AgriSearch NI
Farmer Funded Research

Over 200 farmers attend Beef Farm Walks

Around 250 farmers attended the four RCF Suckler Beef farms walks held at the end of July organised by AgriSearch, AFBI and CAFRE. Held on the farms of Arti Birt, Sean McBride, Hugh McCollum and Patrick and Ciaran Kearney.

The first farm walk was held on the farm of Arti Birt near Portaferry on the Ards Peninsula. Arti farms 160 Limousin X Charolais X Simmental (3 way cross) suckler cows on 290 acres. The majority of the progeny are finished. Arti aims to maximise production efficiency by:

- Monitoring performance
- Efficient use of labour
- Calving at 24 months of age in an ideal body condition
- 25 acres reseeded annually
- Bull selection based on EBV figures

Part of the large crowd of farmers who attended the Beef Farm walk at Arti Birt's

Inside this issue

Table 1 Target weights for rearing replacements based on a mature cow weight of 650kg

Bulling weight 60% mature weight at 14 months

Calving weight 90% mature weight at 24 months

Age (months)	Weight (kg)	Growth rate (kg/d)
3	110	0.90
6	215	
9	280	
12	330	0.74
14	390	
18	480	
21	532	0.57
24	585	

Recent farm developments include the regular weighing of cattle to monitor growth and using the data collected to modify diets in line with animal performance.

Francis Lively from AFBI explained that in order to calve replacement heifers down successfully at 24 months certain liveweight targets need to be met. Heifers should weigh 60% of mature weight at 14 months for bulling and 90% of mature weight at 24 months for calving.

Table 1 above shows the target weights and growth rates for a replacement heifer (based on a mature cow weight of 650kg).

Table 2 overleaf shows the average performance of Arti's spring 2010 born replacement heifers. As can be seen they are well on track.

Francis Lively explaining the growth targets that need to be achieved to calve down replacement heifers at 24 months

A new on-line growth monitoring tool has been developed to help farmers monitor actual liveweight against targets. This will shortly be available on the DARD rural portal for all farmers to use.

An animal list and ages are automatically supplied by APHIS, weights are

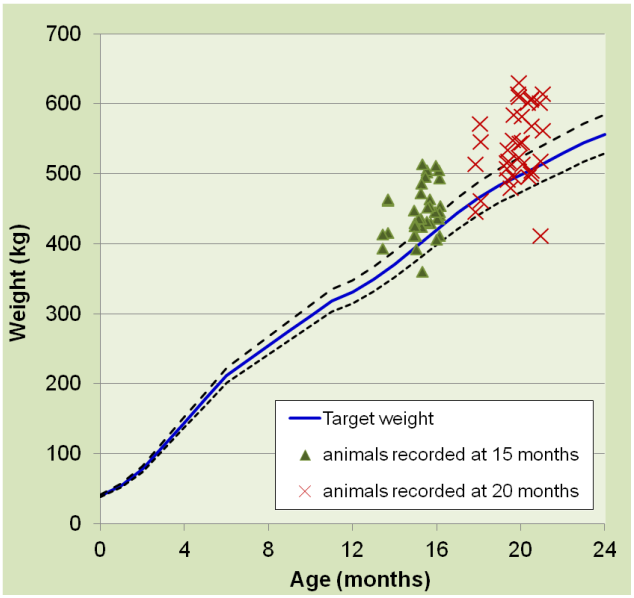
Table 2 Performance of spring 2010 born heifers

SUMMARY	Spring 2010
Mature cow weight	620 kg
Target weight at 1st calving	555 kg
Target weight at breeding	370 kg
No. of animals	43
Age	15 months
Live weight	447 kg
DLWG achieved	0.89 kg/day
No. of animals	34
Age	20 months
Live weight	540 kg
DLWG achieved	0.82 kg/day

automatically plotted against target. An example of the graphic reports generate by this new on-line tool can be seen on the next page.

This graph shows the individual weights of Arti Birt's heifers in relation to their age. It makes it easy to identify under performing animals so you can take the necessary corrective action.

Farmers attending the event at the farm of Sean McBride, Ballycastle heard how he has maximised production efficiency by monitoring performance, calving down at 24 months of age and maximising the production and utilisation of grass.



Sean farms 450 acres near Fair Head. He has 55 Limousin, Hereford and Angus cross suckler cows and finishes the majority of their progeny. In addition he also has 555 ewes and 230 hoggets.

Sean is aiming for a mature cow weight of 585kg so his target weight at bulling and calving should be 350kg and 530kg respectively. The performance of Sean's spring 2011 born heifers can be seen in Table 3 over leaf.

Host Farmer Sean McBride

Table 3 Performance of Sean McBride's spring 2011 born heifers

SUMMARY	Spring 2011
Mature cow weight	585 kg
Target weight at 1st calving	530 kg
Target weight at breeding	350 kg
No. of animals	19
Age	12 months
Live weight	348 kg
DLWG achieved	0.85 kg/day
No. of animals	15
Age	14 months
Live weight	378 kg
DLWG achieved	0.80 kg/day

The Bovine Information System (BovIS) has recently been launched. This will use data from APHIS and meat plants to help producers monitor performance with ease. This can also be linked to CAFRE benchmarking.

Data from the BovIS system (as shown in the table below) illustrates how the six farms involved in the Research Challenge Fund project have improved performance when compared to the Northern Ireland average.

Albert Johnston from CAFRE highlighted the importance of making the most of grazed grass and of making high quality grass silage. He explained that a 330 kg continental heifer eating high quality silage (77 D-value) would require no concentrates to achieve a daily liveweight gain of 0.74kg whereas the same animal receiving 66 D-value silage would require 4.5kg of concentrate to achieve the same liveweight gain.

The third farm walk was held on the farm of Hugh McCollum who farms 100 mainly Aberdeen Angus suckler cows on 400 acres. Progeny are finished through the Aberdeen Angus Quality Beef Scheme (Hugh is Chairman of AAQB).

