management of scientific data, and AFBI Intranet and Internet sites.

2.3 Veterinary Sciences Division (VSD)

VSD undertakes basic, strategic and applied multidisciplinary research in animal health and food safety which aims to underpin sustainable economic growth and development of the agri-food industry in Northern Ireland.

Research is carried out for a wide range of customers in the private and public sectors. Current research topics include circoviruses and other animal viruses, clostridial diseases, bovine tuberculosis, paratuberculosis, leptospirosis, avian and fish pathogens, analytical methods for antibiotics, hormones and other veterinary drug residues, rapid methods of pathogen identification, parasites of farm animals, and biometric identification of animals and food of animal origin.

All R&D work within the division is quality-assured to ISO9001:2000 standards. ISO17025:2005 and GLP (good laboratory practice) standards of accreditation are also in place for a wide range of laboratory testing. An OIE (World Organisation for Animal Health) reference laboratory for animal Leptospirosis is located within the division.

VSD carries out surveillance for animal diseases in Northern Ireland, on behalf of DARD in order to provide early warning of exotic farm animal, avian and fish diseases, and to monitor emerging diseases and changing patterns of endemic diseases. Surveillance is carried out to provide evidence to the EU Commission of the absence of several diseases in Northern Ireland and thereby safeguard access to export markets for livestock and food of animal origin. The division also undertakes testing for BSE, scrapie, brucellosis and bovine tuberculosis and salmonellosis and provides a disease diagnostic service for farmers, private veterinary surgeons, poultry organisations and fish farmers. Targeted surveillance is carried out for Salmonella, Campylobacter and E. coli of public health importance. Screening for antimicrobial drug resistance is an important part of this work.

VSD provides:

- specialist technical services in pathogen testing, reagent production and veterinary epidemiology;
- specialist advice on animal health and food safety to industry and government policy makers at local, national and international levels;
- statutory and regulatory testing services, to ensure that animals and food of animal origin from Northern Ireland meet the highest international standards (including tests for bovine brucellosis and tuberculosis, BSE, scrapie, salmonellosis and veterinary drug residues and marine biotoxins).

VSD maintains scientific preparedness for emergency responses to animal disease and food safety threats.

Bacteriology

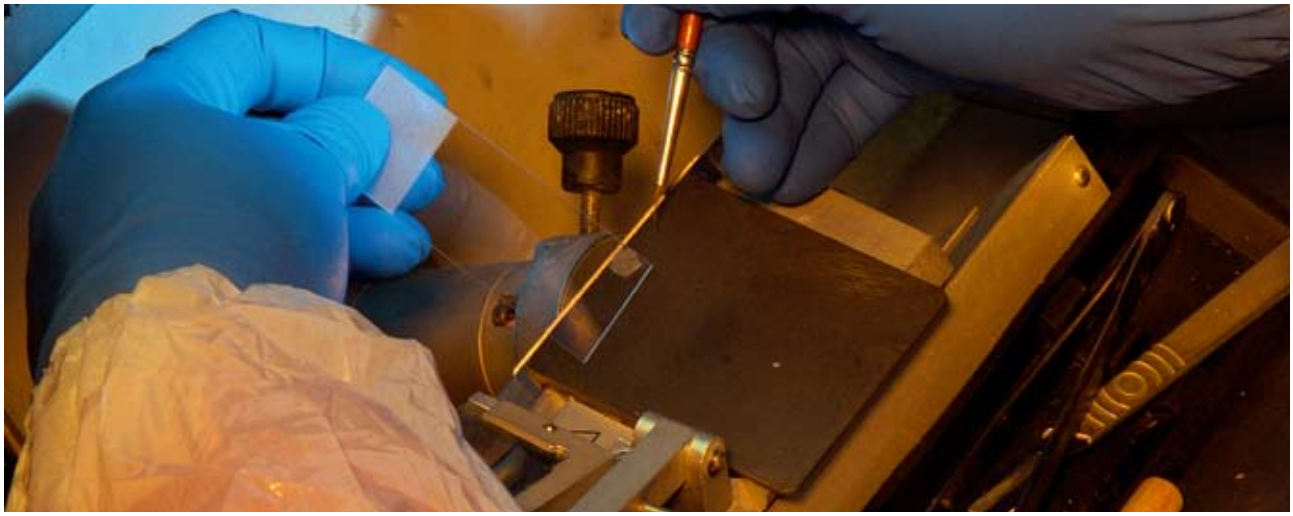
R&D, surveillance and statutory testing for bacterial diseases are carried out. The division encompasses the OIE reference laboratory for animal leptospirosis (GLP-accredited) and an EU National Reference Laboratory for animal salmonellosis. The immunopathogenesis and molecular epidemiology of bovine tuberculosis are current major topics of interest.

Virology

R&D is carried out on the detection, control and early pathogenesis of viral diseases of economic importance in farm animals, poultry and fish, vaccinology, molecular virology, development of novel diagnostics and immunopathogenesis.

Disease Surveillance

A diagnostic surveillance service for diseases of farm animals, poultry and fish is provided to private veterinary practitioners, farmers, poultry organisations and the aquaculture industry. The large throughput of diagnostic submissions facilitates surveillance for novel diseases, changing patterns in endemic diseases or potential introduction of notifiable diseases.



Chemical Surveillance

The Division encompasses an EU National Reference Laboratory for veterinary drug residues that provides screening and confirmatory analysis for a wide range of veterinary drug residues and marine biotoxins. Tests are carried out for residues of licensed veterinary drugs and illegal compounds in meat products from cattle, sheep, pigs, poultry and fish, milk and eggs, and animal feedingstuffs. This work is supported by basic and strategic research that has resulted in the development of novel analytical methods for a wide range of compounds.

Immunodiagnostics

A large volume of serological testing is carried out on behalf of DARD and industry customers. This work includes testing in support of DARD's brucellosis eradication programme, surveillance for exotic diseases such as enzootic bovine leucosis and highly pathogenic avian influenza, equine viral serology, avian viral and mycoplasma serology, and tests required for the export/import of animals.

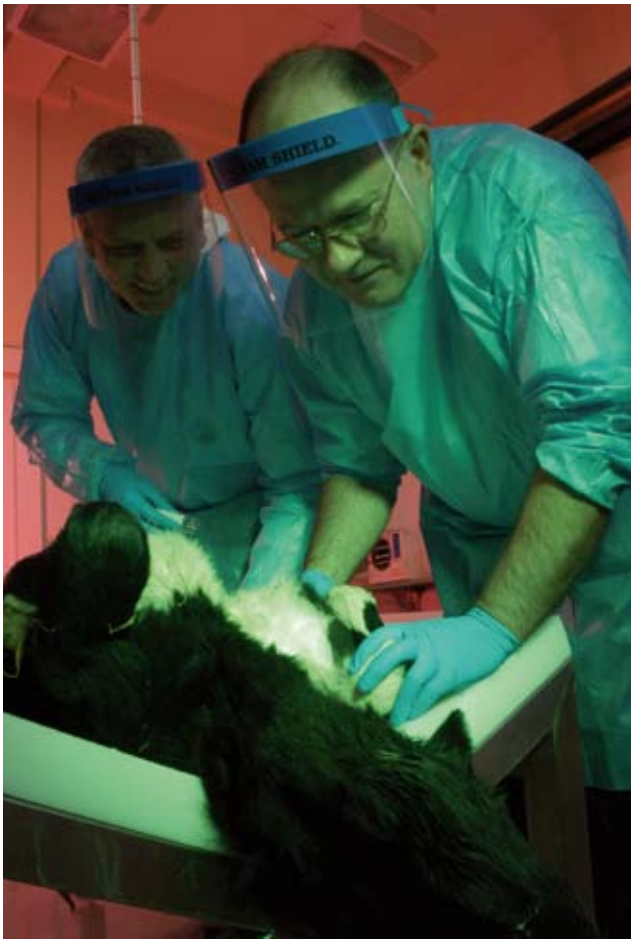
VSD's scientific skills base encompasses pathology, bacteriology, virology, mycoplasmology, parasitology, biochemistry, chemical analysis, epidemiology, biosensor technology, molecular biology, immunology, laboratory animal science.

Microbiological facilities include virus isolation, electron microscopy, immunofluorescence and immunocytochemistry, in situ hybridization, polymerase chain reaction technique (PCR, RT-PCR, real time), fluorimeter technology, gene cloning, expression and library technologies, recombinant DNA vaccines and viral vectors, genome sequencing, gel documentation/image analysis systems, class III microbiological containment laboratories, serology e.g. SAT, MAT, VNT, ELISA test technology, bacterial strain typing and molecular epidemiology e.g. RFLP, PFGE, VNTR, AFLP, spoligotyping.

Protein chemistry facilities include protein separation and purification and peptide synthesis, combinatorial display libraries

Immunological facilities include functional analysis of immune effector cells, monoclonal antibody production, cytotoxic assays, fluorescent activated cell sorting (FACS) analysis, magnetic (MACS) cell sorting systems, cytokine profiling, ELISA development/isotype specific responses, characterisation of cellular and humoral responses, vaccine development-in vitro/ in vivo evaluation of whole cell and subunit vaccines.

Pathology and Clinical Pathology facilities include animal post-mortem examinations, histopathology, immunohistochemistry, immuno-electron microscopy, *in situ* hybridization, image analysis, atomic absorption spectrometry, biochemical and haematological analysis, parasite identification and anthelmintic resistance testing.



Chemical Residues facilities include mass spectrometry e.g. LC-MS/MS, HRGC-MS, GC-MS/MS, antibody production (polyclonal, monoclonal, phage library) to small molecules, immunological and microbiological screening assays, chemical confirmatory methods, biosensors, FPLC, pharmacokinetic/pharmacodynamic studies.

Other VSD facilities are ISO 9001:2000, ISO17025:2005, GLP accreditation, secure avian and large animal accommodation

2.4 Agricultural and Food Economics Branch

Agricultural and Food Economics (AFEB) is a specialist unit within AFBI which provides a strategic socio-economic modelling, knowledge transfer and decision support service for a wide range of customers in government, NGOs and the private sector, nationally and internationally.

The work programme is grounded in the Social Sciences and is uniquely attuned to conditions in the UK agri-food and rural sector, with special emphasis on Northern Ireland. The core aim of the work is to enhance understanding of the socio-economic factors driving behaviour change at different levels of the agri-food and rural system. To do this AFEB develops and maintains a set of macro and micro socio-economic models the outputs of which provide support for decision makers in the policy, private and NGO sectors.

A key feature of the work is AFEB's close interaction with customers and stakeholders both in the formulation of its work programme and in the interpretation and dissemination of results. By working in this way AFEB has experienced significant growth in demand for its services at regional, national and international levels. Much of the growth as a consequence has been sustained by external funding from across its customer base, where there is increasing demand for rigorous socio-economic evidence to support decision making.

AFEB work has had major successes in recent times, for example: providing key analyses of the regional and national impacts of different reform scenarios for the Common Agricultural Policy and for world trade rules; devising optimal production systems for dairy and beef farms in rapidly evolving policy and market environments; valuing the impacts of agriculture on the environment and developing bio-economic farm decision models; analysing changes in the structure and behaviour of farm households; and evaluating and monitoring the development of key emerging economies.

2.5 Sustainable food and farming

Plant breeding

The plant breeding programme based at AFBI Loughgall provides a research base for the breeding of new varieties of grass and potatoes. This has established links with leading plant-breeding organisations in the UK and abroad. It also provides technical support to the local seed sector, seed growers and industrial partners.

Breeding high yielding, persistent forage grasses with improved nutritional status is a primary objective and varieties such as Tyrella and Malone, recently added to Recommended Lists in the UK and Ireland, are setting new standards for improved spring growth and resistance to leaf spot (Dreschlera). A commercial seed crop of Malone has been sown at Limavady, Co Londonderry, representing the first grass seed crop to be grown in the Province for almost 10 years.

Routine use of Near Infra Red Spectroscopy analysis of digestibility has allowed the development of new varieties such as Dunluce and Dunloy, which are a particular improvement in this regard. Collaborative research testing varieties suitable for low input and organic grassland systems continues. The recent establishment of two major trial sites for new AFBI grasses at Evesham (England) and Aberdeen (Scotland)

will supplement data from Loughgall and the Netherlands and should improve the success of identifying varieties, which are widely adapted to UK conditions.

The potato breeding programme continued in its remit to produce competitive new varieties for the Northern Ireland potato industry. Commercial contract breeding has significantly expanded to 40,000 seedlings per year although progress in marketing new varieties has slowed due to the need to identify new commercial partners.

Strategic underpinning research is being undertaken and is aimed at improvement of varietal resistance to potato cyst nematode (PCN), potato blight and virus and storage diseases as well as improving processing quality and opening up wider utilisation options within the ware sector. Commercial potato variety development work is most strongly focussed on providing new varieties for the seed potato export sector. Commercial shipments of Sunset, a particularly promising new variety, were exported to Morocco with a year-on-year increase in production. The variety portfolio also includes the established varieties Pomeroy, Estrella and Sparkle together with a number of, as yet, un-named new selections which are progressing satisfactorily through National List trials. Support for local private breeders also continued and this work has produced several promising seedlings suitable for local and export markets.

Fertility benchmarking online

In conjunction with DARD's College of Agriculture Food and Rural Enterprise (CAFRE), AFBI has developed a unique, free, online facility for farmers in the identification of poor fertility in dairy cows. Dairy farmers report increased difficulty in detecting cows on heat and poor conception rates leading to extended calving intervals and prolonged calving seasons. Poor fertility has a major impact on herd financial performance and on labour inputs. The costs can now be quantified for an individual farm using the Fertility Benchmarking Online program which is available on the Rural Portal website at: www.ruralni.gov.uk/fertilitybenchmarking

The Fertility Benchmarking Online software development team from left to right: Andrew Lynch, David Kilpatrick, Sinclair Mayne, Mark Browne and Erica Chisholm

Dairy herd research

AFBI Hillsborough conducted research jointly funded by DARD and AgriSearch which quantified the level of herd fertility in Northern Ireland on 19 dairy herds across Northern Ireland. This highlighted the variability in dairy herd fertility. While the average performance was relatively poor, the study showed that good fertility performance was still possible in well managed, high yielding herds. The study also indicated that herd fertility performance can be improved through better use of records. Anticipating oestrus based on previous heats and services effectively improved the average heat detection rate in 6 herds from 73% to 83%. In addition, the average interval to first service was reduced by 4 days and the 100-day In-Calf Rate (proportion of cows intended for rebreeding back in-calf within 100 days) was increased from 65 to 69%.

Software development

With input from CAFRE, AFBI developed an online computer program and specialist software developers, Agridata, Farmwizard and Kingswood provided data upload facilities for this. Fertility Benchmarking Online will enable farmers to benchmark their herd fertility performance and calving dates, service dates and pregnancy diagnosis data can be manually entered onto the online application.

