

# AgriSearch

## Annual Report 2013

The Northern Ireland Agricultural Research & Development Council. A company limited by guarantee. Annual report for the year ended 31 March 2013



REFERENCE AND ADMINISTRATIVE DETAILS OF THE CHARITY, ITS TRUSTEES AND ADVISORS  
Year to 31 March 2013

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**Trustees**

James Campbell (Chairman)  
David Workman (Vice Chairman)  
William Hanna  
Henry Jordan  
Mervyn King  
Ian Marshall  
John Martin (appointed 8 October 2012)  
Mary McCormack  
Nigel McLaughlin (retired 8 October 2012)  
Oisín Murnion (appointed 8 October 2012)  
Phelim O'Neill  
Douglas Rowe

**Name by which charity makes itself known**

AgriSearch

**Registered Office**

Countryside Services Limited  
97 Moy Road  
Dungannon  
Co Tyrone  
BT71 7DX

**Company Secretary\***

David Mark (retired 27 June 2013)

**Project Manager** (Senior staff member delegated day to day management)\*

Jason Rankin

**Charity Number**

XR 23492

**Registered Number**

NI 35855

**Bankers**

Danske Bank  
471 – 473 Antrim Road  
Belfast  
BT15 3BP

**Solicitors**

J McKee & Sons  
The Linenhall  
32-38 Linenhall Street  
Belfast  
BT2 8BG

**Registered Auditors**

RSM McClure Watters  
1 Lanyon Quay  
Belfast  
BT1 3LG

\*Secretariat services provided by Countryside Services Limited

## **Advisers**

### **Dairy Advisory Committee**

Gary McHenry	-Chairman	
Drew McConnell	-Vice Chairman	
Peter Conway		
Harper Doupe		
Albert Foster		
Andrew Magowan		(appointed 1 April 2012)
Ian McCluggage		(Non-voting CAFRE liaison)
Roger McCracken		
Dr Alan McIlmoyle		
Jonathan Moore		
David Stewart		

### **Beef Advisory Committee**

James Taylor	-Chairman	
Sam Chesney	-Vice Chairman	
Ray Elkin		(appointed 1 April 2012)
Neville Graham		(Non-voting CAFRE liaison)
George McAuley		(appointed 1 April 2012)
Liam McCarthy		
William McLroy		(appointed 1 April 2012)
Derek Shaw		
John Sheridan		
Dr Raymond Steen		
Ian Stevenson		
Maurice Watson		(appointed 1 April 2012)

### **Sheep Advisory Committee**

Ian Buchanan	-Chairman	(retired 31 March 2013)
Samuel Wharry	-Vice Chairman	
Edward Adamson		(appointed 1 April 2012)
Dr Jonathan Birnie		
Barry Brogan		
Crosby Cleland		(appointed 1 April 2012)
Isaac Crilly		
Neville Graham		(Non-voting CAFRE liaison)
Seamus Maginn		(appointed 1 April 2012)
Dr Raymond Steen		
Campbell Tweed		(appointed 1 April 2013)
David Wallace		(appointed 1 April 2012)

### **Committee Secretary**

Jason Rankin



## **AgriSearch Chairman's Report**

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This is my fifth annual report as chairman of the Northern Ireland Agricultural Research and Development Council (AgriSearch). The period under review included the fifteenth anniversary of the founding of the organisation. That was marked with a half day conference at Hillsborough in October 2012, when the former head of the Agricultural Research Institute for Northern Ireland, Professor Fred Gordon, offered observations that I feel are worth recording in this report.

Professor Gordon stated that the creation of AgriSearch had provided clear evidence that Northern Ireland's main industry was prepared to invest in research and development at a local level. He pointed to the need for government also to invest in the provision of 'world class' facilities for research to put Northern Ireland at the forefront of efficient production of food. It is a competitive world and there is increased investment in agricultural R & D in many countries, including Great Britain and the Republic of Ireland – where the level of government funding is much higher pro-rata than in Northern Ireland. I'm pleased to note that the

Agri-tech initiative for the whole of the UK looks set to make significant new funding available and I anticipate that Northern Ireland will benefit.