	RCF farms (11/12)[1]	NI average[2]
Age at first calving (months)	24	31
Calving interval (d)	368	400
Calves per cow per year	0.95	0.83
Females not calved (%)	4.0	10.7
% of heifers calved 22-26 months of age	72	18
% of herd calving within 90 days	75	68

[1]Based on four out of the six RCF farms as two had yet to complete the calving season when reports created

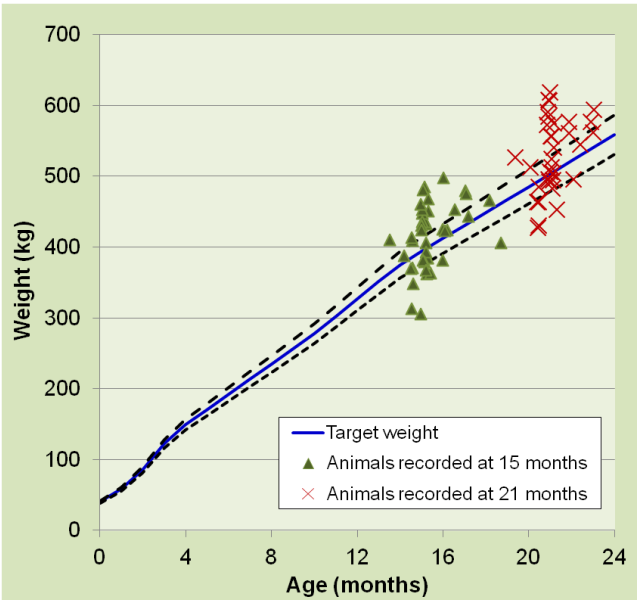
[2]Based on approximately 250 Northern Ireland suckler herds

Table 4 Key performance indicators (KPIs) of RCF farms compared to the Northern Ireland average

Table 5 Effect of silage quality of animal growth rates

Silage quality	D –value (% DM)	330 kg continental heifer		515 kg in-calf continental heifer	
		Growth rate from silage alone (kg/d)	Conc required to achieve 0.74 kg/day	Growth rate from silage alone (kg/d)	Conc required to achieve 0.5 kg/day
High	77	0.95	0	1.0	0*
Low	60	0.04	4.5	0.01	3.5
Average	**67**	**0.44**	**2.0**	**0.45**	**0.50**

Host Farmer Hugh McCollum



Performance of Hugh McCollum's Spring 2011 born replacement heifers

The key objective on the McCollum farm is to produce prime quality carcasses in the most cost efficient manner. Carcass gain and slaughter data can be seen in Table 6 and 7 below.

Table 6 (right)
Carcass gain of Hugh McCollum's finished cattle

Animal type	Target daily carcass gain (kg/d)	Daily carcass gain achieved (kg/d)
Steers	0.47	0.44
Heifers	0.45	0.39

Table 7 Performance of Hugh McCollum's finished cattle

Animal type	No. killed	Carcass weight (kg)	Age at slaughter (months)	Grade	Fat class
Steers	62	320	24	O+	3=
Heifers	27	284	24	R-	3+

Hugh aims to make efficient use of labour with a compact calving season and maximises the grazing season through early turnout.

The final farm walk was held at the farm of Patrick and Ciaran Kearney near Plumbridge.

Ciaran farms 50 suckler cows (including pedigree Simmentals), 130 ewes and 500 store lambs on 346 acres (including 176 acres hill grazing).

Ciaran's aims are:

- Minimise labour through use of EID systems
- Continuous monitoring of performance to enable informed management decisions
- Genetic improvement through bull selection
- Maximising production efficiency - calving at 2 years of age
- Improve silage quality

The performance of Ciaran's spring 2011 born heifers can be seen in Table 8.

Table 8 Performance of Sean McBrides spring 2011 born heifers

SUMMARY	Spring 2010
Mature cow weight	665 kg
Target weight at 1st calving	600 kg
Target weight at breeding	400 kg
No. of animals	19
Age	13 months
Live weight	394 kg
DLWG achieved	0.85 kg/d
No. of animals	17
Age	20 months
Live weight	527 kg
DLWG achieved	0.80 kg/d

Ciaran recently switched from calving at 3 years old to calving at 2 year of age and has been very pleased with the change.

Table 9 overleaf shows the calving performance of the 6 suckler herds involved in the Research Challenge Fund project as well as the herd at Hillsborough who are all calving down at 24 months. As can be seen their was relatively little calving difficulty with an average of only 4% of heifers requiring veterinary assistance at calving.

Host Farmer Ciaran Kearney explaining his farming system

Table 9 Calving performance of RCF Farmers' and AFBI Hillsborough's suckler herds

Farm	No. calved	Calves born dead/dead within 24 hrs	Calf birth weight (kg)	No. of veterinary assisted calvings
A	33	1	36	2
B	11	0	32	0
C	31	3	37	0
D	16	1 (twin)	42	1
E	10	1	36	0
F	36	4	38	3
Hillsborough	21	1	36	0

Indeed CAFRE have been successfully calving suckler heifers at 2 years of age since 2007. 2 year old heifers are consistently the most efficient age group in the herd as can be seen from the data in table 10 below.

On average all Research Challenge fund herds have decreased their age at first calving by 3.3 months since starting the project.

Table 10 Calving at 2 versus 3 years of age - CAFRE experience

	2 year calving [1]	Mature cows
Weight at weaning (kg) [2]	576	666
Calf gain (kg/d)	1.01	1.10
200d weight (kg)	245	264
Weaning efficiency [3]	42.5	40.3
Percentage back in calf (%)	93	94

[1] Easy calving sire used

[2] 2 year old and 3 year old heifers attain similar mature weights

[3] Calf weight at 200 days per 100kg cow weight

Steven Morrison explained that in addition to improving a farm's technical and financial performance, calving down at 24 months as opposed to 36 months significantly reduces emissions of greenhouse gas. This is due to:

⇒ Fewer animals on the farm *(see table 11 below)*
⇒ Fewer inputs required such as feed and land
⇒ Increased carcass output per ha
⇒ Improved cow longevity and fertility

Table 11 Effect of age at first calving on the number of replacement heifers on the farm (100 cow herd)

Age group	Age at calving (months)	
	24	36
0-12	20	20
12-24	20	20
24-36	0	20

Methane - enteric fermentation in rumen, manure management.