CAFRE Dairying Technologists have successfully worked with local herd management software companies to adopt this technology within their packages. Farmers are now actively using this technology through their herd management software packages to improve overall herd fertility performance.

Feeding Information System

In August 2006, the AFBI Hillsborough Feeding Information System (HFIS) service celebrated 10 years serving the farming industry. To mark the occasion, a new enhanced silage analysis service with additional parameters was launched.

The service has its roots back in the early 90s when there were problems in accurately determining the total feeding quality of grass silage. There was general agreement in the industry that silage analysis was essential to enable farmers to optimise performance from silage. However, both advisors and researchers were faced with dilemmas over the high costs associated with traditional 'wet chemistry' analysis, and the difficulty in interpreting analyses and converting them to milk yield or live weight gain at farm level. The problem was complicated further by the rapidly improving genetic merit of the dairy herd and the growing awareness of environmental factors when conserving forage. In 1992, a programme of research was begun to examine these factors using new emerging analytical techniques. Assessments of intake, digestibility, degradability coefficients, metabolisable energy concentration, and a wide range of analytical parameters e.g. protein, fermentation characteristics were undertaken for a wide range of silages. In addition to traditional analysis, samples were also analysed by near infra-red reflectance spectroscopy (NIRS), a technique which can predict both chemical components and biological components of silages including intake potential, digestibility, and metabolisable energy.

A system was developed which can accurately predict silage composition and animal performance and in 1996 the Hillsborough Feeding Information System (HFIS) was launched. This system is now the basis of all silage analysis in the UK and the Republic of Ireland. HFIS marked its 10th anniversary with a number of improvements to both the analytical and reporting system.

A new report has been designed, providing clear and concise results of silage analysis and practical feeding information used at farm level has been separated from the more technical components required for nutritional software programs. Five feeding report types are available for: dairy cattle, growing steers, growing lambs, suckler cattle, hill and lowland bred sheep. Report delivery is by 1st class post and now email (where appropriate) and for Northern Ireland, a pre-paid postal service is also available for sample delivery.

Sire selection for easycare sheep

Is it possible to introduce easy-care traits such as ease of lambing and lamb viability into a terminal sire breed? What about the impact on lamb performance and carcass quality? These were some of the questions posed at farm workshops organised by AFBI Hillsborough, in conjunction with AgriSearch and College of Agriculture, Food and Rural Enterprise (CAFRE Greenmount campus).

With continuing pressure on margins from sheep production, a key challenge facing sheep producers is to find ways of reducing costs whilst maintaining or increasing lamb output. However sheep production systems in Northern Ireland are generally labour intensive, especially at lambing time, which puts a major constraint on efforts to increase lamb output per labour unit. A major research programme, co-ordinated by the AFBI Hillsborough and jointly funded by DARD and AgriSearch, is currently being undertaken on lowland farms across Northern Ireland and at Hillsborough to address the issue of labour requirements on sheep farms.

To date, the research has examined the performance of ewes on two contrasting lambing systems – an indoor lambing system with ewes offered grass silage and concentrate-based diets, and a pasture-based system where ewes are turned out to grass 4-6 weeks before lambing (depending on grass growth and ground conditions) without concentrate supplementation. A key factor affecting labour inputs in both systems is the choice of sire.

Use of NZ X UK Suffolk rams halved the number of ewes requiring intervention at lambing, with 81% of ewes lambing down unassisted compared to 64% of ewes lambing to UK Suffolk rams. This difference can be partly explained by a 0.3 kg reduction in lamb birth weight of both single and twin born lambs from NZ X UK Suffolk-sired ewes. Lamb performance up to weaning, in terms of daily live weight gain, was not affected by sire genotype. However there was a notable improvement in the fertility of ewes mated with NZ X UK Suffolk rams compared with ewes mated with UK Suffolk rams.

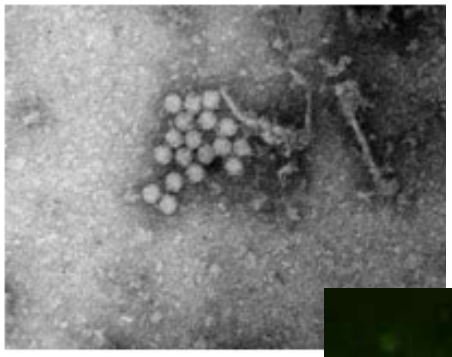
Lamb performance, in terms of daily live weight gain from birth to slaughter and killing out percentage, was similar for both UK and NZ X UK Suffolk-sired lambs. However there was a notable effect of sire genotype on carcass conformation, when defined by the EUROP scale. The proportion of carcasses achieving E, U and R grades was 98 and 90% for UK Suffolk- and NZ X UK Suffolk-sired lambs respectively. Carcass fat cover was similar for both sire genotypes, with more than 93% of carcasses from both UK and NZ X UK Suffolks achieving the target fat class 2 or 3. Assuming a base (R3) price of 230 p/kg carcass-weight, together with a 10 p/kg bonus for U grade carcasses and a 10 p/kg penalty for O grade carcasses, UK Suffolk-sired lambs were worth £0.61/head more at slaughter than NZ X UK Suffolk-sired lambs. However the net effect of using NZ X UK Suffolk sires was an increased lamb output value of £7.43 per ewe lambed due to the greater number of lambs available for sale.

Necrotic enteritis in poultry

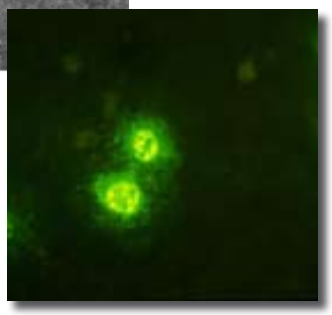
Necrotic enteritis is re-emerging as a disease of chickens and turkeys that has significant implications for the welfare and economics of poultry production. It is caused by strains of Clostridium perfringens that are widespread in the environment but can cause necrotic enteritis when gut health is compromised. The progressive withdrawal of in-feed growth promoting antibiotics that has taken place in Europe in recent years has been associated with the re-emergence of necrotic enteritis as a serious problem. This problem is expected to increase as compliance with EU legislation will result in the prohibition of all growth promoting antibiotics and coccidiostats from poultry feed by 2012. In a project funded by Devenish Nutrition Ltd and Invest NI, AFBI and Queen's University have developed a reproducible model of necrotic enteritis and are now using this model to test various interventions that may reduce the incidence of necrotic enteritis. As part of this project, Devenish Nutrition are carrying out field trials on dietary and non-dietary methods of controlling this disease and improving flock performance.

Porcine circovirus diseases

AFBI's Veterinary Sciences Division research is at the forefront of EU-funded international research projects on porcine circovirus diseases (www.pcvd.org and www.pcvd-ssa.vri.cz/) and was instrumental in identifying the causal agent as porcine circovirus type 2 (PCV 2). One of these diseases, postweaning multisystemic wasting syndrome, first appeared in Canada and France in 1997 and quickly spread around the world as a global epizootic that caused severe economic losses to pig producers and restricted the movement of pigs and pig products. These projects have been key in the development of commercial diagnostics and recently launched vaccines to combat PCV2 disease.



Detection of porcine circovirus by electron microscopy



Detection of porcine circovirus infected cells by indirect immunofluoresecence

Farmer succession and early retirement schemes

Financial support for EU farmers seeking early retirement is a discretionary element of CAP rural development policy and some EU member states, most notably France, Ireland and Greece have chosen to implement the measure.

This study explored whether the introduction of such a scheme in Northern Ireland would be likely to represent good value for money. We estimated the benefits that might arise using FADN data and a separate survey of 350 farmers aged 50 to 65.

In our survey 87 per cent of farmers said that they intended to finance their retirement from a range of sources. The most frequently mentioned were state pension, land rental, sale of stock or equipment and spouse's pension.

The attraction of an Early Retirement Scheme lies in its potential, through financial incentives, to accelerate the transfer of farm resources from older farmers to younger farmers who are expanding their businesses. Our econometric analysis, however, showed that while farm scale was a significant determinant of financial performance, operator age was not. Benefits from releasing land, therefore, were conditional on transfers bringing about significant farm expansion and changes in land use. We found that even when these conditions were satisfied, in a best-case expansion scenario, pension payments to transferors of only about one-third the statutory maximum could be justified. Overall, we concluded that the economic case for such a scheme was weak.

Wood from silvopasture

There is a need to increase the area of woodland on Northern Ireland farms as tree cover is very low (6%), the demand for wood based products is steadily increasing and trees bring a range of environmental benefits. They also provide valuable ecosystem services such as nutrient uptake, carbon sequestration and soil stabilization. Farmers in Northern Ireland have been reluctant to plant trees but at AFBI Loughgall trees have been successfully introduced to managed grassland in a silvopastoral system. Ash planted in 1989 have grown exceptionally well and full livestock output was possible until 2003. Although height growth in the trees in the trial at Loughgall has slowed down, diameter growth is increasing rapidly. Ash at wide spacing in silvopasture are increasing in diameter faster than ash in a woodland situation.

These trees will now be ready for a second thinning of hurley-ash in winter 2007. Timber quality (measured by a Fibre-Gen ST300) from silvopastoral ash is different from that of closely spaced trees,and while it may not suit some conventional uses, it has the potential to be a niche market timber. With rules for the Single Farm Payment allowing farmers to plant a certain amount of trees and to recognise silvopasture, the prospects for the system as a long-term viable, sustainable land-use option are encouraging.

2.6 Competitiveness in the agri-food industry

Growth regulator for the Bramley Industry

Bramley's seedling apple is the main apple grown in Ireland but as a triploid, it grows very strongly which presents many challenges to the grower. Winter pruning and early Summer applications of Cultar (growth regulator) have traditionally been used to keep the trees in check and optimise fruit production. However, this combination did nothing to eliminate the removal of water shoots (summer sprouts which develop into extensive woody branches that destroy the shape of the tree).

In 2005 AFBI Loughgall started a replicated trial to evaluate Regalis (Prohexadione –Ca), which reduces extension growth in woody plants by preventing the natural growth promoters (Giberellins) from operating.

These growth regulators have been evaluated against an unsprayed control over several growing seasons. Regalis is claimed to give better control of shoot expansion than Cultar, to slightly increase yield and to have a very major effect on water shoot production. Reduction in shoot extension and water shoot development potentially results in resources becoming available for fruit development and subsequent fruit bud development. Therefore yield and fruit bud must be monitored to properly evaluate these potential benefits on Bramley. Mature Bramley's on M26 root stocks were sprayed with the full recommended rates of either Cultar or Regalis and compared to an unsprayed control.

Regalis – treated apple trees produced less wood and increases in fruit bud numbers and in fruit set were recorded in 2007. This technology is now being rapidly adopted by the industry.

The Effects of Regalis and Cultar on shoot extension compared to the unsprayed control over three years (as % of control).

	2005	2006	2007	Mean
Control	100	100	100	100
Regalis	38	55	46	46
Cultar	56	80	60	65

Optimal milk production systems for Northern Ireland

One of the mantras of EU agricultural policy is that farmers must become more competitive. It is not always clear, however, which milk production system farmers should operate in order to achieve this goal. Popular notions focusing on low input systems for example can be simplistic and misleading.

This project involved the development of a whole farm business model for a "typical" dairy farm. The model was designed to allow the profitability of eleven different milk production systems to be examined.

Systems examined included those with spring, autumn and non-seasonal calving patterns, with winter diets based on either grass silage only, or a combination of grass silage and maize silage. Concentrate inputs in the systems examined ranged from 600 to 3,750 kg per year, while milk yields ranged from 5,000 to 10,000 litres per year.

The modelling took account of the impact of calving date and system on milk quality, and allowed the effects of changes in milk price, seasonality payments and input costs to be examined.

When the different milk production systems were examined under a range of possible market scenarios the optimum systems identified were the moderate input-moderate output systems detailed below.

Other key findings:

- Low input-low output (New Zealand type systems) and high input-high output (North American type systems) tended to be less profitable.
- Optimal expansion strategies will depend to some extent on farm specific circumstances and on future market developments.
- The aim of expansion should be to increase or maintain family income. Thus it is essential to manage the risks involved in expansion – i.e. to invest with care.
- Long term survival and growth will be dependent on a relentless drive to improve the efficiency of all aspects of the farm business.

Optimal Milk Production Systems

Spring calving	Autumn calving	Autumn calving
7, 000 litres/cow	8, 000 litres per cow	8, 000 litres per cow
1.4 t concentrates	2.0 t concentrates	1.9 t concentrates
Grass Silage	Grass Silage	Grass + Maize Silage

Putting orange juice under pressure

High pressure processing (HPP) of foods is a new food treatment that can make food safer to eat and extend shelf-life without reducing vitamin content and without altering flavour, texture or appearance. It can be carried out at room temperature and the pressure used is immense being equivalent to the weight of three elephants standing on a strawberry.

AFBI is currently at the centre of new research to determine how this process can be developed in order to provide 'niche' products for the Northern Ireland food industry. The Institute has a small industrial pressure rig at Newforge Lane, Belfast, which allows for large-scale experiments and AFBI is currently assisting companies in market testing HPP products.

HPP is suitable for foods with high water content and HPP-treated fruit juices retain their fresh, "just-squeezed" properties with a shelf-life extended for several weeks when held at refrigeration temperatures.

The technology also has potential advantages for producing high quality fruit smoothies, salads, sauces and vegetable products such as carrot juice and garlic puree. HPP can improve the safety and quality of shellfish and has the additional benefit of making "shucking" the meat from the shell much easier, which is seen as a real industrial advantage. The technology can be applied to raw milk, which is then used in the production of "raw milk" mould-ripened cheeses. The pressure treatment reduces the numbers of potential food poisoning bacteria without affecting the traditional quality of the cheese. HPP can affect the protein structure of milk, giving the potential to produce cheese with unique, desirable characteristics. This has been used successfully in the manufacture of Mozzarella cheese which has improved "meltability" and "stringiness" – both desirable characteristics in pizza production. HPP-induced changes in the protein structure can also lead to novel gelling properties, which could be of value in the manufacture of yoghurts and other dairy desserts.

The facilities at AFBI are uniquely designed to help food companies assess the potential benefit of the technology to their business with a view to developing innovative food products and/or improving current processing methods. Services are tailor-made to meet individual company needs with a complete range of microbiological, chemical and sensory analyses being available to complement the pressure treatment facility.