Professor Gordon also observed that the amount of 'red tape' and inspection procedures around the expenditure of public money on research threatened to delay useful work and such procedures ceased to be cost effective when they take up huge amounts of scientists' time.

Ways must be found to minimise that problem, as money is invested by AgriSearch in projects jointly funded by DARD and for which we seek the best possible use of resources. It is acknowledged that auditors have to be satisfied that public funds are fully accounted for and I note the report by the Northern Ireland Comptroller and Auditor General has stated that the development of a strong and comprehensive corporate governance framework for the Agri-Food and Biosciences Institute (AFBI) has only been achieved 5 years after the establishment of the organisation, which was created out of the former



## AgriSearch Chairman's Report

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DARD Science and Veterinary Science Divisions in April 2006.

It is suggested in the Audit Office report that AFBI has under-charged for research work carried out. This is partly because overhead costs have not been fully taken into account prior to April 2011. Any increased inclusion of overhead costs could impinge on the overall costs of future research projects commissioned by AgriSearch for completion at AFBI, so this is a matter that we must bear in mind. But

it is worth recording that all current and past projects funded by AgriSearch were and are for fixed sums agreed in advance.

As previously reported, the new corporate governance framework and the Evidence and Innovation strategy introduced by DARD as a basis for decision making on its funding of research have increased the amount of consultation with AgriSearch committees. This is part of the process that has already addressed one of



## AgriSearch Chairman's Report

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the main concerns expressed by the Auditor General about the formative years of AFBI.

Having devoted a lifetime to research, Professor Gordon commented that most projects require several years and often lead onto further questions needing answers. Therefore hiring scientists on short term contracts will not always make sense. While acknowledging the need for flexibility in the workforce, he called for some certainty of career if our best young research scientists are not to be lost to the private sector.

Looking back over recent years of understaffing and the loss of good young scientists in the Agriculture Branch of the AFBI and having seen the delays in the recruitment process, I believe that the observations and advice offered by Professor Gordon should be taken up.

On behalf of AgriSearch, I urge AFBI to examine seriously the recruitment process and to put a high priority on retaining the necessary staff to ensure that the world class facilities at

Hillsborough are used to the maximum for the benefit of the agri-food industry and the wider economy of Northern Ireland.

### **Volunteers**

As a registered charity, the objectives of AgriSearch are to advance education for the public benefit, in particular by conducting and commissioning research into the improvement and development of sheep, beef and dairy farming and to disseminate and publish the useful results of such research. In doing so, the charity makes significant use of volunteers.

This report is an opportunity for me to acknowledge the considerable effort and time that is freely given to AgriSearch by members of the advisory committees and by trustees. I wish to highlight the input of the chairmen of all three advisory committees and to thank them.

This is the place to record special thanks to Ian Buchanan, who stood down at the end of March from the position of chairman of the sheep advisory committee having served the

## AgriSearch Chairman's Report

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maximum term. Ian showed remarkable dedication and enthusiasm throughout, along with practical common sense in meetings with government officials and researchers.

The committee subsequently elected Samuel Wharry as chairman, a very able successor. Several new members were welcomed to the advisory committees at the beginning of the year under review (names listed on page 3). AgriSearch looks to these volunteers to pick up the baton with fresh enthusiasm.

At the annual general meeting in

October, John Martin and Oisín Murnion were appointed to the board of trustees. This followed the sudden and very sad loss of Seamus Haughey in July 2012 (recorded in last year's report) and the retirement in October of Nigel McLaughlin, who served as a trustee for the maximum term.

### **Funds**

One factor that has remained constant throughout the 15 years has been the rate of research levy collected. Since 1997 the levy has been 0.02p/litre of milk processed, 20p/head of cattle

## AgriSearch Chairman's Report

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and 5pence per sheep slaughtered in Northern Ireland. Due to inflation, the buying power of the income from levies has fallen by around 50 per cent over that time.

AgriSearch has attempted to address this by seeking other sources of income and trying to ensure that the levies are paid on the maximum possible numbers of stock and litres of milk.