Reducing the age at first calving could reduce greenhouse gas emissions by 10-15%.

Other methods of reducing greenhouse gas emissions include:

- Reducing age at slaughter
- Balanced diet formulations
- The use of improved beef genetics
- Minimising animal mortality and morbidity
- Improving fertility
- The efficient use of fertiliser nitrogen, clover and legumes

Improved efficiency is key!

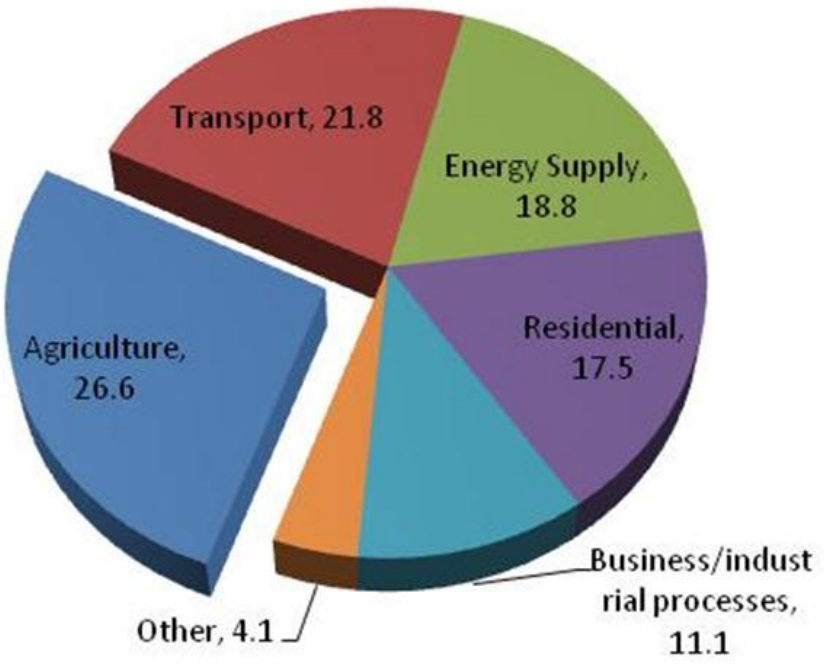
DARD and AgriSearch have commissioned AFBI to develop a tool to enable producers to calculate emissions on their own farm. This will be available on the DARD rural portal later this year.

As can be seen from the pie chart opposite agriculture now accounts for 26.6% of the total Northern Ireland greenhouse gas emissions.

The greenhouse gases associated with agriculture are:

Carbon dioxide - fertiliser, lime, herbicides, pesticides, fuel, electricity, animal feed etc

Nitrous oxide - fertiliser application, manure management, crop residues etc



Percentage contribution of Agriculture and other sectors to total Northern Ireland Greenhouse Gas Emissions

Independent Farmer Trustees Sought for Board of AgriSearch

AgriSearch (Northern Ireland Agricultural Research and Development Council) seeks applicants for two vacancies on its Board for Independent Farmer Trustees.

AgriSearch was formed in 1997 to provide a mechanism through which beef, dairy and sheep farmers could have direct involvement in production orientated research. Funds contributed to AgriSearch are used to commission research into the improvement and development of beef, sheep and dairy farming.

AgriSearch's guiding principle is to provide practical benefit for primary producers to reduce costs, improve performance, drive innovation and improve welfare. Duplication of existing R&D work is avoided and every effort is made to get maximum leverage from complementary funding sources.

The Board of Trustees is responsible for the overall corporate governance of AgriSearch. It reviews research projects recommended by the three sectoral advisory committees and acts as a custodian of its finances.

Trustees serve for three years per term of service and may be re-elected up to a maximum of three terms. There is no payment for such service but travelling expenses will be paid to attend meetings, events etc.

As the two vacancies are for 'Independent Farmer Trustees' applicants must be actively engaged in beef, dairy and / or sheep farming in Northern Ireland and be an AgriSearch levy payer.

Application forms are available by contacting Jason Rankin on 028 8778 9770 or alternatively can be downloaded from the AgriSearch website by clicking here.

The closing date for application is Friday 7th September 2012. Interviews for the positions will be held during the week beginning 10th September 2012, following which nominations will be put to the Annual General Meeting on the 8th October 2012.

AgriSearch NI
Farmer Funded Research

AgriSearch seeks to appoint two independent farmer representatives to its Board of Trustees

The above persons should be actively involved in farming

The AgriSearch Board of Trustees meets three times per year to approve research projects forwarded by AgriSearch's Advisory Committees. By selecting suitable near market research of practical benefit to farmers Trustees play an important part in keeping NI agriculture competitive, as well as acting as stewards for levy monies.

The role is for a three year term and travelling expenses will be paid to attend meetings.

The closing date for applications is 7th September 2012

For further information on the role or to obtain an application form please contact Jason Rankin on 028 8778 9770 or visit www.agrisearch.org

Dr Debbie McConnell graduates

Dr Debbie McConnell, daughter of Drew and Val McConnell, Carrigans, Omagh who recently graduated from Queen's University, Belfast with a PhD in Biological Sciences having previously graduated from Durham University with a BSc(hons) degree in Geography.

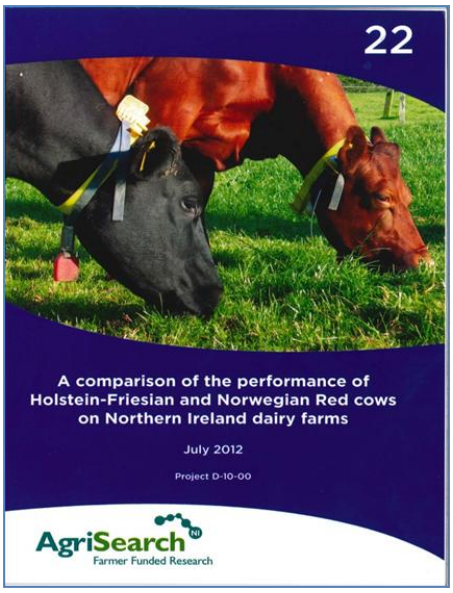
Her PhD evaluated strategies to reduce phosphorus losses from agricultural soils. Debbie received a postgraduate studentship from DARD. Her research was conducted at AFBI, Hillsborough and was co-funded by DARD and AgriSearch. Her research will be of great value when it comes to the negotiations to renew Northern Ireland's Nitrates Action Programme.