Within the last year approximately 25 different food companies have conducted trials using the facility. Around half of these are based in Northern Ireland, with the remainder coming from Ireland, and GB and a few from mainland Europe. The products investigated included seafood (oysters, mussels, crabs, scallops and lobster), where

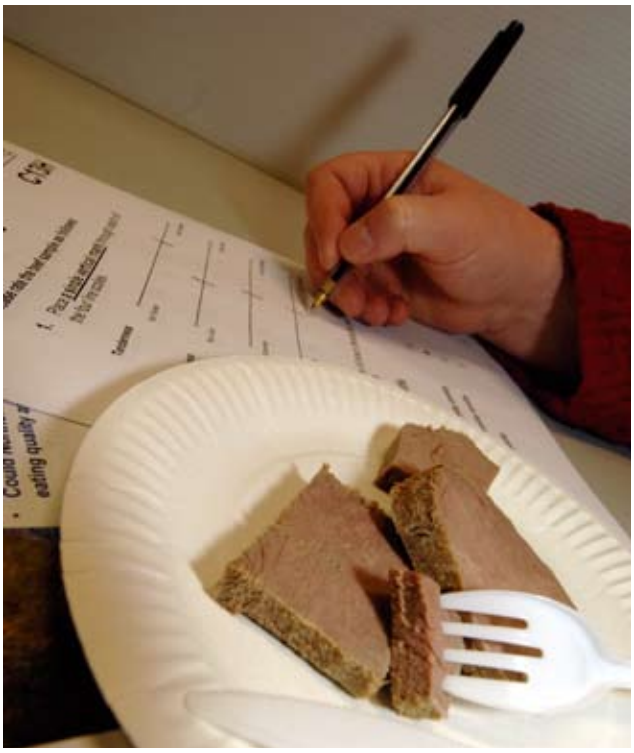
HPP was used to easily remove the shell from the meat. A range of other products were processed with a view to killing potential pathogens and spoilage bacteria leading to improved safety and shelf-life. These included smoked salmon, cooked meats, ready meals, vegetable products and fruit juices and pieces. A local company based in Dundonald also uses the facility to produce a variety of fruit smoothes with the Brand name Puro. These are sold in the major supermarkets and cafes on the island of Ireland and in some schools in GB. Currently these are the only HPP products commercially available in the UK. Companies using the facility have the option of using AFBI expertise in product development, shelf-life testing and sensory evaluation of their products in addition to HPP processing. In 2006 the facility generated approximately £25,000 income for AFBI.

Beef Eating Quality

Collaboration between AFBI scientists, the Northern Ireland beef industry, the Livestock and Meat Commission and other stakeholders has led to an extensive programme of research being carried out to "*evaluate, adapt and develop an appropriate and effective Beef Eating Quality Management System for the Northern Ireland beef industry*". The project commenced in 2003 and aims to provide the local industry with the necessary practical information it requires to fine-tune its beef production and processing methods so that consumers can be consistently supplied with beef of excellent eating quality. Aspects such as the effect of breed, gender, age, lairage, processing regime, ageing and cooking method are being investigated.

So far, more than 4000 Northern Ireland consumers have taken part in consumer taste panels, evaluating nearly 30,000 pieces of grilled or roast beef from more than 600 joints collected from over 200 animals. Charities and groups across NI have assisted with this research. While much of the consumer work has been carried out in Belfast, the research team has also been on the road, visiting venues as far apart as Carrickfergus and Enniskillen.

The research has gone some way towards evaluating what is perceived as the world's leading beef eating quality system – the Australian MSA model. The applicability of this and other internationally recognised systems such as the UK MLC Blueprint system, the New Zealand Q-Mark system, and the USDA Grading system, is also being assessed. Work is progressing to adapt and develop an effective system more applicable to local needs, an outcome that the industry is looking forward to when the project is completed.



Do people value the welfare of farm animals?

Public concern over farm animal welfare has led to the banning of a number of intensive farming methods such as battery cages for laying hens and the development of high welfare status products sold at a price premium, for example the RSPCA's "freedom food" initiative. This is indicative of the fact that consumers of high welfare status animal products place a value on farm animal welfare improvements.

Improving the welfare of all farm animals through legislation, however, imposes costs on food producers, thus affecting all consumers. Are these increased costs of food production justified?

In addition to the satisfaction gained through the direct consumption of high welfare status meat and dairy produce, consumers *and* non-consumers of animal products can potentially derive satisfaction from the knowledge that *all* animals are experiencing welfare-enhancing husbandry practices.

In economic terms, therefore, farm animal welfare can be considered a complex good, sought partly for private consumption and also as a public good. Contingent valuation was used to determine the economic value of four schemes designed to improve the welfare of four farm animal species. It was found that people are willing to pay extra on their weekly food bill to ensure that all the laying hens, broiler chickens, dairy cows and pigs in Northern Ireland have improved welfare conditions.

The benefits of improving animal welfare were shown to exceed the costs of implementing these schemes. The conclusion is that improving the standards of legislation for farm animal welfare so that *all* farm animals experience higher standards of welfare can be justified on economic grounds.

Chemical residues surveillance

European, national and local legislation requires that all food of animal origin be tested for the presence of chemical and environmental contaminants. The chemical contaminants covered by the legislation include residues of legal veterinary medicines, illegal growth-promoting drugs and marine biotoxins. AFBI is responsible for all testing for these compounds in Northern Ireland, on behalf of DARD and/or the Food Standards Agency NI.

AFBI also carries out the Northern Ireland component of the UK National Surveillance Scheme for veterinary drug residues and complementary targeted testing schemes (Meat Inspection Scheme, Suspect Bovine Scheme and Pigs Testing Scheme), on behalf of DARD, to ensure that NI produce is safe, wholesome and fit for national and international trade. On behalf of the Food Standards Agency (NI) and in compliance with EU legislation, AFBI also monitors shellfish harvested in Northern Ireland for the presence of a range of marine biotoxins. This analytical work is accredited to the principles of Good Laboratory Practice and to ISO 17025 and subjected to regular external audit by the US Department of Agriculture, EU Food and Veterinary Office and other bodies. AFBI acts as an EU National Reference Laboratory for a wide range of illegal veterinary drug residues.

Damage in amenity turf

Plant health surveillance recently identified severe nematode damage to amenity sports turf throughout north-western Europe.

Damage to a golf green caused by *Meloidogyne minor*, a major threat to crop production.

The main organism responsible for damage to golf greens and soccer pitches is a new species of root-knot nematode (*Meloidogyne minor),* whose emergence may be linked to climate change. AFBI scientists have built up considerable expertise with this organism both in terms of molecular identification and in potential eradication and control measures. The work has demonstrated that *M. minor* represents a significant threat to many crops and that monitoring for plant parasitic nematodes may be an increasingly important aspect of crop protection in the future. AFBI has collaborated with colleagues in the Central Science Laboratory (England) and the Dutch Plant Protection Service to produce the first Pest Risk Assessment for this important new pest.

The impact of trade liberalisation on agriculture in the UK

The World Trade Organisation, Doha Round of negotiations on trade liberalisation commits the EU to eliminate export subsidies over a specified period and, in principle, to cut tariffs on imports. The final outcome will have important consequences for UK agriculture. Our FAPRI-UK research programme, in conjunction with partners in the University of Missouri and funded by the four UK agriculture administrations, has analysed the impact of trade liberalisation on the dairy, beef and sheep sectors of the UK.

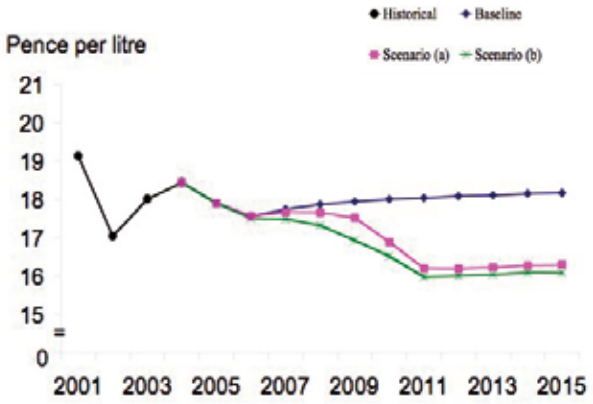
Our UK models, which take account of conditions in European and wider global markets, produce Baseline projections (not forecasts) of prices and production in the beef, sheep, dairy and cereal sectors for each country in the UK, assuming that current policies remain in place and specific macroeconomic assumptions hold. The Baseline provides a benchmark against which policy scenarios can be compared and interpreted.

Two trade liberalisation scenarios were considered: (a) export subsidies eliminated (ESE) in five equal steps from 2005 to 2010; and (b) in addition import tariffs were reduced by 60 per cent over the same time period. Projections of prices and production *at the end a ten-year projection period*, i.e. in 2015, were compared against Baseline figures.

We illustrate the outputs of our models using results for the *dairy sector*. In this sector export subsidies are used extensively as EU dairy product prices are usually higher than world prices. Consequently, removal of export subsidies has a particularly severe

impact on dairy commodity prices and the UK dairy quota is not fully utilised.

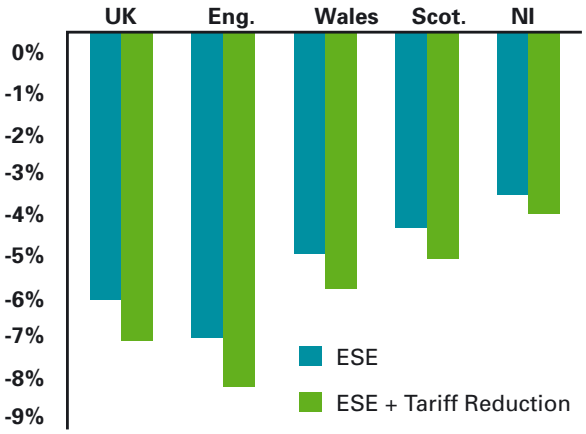
English Producer Milk Prices



The decline in milk production is greater in England than in the other UK countries.

Tariff reductions do not add significantly to the projected price and production impacts of the elimination of export subsidies.

Milk Production Relative to Baseline



Results for other commodity sectors are available from the FAPRI-UK team.

Development of a Pig Grading Information System (PiGIS)

PiGIS
Pig Grading Information System
www.ruralni.gov.uk/pigis

The Walker Report in 2002 showed Northern Ireland finished pigs to be more variable in weight and fat depth than both the Republic and Great Britain. As producers were largely unaware of this and the impact on their profitability, the report recommended the development of a more informative reporting system for both pig processors and producers. DARD Vision funding, provided over three years, enabled a joint project between CAFRE and AFBI to develop a Pig Grading Information System (PiGIS).

AFBI's specialist software development team built the application exploiting the latest database and web development technologies. A consultant statistician provided expertise for data validation and model development purposes including the use of Analysis of Variance techniques to estimate the within-batch variance component for the weight and fat depth results.

Following extensive testing and feedback from pig farmers, the application is now integrated into the existing Rural Portal website (www.ruralni.gov.uk/pigis) for access by registered users.

The main features of the application are:

- Automatic upload of data from processing plants to a central database;
- Real-Time analysis of individual producer data;
- Producers are ranked in terms of quality;
- Carcass quality is profiled in terms of weight and fat depth;
- Individual producers are benchmarked against the top producers over specified date ranges;
- Areas for improvement are indicated;
- A "Golden Box" shows the number of pigs falling within the factory ideal.

With PiGIS, both producers and processors have a tool to help them improve the quality of Northern Ireland pig carcases and thus the performance of the pig sector in the market place.

To view a demo of the system visit www.afbini.gov.uk/pigis For further information

2.7 Management and protection of natural resources

Agricultural wastes

One of the issues facing modern intensive farming is the problem of the safe disposal of agricultural wastes for compliance with nutrient (N, P) and public health management in the environment. EU legislation now controls the disposal of many untreated food or farm wastes, requiring a re-examination of composting technologies for dealing with large volume wastes including spent mushroom compost, pig slurry and other animal by products. In a major study, AFBI scientists have been involved in the evaluation of processing technologies for converting large volumes of mature composted farm wastes to pelleted fertilisers for amenity grasslands. Key to this was microbiological testing to ensure that the fertilisers produced from the animal wastes were free from bacterial pathogens and risk free for the end-user and the environment.

Monitoring Phosphorus in Grassland Soils

DARD introduced the 'Nitrates and Phosphorus Regulations 2007' in January 2007 to halt enrichment of Northern Ireland's rivers and lakes by agricultural pollution. Since then, soil phosphorus (P) has become a major topic of discussion within the farming community. The regulations stipulate that farmers can apply chemical fertiliser P to land only if soil analysis has identified a crop requirement for P. On grassland farms, crop demand varies with soil P and the targeted yields for grass. Fields at a soil P-index of 2 and lower do have a requirement for P but, in many cases, this can be met from recycling the P in manures that is available on farms. In practical terms, this means there is typically no need for the application of chemical fertiliser P at the target soil P-index of 2 for intensively managed grassland or at the target soil P-index of 1 on extensive grassland.

AFBI's Agri-Environment Branch has carried out a number of soil surveys across Northern Ireland to quantify the extent of soil enrichment by P. The first major survey took place during the period 1988-97 and included the representative sampling of over 6,000 agricultural soils, predominantly grassland below 200 metres altitude, using standard soil survey protocols. As a result, a wide range of grassland types were sampled - from extensive to intensive systems.

Results showed that nearly two-thirds (64%) of the soils sampled in 1988-97 were at Index-2 or above with one-third (34%) at Index-3 or above.

The 1988-97 survey included a regular 5 km grid of soil pits. These 300+ soil pits were re-sampled in Winter 2004-05 and their P concentrations again determined in AFBI's UKAS-accredited laboratory facilities. The results showed that, during the roughly 10-year period between surveys, mean P concentrations for managed grassland soils had increased by 22% from 28 to 34 mg P per litre. The breakdown of soil-P by P-index for the 2004-05 survey is shown in the Figure x below which demonstrates clearly that 75% of managed grassland soils are now at Index-2 or above with 51% at Index-3 or above.

The extent of the enrichment of our agricultural soils with P was confirmed by two additional recent surveys, this time on intensive cattle farms, which showed

that over 83% of soils sampled in Winter 2004-05 were at Index-2 or above with over 59% at Index-3 or above.

The soil surveys demonstrate clearly that P accumulation on Northern Ireland farms is a major problem, with at least half our managed grassland soils now at P-index 3 or above. However, the surveys also show that, with organic manure correctly recycled, over three-quarters of all managed grassland should now require no chemical fertiliser P at all, leading to both economic benefits for the farmer and reduced pollution of our waterways by P.

AFBI's Geographic Information System (GIS)

A Geographic Information System (GIS) is a system for the management, analysis and display of geographic information in the form of maps. All the data used within AFBI's GIS have location information associated with them. For example, farms are generally identified by the post-code for the farmhouse while sampling locations for soil, water and air are usually identified using either an Irish Grid reference or latitude/ longitude coordinates read from a global positioning system (GPS).