Year-on-year, it is pleasing to note that the income from the levy rose by 3.8% in 2012-13, with increased contributions in all sectors. In addition, as indicated in last year's report, the sheep sector benefitted from a contribution of £20,000 assigned by the Livestock and Meat Commission for NI from its budget for research. I am pleased to report that another £20,000 is being contributed during the year to March 2014 and I wish to record thanks to the LMC.

The past two years have seen some volatility of AgriSearch income and expenditure. Grant income from the DARD Research Challenge Fund (RCF) in the year to 31 March 2013 was just £31,322. This was after receiving

income of over £300,000 from that source during the previous year. Grant income is expected to increase in the current year.

All of this RCF income relates to projects in which AgriSearch is the 'lead partner' in putting forward the proposals, applying for the support funds, administering the payments for the work and claiming payment of the aid. The RCF places particular emphasis on knowledge transfer. This ties in with the view held by AgriSearch that it is vital to disseminate the results of practical research as efficiently as possible and get benefits on farms as a result of recommended practices being implemented. In pursuit of this objective, AgriSearch has put increased time and resources into farm walks and other means of knowledge transfer. Part of the cost of this is paid for by the Research Challenge Fund.

### **Knowledge transfer**

During the 12 months to the end of March 2013, AgriSearch was involved in the organisation of twelve farm walks, of which 6 focused on beef, 3 on sheep and 3 on dairy enterprises.



## AgriSearch Chairman's Report

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These have been held in conjunction with the Agri-Food and Biosciences Institute (AFBI) and with the College of Agriculture, Food and Rural Enterprise (CAFRE). We also worked with CAFRE on conferences and events held to mark the centenary of agricultural education at Greenmount.

I wish to express thanks to the farmers who hosted farm walks and to the staff from CAFRE whose advisory role is key to the uptake of knowledge arising from applied research.

The staff of AFBI again brought their experience and expertise to each of the

farm walks – and I record thanks for all of the resources and effort that they put in to these events.

In bringing together the efforts of researchers, advisers and farmers, AgriSearch is working in the way that the European Commission now proposes for 'operational groups' to function under the future EU programme that aims to improve the uptake and implementation of agricultural research and innovation. Under these proposals, there could be a role for AgriSearch as an 'innovation broker'.

This should mean that Northern Ireland

## AgriSearch Chairman's Report

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is well placed to draw funding from the EU Horizon 2020 programme, although it may be necessary for this to be done through joint programmes involving at least three EU Member States – and the scale of funding involved would be far beyond anything currently administered by AgriSearch. To that end, AgriSearch has continued its involvement with the European Cattle Innovation Partnership – a group of representatives of agricultural research levy organisations of several countries.

Another strand of the EU proposals envisages establishment of 'operational groups' at local level. With this in mind, AgriSearch should be in a position to obtain support from the next Rural Development Programme for NI (2014-2019).

There is potential for our efforts to 'dovetail' with some of the recommendations of the Agri-Food Strategy Board for NI, which urges government to commission research into measurable, best practice systems for sustainable intensification on-farm and double the draw-down of European funding in support of Agri-Food

innovation over the next three years.

### Projects

During the financial year 2012/13, AgriSearch agreed to fund thirteen projects, committing a total of £491,148. This was on the understanding that there would be complementary funding in the region of £2.84 million from other sources including the Department of Agriculture and Rural Development (DARD). Most of the projects were commissioned following the DARD Evidence and Innovation procedures, in which the advisory committees of AgriSearch play a key role in provision of practical farming views.

One of the projects is a major new study on liver fluke in cattle, for which assistance has been approved following a grant application to BBSRC (Biotechnology and Biological Science Research Council). By joining forces with the GB organisations (EBLEX, DairyCo, QMS and HCC) AgriSearch added weight to the case for this research, while making a relatively small investment of funds.

Including other sources of funding over

## **AgriSearch Chairman's Report**

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the years, the total expenditure on the research and development supported by AgriSearch since its formation in 1997 is over £20.7m. The most recent projects are listed on page 13.

Timing of decisions made by co-funders can impinge on the timing of commitment of funds by AgriSearch. This was a factor at the end of March 2012, when the co-funding of six projects awaited approval by DARD. Those projects are among 13 approved during the year to March 2013, accounting in part for the direct programme expenditure having risen to almost £500,000 during this year and a net reduction in funds carried forward. Research and development grants are accrued as expenditure in the year in which the commitment is made by AgriSearch. At time of writing, further commitments of £165,000 have been made since the end of the financial year.