Debbie will shortly take up a post as Research and Development Manager with DairyCo in Stoneleigh, England.

AgriSearch would like to offer Debbie our congratulations on her graduation and wish her every success in her new role with DairyCo.

Dr Debbie McConnell BSc PhD

Congratulations to AFBI lead sheep researcher Dr Ronald Annett and his wife Mandy on their marriage earlier this summer



A new farmers booklet on the Norwegian Red cattle trial is now available to request a copy phone AgriSearch on 028 8778 9770
email: info@agrisearch.org
or download an electronic copy here

Norwegian Reds—How did they do? Part III

AgriSearch has just published a new farmers booklet on the Norwegian Red cattle trial. In a series of articles we have been looking at the results of the Norwegian Red project.

In our first article we looked at calving difficulty, calving temperament, calf mortality and milking temperament. In the second article we turned to milk production. In this third and final article we are looking at fertility, longevity and financial performance.

The results of the study provided clear evidence of improved fertility with Norwegian Red cows compared to Holstein-Friesian cows. Table 1 opposite shows a clear trend toward a higher conception rate at first artificial insemination with the Norwegian Red cows. In addition, as can be seen in Table 2 below, there was a clear trend for Norwegian Red cows to have a lower calving interval than the Holstein-Friesian cows in each of lactations 2 - 4, although it must be remembered that calving interval data hides the increased infertility rates with the Holstein-Friesian cows. The over all culling data from the experiment highlighted that 28.5% of Holstein-Friesian cows and 11.8% of Norwegian Red cows were culled as infertile prior to lactation 6.

Table 1 Effect of breed on conception to first AI

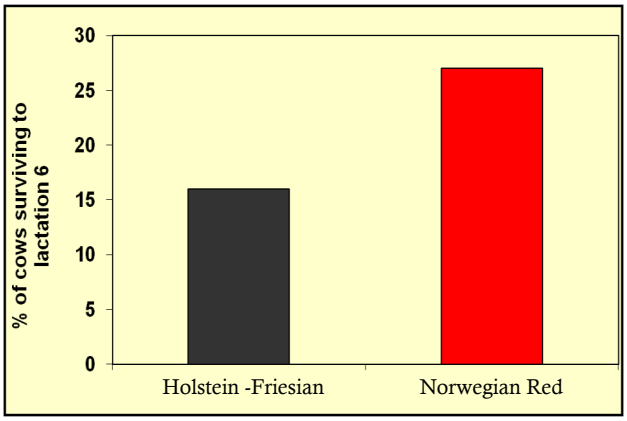
	Holstein-Friesian	Norwegian Red
Heifers	58%	66%
Lactation 1	41%	55%
Lactation 2	39%	60%
Lactation 3	35%	65%
Lactation 4	52%	59%

Table 2 Effect of breed on calving interval

	Holstein-Friesian	Norwegian Red
Lactation 1	389	399
Lactation 2	390	379
Lactation 3	397	376
Lactation 4	387	384
Lactation 5	399	386

While poorer fertility levels are normally associated with increased levels of negative energy balance, the condition score data from this experiment suggested no difference between breeds in the extent of tissue mobilisation. Thus the improved fertility within the current study is likely a direct reflection of the long term genetic selection for improved fertility within Norway.

The results of this experiment demonstrate that a much broader selection index, such as the Total Merit index in Norway, can improve cow longevity. For example, 27.2% of Norwegian Red cows, compared to 16.3% of Holstein-Friesian cows, survived until the end of the fifth lactation. Although cow survival was not monitored after this point, an extrapolation of the data indicates that on average Holstein cows completed 3.5 lactations while Norwegian Red cows completed 4.2 lactations.



While cows were culled for many reasons, the main 'cow' reasons were infertility, mastitis, feet and legs and udder structure. The higher culling rate of Norwegian Red cows due to poor udder structure can be related to an apparent weakness in the medial suspensory ligament of the udder, and this tended to be more common in later lactations, especially on farms where feed inputs and milk outputs were high. In recognition of the importance placed on udder characteristics internationally, the weighting on udder type within the Norwegian breeding programme has increased during the last decade to its current level of 15%.

The financial performance of the two breeds has been compared based on the performance data contained within these articles. Milk yield and milk composition were adjusted to take account of the different herd structures arising due to differences in survival between breeds, with milk price adjusted for compositional bonuses. The analysis has been undertaken