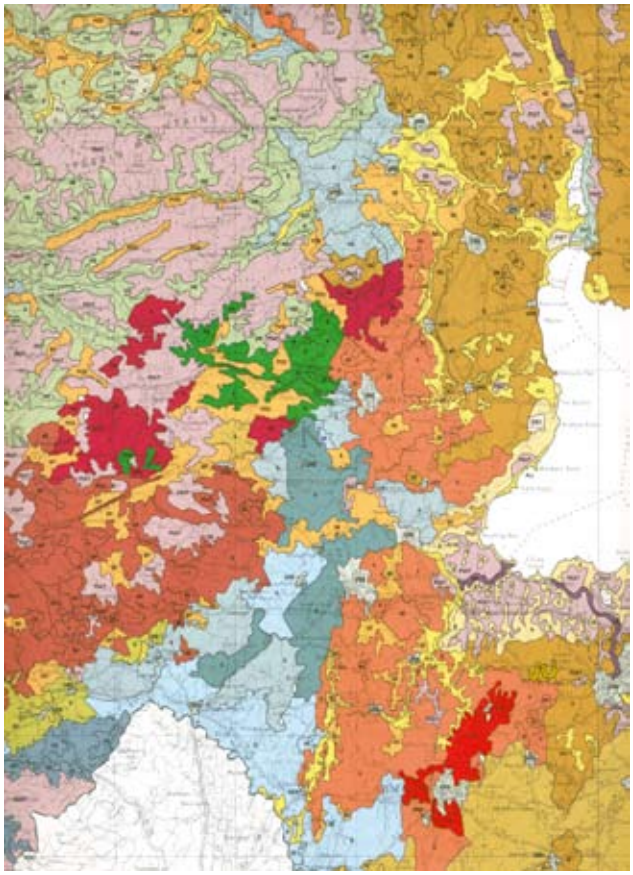
AFBI has been in the forefront of GIS development in Northern Ireland since 1991 and has created or co-funded a substantial number of important, Province-wide, environmental databases. These include (amongst many others):

- AFBI Soil Maps (classified by agricultural land quality and hydrology)
- AFBI's Soil Geochemical Atlas of Northern Ireland and
- High resolution Ortho-imagery (map-accurate aerial photos)

AFBI Soil Maps

The first full survey of Northern Ireland soils was carried out by staff from DARD (now AFBI staff) over the period 1988-1997. During the survey, the soils of the Province were systematically sampled, described, analysed and classified into soil series. Soil profile samples were taken on a regular 5 km grid across Northern Ireland from each major soil series in the agriculturally-important area of the Province (equivalent to the area below 200 m) and their physical and chemical properties determined. The survey identified 308 distinctively different soil series in the Province developed from 97 soil parent materials. The locations of these series have been published as maps in both paper and electronic formats through the 1:50,000 scale soil series maps. The series data have also been used to derive maps of Agricultural Land quality Class (ALC) and the Hydrology of Soil Types (HOST).

A generalised version of the 1:50,000 scale soil maps, reproduced at 1:250,000 scale, has now been made available online to the general public through The Marine Irish Digital Atlas (MIDA) (see http://mida.ucc.ie/pages/atlas/atlas.php).



Full details of the soil maps and associated products are available from AFBI or via our current website links :

- http://www.qub.ac.uk/afs/aes/out.htm or
- http://www.qub.ac.uk/envres/EarthAirWater/jordan.htm

These products include the soil memoirs which were published in a book "Soil and Environment: Northern Ireland" (Ed. J.G. Cruickshank, 1997), the soil maps, a CD-ROM of soil attributes and the "Soils Geochemical Atlas of Northern Ireland" (Jordan et al., 2000).

The AFBI Soil Geochemical Atlas of Northern Ireland

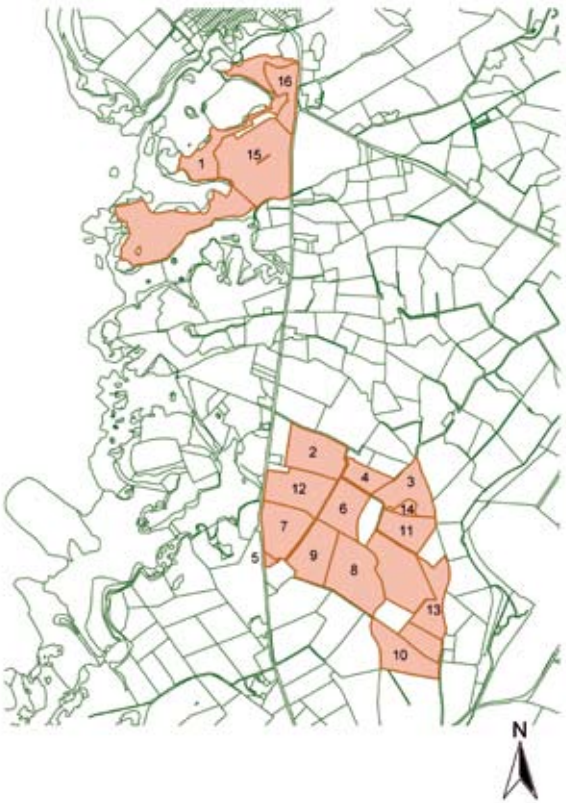
The "Soil Geochemical Atlas of Northern Ireland" is based on analytical data from over 6,000 soil samples taken from agricultural and upland areas of Northern Ireland. These samples were subjected to chemical analysis and the total and extractable concentrations of 15 elements determined viz. major nutrients Phosphorus (P), Potassium (K), Magnesium (Mg), Sulphur (S) and pH; major elements Calcium (Ca), Iron (Fe) and Sodium (Na); trace elements Cadmium (Cd), Chromium (Cr), Cobalt (Co), Copper (Cu), Lead (Pb), Manganese (Mn), Molybdenum (Mo), Nickel (Ni) and Zinc (Zn). The analytical results are displayed as distribution maps supported by statistics and histograms of the data, together with a discussion of the distributions. These maps have been used, for example, to identify areas where sewage sludge cannot be spread on agricultural land due, largely, to naturally-high soil Ni concentrations from basaltic parent material.

High resolution Ortho-imagery (The AFBI Farm Information System)

The AFBI farm information system is a combination of digital maps and associated data overlain on ortho-imagery (digitised, map-accurate aerial photographs) for display purposes. AFBI have piloted the farm information system on 67 dairy farms distributed across Northern Ireland. These farms were involved in a nutrient management planning project with AFBI/ DARD and all participating farmers found the maps complemented their nutrient management plans. The data generated for each field include its area and perimeter, soil type, altitude, annual rainfall and agricultural land quality class.

- The ortho-images, and satellite data when available, show how a farmer's fields fit into the local landscape and, because they are of high resolution, can highlight areas of significant spatial variability of grass production within and between fields and so would find use in 'precision agriculture'.
- The area values automatically output by the GIS as part of this information system are useful to plan fertiliser and manure application rates as are the perimeter values which find use when calculating lengths of fencing to be installed or replaced.
- Other maps identify regions of the farm where slurries or fertilisers should not be spread because of proximity to watercourses or boreholes or runoff risk.
- Additional maps show how the nutrient status of soils and herbage in adjacent fields differ so that nutrient deficiencies or over-supply can be corrected.

Nutrient management planning, complemented by the comprehensive set of maps created from the farm information system, allows a farmer to farm in a more economical and environmentally-friendly way.



Location of all fields belonging to a farmer including the out-farm.

Science underpins increase in prawn quota

There was good news for the Northern Ireland fishing industry in 2007 when the European Commission Council of Ministers granted a 17% increase in Total Allowable Catch (TAC) of Dublin Bay Prawn (*Nephrops*) from the Irish Sea.

This decision was based upon scientific advice that these stocks are being fished sustainably and that increased catches would not be detrimental. AFBI played a vital part in providing this advice.

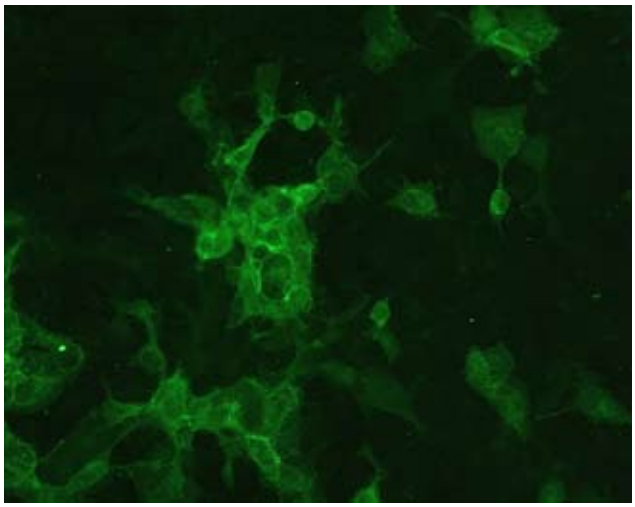
The scientific advice was based upon the adoption of new assessment methodology by scientists from the AFBI Fisheries and Aquatic Ecosystems Branch working in collaboration with colleagues from the Irish Marine Institute in Galway. The new methods, originally pioneered in Scotland for North Sea stocks, involve the use of underwater television (UWTV) to count the number of burrows in which prawns live on the seabed. This is done by towing a video camera on a purpose-built sledge behind the AFBI research vessel, RV *Corystes*. The data are then combined with those from trawl surveys performed by *Corystes* and subjected to statistical analysis to provide an estimate of how much catch can safely be removed from the stock. The technique requires an expert knowledge of the prawn burrow appearance so that they may be distinguished from those of other bottom-dwelling creatures.

Recommendations arising from this work are considered by scientific committees under the umbrella of the International Council for the Exploration of the Sea (ICES) who advise the European Commission on the sustainability of fish stocks.

Early attempts to assess the state of Nephrops stocks were from interpretations based on the trends in the average size of animals in catches. More recently, methods evolved which apply computer-based mathematical models to commercial catch data, as is done to assess for fin-fish stocks. Now, the new method of using underwater TV to study prawns in their natural habitat has been accepted as the most valid procedure available. UWTV surveys have been performed annually by AFBI scientists since 2003 and are the first of its kind ever to be carried out in the Irish Sea. Results indicate higher densities of the Dublin Bay prawn in the Irish Sea compared to any other area where this technique has been previously used. Now that the time series of data is sufficient, it is possible to provide a meaningful assessment upon which management advice can be based.

Pancreas disease of salmon

AFBI's Veterinary Sciences Division has developed a reputation as a centre of excellence for research on salmonid alphaviruses (SAV), the cause of pancreas disease (PD) in Atlantic salmon and sleeping disease (SD) in rainbow trout. A current research project, funded by the Marine Institute in the Republic of Ireland has shed new light on viral strains and how they spread.



Staining of SAV growing in cell culture

Following the largest comparison of SAV strains performed to date, the AFBI research group has identified three new subtypes of SAV (subtypes 4, 5 and 6). Their findings have helped to show that infection spreads from farm to farm, rather than being transmitted vertically through broodstock, as previously suggested. One of the key aims of the project was to identify practical control measures for PD and SD. These findings have already been communicated to industry, the aquaculture industry which is implementing appropriate management changes to control these diseases.

2.8 Climate change and renewable energy

Renewable energy

Through funding from the Secretary of State's Environment and Renewable Energy Fund a new research facility is being developed at the AFBI Hillsborough site which will incorporate a range of renewable energy technologies:

- Anaerobic Digestion of animal manures
- Willow biomass production
- Bioremediation of farm wastes
- Alternative biomass crops
- Harvesting of forest brash
- Biomass based district heating loop
- Electricity and heat generation from biogas and biomass
- Solar panel hot water supply for dairy parlour
- Investigation of other agriculturally related renewable energy technologies

The technologies are being brought together to meet existing heat and electricity demands on-site The research programme being developed will help the agricultural industry in Northern Ireland take forward opportunities to develop renewable energy enterprises The research data will also provide evidence of ways that agriculture can contribute to carbon savings and the reduction of carbon emissions

Research

Building on a history of 30 years of research by AFBI into willow biomass, and on other areas of AFBI expertise, an extensive research programme of agriculturally related research is being proposed for a new Environment and Renewable Energy Centre. Key areas of research in which projects are being currently developed, or are envisaged for future development include:

- Maximising the energy output of biogas from on-farm anaerobic digestion of animal manures;
- The contribution of Anaerobic Digestion in achieving efficient on-farm nutrient management;
- The bioremediation of farm wastes via biomass crops;
- Methods of harvesting, drying and storing SRC willow;
- The utilisation of forest brash for biomass;
- Improving the establishment of Miscanthus for biomass;
- Efficient management of the SRC willow supply chain from field to heat;
- The use of solar panels to supply hot water for diary parlours;
- Novel on-farm applications for solar heat and photo-voltaic panels;
- Novel biomass crops;
- The management of multi-fuel biomass heating systems to achieve maximum carbon saving;
- The development of 2nd generation liquid biofuels.

AFBI is working with DARD, other government departments, the agriculture industry and other interested parties to develop this research programme.

Willow genotype evaluation for Northern Ireland conditions

The most important characteristics for the selection of new willow (Salix spp.) genotypes for biomass production are yield, rust (Melampsora epitea) resistance and growth form. Thirty-two numbered genotypes from the European Willow Breeding Programme are undergoing evaluation at AFBI, Loughgall. After the first two-year harvest a number of these genotypes have shown significant yield improvement compared to standard genotypes. Salix spp. genotypes are also being assessed for their suitability for inclusion in mixtures, which is the standard rust disease control strategy.

In spring 2007 a new trial was planted incorporating new and commercially available genotypes from the European and Swedish Breeding Programmes. Also included were twelve genotypes which originated from the American Breeding Programme in Syracuse, New York State, USA, and which utilise a different range of Salix spp. parentage. A parallel trial was also planted in the USA.

Willow leaves showing rust symptoms.

2.9 Scientific preparedness for emergencies

Avian influenza

Outbreaks of avian influenza occurred across Europe in 2006. In most cases, infection has been found only in wild birds, although it had spread to domestic poultry in a few cases. AFBI's Veterinary Sciences Division carried out laboratory testing of samples from a Northern Ireland enhanced surveillance programme that was part of an EU-wide exercise which required surveillance of domestic poultry and wild birds.

The objectives of avian influenza surveillance in domestic poultry were to:

- Detect subclinical infections of avian influenza viruses of subtypes H5 and H7
- To target this surveillance at higher risk poultry populations, relating to their husbandry and species susceptibility
- Contribute to the demonstration of 'disease free status' in the context of international trade

The objectives of wild bird surveillance were to:

- Detect the occurrence of highly pathogenic avian influenza (HPAI) H5N1 in wild birds with passive surveillance of unusually high mortality events.
- Assess the risk of introduction of HPAI H5N1 to poultry in the event of a positive finding in wild birds.
- Monitor the occurrence of avian influenza viruses in different species of free living wild birds.