### **Management**

Since the formation of the organisation in 1997, the income earned on investment of funds held has covered costs of administration of AgriSearch.

This has ensured that all of the levy collected is ultimately allocated to the funding of research and dissemination. It is regrettable that interest rates have dropped to the extent that the investment income for the year to March 2013 was just £23,393. This was down by almost £16,000 on the previous year and compares to a figure in excess of £100,000 investment income in 2008, when interest earned on bank deposits was at much more favourable rates. The surplus built up in those earlier years is helping to cover current administration costs.

In an effort to address the issue of very low interest rates, while maintaining a 'low risk' policy on investments, the trustees agreed early in 2013 to invest a further £100,000 in the Danske Bank Managed Portfolio. Since the first investment of £250,000 in this portfolio in 2009, it has performed very satisfactorily – with an average return of 7.5% per annum (based on the valuation at 31 March 2013).

In June 2013, David Mark resigned from the position of managing director of Countryside Services Limited and

## AgriSearch Chairman's Report

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therefore ceased to be company secretary of AgriSearch. Throughout his time with the organisation, David showed great personal interest in the work of AgriSearch and was a strong advocate of its role in funding and directing agricultural research on behalf of farmers. I wish to record my thanks to David for his advice and support and sincerely wish him well in his future career.

The increasing workload taken on by AgriSearch has been shouldered by project manager, Jason Rankin, who

tackles every job with zeal. In addition to secretarial services to the committees and board of trustees, Jason has published the AgriSearch Ezine and provided updates of the website [www.agrisearch.org](http://www.agrisearch.org) as well as co-ordinating knowledge transfer events. While acknowledging the tremendous input by Jason and expressing thanks, I must point out that the resources of AgriSearch are fully stretched. It will be necessary to continuously review and prioritise our activities, while aiming to obtain additional funding for the future.



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- Effect of early lactation nutritional strategies on the health, reproductive performance and milk production performance of lactating dairy cows.
  - Investigation of the relationship between genotype, trace element status and gastrointestinal parasite infections in lambs, and the development of nutritional and management strategies to increase lamb output from grazed grass.
  - The extent and impact of colostrum quality variability on calf health and performance on Northern Ireland dairy farms and an exploration of strategies to improve calf survival.
  - Identifying key drivers of production efficiency through the establishment and analysis of a database for the AFBI Hillsborough dairy herd.
  - Development of beef and sheep systems for improved sustainability, biodiversity and delivery of ecosystem services within hill areas of Northern Ireland.
  - An evaluation of mid and late pregnancy feeding strategies for managing condition score of spring calving suckler cows and their subsequent reproductive performance and progeny performance.
  - Pilot study on breeding management
  - Genetics of one-carbon metabolism in sheep in relation to productivity, fertility and health
  - Pilot Study to address poor performance in the bottom quartile of cattle on farms
  - Accessing Global Research for dairy farmers
  - Improving the control of liver fluke infection in cattle in the UK
  - Relationships between nutrition and immune function in dairy cows, and their impact on cow health and fertility, with particular reference to uterine health.



## Projects commissioned by AgriSearch between 1st April 2012 and 31st March 2013



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- Environmental implications of livestock grazing on a range of Less Favoured Area (LFA) environments (extension of previous project)

## Projects commissioned shortly after the end of the financial year

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- Impact of compaction on soil quality and nutrient availability for sustainable and competitive production in grassland and arable farming systems in Northern Ireland
  - Grass Check 5 - Grass growth monitoring and the provision of information to improve grassland utilisation efficiency.
  - Research to characterise the development of immunocompetence from birth to weaning in artificially-reared dairy and suckled beef calves differing in neonatal passive immunity (PhD Studentship)
  - Provision of a ewe-recording service to the Northern Ireland Sheep Industry (Hillsborough Recording Scheme)
  - Development of a field guide to lameness diagnosis and treatment in sheep