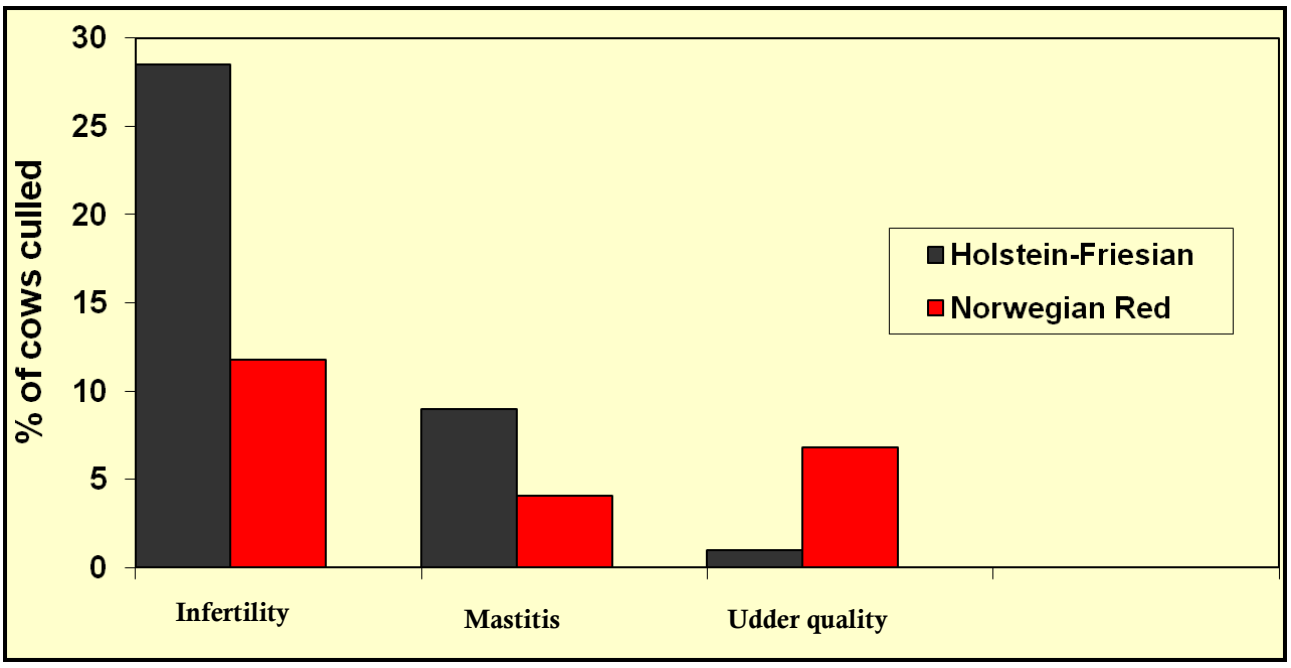


Figure 2 Main reasons for culling cows

at a milk price of 26 pence per litre. Differences between breeds in replacement rates, stillbirth rates, calves sold and cull cows sold have been included within the calculations. The value of calves sold, cull cows and replacement heifers were assumed to be the same based on findings from previous Hillsborough studies. Feed costs were based on annual food intakes obtained from previous Hillsborough studies (involving similar levels of performance), with feed costs assumed to be the same for both breeds. Vet / medicine and semen costs were assumed to be 20% lower with the Norwegian Red Cows due to their improved health and fertility.

When expressed on an annual basis, the value of milk sold with each of the two breeds was almost identical. However, when account is taken of differences in culling rate, calf survival and replacement rate, total outputs were £55/cow/year higher with the Norwegian Red cows compared to the Holstein-Friesian cows. The lower variable costs with the Norwegian Red cow reflects the lower vet/ medicine and AI costs assumed, while equal overhead costs where adopted with each breed. The overall outcome is was that Norwegian Red cows had a gross margin and net profit which was £78/cow/year higher than the Holstein -Friesian cows.

Table 3 Comparison of the economic performance of Holstein-Friesian and Norwegian Red cows (cow/year basis)

	Holstein-Friesian	Norwegian Red
Milk sold (litres/cow/year)	6582	6508
Fat (%)	3.78	3.87
Protein (%)	3.25	3.33
Outputs (£/cow/year)		
Milk sold	1700	1708
Calves sold	89	104
Cull cows sold	198	164
Less replacement charge	374	309
Total outputs	1613	1668
Variable costs (£/cow/year)	763	739
Gross margin (£/cow/year)	851	929
Overhead costs (£/cow/year)	490	490
Net profit (£/cow/year)	361	439

AgriSearch joins with other European countries to tackle dairy farming's biggest challenges

AgriSearch has joined forces with other European levy funded organisations to collaborate more closely on dairy research, development and knowledge exchange.

Dairy levy bodies in six European countries have signed up to the European Cattle Innovation Partnership (ECIP), the culmination of an initiative by dairy farmer and former Farmers Club chairman Richard Holland. Mr Holland saw an opportunity for levy organisations across Europe to better co-ordinate efforts to tackle priority issues, and make the most of existing research available from other countries.

"Many of the issues facing dairy farming are common across several countries'' explains Mr Holland. By forming a partnership, we now have a recognised platform where we can share our research and knowledge, to address those issues in a much more efficient way."

The group has compiled a list of over 200 projects, which will be kept up to date under the new collaboration agreement. The database provides an overview of current activity, as well as identifying projects whose results may be readily translatable to other countries.

AgriSearch Chairman James Campbell says:

"The partnership is an excellent opportunity for us to get a better return on our research funds for levy payers. We will be looking at where we can avoid duplication and act more strategically in R&D terms, across a wider geographic area. For example, there are lessons we can take from Danish research into lameness, or from work on manure management in the Netherlands. The distinguishing feature of this group is that it represents the needs of the dairy farmer, and is very much focussed on increasing the impact of applied R&D at farm level."

The partnership currently includes: Productschap Zuivel and LTO (Netherlands); Knowledge Centre for Agriculture (Denmark); Centre National Interprofessionnel de l'Economie Laitière (CNIEL") and Fédération Nationale des Producteurs de Lait (FNPL) (France); Israel Dairy Board; DairyCo (Great Britain) and AgriSearch.

During 2012, ECIP will be co-ordinated by the Dutch Dairy Board. As ECIP matures, the group will develop proposals targeting additional EU funds, to underpin collaborative research, development and knowledge exchange.

BovIS now available online

The first phase of the Bovine Information System (BovIS) is now available on the rural portal (www.ruralni.gov.uk). This database brings together data from APHIS and the main Northern Ireland meat plants to enable farmers to benchmark the physical performance of their herds.

When logged in farmers are able to obtain a summary of the physical performance of all animals slaughtered since 1st January 2009. This includes the percentage of animals that are 'in-spec' and a break down of the performance of the progeny of from various sires and dams.

They are also able to generate reports on different breeds and categories (steers, heifers, young bulls and cows) and compare their performance against similar producers ranked in the top 10%.

New AgriSearch Sheep Advisory Committee Meets

When the new AgriSearch sheep advisory committee met to examine how research projects already selected for support are progressing it was a virtual who's who of the NI sheep sector!

The sheep advisory committee likewise took the opportunity to discuss further potential research projects of value to farmers and worthy of support by AgriSearch. Plans were also put in place for sheep farm walks this coming autumn and spring when scientists and farmers working together on research projects will give a results up date to lamb producers.