No evidence of avian influenza virus infection in domestic poultry was found in Northern Ireland during the year. In free-living wild birds, several low pathogenicity avian influenza viruses found were found (H1N1, H6N8 and a low pathogenic H5 in teal, H10N7 in a mallard and low pathogenic H5 in a pintail). Investigation of unusually high mortality events indicated avian influenza infection in only one bird, a swan. No HPAI virus was found during this surveillance.

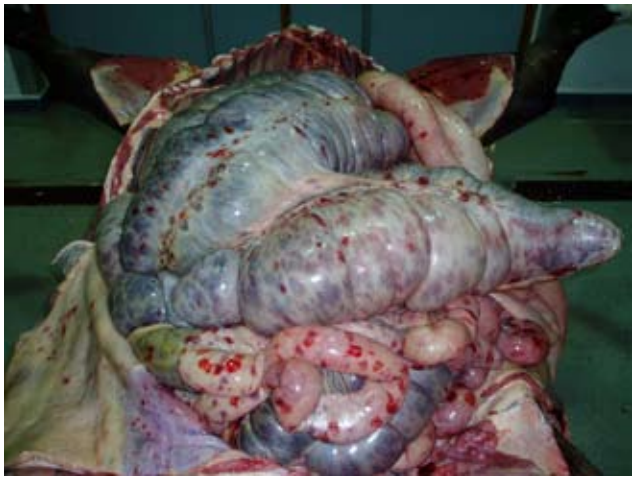
The detection of low pathogenic viruses in wild birds is not surprising and the findings in Northern Ireland were consistent with those in other Member States across Europe.

New molecular diagnostics

The Veterinary Sciences Division of AFBI continues to work at an internationally recognised level on the development of new and improved diagnostics for epizootic diseases through participation in the EC-funded FP6 programmes, LAB-ON-SITE (http://www.labonsite.com/) and FLUTEST. Advanced molecular assays have been developed for Aujeszky's disease virus, African swine fever, avian influenza virus, bluetongue virus, classical swine fever virus, infectious laryngotracheitis virus, foot-and-mouth disease virus, Newcastle disease virus, porcine circovirus type 2, porcine parvovirus, swine vesicular disease virus and vesicular stomatitis virus. The assays are highly sensitive, specific and rapid, capable of detecting minute amounts of virus genetic material in less than four hours with high sample throughput. The latest stage of assay development is looking towards new portable technologies such as loop-mediated isothermal amplification (LAMP) that have the potential for pen-side testing and use in regional laboratories.

First case of equine infectious anaemia in Northern Ireland

In August 2006 equine infectious anaemia (EIA) was suspected in a three-month-old foal that had epidemiological links to an EIA outbreak in the Republic of Ireland.



The foal had been lethargic, anorexic and pyrexic, and was euthanased on humane grounds after its condition had deteriorated. A post-mortem examination carried out in AFBI's Veterinary Sciences Division revealed that the carcase was pale and slightly jaundiced, with watery blood and many subcutaneous, intestinal, renal, epicardial, pleural and lung haemorrhages. Microscopic tissue lesions were consistent with EIA and the Coggins test for EIA was positive. This was the first recorded case of EIA in Northern Ireland.

Alpha-nortestosterone emergency response

During the year, AFBI's Veterinary Sciences Division became heavily involved in testing for alpha-nortestosterone following the finding in March 2006 of this hormone in urine of a steer that had been submitted to a meat plant after on-farm emergency slaughter (OFES). At that time, it was believed that this hormone could not be produced naturally in male cattle and that any positive finding was therefore tantamount to illegal administration. However, laboratory analysis and investigations at AFBI's Veterinary Sciences Division, which necessitated the development of a rapid biosensor based screening test to complement the existing confirmatory test, have produced evidence that this hormone can be produced naturally by male cattle under certain circumstances. Field investigations by DARD failed to reveal any evidence of illegal use of this hormone in Northern Ireland.

A review by a DARD-appointed independent expert validated the analytical testing carried out by AFBI and concluded that the hormone was likely to have been produced naturally by OFES cattle as a response to injuries that they had sustained on-farm. AFBI's findings have been communicated to the Veterinary Medicines Directorate, Food Standards Agency and European Commission who are considering the legislative implications.

AFBI has also recently developed a test which can be applied to hair samples to differentiate between naturally produced and illegally administered alpha-nortestosterone and thereby act as a deterrent to potential abuse in the future.

2.10 Events and visits

Secretary of State Visit

The Secretary of State for Northern Ireland made a private visit to AFBI's Veterinary Sciences Division at Stormont, Belfast to meet with staff involved in Contingency Planning and Avian Influenza disease prevention. During the visit, Mr Hain met staff involved in Disease Contingency Planning and Avian Flu disease prevention. An important function of AFBI, Stormont is the maintenance of a local capacity for responding to animal disease emergencies.

AFBI, Stormont is carrying out avian influenza screening of wild birds sampled in Northern Ireland as part of the UK surveillance programme. It also carries out precautionary testing of mortality incidents in domestic poultry as they arise in order to provide early detection of avian influenza and other disease outbreaks.

Mr Peter Hain (far right) pictured during the Secretary of State's visit.

RV "Corystes"Commissioned

The commissioning of AFBI's newly-acquired research vessel RV "Corystes" took place in Belfast on 30 October 2006.

Mr David Cairns, Minister for Agriculture and Rural Development for Northern Ireland officially handed over the vessel, on behalf of DARD, to AFBI Chairman, Mr Seán Hogan.

Mr Cairns said: "The commissioning of this new research vessel is a great step forward for both AFBI and marine research in Northern Ireland. It will directly support the key DARD policy objective of sustainability of Irish Sea fisheries and the development of an ecosystem approach to fisheries management. This is a major step in the development of the new independent body AFBI and I am delighted that the Corystes is going to an organisation fully committed to delivering high quality marine science locally."

AFBI Global Research Unit

AFBI's Global Research Unit (GRU) has published a series of reports addressing key issues facing the agri-food industry in Northern Ireland.

The reports represent the fruit of over two years work by the GRU team, based at AFBI Hillsborough and cover a broad range of topics from manure treatment methods to omega-3 fatty acids and liquid biofuels.

Copies of the reports can be downloaded from the AFBI website http://www.afbini.gov.uk/gru.

Alternatively, Dr. Woods can be contacted directly for printed copies at info@afbini.gov.uk.

Dr. Vanessa Woods, Global Research Unit Manager presents Dr. George McIlroy, CEO, AFBI and Mr. Seán Hogan, AFBI Chairman, with one of the five major publications produced.

EU Research Award

AFBI was awarded a grant from the EU Commission for research into the bacterium Mycobacterim avium subsp. Paratuberculosis (Map). Map is the known cause of Johne's disease of cattle that presents as a chronic enteritis.

It represents a severe economic loss to farmers across Europe and other continents through loss of milk production and high animal replacement costs. The organism has also been implicated as a possible contributory factor of Crohn's disease in humans which is an incurable, inflammatory condition of the gastrointestinal tract.

The programme, known as ParaTBTools, with a budget of approximately 4 million Euros, will investigate the veterinary, medical, food and economic aspects of this disease-causing bacterium and consists of 29 European partners, comprising both research organisations and small and medium enterprises.

Participants in the project are divided between five Theme areas. Food Microbiology Branch in AFBI's AFESD will lead the theme area concerned with food safety aspects of Map. The specific task is firstly to devise molecular methods, based on DNA technology, for the detection of Map in a range of dairy products. This follows on from AFBI previous research in which a molecular method based on immunocapture was developed to detect the organism in food and water supplies.

The optimised methods will be used, along with traditional culture methods, to optimise the cheese making and ripening process for hard cheeses such as Cheddar to ensure the removal or killing of Map and hence the safety of the public to this potential human pathogen.

CARAS visits AFBI

Dr George McIlroy, AFBI Chief Executive was delighted to be able to welcome the Council for Awards of Royal Agricultural Societies (CARAS) to the Institute and to make a short presentation on the Institute's role in the provision of scientific support to the agri-food industry.

CARAS members were able to tour some of the facilities at AFBI's Newforge Lane headquarters with scientists in the Applied Plant Science and Biometrics Division giving presentations on their findings from current research on potato cyst nematodes (PCN) and demonstrated how electron microscopy is being used to assist in the examination of fibre quality for new non-food cropping alternatives. Members then visited the Geographic Information System (GIS), used by AFBI's Agri-Environment Branch to address current policy issues relating to the link between agriculture and water quality, with respect to eutrophication of Northern Ireland water courses and implications relating to the nitrate action programme.

FSA (Northern Ireland) Food Advisory Committee Meeting

AFBI was delighted to be able to host the Food Standards Agency Northern Ireland Food Advisory Committee (FSA NIFAC) at their Newforge Headquarters in November 2006.

The NIFAC Members were able to make full use of the Institute's video conference facilities to share the meeting with colleagues in London. The Committee toured AFBI to view at first hand the work that AFBI is undertaking in support of the food industry in Northern Ireland. The Committee was given a short demonstration of the High Pressure Processing facility, outlining the many benefits of pressure treating certain foods, including food safety, and the effect on shelf life.

Mr George Dunstall (foreground, left) of the AFBI Food Microbiological Unit, describes to the NIFAC Committee the tests that are carried out in the category 3 laboratories.

Society for Applied Microbiology celebrates its 75th Anniversary

AFBI Scientist, Dr Margaret Patterson (left), pictured with Sir David King (centre) and Mrs Iris Robinson MP (right) at the Society for Applied Microbiology (SfAM) President's Dinner, is only the fourth woman to hold the Presidency in its 75 year history. Margaret is a Principal Scientific Officer at AFBI and is the current President of the Society for Applied Microbiology (SfAM).

The Society held its 75th President's Dinner in the Palace of Westminster, London recently. Mrs Iris Robinson, Dr Patterson's local MP, hosted the event and the after dinner speaker was Professor, Sir David King, Chief Scientific Advisor to H.M. Government and Head of the Office of Science and Innovation. He highlighted the critical role of SfAM and other learned Societies in advising and influencing government policy and strategy. Sir David described his role in advising Government during the outbreak of foot and mouth in the UK and highlighted the importance of science and applied microbiology in government policy. He enthusiastically made the point that exciting opportunities existed for linking new technological developments, with microbiology to give, for example, kits for rapid animal diagnosis, which are essential to deal effectively with the next large disease outbreak. The Society for Applied Microbiology is the oldest UK Microbiological Society and is celebrating its 75th Anniversary this year.

Cheshire Grassland Society Visit

As part of a recent two-day visit to Northern Ireland, 24 members of the Cheshire Grassland Society visited AFBI, Hillsborough to view and discuss latest research on grassland and milk production systems. The group were particularly interested in results of recent research on rearing dairy heifers to calve at 24 months of age.

AFBI staff also highlighted ongoing research on dairy cow fertility, lameness and sustainable dairy systems. The visit ended with a viewing of the rotary parlour and lunch at AFBI, Hillsborough before leaving to visit the farm of Mr David Jackson, winner of last years UGS Grassland Farmer of the Year competition. The group also visited the farms of Mr Patrick Lennon and Mr Will Taylor on the Ards peninsula before returning to Cheshire.

Student receives British Society of Animal Science Award

Ms Camila Muñoz, a Queen's University postgraduate student based at AFBI, Hillsborough recently won the British Society of Animal Science President's Prize for the best theatre presentation by a young scientist at this year's Annual Conference held in York. The conference brings together leading scientists from around the world. Camila, who is originally from Chile holds a veterinary medicine degree from the University of Chile, and is currently in her 2nd year of PhD studies at Hillsborough. Camila's PhD is investigating the effect of nutritional status of ewes during early pregnancy on ewe reproductive performance and subsequent lamb growth and development. Her paper at the British Society of Animal Science Conference 2006 was entitled 'Nutritional status of ewes in early and mid pregnancy: Effect of selenium supplementation on ewe reproduction and offspring performance'.

Dr George McIlroy
Chief Executive and Accounting Officer
Date: 6/05/08

3 Statement of Accounts

3.1 Remuneration Report

Chairman and Board Members

The Chairman and Board members are appointed in accordance with the Code of Practice of the Office of the Commissioner of Public Appointments for Northern Ireland.

The Chairman and Board members are appointed for a fixed period of between two and four years. Thereafter they are re-appointed in accordance with the Code of practice.

The remuneration of the Board is set by DARD. Increases are calculated in line with the recommendations of the Senior Salaries Review Body. There are no arrangements in place for the payment of a bonus. Neither the Chairman nor any Board Member receives pension contribution from AFBI or DARD. AFBI reimburses the Chairman and Board members for any incidental expenses incurred for carrying out their duties relevant to the organisation.

Details of remuneration of the Chairman and Board Members

	Salary £ (to nearest £1,000)	Benefits in kind
Mr Sean Hogan, Chairman	24,000	-
Prof. David McDowell	10,000	-
Mr Kieran Campbell	3,600	-
Dr Michael Hollywood	3,600	-
Dr Christine Kennedy	3,600	-
Mr Nicholas Mack	3,600	-
Prof. Grace Mulcahy	3,600	-
Mr John McKinley	3,600	-
Prof. Stewart McNulty	3,600	-
Mr Jim Noble	3,600	-
Mr John Rankin	3,600	-
Mr Michael Walker	3,600	-
Mr Jim Stewart	3,600	-

Mr Jim Stewart resigned on 31 March 2007.

Sub-committees of the Board

During the year, the following sub-committees were set up:

Audit Committee

Dr Michael Hollywood, Chairman
Mr Kieran Campbell
Mr John Rankin

Remuneration Committee

Prof. David McDowell, Chairman
Mr Kieran Campbell
Dr Christine Kennedy

The role of the Renumeration Committee is to advise the AFBI Board on the development of Reward and Recognition Policies. Whilst the terms and conditions of employment and remuneration of all AFBI employees are in accordance with the overall terms and conditions of the NICS, as described above, any proposed changes to the overall framework are also subject to review and scrutiny by this Committee.

Policy on Rewards to Staff for Exploitation of Intellectual Property

A policy is also being developed to establish a system of revenue sharing of proceeds arising from the exploitation of intellectual property. This is being reviewed by the Remuneration Committee.

Chief Executive and Senior Management Team

Remuneration Policy

At present, the remuneration of the Chief Executive Officer and the three Deputy Chief Executive Officers is set in accordance with those prevailing in the Senior Civil Service (SCS) in Northern Ireland which, in turn, is set by the Prime Minister following independent advice from the Review Body on Senior Salaries. The pay award for staff in the Senior Civil Service is comprised of two elements – a base pay uplift and a non-consolidated bonus, both of which are entirely performance based.

At present, the remuneration of the Head of the Business Support Unit and the Head of the Chief Executive's Office, the remaining members of the senior executive team in AFBI called the Senior Management Team (SMT), is set in

accordance with the pay award negotiated with the trade unions for all non-industrial staff in the Northern Ireland Civil Service.