# The Northern Ireland Agricultural Research and Development Council

## Statement of financial activities (including income and expenditure account) For the year ended 31 March 2013

		Unrestricted Funds	
	Notes	2013	2012
		£	£
<b>Incoming resources</b>			
<b>Incoming resources from generated funds:</b>			
<b>Voluntary Income</b>			
Milk income		323,123	315,101
Beef income		79,243	77,559
Sheep income		20,663	14,892
Sheep Income – Contribution from Livestock and Meat Commission		20,000	-
Grant income (DARD Research Challenge Fund)		31,322	302,576
Dissemination income (Conference Fees)		-	830
		474,351	710,958
<b>Investment income</b>		23,393	39,256
<b>Total incoming resources</b>		497,744	750,214
<b>Resources expended</b>			
<b>Costs of charitable activities</b>			
Direct programme expenditure		499,957	227,490
Dissemination costs		41,843	35,593
<b>Governance costs</b>			
Management and administration	2	62,881	65,912
<b>Total resources expended</b>		604,681	328,995
<b>Net movement in funds for the year</b>	3	(106,937)	421,219
<b>Fund balance brought forward at 1 April 2012</b>		607,433	186,214
<b>Fund balance carried forward at 31 March 2013</b>	13	500,496	607,433

All amounts above relate to continuing unrestricted operations of the company.

The company has no recognised gains and losses other than those included in the results above, and therefore no separate statement of total recognised gains and losses has been presented.

There is no material difference between the net outgoing resources and the funds for the financial year stated above and their historical cost equivalents.

# The Northern Ireland Agricultural Research and Development Council

## Balance Sheet As at 31 March 2013

	Notes	2013 £	2012 £
<b>Fixed assets</b>			
Tangible assets	6	-	-
Investments	7	401,947	285,621
		401,947	285,621
<b>Current assets</b>			
Debtors	8	112,300	162,118
Cash at bank and in hand	9	726,824	972,103
		839,124	1,134,221
<b>Creditors: amounts falling due within one year</b>	10	(518,396)	(613,408)
<b>Net current assets</b>		320,728	520,813
<b>Total assets less current liabilities</b>		722,675	806,434
<b>Creditors: amounts falling due after more than one year</b>	11	(222,179)	(199,001)
<b>Net assets</b>		500,496	607,433
<b>Funds</b>			
Unrestricted funds		500,496	607,433
<b>Total funds</b>	13	500,496	607,433

The accounts have been prepared in accordance with the provisions applicable to companies subject to the small companies' regime.

The financial statements on pages 11 and 12 were approved by the Trustees on 24th June 2013 and were signed on their behalf by:

James Campbell  
**Director**

**Company Registration number: NI 35855**

## Notes To The Financial Statements For The Year Ended 31 March 2013

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### 1. Accounting policies

These financial statements are prepared on the going concern basis under the historical cost convention and in accordance with applicable United Kingdom accounting standards, the Statement of Recommended Practice (SORP) "Accounting and Reporting by Charities" published in March 2005, the Companies Act 2006 and in accordance with the Financial Reporting Standard for Smaller Entities (effective April 2008). The principal accounting policies are set out below.

#### **Tangible fixed assets**

Tangible fixed assets are stated at cost less accumulated depreciation. The cost of tangible fixed assets is their purchase cost, together with any incidental costs of acquisition. Depreciation is calculated so as to write off the cost of tangible fixed assets, less their estimated residual values, on a straight line basis over the expected useful economic lives of the assets concerned. The principal annual rates used are as follows:  
Computer equipment - 20% straight line

#### **Investments**

Investments are valued at Open Market Value as at 31 March 2013. Investment income is recognised on a receivable basis and arises from interest bearing deposit accounts.

#### **Incoming resources**

Income represents all monies, on an accruals basis, collected on behalf of the charity by its agents. The levy rates charged to producers are as follows:-

- Milk - 0.02p per litre
- Beef - 20p per head
- Sheep - 5p per head

Included within sheep income in the year is a contribution of £20,000 from the Livestock & Meat Commission.

#### **Grants receivable**

Grants are recognised in the statement of financial activities in the period in which they are receivable. Income is deferred only when the charity has to fulfill conditions before becoming entitled to it, or where the funder has specified that the income is to be expended in a future period.