Further details of the new research projects and sheep farm walks will appear in forthcoming issues of this Ezine.

Standing, from left: Seamus Maginn, Crosby Cleland, Jonathan Birnie, Samuel Wharry (Vice-Chair), Isaac Crilly, Neville Graham and Colin Smith
Seated from left: David Wallace, Ian Buchanan (Chair), Raymond Steen and Edward Adamson
Committee member Campbell Tweed had to leave early and Barry Brogan was unable to attend.

Research Challenge Fund Dairy Farm Walks Planned

A series of three dairy farms walks will take place on 31st October and 1st & 2nd November across the province. Details of the farms will follow.

Each farm walk will start at 11am and finish around 2pm with a bite of lunch.

These farm walks will be organised in conjunction with AFBI and CAFRE. Topics to be addressed include:

- Transition cow management (including fertility & health issues)
- Forage quality and availability
- Winter feeding & feed use efficiency
- Greenhouse gas issues

Further details will follow in future editions and in the farming press.

Is there a role for New Zealand Sheep Breeds in Northern Ireland?

Summary

Experience to-date indicates that lambs born to maternal breed sires from New Zealand (Romney, Highlander) perform well on the ground but struggle with carcass conformation.

Terminal sire breeds (Primera) are easy-lambed and produce fast-growing lambs with reasonable carcass conformation. These breeds may have a role to play in the future.

Crossbred ewes are currently being evaluated on both hill and lowland flocks.

Introduction

The previous chapter highlighted the issue of high labour requirements on sheep flocks in the UK and Ireland. The situation is very different in New Zealand where flock sizes of 1,500 to 2,500 ewes per labour unit are common, and intervention rates at lambing are often below 1%. Unlike the UK sheep industry, which has some 90 recorded breeds (excluding crossbreds), the New Zealand industry has fewer than 30 recorded breeds plus some composite types, with the NZ Romney accounting for more than half of the ewe population. This chapter examines the potential role for New Zealand sheep breeds within NI farming systems.

Which breeds are being assessed?

Three sheep breeds are currently being investigated within AFBI trials:

- NZ Romney
- Highlander
- Primera

NZ Romney

The Romney is the most common breed of sheep in New Zealand for a number of reasons. Firstly it is well adapted to grazing in both hill and lowland environments. Also, it is regarded as a dual purpose breeding suitable for both meat and wool production, which provides a degree of flexibility. However the Romney is noted most for its excellent mothering ability, and a number of Romney-cross ewes are currently being investigated by AFBI for their maternal ability.

The performance of 1st cross Romney lambs is outlined in Tables 5.1 and 5.2.

Ease of lambing was very similar to the Texel X lambs despite the Romney crosses being 0.5kg heavier at birth. However, with 23% ewes requiring assistance, it is difficult to see a role for Romney sires within easier-care sheep systems.

Table 5.1 Performance of Texel and NZ Romney sires on 6 lowland flocks

	Texel	NZ Romney
% lambs born unassisted	77	77
Birth weight (kg)	5.4	5.9
Mortality at birth (%)	6	5
Weaning weight (kg)	33.6	33.9
Birth to weaning LWG (g/d)	263	265

Table 5.2 Comparison of the carcass characteristics of lambs sired by Texel and NZ Romney rams (slaughtered at fat class 3)

	Texel	NZ Romney
Age at slaughter (days)	200	174
Slaughter weight (kg)	45.2	45.5
Carcass weight (kg)	20.3	19.7
Kill-out %	44.7	43.2
Conformation grades (%):		
U	22	11
R	72	65
O	6	24
Carcass value (£)[1]	61.22	58.84

Growth rate and weaning weight were also very similar in these breeds. Being an earlier maturing breed, the Romney X lambs reached finished condition on average 26 days earlier than Texel X lambs, albeit with a small penalty on carcass weight (Table 5.2). Killing-out percentage was 1.5% lower for the Romney crosses, which is probably due to their heavier weight of fleece. However the Romney X lambs struggled to reach a suitable carcass conformation, with 24% lambs failing to meet the target EUR grades for conformation compared with just 6% of Texel X lambs.

Highlander

The Highlander is a maternal composite breed developed within a large-scale breeding programme by Rissington Breedline Ltd., a sheep breeding company based on New Zealand's north island. This breeding programme aims to develop a long lasting ewe of moderate mature weight with good fertility and high lamb output off grass. Emphasis is also now being placed on improving muscling and the degree of resilience to worm infestations. Highlander-cross ewes are currently being examined by AFBI on 12 hill and lowland flocks around Northern Ireland.

The performance of Highlander rams as a crossing sire for Cheviot X Blackface, Lleyn X Blackface and Texel X Blackface ewes on hill flocks is outlined in Table 5.3.

Table 5.3 Performance in 2010 of Highlander, Lleyn and Texel cross lambs within a rotational breeding programme on 6 hill flocks

	Highlander	Lleyn	Texel
% lambs born unassisted	85	80	87
Birth weight (kg)	3.9	3.9	3.8
Mortality at birth (%)	5	4	7
Weaning weight (kg)	29.8	29.9	29.2
Birth to weaning LWG (g/d)	201	202	197

While this study is currently ongoing, results to-date would indicate that Highlander X lambs are easily lambed with just 15% births requiring assistance. Growth rates and weaning weights of Highlander X lambs recorded so far have been comparable with the Lleyn and Texel cross lambs. Early indications from a small sample of lambs slaughtered in 2010/11 are that carcass conformation in Highlander X hill lambs is also comparable with Lleyn X lambs, with around 70% lambs achieving EUR grades.

Within lowland flocks, the relative merits of using Highlander rams are similar to those observed in hill flocks, as shown in Table 5.4.

To-date, Highlander X lambs have achieved similar growth rates and weaning weights to Texel X lambs but with fewer lambing difficulties. However, there is some indication that Highlander X lambs struggle to achieve a high proportion of EUR grades for conformation.

carcasses with good muscling and excellent eating quality.