Service contracts

Appointments in AFBI are made in accordance with the Civil Service Commissioners' code which requires appointments to be made on merit on the basis of fair and open competition but also includes the circumstances when appointments may otherwise be made. Unless otherwise stated below, the officials covered by this report hold appointments which are open-ended until they reach the normal retiring age of 60. Policy relating to notice periods and termination payments is contained in the Northern Ireland Civil Service (NICS) Staff Handbook.

Duration of notice periods

At present, recruits or promotees to the analogous Senior Civil Service posts in AFBI are required to give three month's notice of resignation. The Institute reserves the right to introduce a longer period of notice for individual posts up to a maximum of six months and incumbents will be notified accordingly. This may be likely where the recruitment of the replacement is likely to be a protracted process.

At the time of resignation, the Institute may, by agreement with the member of staff concerned, agree to waive the required notice.

Where the Institute is of the opinion that the appointee is unfit to continue in post or is incapable of adequately performing the duties of the post, it can terminate the appointment with due notice as per the NICS Staff Handbook/ Terms and Conditions.

Termination payments

If for any reason other than disciplinary dismissal, the minimum period of notice cannot be given, the member of staff will receive compensation in lieu of the unexpired period of notice. Compensation is not payable when the date of leaving is mutually agreed, for example, in cases of flexible early retirement, approved early retirement, voluntary redundancy or where staff resign before the end of the notice period.

Salary and Pension Entitlements

The following sections provide details of the remuneration and pension interests of the Senior Management Team of the Institute.

(a) Remuneration

	2006/2007 Salary £'000	Benefits in kind (to nearest £1,000)
Dr S G McIlroy	85 - 90	-
Dr M Camlin	65 - 70	-
Dr S Neill	65 - 70	-
Dr S Kennedy	60 - 65	-
Dr R Boyd	60 - 65	-
Mr S Dolan	50 - 55	-

Salary:

Salary includes gross salary; performance pay or bonuses and any allowance that is subject to UK taxation. This report is based on payments made by the Institute and thus recorded in the accounts.

Benefits in kind:

The monetary value of benefits in kind covers any benefits provided by the employer and treated by the Inland Revenue as a taxable emolument.

(b) Pensions

Name	Real increase in pension	Real increase in lump sum	Pension at end date	Lump sum at end date	CETV at start date	CETV at end date	Employee contribs. and transfers in	Real increase in CETV funded by employer
	To nearest £				To nearest £'000		To nearest £	To nearest £'000
Dr G McIlroy	0-2500	2500-5000	15000-20000	45000-50000	294	333		15
Dr M Camlin	0-2500	2500-5000	30000-35000	95000-100000	720	797		21
Dr S Neill	0-2500	0-2500	30000-35000	95000-100000	714	785		16
Dr S Kennedy	0-2500	5000-7500	20000-25000	65000-70000	355	420		39
Dr R Boyd	0-2500	0-2500	20000-25000	65000-70000	505	516		3
Mr S Dolan	0-2500	2500-5000	10000-15000	40000-45000	208	248		24

Cash Equivalent Transfer Values

A Cash Equivalent Transfer Value is the actuarially assessed capitalised value of the pension scheme benefits accrued by a member at a point in time. The benefits valued are the member's accrued benefits and any contingent spouse's pension payable from the scheme. A CETV is a payment made by a pension scheme or arrangement when a member leaves a scheme and chooses to transfer the benefits accrued in their former scheme. The pension figures shown relate to the benefits that the individual has accrued as a consequence of their total membership of the pension scheme, not just in a senior capacity to which disclosure applies. The CETV figures, and from 2003/04 the other pension details, include the value of any pension benefit in another scheme or arrangement which the individual has transferred to the Civil Service pension arrangements and for which the CS Vote has received a transfer payment commensurate with the additional pension liabilities being assumed. They also include any additional pension benefit accrued to the member as a result of their purchasing additional years of pension service in the scheme at their own cost. CETVs are calculated within the guidelines and framework prescribed by the Institute and Faculty of Actuaries.

Real increase in CETV

This reflects the increase in CETV effectively funded by the employer. It takes account of the increase in accrued pension due to inflation, contributions paid by the employee (including the value of any benefits transferred from another pension scheme or arrangement) and uses common market valuation factors for the start and end of the period.

Civil Service Pensions

Pension benefits are provided through the Civil Service pension arrangements. From 1 October 2002, civil servants may be in one of three statutory based 'final salary' defined benefit schemes (Classic, Premium and Classic Plus). The schemes are unfunded with the cost of benefits met by monies voted by Parliament each year. Pensions payable under Classic, Premium and Classic Plus are increased annually with changes in the Retail Price Index. New entrants after 1 October 2002 may choose between membership of premium or joining a good quality 'money purchase' stakeholder arrangement with a significant employer contribution (partnership pension account).

Employee contributions are set at the rate of 1.5% of pensionable earnings for Classic and 3.5% for Premium and Classic Plus. Benefits in Classic accrue at the rate of 1/80th of pensionable salary for each year of service. In addition, a lump sum equivalent to three years' pension is payable on retirement. For Premium, benefits accrue at the rate of 1/60th of final pensionable salary for each year of service. Unlike Classic there is no automatic lump sum (but members may give up (commute) some of their pension to provide a lump sum). Classic Plus is essentially a variation of Premium, but with benefits in respect of service before 1 October 2002 calculated broadly in the same way as in Classic.

The Partnership Pension account is a stakeholder pension arrangement. The employer makes a basic contribution of between 3.5% and 12.5%, depending on the age of the member, into a stakeholder pension product chosen by the employee from a selection of approved products. The employee does not have to contribute but where they do make contributions, the employer will match this up to a limit of 3% of pensionable salary in addition to the employer's basic contribution. Employers also contribute a further 0.8% of pensionable salary to cover the cost of centrally- provided risk benefit cover (death in service and ill health retirement). Further details about the Civil Service pension arrangements can be found at the website www.civilservicepensions-ni.gov.uk

The Institute's accounting policy in respect of pensions is at Note 1.

Dr George McIlroy
Chief Executive and Accounting Officer
Date: 6/05/08

3.2 Statement on Internal Control

Scope of responsibility

As Accounting Officer for the Agri-Food and Biosciences Institute (AFBI), I have responsibility for maintaining a sound system of internal control that supports the achievement of AFBI's policies, aims and objectives, set by the AFBI Board, whilst safeguarding the public funds and assets for which I am personally responsible, in accordance with the responsibilities assigned to me in Government Accounting Northern Ireland.

The accountability arrangements within AFBI encompass stewardship, performance and compliance. Monthly Senior Management Team (SMT) and AFBI Board meetings, together with quarterly Audit Committee meetings, support the role of the Accounting Officer. DARD is the sponsoring Department of AFBI and the Permanent Secretary, as DARD's Principal Accounting Officer, is accountable to the Assembly for the grant-in-aid issued to AFBI. The AFBI Sponsor Branch within DARD is the primary source of advice to the Minister on the discharge of her responsibilities in respect of AFBI and the primary point of contact for AFBI in dealing with DARD. My responsibilities and those of the Board Chairman and Board Members are set out in the Management Statement.

The purpose of the system of internal control

The system of internal control is designed to manage, rather than eliminate, the risk of failure to achieve policies, aims and objectives; it can therefore only provide reasonable and not absolute assurance of effectiveness. The system of internal control is based on an ongoing process designed to identify and prioritise the principal risks to the achievement of AFBI policies, aims and objectives, to evaluate the nature and extent of those risks and to manage them efficiently, effectively and economically. This process has been in place for the year ended 31 March 2007 and up to the date of approval of the annual report and accounts, and accords with Department of Finance and Personnel guidance.

Capacity to handle risk

I can confirm that AFBI has completed a review and revision of its Risk Management Strategy and has introduced a robust process for identifying, evaluating and managing the significant risks faced by AFBI. The SMT, led by

the Chief Executive, review the significant risks and have created a Corporate Risk Register defining the risks, their owners and mitigation strategies. Ownership of risks has been allocated to the appropriate staff and procedures are in place to ensure that risks are kept under regular review and reported on. Risk management is appropriately linked into corporate planning, business planning and decision making processes. All relevant managers in AFBI have been given a copy of the Risk Management Strategy and refresher training was provided to ensure up to date knowledge of current best practice. A Risk Co-ordinator has been appointed and a new format for capturing and recording risks has been introduced.

The risk and control framework

AFBI'S Risk Management Strategy describes how AFBI implements its approach to risk management. It sets out the necessary organisational roles and responsibilities along with the framework and underlying principles of the system of internal control. It documents the roles and responsibilities of senior managers, risk owners, the risk co-ordinator and line managers and sets out the monitoring and reporting arrangements.

Senior managers hold regular review meetings to assess risks within their respective Divisions and inform the SMT and ultimately the AFBI Board of any changes in risk status. The Corporate Risk Register is a standing agenda item at SMT and Board meetings and is subject to formal review quarterly by the AFBI Audit Committee, including the effectiveness of the risk management process.

The operation of the system of internal control is the responsibility of line management. The internal audit function undertakes independent assessments of risk and the adequacy of related controls in AFBI. Findings and recommendations for strengthening the control framework are agreed with management and the implementation of agreed changes and any corrective action is monitored by Internal Audit.

The Audit Committee reviews internal audit coverage and performance, considers significant findings and recommendations and monitors progress achieved by management in relation to implementing audit recommendations. Internal Audit has unrestricted access to all records, personnel and property of AFBI and is entitled to receive such information as is necessary for performance of its work.

In addition to reviewing the work of the internal audit and risk management functions, the Audit Committee reviews AFBI's Annual Accounts and the basis of this Statement on Internal Control. Each Deputy Chief Executive Officer produces an annual Stewardship Statement confirming that risks have been managed in accordance with the Risk Management Strategy and that internal controls designed to manage risks had been effective throughout the year. The Head of the Business Unit prepares an annual Stewardship Statement in relation to the effectiveness of the financial controls, including the maintenance of proper accounting records, the safeguarding of assets and detection of fraud.

Review of Effectiveness

As Accounting Officer, I have responsibility for reviewing the effectiveness of the system of internal control. My review of the effectiveness of the system of internal control is informed by the work of the internal auditors, the managers within AFBI who have responsibility for the development and maintenance of the internal control framework, and comments made by the external auditors in their management letter. In addition, during 2006/07 DARD Internal Audit Branch performed a 'health check' audit of AFBI and their report formed part of this review. I am advised on the implications of my review of the effectiveness of the system of internal control by my SMT and by the Audit Committee and a plan to address weaknesses and ensure continuous improvement of the system is in place.

The HIA has provided me with a report on internal audit activity within AFBI during our first year of operation and an assurance statement for 2006/07. These indicate that that whilst overall there is a basically sound system of governance, risk management and internal control in place, there are areas of weakness in relation to corporate governance, budgetary control, procurement and software licensing. The HIA opinion is based upon both the direct audit work performed in 2006-2007 and an evaluation of the adequacy of the AFBI's risk management process. The DARD Internal Audit Branch 'health check' confirmed these weaknesses and reported additional concerns in relation to Health and Safety, Waste Management and Equipment Maintenance. The specific areas identified are listed below.

Internal control improvements

During the period the HIA identified the following specific areas where internal control could be further improved:

- Budgetary control: specifically, need for improved documentation, earlier allocation of budgets, improved presentation of budget information and training for budget holders;
- Corporate governance: specifically, extension of the agenda for Board meetings, a list of reserved matters for the Board, revised Board performance measures, attendance of Executive Directors at Board meetings and a requirement for the Audit Committee to assess its information needs;
- Software licensing: specifically, the need to create a register of software licenses, the need to include in the AFBI-DARD SLA a requirement in respect of software licensing;
- Procurement: specifically, a lack of documentation covering legacy contracts and a need to review and revise the AFBI procurement procedures.
- Health and Safety: recommendations on reviewing policy and procedures were made along with recommendations for completion of risk assessments, work plans for advisors and improved reporting mechanisms within AFBI.
- Waste management: a requirement to provide training in waste management was identified.
- Equipment maintenance: it was recommended that a co-ordinated approach to the maintenance schedule and records of all AFBI owned equipment is adopted.

I have assigned individual officers to prepare action plans and associated timetables to implement the necessary improvements. The implementation timetables are monitored by the Chief Executive's Office, subject to follow up reviews by Internal Audit and reported through SMT to the Audit Committee.

I am pleased to report that an Internal Audit Follow up report identified that good progress was being made against a range of the audit recommendations. Full implementation of all the agreed recommendations will be completed in the course of 2007-2008.

Dr George McIlroy,
Chief Executive and Accounting Officer
Date: 6/05/08

3.3 Statement of Accounting Officer's Responsibilities

Under the Agriculture (Northern Ireland) Order 2004, the Institute is required to prepare for each financial year, statement of accounts detailing the resources acquired, held, or disposed off during the year and the use of resources by the Institute during the year.

The statement of accounts are prepared on an accruals basis and must give a true and fair view of the state of affairs of the Institute, its income and expenditure, recognized gains and losses and cash flows for the financial year.

DARD has appointed the Chief Executive Officer of the Institute as Accounting Officer of the Institute, with responsibility for preparing the Institute's accounts and for transmitting them to the Comptroller and Auditor General.

In preparing the accounts, the Accounting Officer is required to comply with the Government Financial Reporting Manual and in particular to:

a) observe the Accounts Direction issued by DARD, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;

b) make judgments and estimates on a suitable basis;

c) state whether applicable accounting standards, as set out in the Government Financial Reporting Manual have been followed, and disclose and explain any material departures in the accounts; and

d) prepare the accounts on a going concern basis.

The responsibilities of an Accounting Officer, including responsibility for the propriety and regularity of the public finances for which he is answerable, for keeping proper records and for guarding the Institute's assets, are set out in the Accounting Officer's memorandum issued by DFP and published in Government Accounting Northern Ireland.

3.4 Audit Certificate

Agri-Food and Biosciences Institute

THE CERTIFICATE AND REPORT OF THE COMPTROLLER AND AUDITOR GENERAL TO THE NORTHERN IRELAND ASSEMBLY

I certify that I have audited the financial statements of the Agri-Food and Biosciences Institute for the year ended 31 March 2007 under the Agriculture (Northern Ireland) Order 2004. These comprise the Income and Expenditure Account, the Balance Sheet, the Cashflow Statement and Statement of Recognised Gains and Losses and the related notes. These financial statements have been prepared under the accounting policies set out within them.

Respective responsibilities of the Institute, the Accounting Officer and auditor

The Institute and the Chief Executive as Accounting Officer are responsible for preparing the Annual Report, the Remuneration Report and the financial statements in accordance with the Agriculture (Northern Ireland) Order 2004 and the Department of Agriculture and Rural Development's directions made thereunder and for ensuring the regularity of financial transactions. These responsibilities are set out in the Statement of Accounting Officer's Responsibilities.