#### **Resources expended**

All expenditure is accounted for on an accruals basis and has been classified under headings that aggregate all costs related to the category.

#### **Direct programme expenditure**

Direct programme expenditure represents research and development grants approved for payment. These are charged as expenditure in the year in which the commitment is made and are carried forward as a liability until paid.

#### **Management and administration expenditure**

These represent costs incurred in the management of the company's assets, organisational administration and compliance with constitutional and statutory requirements and other support functions.

#### **Value Added Tax**

The company is not registered for VAT purposes; therefore expenditure in total is shown gross of VAT.

# The Northern Ireland Agricultural Research and Development Council

## Notes To The Financial Statements (Continued) For The Year Ended 31 March 2013

### Unrestricted Funds

Unrestricted funds are amounts received or generated and which are expendable at the discretion of the company in furtherance of its objectives.

	Notes	2013	2012
		£	£
<b>2 Management and Administration</b>			
Promotion, publications and advertising		8,082	6,750
Administrative costs		54,799	59,162
		62,881	65,912

### 3 Net incoming (outgoing) resources

This is stated after charging:

Auditors' remuneration	2,250	2,550
Depreciation of tangible fixed assets		
- on owned assets	-	-

### 4 Trustees' emoluments and expenses

The Trustees received no emoluments during the year (2012: Nil) and no other pension costs were accruing to trustees in either year.

The Trustees received expenses of £3,134 during the year (2012: £2,142) for travel.

### 5 Taxation

The company is a registered charity, and as such is entitled to certain tax exemptions on income and profits from investments, and surpluses on any trading activities carried on in furtherance of the charity's primary objectives, if these profits and surpluses are applied solely for charitable purposes.



# The Northern Ireland Agricultural Research and Development Council

## Notes To The Financial Statements (Continued) For The Year Ended 31 March 2013

<b>6 Fixed assets</b>	<b>Computer Equipment</b>
	<b>£</b>
Cost	
At 1 April 2012 and 31 March 2013	12,713
Accumulated depreciation	
At 1 April 2012	12,713
Charge for year	-
At 31 March 2013	12,713
Net book value	
At 31 March 2013	-
At 31 March 2012	-

### 7 Investments

Investments purchased during the year are primarily held to provide an investment return for the charity. The movements in investments in the year were

	<b>2013</b>
	<b>£</b>
Market Value at 1 April 2012	285,621
Additions	100,000
Change in Market Value	16,326
Market Value at 31 March 2013	401,947

### 8 Debtors

	<b>2013</b>	<b>2012</b>
	<b>£</b>	<b>£</b>
Trade debtors – levy debtors	102,387	109,677
Prepayments and accrued income	9,913	52,441
	112,300	162,118

### 9 Cash at bank and in hand

	<b>2013</b>	<b>2012</b>
	<b>£</b>	<b>£</b>
Cash at bank	726,824	972,103

# The Northern Ireland Agricultural Research and Development Council

## Notes To The Financial Statements (Continued) For The Year Ended 31 March 2013

	2013 £	2012 £
<b>10 Creditors: amounts falling due within one year</b>		
Trade creditors	91,232	123,684
Other creditors - committed expenditure (note 12)	415,745	487,928
Accruals and deferred income	11,419	1,796
	518,396	613,408
<b>11 Creditors: amounts falling due after one year</b>		
Other creditors — committed expenditure (note 12)	222,179	199,001
<b>12 Committed Grant Expenditure</b>		
Committed expenditure at 1 April 2012	686,929	1,301,213
Further commitments during the year	491,148	451,261
Cancelled project -		(311,060)
Paid during the year	(540,153)	(754,485)
At 31 March 2013	637,924	686,929
<b>13 Reconciliation of movement in accumulated funds</b>		
At 1 April 2012	607,433	186,214
Net incoming (outgoing) resources for the year	(106,937)	421,219
At 31 March 2013	500,496	607,433

### 14 Share capital limited by guarantee

The Northern Ireland Agricultural Research & Development Council is a company limited by guarantee. The liability of the members is limited to an amount not exceeding £1.