Primera

Like the Highlander, the Primera is a composite breed developed within a large-scale breeding programme by Rissington Breedline Ltd. As the terminal sire breed, the target breeding objectives of Primera are to produce lambs with good viability which are born without assistance, achieve high growth rates off grass with efficient food conversion and produce

Primera sires are currently being evaluated on 6 lowland flocks around Northern Ireland. Provisional results on lamb performance up to weaning in 2010 are presented in Table 5.4. To-date, Primera sires have presented few lambing difficulties with less than 10% lambs requiring assistance at birth, which is excellent for a terminal sire breed. In keeping with their breeding objectives, Primera X lambs have achieved high growth rates off grass (comparable with Suffolk X lambs) which has continued through to slaughter. Early indications are that carcass conformation of Primera X lambs is acceptable, with around 75% lambs achieving EUR grades.

Table 5.4 Performance in 2010 of Texel, Primera and Highlander cross lambs on 6 lowland flocks

	Texel	Primera	Highlander
% lambs born unassisted	83	91	87
Birth weight (kg)	4.7	4.7	4.6
Mortality at birth (%)	6	6	4
Weaning weight (kg)	30.4	31.3	30.7
Birth to weaning LWG (g/d)	252	261	255

CAFRE / AFBI / AgriSearch
Beef Seminars
30th & 31st October 2012

As part of the ongoing Greenmount Centenary events CAFRE, AFBI and AgriSearch will be holding two seminars for the beef industry on 30th and 31st October 2012 in Enniskillen and Greenmount Campuses respectively.

Both seminars start at 7.00pm and feature the same line up of speakers. Topics for discussion include:

- Calving replacement heifers at 2 years of age
- Bull choice and genetic improvement
- Systems of beef production and nutrition
- Economics of beef production
- Grassland management
- New BovIS benchmarking tool

Along with speakers from AFBI and CAFRE, high profile, industry leading guest speakers will be at both events.

Simon Frost from the Peak District will discuss his rearing system, the uses of high EBV Charolais bulls on his Lim / Holstein suckler cows and how he has produced E grade finished bulls with record breaking daily carcass gains.

Farmers Weekly Beef Farmer of the Year 2011 and Ulster Grassland Farmer of the Year 2012, Sam Chesney will outline his secrets of success, and highlight the importance of monitoring both animal and financial performance.

Guest speaker Simon Frost

All are welcome to attend these seminars.

Sam Chesney

afbi Agri-Food and Biosciences Institute

cafre College of Agriculture, Food & Rural Enterprise

AgriSearch NI Farmer Funded Research

Physical and Financial Performance across 10 dairy farms over three years to identify the main drivers of profitability on Northern Ireland dairy farms

In a previous Ezine we featured a meeting of the farmers involved in a study which measured the physical and financial performance of 10 Northern Ireland dairy farms across three years to identify the main drivers of profitability on Northern Ireland.

Table A shows the mean, maximum and minimum three year averages for the ten farms for a range of physical performance parameters.

Although the average herd size across the 10 farms in this study was 111 cows, there was a considerable range in herd sizes. The milk output achieved on the farms also varied widely, with a difference of almost 3,800 litres/cow/year between the highest and lowest yielding herd.

Milk composition also varied widely between farms. The farm with the highest milk composition over the three years had a combined fat + protein content 24% higher than the farm with the lowest composition. Over the three years, the average milk prices received by the farmer with the highest milk

Table A. The mean, maximum and minimum three year averages for the ten farms for a range of physical performance parameters

	3 year average	Range between farms	
		Maximum	Minimum
Herd Size	111	187	74
Milk yield (litres/cow/year)	6894	8704	4912
Milk butterfat content (%)	4.09	4.52	3.55
Milk protein content (%)	3.29	3.57	2.99
Milk from forage (litres/cow/	2955	4549	2259
Concentrates fed (kg/cow/year)	1773	2549	762
Milk Price (ppl)	21.0	22.6	19.5
Length of grazing season (full	154	244	0
Pre-grazing herbage mass in early	4697	5986	3363
Post-grazing herbage mass in	2262	2500	1763
Average farm cover in early sea-	3406	4125	2513

composition was 3.1ppl higher than the farm with the lowest milk composition.

Four of the farms had a compact calving pattern (>60% cows calved within 12 weeks), with three of those described as spring calving and one farm exclusively autumn calving. The other six farms had a spread calving pattern. The highest average annual concentrate input was 2.5 t/cow, with 0.8 t/cow the lowest concentrate input. Average milk from forage achieved across the farms over the study was 2,955 litres/cow/year, however this ranged from 4,500 to 2,300 litres/cow/year between the farms.

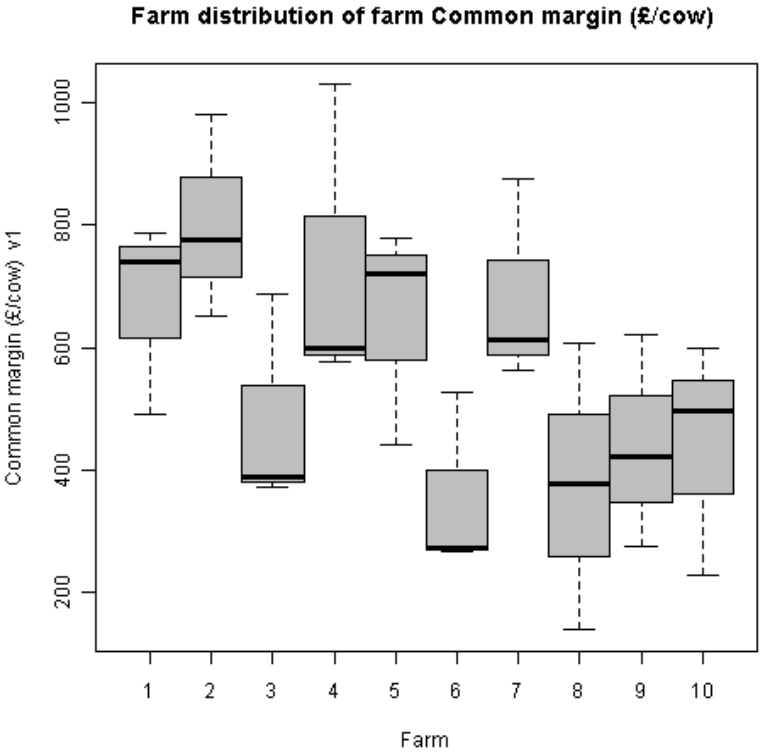


Figure A. Boxplot showing distribution of common margin (£/cow) over the three year on each farm