My responsibility is to audit the financial statements and the part of the Remuneration Report to be audited in accordance with relevant legal and regulatory requirements, and with International Standards on Auditing (UK and Ireland).

I report to you my opinion as to whether the financial statements give a true and fair view and whether the financial statements and the part of the Remuneration Report to be audited have been properly prepared in accordance with the Agriculture (Northern Ireland) Order 2004 and the Department of Agriculture and Rural Development's directions made thereunder. I report to you whether, in my opinion certain information given in the Annual Report, which comprises the Management Commentary, AFBI Science, and the unaudited part of the Remuneration Report is consistent with the financial statements. I also report whether in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

In addition, I report to you if the Institute has not kept proper accounting records, if I have not received all the information and explanations I require for my audit, or if information specified by the Department of Finance and Personnel regarding remuneration and other transactions is not disclosed.

I review whether the Statement on Internal Control reflects the Institute's compliance with the Department of Finance and Personnel's guidance, and I report if it does not. I am not required to consider whether this statement covers all risks and controls, or form an opinion on the effectiveness of the Institute's corporate governance procedures or its risk and control procedures.

I read the other information contained in the Annual Report and consider whether it is consistent with the audited financial statements. I consider the implications for my report if I become aware of any apparent misstatements or material inconsistencies with the financial statements. My responsibilities do not extend to any other information.

Basis of audit opinion

I conducted my audit in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board. My audit includes examination, on a test basis, of evidence relevant to the amounts, disclosures and regularity of financial transactions included in the financial statements and the part of the Remuneration Report to be audited. It also includes an assessment of the significant estimates and judgments made by the Accounting Officer in the preparation of the financial statements, and of whether the accounting policies are most appropriate to the Institute's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations which I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements and the part of the Remuneration Report to be audited are free from material misstatement, whether caused by fraud or error and that in all material respects the expenditure and income have been applied to the purposes intended by the Assembly and the financial transactions conform to the authorities which govern them. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements and the part of the Remuneration Report to be audited.

Opinions

Audit Opinion

In my opinion:

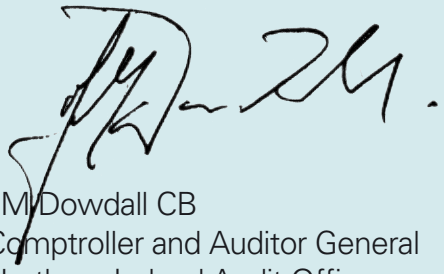
- the financial statements give a true and fair view, in accordance with the Agriculture (Northern Ireland) Order 2004 and directions made thereunder by the Department of Agriculture and Rural Development, of the state of the Institute's affairs as at 31 March 2007 and of its deficit, recognised gains and losses and cashflows for the year then ended;
- the financial statements and the part of the Remuneration Report to be audited have been properly prepared in accordance with Department of Agriculture and Rural Development's directions issued under the Agriculture (Northern Ireland) Order 2004; and
- information given within the Annual Report, which comprises the Management Commentary, AFBI Science, and the unaudited part of the Remuneration report is consistent with the financial statements.

Audit Opinion on Regularity

In my opinion, in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

Report

I have no observations to make on these financial statements.



JM Dowdall CB
Comptroller and Auditor General
Northern Ireland Audit Office
106 University Street
Belfast BT7 1EU

7 March 2008

3.5 Accounts

Agri-Food & Biosciences Institute
Annual Report and Accounts
Income and Expenditure Account for the year ended 31 March 2007

	Note	£'000
Income		
Income from operating activities	2	6,194
Other finance income: Net Return on Employer Assets	12a	133
Total income		6,327
Expenditure		
Programme related costs	5	9,560
Administrative expenses		
staff costs	3	20,165
other	4	15,006
Notional cost of capital		299
Total expenditure		45,030
Net expenditure for the year		(38,703)

All activities derive from operating activities.
Notes 1 to 25 form part of the accounts.

Statement of recognised gains and losses for the year ended 31 March 2007

		£'000
Net (gain) / loss on the revaluation of tangible fixed assets		(364)
Actuarial loss recognised for the financial year	12a	1,807
Recognised gains for the financial year		1,443

Agri-Food & Biosciences Institute
Annual Report and Accounts
Balance Sheet as at 31 March 2007

	Note	£'000	£'000
Fixed Assets			
Tangible assets	6	11,713	
Intangible assets	7	274	
			11,987
Current Assets			
Stock	8	578	
Debtors	9	3,137	
Cash in hand	10	14	
		3,729	
Creditors: Amounts falling due within 1 year	11	(4,789)	
Net current assets			(1,060)
Total assets less current liabilities			10,927
Provisions for liabilities and charges	12		(1,486)
			9,441
Capital & Reserves			
General Reserve	13		8,541
Revaluation reserve	14		900
			9,441

Approved by the Board and signed on its behalf by

Chief Executive and Accounting Officer

Date 6/05/08

Agri-Food & Biosciences Institute
Annual Report and Accounts
Cash Flow Statement for the year ended 31 March 2007

	Note	£'000
Net cash outflow from operating activities	15	39,334
Capital Expenditure		
Payments to acquire tangible fixed assets		2,247
Payments to acquire intangible fixed assets		197
Receipts from sale of tangible fixed assets		(25)
Net Cash Outflow Before Financing		41,753
Financing		
Grant in Aid from DARD: Capital		2,444
Grant in Aid from DARD: Resource		38,040
Decrease in Net Cash and Cash Equivalents		1,269
Movement in Cash and Cash Equivalents		
Opening cash and bank balances (overdrawn)		31
Closing cash and bank balances (overdrawn)		1,238
		1,269

3.6 Notes to the Accounts for the Year Ended 31 March 2007

1. Accounting Policies

Statement of accounting policies

These financial statements have been prepared in accordance with the 2006-2007 Government Financial Reporting Manual (FReM) issued by DFP and the Accounts Direction issued by DARD on 19 April 2006. The accounting policies contained in the FReM follow UK generally accepted accounting practices for companies (UK GAAP) to the extent that it is meaningful and appropriate to the public sector.

Where FReM permits a choice of accounting policy, the accounting policy judged to be the most appropriate to the particular circumstances of the Institute, for the purpose of giving a true and fair view, has been selected.

The Institute's accounting policies have been applied consistently in dealing with the items considered material in relation to the accounts. The particular accounting policies adopted by the Institute are described below.

Accounting convention

These accounts have been prepared under the historical cost convention modified to account for the revaluation of fixed assets and livestock.

Tangible and intangible fixed assets

(1) The Institute does not own any land and buildings but leases them from DARD.
(2) Other non-property assets are stated at current cost using appropriate indices to account for the effects of inflation.
(3) The threshold for capitalisation is £5,000 excluding VAT. However, as the Institute is subject to irrecoverable VAT, the irrecoverable amount in relation to that asset is added to cost for capitalisation in accordance with Statement of Standard Accounting Practice 5 'Accounting for Value Added Tax'.
(4) The Institute does not capitalise fixtures, fittings and office furniture.

Depreciation

Assets in course of construction are not depreciated.

Depreciation is charged on a straight line basis in order to write off the valuation of assets, less estimated residual value, of each asset over the expected useful life. The useful lives of tangible assets, which are reviewed regularly, are:

Plant	3 to 15 years
Equipment	5 to 20 years
Transport equipment: boats	5 to 15 years
Transport equipment: vehicles	5 to 10 years
Information technology: computers	3 to 6 years

The useful lives of intangible assets, which are reviewed regularly, are

Software	2 to 10 years

Debtors

Provision is made where necessary for debts which are considered doubtful. Debts can only be written off when non recovery is considered certain and after the approval of senior management in accordance with the internal delegation limit.

Taxation

The Institute is not liable to corporation tax on income earned in the year. Value Added Tax (VAT) is accounted for in accordance with Statement of Standard Accounting Practice 5 in that amounts are shown net of VAT except where irrecoverable VAT is charged to the operating cost statement or capitalised where it relates to the purchase of a fixed asset.

Provisions

The Institute makes provisions for liabilities and charges where, at the balance sheet date, a legal or constructive liability exists (i.e. a present obligation for past events exists), where the transfer of economic benefits is probable and a reasonable estimate can be made. Where the time value of money is material, the Institute discounts the provision to its present value using a standard Government discount rate, which currently stands at 3.5%.

Pensions

Present and past employees are covered by the Principal Civil Service Pension Scheme (Northern Ireland) (PCSPS (NI)), which is a defined benefit scheme and is unfunded and non-contributory. The Institute recognises the expected cost of providing pensions on a systematic and rational basis over the period during which it benefits from employees' services by payment to the PCSPS (NI) of amounts calculated on an accruals basis.

All pension contributions are charged to the Income and Expenditure Account when incurred.

NILGOSC

The closure of the ARINI pension scheme raised a potential liability of £3 million arising from a deficit in the former ARINI pensions fund and a cessation penalty imposed by the administrators of the scheme due to the loss of future contributions. The closing ARINI accounts included a provision for £3 million which is consolidated in the AFBI opening position. Further advice, from the Government Actuary Department, received by the Institute indicates that the provision should be revised to £1.458 million at 31 March 2007. An outline business case recommending underwriting of this provision by DARD in the event that the deficit position is actually realised is approved in principle by DFP.

The Northern Ireland Local Government Superannuation Committee Scheme (NILGOSC) is a defined benefit statutory scheme, administered in accordance with the Local Government Pension Scheme Regulations (Northern Ireland) 2002, as amended. It is contracted out of the State Second Pension. This is a fully funded defined benefit scheme that provides benefits on a final salary basis at a normal retirement age of 65. Benefits accrue at the rate of 1/80th of pensionable salary for each year of service. In addition a lump sum equivalent to 3/80th's of pensionable salary is payable on retirement.

From 1 April 2006 all the former ARINI staff transferred to the PCSPS (NI), therefore no contributions payable in the period and no further payments are payable in future years.

An actuarial valuation was carried out at 31 March 2007 in accordance with Financial Reporting Standard 17 and Financial Reporting Manual (FReM) and the details of the valuation are shown in note 12a.

The charge to the Income and Expenditure account, which is included in staff costs, consists of the impact of Curtailments and Settlements and the Net Return. Actuarial gains and losses are taken to reserves and shown in the Statement of Total Recognised Gains and Losses.

Valuation method:
The liabilities under the scheme have been valued using the projected unit method.

Financial assumptions:
The principal financial assumptions used are shown in the table below.

Assumptions as at 31 March 2007	% per annum	Real % p.a.	31 March 2006 % per annum	Real % p.a
Price increases	3.2%	-	3.1%	-
Salary increases	4.7%	1.5%	4.6%	1.5%
Pension increases	3.2%	-	3.1%	-
Discount rate	5.4%	2.1%	6.0%	2.8%

The inflation assumption has been derived by considering the difference in gross redemption yields of traditional and index linked gilt edged securities at the year end. Salary increases are assumed to be 1.5% more than price increases, in line with the assumption used in the latest formal valuation of the Fund.

The discount rate used is the return on a high quality corporate bond of the equivalent term and currency to the liability.

Expected Return on Assets
The expected return on assets is based on the long term future expected investment return for each asset class as at the beginning of the period. The assumed returns are net of investment expenses and allowances have been included in the cost of accruing benefits for administration expenses.

The following table shows the expected rate of return in respect of each class of asset.

Asset Class	Expected return at 31 March 2007 % per annum
Equities	7.8%
Bonds	4.9%
Property	5.8%
Cash	4.9%

Bulk transfers
An allowance has been made for the bulk transfer of the past service benefits to the PCSPS (NI). The terms of the bulk transfer have not yet been formally agreed and details are not yet known of which members will transfer their benefits from the Fund to PCSPS (NI). Accordingly, no assets have yet been transferred across to PCSPS (NI).

Deferred Tax
No adjustment has been made for any deferred tax.

Recognition of Surplus / Deficit
The Institute has a 'constructive obligation' to fund any deficit allocated to its share of the Fund and it therefore fully recognises the whole of any deficit.

Early departure costs
The Institute is required to meet the additional cost of benefits beyond the normal PCSPS(NI) benefits in respect of employees who retire early. The Institute recognises in full for this cost when the early retirement programme is committed.

Grant in aid
Grant in aid represents net funding received from DARD and is credited to general reserves.

Income

Income from operating activities represents:

- Funding received from other organisations, including funding from the European Union. Such income is matched against programme expenditure where possible;
- Other income receivable, principally, fees and charges for services provided.

Programme expenditure

Programme expenditure comprises the costs of undertaking activities in support of discharging the Institute's responsibilities and is accounted for on an accruals basis.

Administration expenses

Administration expenses reflect the cost of running the Institute.

Leases

Operating lease rentals are charged directly to the Operating Cost Statement over the period of the lease. There are no finance leases.

Capital charge

A non-cash capital charge, reflecting the cost of capital utilised, in included in the Income and Expenditure Account and calculated using the average method. The charge is calculated at Government's standard rate of 3.5% in real terms on assets less liabilities.

Stock and work in progress

Livestock is valued at market value. Other stocks are valued at the lower of cost and net realisable value.

Contingent Liabilities

Legal claims are assessed together and a provision of 50% of the likely maximum claim value is made. The percentage will be reviewed periodically to ensure it represents a reasonable estimate of the expenditure on such claims.

2. Income

	£'000
Income from analytical, diagnostic work and research contracts	5,184
Sale of general produce and livestock	772
Charter of ship	229
Rents receivable	9
Total	**6,194**

Fees and charges

A detailed analysis of the required information is not provided as the full cost of each service provided does not exceed £1m and the income and cost of each service provided is not material to the accounts.

3. Staff Costs and Employee information

The breakdown of staff costs is as follows:

Staff with a permanent UK employment contract with AFBI

	£'000
Salaries and wages	18,522
Social security costs	1,384
Other pension costs	3,126

Other staff engaged on objectives of AFBI

Short term and casual staff	349
Adjustments to pension liabilities	(3,216)
Total staff costs	**20,165**

The average numbers employed during the year is as follows:

Board Members (including Chairperson)	13
Administration	83
Scientific	588
Industrials	79
Casual staff	13

The Principal Civil Service Pension Scheme (Northern Ireland) (PCSPSS (NI)) is an unfunded multi-employer defined benefit scheme, which produces its own resource accounts, but the Agri-Food and Biosciences Institute is unable to identify its share of the underlying assets and liabilities. The most up-to-date actuarial valuation was carried out as at 31 March 2003 and details are available in the PCSPSS (NI) accounts.

For 2006/2007, employers' contributions of £3,126,230.94 were payable to the PCSPS (NI) at one of four rates in the range 16.5 to 23.5 percent (2005/06: 16.5 to 23.5 percent) of pensionable pay based on salary bands. The contribution rates reflect benefits as they are accrued, and reflect past experience of the scheme.