# The Northern Ireland Agricultural Research and Development Council

## Management and Administration Expenditure Year Ended 31 March 2013

	2013	2012
	£	£
<b>Management and Administration Expenditure</b>		
Annual report publication	1,021	899
Advisory support costs	7,061	5,851
Management charge: Countryside Services Limited	21,381	22,262
Audit and accountancy fees	2,704	2,250
Insurance	2,554	2,523
Miscellaneous expenses	3,084	1,570
Web Design and Upkeep	111	2,450
Venue costs	-	270
Computer software support	816	1,641
Chairman's honorarium	6,250	6,250
VAT costs	11,347	12,289
Catering	-	2,515
Postage	716	-
Rental Fee	5,000	5,000
Depreciation	-	-
Bank fees	836	142
	<b>62,881</b>	<b>65,912</b>

## AGRISEARCH BOOKLETS

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### **1 SHEEP**

The Effects of Genetics of Lowland Cross-Bred Ewes and Terminal Sires on Lamb Output and Carcass Quality

### **2 DAIRY**

A Comparison of Four Grassland-Based Systems of Milk Production for Winter Calving High Genetic Merit Dairy Cows

### **3 DAIRY**

Dairy Herd Fertility - Examination of Effects of Increasing Genetic Merit and other Herd Factors on Reproductive Performance

### **4 SHEEP**

Developing Low Cost 'Natural-Care' Systems of Sheep Production

### **5 BEEF**

An Examination of Factors affecting the Cleanliness of Housed Beef Cattle

### **6 BEEF**

The Effects of Housing System on Performance, Behaviour and Welfare of Beef Cattle

### **7 DAIRY**

Developing Improved Heifer Rearing Systems

### **8 BEEF**

The Influence of Suckler Cow Genetics and Terminal Sire on Performance of the Suckler Herd

### **9 DAIRY/ BEEF**

Reducing Organic Nitrogen Outputs from Dairy Cows and Beef Cattle in Nitrate Vulnerable Zones

### **10 DAIRY**

The Effect of the Type of Dietary Supplement on the Performance of the Grazing Dairy Cow

### **11 DAIRY**

Are International Dairy Sire Genetic Evaluations Relevant to Milk Production Systems in Northern Ireland?

### **12 DAIRY/ BEEF**

Holstein Bull Beef

### **13 DAIRY**

Effective Footbathing of Dairy Cows

**14 DAIRY**

Effects of Feeding Forage Maize and Whole Crop Silages on the Performance of Dairy Cows Offered Two Qualities of Grass Silage

**15 BEEF**

Maximising Beef Output from the Suckler Herd Through the Production of Heavy Bulls

**16 DAIRY**

The Effect of Reducing the Protein Content of the Diet on the Performance of Dairy Cows

**17 DAIRY**

Comparisons of Dairy Cow Management Strategies which Differ in Labour Inputs

**18 DAIRY**

Reducing Phosphorous Levels in Dairy Cow Diets

**19 DAIRY**

The Effect of Applying Slurry During the Grazing Season on Dairy Cow Performance

**20 BEEF**

Contribution of Meat (Beef and Lamb) From Grass-Fed Ruminants to the Total Human Dietary Intake of Long Chain N-3 Polyunsaturated Fatty Acids

**21 BEEF**

Maximising Returns from Beef Sourced from the Dairy Herd

**22 DAIRY**

A Comparison of the Performance of Holstein-Friesian and Norwegian Red cows on Northern Ireland Dairy Farms

**23 DAIRY**

The Effect of a Number of Novel Supplementation Strategies on Milk Production and Fertility of High Yielding Dairy Cows

**24 DAIRY**

A Comparison of the Performance of Holstein-Friesian and Jersey Crossbred Cows across a Range of Northern Ireland Production Systems

**25 DAIRY**

The Effect of Applying Cattle Slurry as the Sole Source of Nutrients over a Four Year Period on the Yield and Persistency of Seven Perennial Forage Crops

**26 DAIRY**

Grassland performance and its relationship with profitability on 10 Northern Ireland dairy farms

**27 DAIRY**

The Effect of offering concentrates during the dry period on dairy cow performance





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