Although herds grazed full-time for an average of 150 days, the longest grazing season was 244 days, with one farm housing

Table B. The mean, maximum and minimum three year averages for the ten farms for a range of financial performance parameters

	3 year average across all farms	Range between farms	
		Maximum	Minimum
Concentrate costs (ppl)	4.3	6.0	1.9
Total variable costs (ppl)	7.1	8.7	5.1
Gross margin (ppl)	12.9	15.7	10.3
Common margin (ppl)	8.3	11.2	4.9
Common margin (£/cow)	564	804	356
Common margin (£/ha)	1336	1898	676

cows overnight throughout the main grazing season. On average, pre- and post-grazing herbage masses measured in early and late season were well in excess of those required to achieve efficient grass utilisation (Dale *et al.,* 2009; Lee *et al.,* 2008; McEvoy *et al.,* 2008), with this grass surplus also reflected in the average grass cover across all the fields available for grazing (average farm cover).

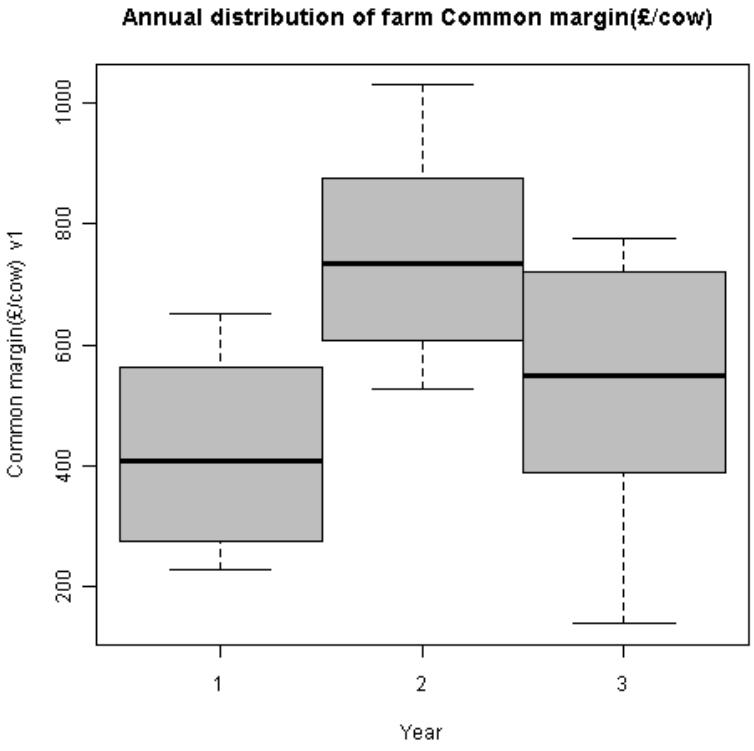


Figure B. Boxplot showing distribution of common margin (£/cow) within each year

Production costs were also extremely variable between farms (Table B), reflecting the different systems used across the farms. The lower input farms recorded variable costs of 5.1 ppl compared to 8.7 ppl recorded on the higher input farms. Common margin also varied widely between farms (Figure A) and between years (Figure B), with 8.3 ppl and £564/cow common margin achieved on average across the farms across the three years. Common margin increased in Year 2 across the farms reflecting a 40% increase in the base price paid for milk compared to Year 1. The overall reduction in common margin in Year 3 largely reflected a decline in the base price of milk and the high fertiliser prices.

Factors affecting whole farm profitability

Relationships between all parameters recorded during the study and common margin (expressed on a per cow, per litre and per hectare basis) were examined. Although the variation in common margin between farms was expected, the extent of the influence of year on common margin was not, with average common margin almost doubling between Years 1 and 2 (£425 vs £750/cow). The year effect was linked to factors mostly outside of the farmers control (global markets for milk, cereals and fertilisers and the effects of these on farm expenditure and income), and this fluctuation in the costs of inputs and value of outputs made it more difficult to identify farm factors which affect common margin. However, the influence of the key parameters on common margin (£/cow) will be discussed under the following headings;

scale, grazing management, milk price, production from forage/concentrate input and production systems.

Scale

Although the long term trend within Northern Ireland has been for dairy herds to increase in size, many remain 'one person' or 'family run' businesses. There are however an increasing number of farms, who in pursuit of further efficiencies of scale, are increasing herd size to 150 cows plus. Within this study, there was no evidence of any efficiency gains due to increasing scale in terms of costs, with no relationship established between cow numbers and forage, concentrate or variable costs (ppl). Furthermore, the number of cows in the herd at the end of each year was not related to common margin (£/cow, ppl or £/ha). The results of this study indicate that medium sized (80-120 cows), family run dairy farms can remain competitive within Northern Ireland, provided labour and overhead costs are kept in proportion to the scale of the business.

Milk yield and total milk output are also measures of scale, and many farms use milk production targets as benchmarks for their businesses. The results from this study highlight that there was no relationship between milk yield per cow and the costs of milk production (forage costs (ppl), common costs (£/cow)), with concentrate and total variable costs (ppl) tending to increase as milk yield increased. In addition, this study established that both the total volume of milk sold and the average annual milk yield per cow were poor indicators of common margin (ppl, £/ha) ($P>0.05$). Therefore, this emphasises that profitable milk production is not necessarily driven by maximising milk output, with the cost increases associated with high milk production systems eroding any competitive advantage over the moderate input/output systems. There is also a risk that if milk price should fall within a high input system, then the costs of production are such that the business could be operating at a net loss (ppl).

In the next ezine we will look at the relationship between grazing management and financial performance.

Published by:
Northern Ireland Agricultural Research and Development Council (T/A AgriSearch)
97 Moy Road
Dungannon
County Tyrone
BT71 7DX