Employees joining after 1 October 2002 could opt to open a partnership pension account, a stakeholder pension with an employer contribution. Employer's contributions were paid to one or more of a panel of four appointed stakeholder pension providers. Employer contributions are age related and range from 3 to 12.5 per cent of pensionable pay. Employer's also match employee contributions up to 3% of pensionable pay. In addition, employer contributions of 0.8% of pensionable pay were payable to PCSPS (NI) to cover the cost of future lump sum benefits on death in service and ill health retirement of these employees.

4. Administrative costs: other

	£'000	£'000
Travel and subsistence		247
Computer support		123
Accommodation costs		
Lease of land and buildings	6,766	
Rates and water	949	
Electricity	843	
Oil	128	
Gas	582	
Repairs and maintenance	685	9,953
Postage, printing and stationery		179
Communications and marketing		
Telephone	259	
Marketing and advertisements	79	338
Internal consultancy and recruitment		87
Contracted out services		1,611
Hospitality		8
Training, conferences and library expenses		950
Legal costs and compensation		35
Increase in provision for legal costs		9
Irrecoverable Vat		1,296
Other expenses		125
Audit fees		45
		15,006

5. Programme costs

	£'000
Livestock purchases adjusted for stock	588
Animal feed and veterinary expenses	347
Laboratory consumables	1,517
Plants, shrubs, fertiliser	190
Motor and tractor expenses	415
Laboratory equipment maintenance and other expenses	824
Apparatus, glassware, minor equipment	882
Protective clothing	75
Clinical and other waste disposal costs	450
Hire of plant and vehicles	89
Ship operating costs	1,606
Other expenses	347
Debt provision and charges	(37)
Depreciation	2,208
Asset impairment	72
Profit and disposal of fixed assets	(13)
	9,560

6. Tangible fixed assets

	Plant & Machinery £'000	Information Technology £'000	Transport Equipment £'000	Total £'000
Cost or valuation				
At 1 April 2006	17,080	1,290	2,479	20,849
Additions	1,708	243	296	2,247
Disposals	(56)		(36)	(92)
Revaluations	691		83	774
Impairments		(110)		(110)
At 31 March 2007	**19,423**	**1,423**	**2,822**	**23,668**
Depreciation				
At 1 April 2006	(8,382)	(496)	(635)	(9,513)
Charge for the year	(1,631)	(294)	(242)	(2,167)
Disposals	44		35	79
Revaluations	(391)		(19)	(410)
Impairments		56		56
At 31 March 2007	**(10,360)**	**(734)**	**(861)**	**(11,955)**
Net book value				
At 1 April 2006	**8,698**	**794**	**1,844**	**11,336**
At 31 March 2007	**9,063**	**689**	**1,961**	**11,713**

Notes:

1) The Institute does not own any land or buildings but leases them from the Department of Agriculture and Rural Development.
2) The Institute does not own any donated assets.
3) The opening cost and depreciation include assets taken over from ARINI.

7. Intangible fixed assets

Intangible fixed assets comprise software licences.

	£'000
Cost or valuation	
At 1 April 2006	149
Additions	197
Disposals	
Revaluations	
Impairments	(21)
At 31 March 2007	**325**
Depreciation	
At 1 April 2006	(13)
Charge for the year	(41)
Disposals	
Revaluations	
Impairments	3
At 31 March 2007	**(51)**
Net book value	
At 1 April 2006	**136**
At 31 March 2007	**274**

8. Stock

	£'000
Livestock and sundry stock at Hillsborough	447
Stores at Newforge and Stoney Road	131
	578

9. Debtors

	£'000	£'000
Amounts falling due within one year		
Trade debtors	2,290	
Less: Bad debt provision	(34)	2,256
Other debtors		98
Prepayments and accrued income		783
		3,137
Amounts owed by Central Government bodies		1,996
Amounts owed by bodies outside Central Government		1,141
		3,137

10. Cash in hand

	£'000
Bank No 1 Acount	11
Petty cash	3
	14

11. Creditors

	£'000
Amounts falling due within one year	
Bank overdraft	1,252
Vat	185
Other taxation and social security	5
Trade creditors	2,740
Capital creditors	48
Accruals and deferred income	559
	4,789
Amounts owed to Central Government bodies	841
Amounts owed to bodies outside Central Government	3,948
	4,789

12. Provisions

	NILGOSC £'000	Other £'000	Total £'000
Balance at 1 April 2006	(3,000)	(19)	(3,019)
Movement in the year	-	(9)	(9)
Other movements - staff costs	2,136	-	2,136
Curtailments - staff costs	1,080	-	1,080
Actuarial Gain / (Loss)	(1,807)	-	(1,807)
Income	133	-	133
Balance at 31 March 2007	(1,458)	(28)	(1,486)

Provisions have not been discounted as these relate to payments due to be paid in the near future.

NILGOSC

The closure of the ARINI pension scheme raised a potential liability of £3 million arising from a deficit in the former Agriculture Rearch Institute for Northern Ireland (ARINI) pensions fund and a cessation penalty imposed by the administrators of the scheme due to the loss of future contributions. A qualification to the ARINI accounts reflected the uncertainty about the documentation supporting the calculation of this potential liability. Further advice, from the NILGOSC Actuary, received by the Institute indicates that the provision should be revised to £1.458 million at 31 March 2007.

Other

These relate to legal cases due to come to the tribunals in the coming year. Legal claims are assessed together and a provision of 50% of the likely maximum claim value is made. This percentage is to reviewed on an ongoing basis to ensure it continues to represent a reasonable estimate of the expenditure on such claims.

12a Pensions Provision: NILGOSC

Analysis of Amount Charged to Operating Profit

	Year to 31 March 07	
Amount charged to operating profit	**£'000**	**% of payroll**
Service Cost	-	-
Past Service Cost	-	-
Curtailment and Settlements	(1,080)	-
Decrease in irrecoverable Surplus	-	-
Adjustment to opening provision and cessation adjustments	(2,136)	-
Total Operating Charge (A)	**(3,216)**	**0%**
Amount Credited to Other Finance Income		
Expected Return on Employer Assets	702	-
Interest on Pension Scheme Liabilities	(569)	-
Net Return (B)	**133**	**-**
Net Revenue Account Cost (A) – (B)	**(3,349)**	**-**

Analysis of Amount Recognised in Statement of Total Recognised Gains and Losses (STRGL)

	Year to 31 March 2007 £'000
Actual Return Less Expected Returnon Pension Scheme Assets	(121)
Experience Gains and Losses arising on Scheme Liabilities	-
Changes in Assumptions underlying the Present Value of Scheme Liabilities	(1,686)
Actuarial Gain / (Loss) in Pension Plan	**(1,807)**
Increase / (Decrease) in Irrecoverable Surplus from Membership Fall and Other Factors	-
Actuarial Gain / (Loss) Recognised in STRGL	**(1,807)**

Movement in Surplus / Deficit during the year

	Year to 31 March 2007 £'000
Surplus / (Deficit) at the Beginning of the year	(370)
Current Service Cost	-
Employer Contributions	-
Contributions in respect of Unfunded Benefits	-
Other Income	-
Other Outgo (e.g. expenses, etc.)	-
Past Service Costs	-
Impact of Settlements and Curtailments	1,080
Net Return on Assets	133
Actuarial Gains / (Losses)	(1,807)
Surplus / (Deficit) at End of Year	(964)
Adjustment as a result of proposed bulk transfer	(494)
Balance as per note 12	**(1,458)**

History of Experience Gains and Losses

	Year to 31 March 2007 £'000
Difference between the Expected and Actual Return on Assets	(121)
Value of Assets	10,692
Percentage of assets	(1.1%)
Experience Gains / (Losses) on Liabilities	-
Total Present Value of Liabilities	11,656
Percentage of the Total Present Value of Liabilities	-
Actuarial gains / Losses Recognised in STRGL	(1,807)
Total Present Value of Liabilities	11,656
Percentage of the Total Present Value of Liabilities	(15.5%)

Balance Sheet Disclosures as at 31 March 2007

	31 March 2007
Price increases	3.2%
Salary increases	4.7%
Pension increases	3.2%
Discount rate	5.4%

Assets Employed

	Long Term Return at 31 March 2007 % per annum	Assets at 31 March 2007 £'000
Equities	7.8%	7,988
Bonds	4.9%	1,495
Property	5.8%	1,090
Cash	4.9%	121
Total	7.2%	10,692

Net Pension Asset as at

	31 March 2007 £'000
Estimated Employer Assets (A)	**10,692**
Present Value of Scheme Liabilities	11,656
Present Value of Unfunded Liabilities	-
Total Value of Liabilities (B)	**11,656**
Net Pension Asset (A-B) before cessation adjustment	**(964)**

13. General Reserve

	£'000
Balance at 1 April 2006	8,116
Grant in Aid from DARD	40,484
Net operating cost	(38,703)
Actuarial loss (see note 12a)	(1,807)
Transfer from Revaluation Reserve	152
Cost of capital	299
	8,541

14. Revaluation Reserve

	£'000
Balance at 1 April 2006	688
Arising on revaluation in the year	364
Transfer to General Fund of realised element	(152)
	900

15. Cash flow statement

Reconciliation of results for the year to net cash outflow from operating activities

	£'000	£'000
Net operating cost		(38,703)
Adjustments for non-cash transactions		
Depreciation	2,208	
Impairment of Fixed Assets	72	
Profit on disposal of fixed assets	(13)	
Increase in provision of legal costs	9	
Cost of capital	299	
Nte adjustment to pension provision	(3,349)	
Decrease in bad debts position	(37)	
Total non-cash transactions movement		(811)
Adjustments for movement in working capital other than cash		
(Increase) / decrease in stock	339	
(Increase) / decrease in debtors	(2,271)	
Increase / (decrease) in creditors	2,112	
Total movements in working capital other than cash		180
Net cash outflow from operating activities		**(39,334)**

16. Capital commitments

The Institute has no capital commitments at the year end.

17. Commitments under leases

The Institute had no material operating lease obligations in 2006/2007. At the year end commitments existed in respect of annual rentals of £6,720,000 per annum for the foreseeable future.

	£'000
Within one year	6,720
In the second to fifth years	26,880

18. Finance leases

The Institute had no finance leases during 2006/2007.

19. Commitments under PFI contracts

The Institute had no PFI contracts during 2006/2007.

20. Contingent liabilities

There are no contingent liabilities at the year end.

21. Financial Instruments

The Institute is not allowed to borrow or invest surplus funds as per the Management Statement and Financial Memorandum. Financial assets and liabilities are generated by operational activities and are not held to handle the risk profile facing the Institute in undertaking its operations.

Liquidity risk

The Institute's net revenue resource requirements are financed by the Grant in Aid agreed with the Department of Agriculture and Rural Development, as is its capital expenditure.

It is not, therefore exposed to significant liquidity risks.

Interest rate risk

All the Institute's financial assets and liabilities carry nil rate of interest and it is not therefore exposed to significant interest rate risk.

Foreign currency risk

The Institute's assets and liabilities are denominated in sterling so it has no exposure to currency risk.

Fair values

The book values and fair values of the financial assets and liabilities at 31 March 2007 are not considered to be materially different.

22. Losses and special payments

a) Losses statement

There were no cases where significant losses had been incurred.

b) Special payments

There were no cases of ex-gratia payments or extra-statutory payments.

23. Related party transactions

The Department of Agriculture and Rural Development is the sponsor Department of the Institute with which it had various material transactions during the year and is regarded as a related party.

In addition the Institute had some transactions with other government departments and other central government bodies. Most of these transactions have been with Northern Ireland departments and their executive agencies such as DFP (including CPD and Pensions Branch), DCAL, DOE, FSA (NI), HMRC and DEFRA.

	£'000
Debtors (amounts due within one year) (Note 9):	1,996
Balances with other central government bodies: Creditors (amounts due within one year) (Note 11):	841

24. Third party assets

The Institute does not hold any third party assets.

25. Post Balance Sheet events

There were no events after the Balance sheet date which would require adjustment to the financial statements.

afbi Agri-Food and Biosciences Institute

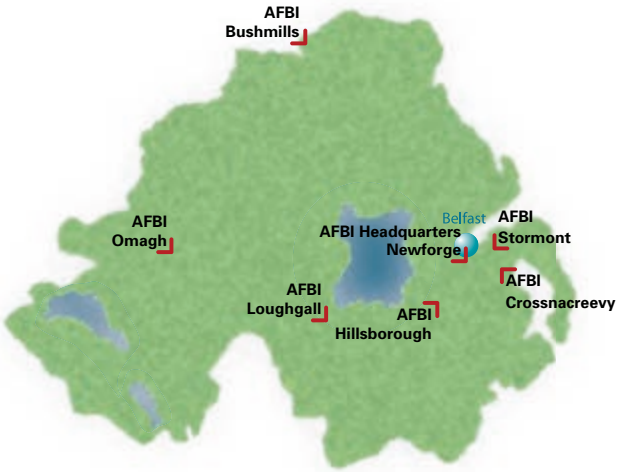
AFBI's mission is to maintain and enhance its reputation as a world-class scientific institute, delivering proven value to Government and other customers.

AFBI provides research and development, analytical and diagnostic services, and scientific advice in agriculture, food, animal and plant health, marine and fresh water ecosystem management and the agri-environment.

Our customers include a range of local, national and international commercial companies, Northern Ireland and United Kingdom Departments, Agencies, and associated bodies and the European Union.

We pride ourselves on the quality and breadth of our scientific expertise and maintain appropriate quality assured accreditation standards. AFBI has various national and international reference laboratories.

AFBI maintains a cutting edge skills and technology base to fulfil its statutory obligations including provision of rapid, scientific response capabilities for DARD and other Departments during emergencies.



AFBI sites throughout Northern Ireland

AFBI scientists have long standing experience and internationally recognised standards of providing evidence-based scientific advice to Government policy makers and commercial decision makers.

We are the partner/contractor of choice for many local, national and international bodies.

A major aim is to support industry by providing a "one-stop shop" for diverse specialist expertise and facilities.

AFBI's expertise includes:
Veterinary diagnostics; animal health and welfare; food science; crop and livestock systems; biometric traceability; plant breeding; biometrics and statistics; agricultural economics; renewable energy and non-food crop agronomy; oceanography; fish stock management, aquatic and land based ecosystem management of natural resources.

AFBI has facilities sited across Northern Ireland which include modern laboratories and secure animal accommodation and has a purpose built marine research vessel. The facilities have "state of the art" equipment required to resolve scientific problems and produce sophisticated and reliable results.

Technological capabilities include:
molecular technologies; light and electron microscopy; mass spectrometry; pathogenesis studies; biosensor technology; seabed mapping and minimal processing technologies.

If you have a problem in agri-food or biosciences, AFBI has a high quality, cost-effective solution.

To find out what AFBI can do for your business, contact:

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