AgriSearch NI
Farmer Funded Research

Weigh bands free for first 200 farmers on AgriSearch stand!

AgriSearch will once again have a stand at the Winter Fair along with Animal Health and Welfare Northern Ireland.

We will be on stand 123 in the main pavilion across from the DARD stand.

As always it will feature results from the latest research and a number of farmers' booklets will be available, including a user's guide to BovIS and the final results of the BVD prevalence study.

Maria Guelbenzu from AFBI, Stormont will be presenting the results of the BVD prevalence study at a seminar at the Winter Fair at 12 noon.

Maria Guelbenzu (inset) will be speaking at the Seminar Suite at the Winter Fair on the BVD Prevalence Study

In addition, AgriSearch will feature the new growth monitoring tool available on BovIS (Bovine Information System) through the DARD rural portal. This can be used to track the performance of a wide variety of stock, including dairy heifers, enabling comparisons to be made against known targets.

BovIS
Bovine Information System

To encourage farmers to avail of this tool AgriSearch will be giving out 200 dairy heifer weight bands. All we ask in return is that farmers complete a short survey aimed at identifying areas AgriSearch should prioritise for future dairy research.

AgriSearch's Global Research Officer, Dr Gareth Arnott, will also be in attendance to discuss the interim findings of his desktop research examining confinement and zero-grazing systems.

Dr Gareth Arnott

Amanda Awarded PhD Scholarship

Amanda Dunn, from Brookeborough, Co Fermanagh has been awarded AgriSearch funding to undertake a PhD project on 'The Development of Immunocompetence in suckled beef and dairy calves.'

This three year study will produce best practice guidelines for calf rearing on Northern Ireland farms that will ensure livestock performance and animal welfare targets are met. Due to major advances made over recent years in genetics, technology and nutrition the way calves are reared has an ever greater impact on the profitability of dairy and beef enterprises.

Amanda, whose considerable practical farming experience includes working on a large dairy goat unit at Brookeborough, undertakes this AgriSearch study supervised by Dr Steven Morrison (AFBI), Niamh O'Connell (QUB) & Michael Welsh (AFBI).

AgriSearch Chairman James Campbell (left) congratulates Amanda Dunn on being awarded a PhD Scholarship. Also looking on AgriSearch Vice-Chair David Workman

Total Confinement vs. Pasture Systems: What does the Science Say?

Dr Gareth Arnott

There is considerable interest in the use of total confinement and zero-grazing dairy systems. This interest has spiked in recent times on the back of this year's late spring and fodder crisis, together with the term *du jour* of 'sustainable intensification', further highlighted in this year's Agri-Food Strategy report 'Going for Growth'. However, maintaining growth in the Northern Ireland dairy sector is a major challenge, particularly with land availability a considerable limiting factor. In this environment, many dairy producers are questioning what the best production system for their situation is.

Recent wet summers have increased interest in total confinement systems

To help inform this debate, AgriSearch have funded a review "Total Confinement vs. Pasture Systems: What does the Science Say?" This project, conducted jointly by researchers at the Institute for Global Food Security at Queen's University and dairy scientists at AFBI Hillsborough, is reviewing global dairy science literature to examine the advantages and disadvantages of total confinement and pasture systems. A holistic approach will be used to assess the production, health and welfare, economic and environmental implications of each production system. So far, 196 relevant studies have been identified and results are still being collated. However, some major themes have already emerged.

The central benefits of total confinement systems stem from the high level of cow management that can be achieved. Under such high input systems, cows typically exhibit higher levels of performance (increased milk and milk solids yield). These systems also enable dietary management to increase dry matter intake, combating negative energy balance and helping maintain body condition. In addition, cows are not exposed to adverse weather conditions, nor is the land degraded by poaching. However, the production costs involved in total confinement systems are considerably higher than those involving pasture. Indeed, it is only with larger herds that the benefits of economies of scale can

Are total confinement systems really only economically justifiable for the largest dairy herds?

really be achieved. This raises the related issue regarding attitudes to herd size, with the idea of 'mega-dairies' proving controversial.

On the other hand, grass is the cheapest feed available and systems incorporating pasture are less costly and typically achieve higher profitability (per litre, per cow) when compared with similar herd sized total confinement systems. Additional benefits of systems incorporating pasture include; increased health (decreased lameness and mastitis), increased cow welfare (decreased mortality / culling rates, increased comfort / lying behaviour, and decreased aggression), improved reproductive performance and fertility, improved milk composition (e.g. milk FA profiles), and lower environmental impacts, including green house gas emissions. These are considerable benefits.

Preliminary results clearly indicate there are advantages and disadvantages of each system.

Could it be that with the conventional NI system of winter housing and seasonal pasture, producers are already adopting a 'best of both worlds approach'?

It is also worth noting that the majority of consumers (95% in a recent UK study) do not think it is acceptable to keep cows permanently housed indoors. Surely this represents a marketing opportunity for NI with its current clean green producer image.

The industry is at a cross roads in terms of translating 'sustainable intensification' goals into reality and some see a move to total confinement systems as inevitable. However, initial results of this review highlight there are still considerable benefits of incorporating pasture grazing into production systems. Ultimately this is more than a scientific question, with the choice of system depending on individual circumstances, ethics, policy and personal views on the meaning of 'sustainable intensification'.

Milk from grass-fed cows - a marketing opportunity?

New Booklet on Transition Cow Feeding Available

A farmers' booklet on transition cow feeding has just been published by AgriSearch. This reports the results of one part of a major Research Challenge Fund study.

The study involved 1,217 dairy cows on ten Northern Ireland dairy farms over a two year period. Cows were managed on one of three treatments during the dry period:

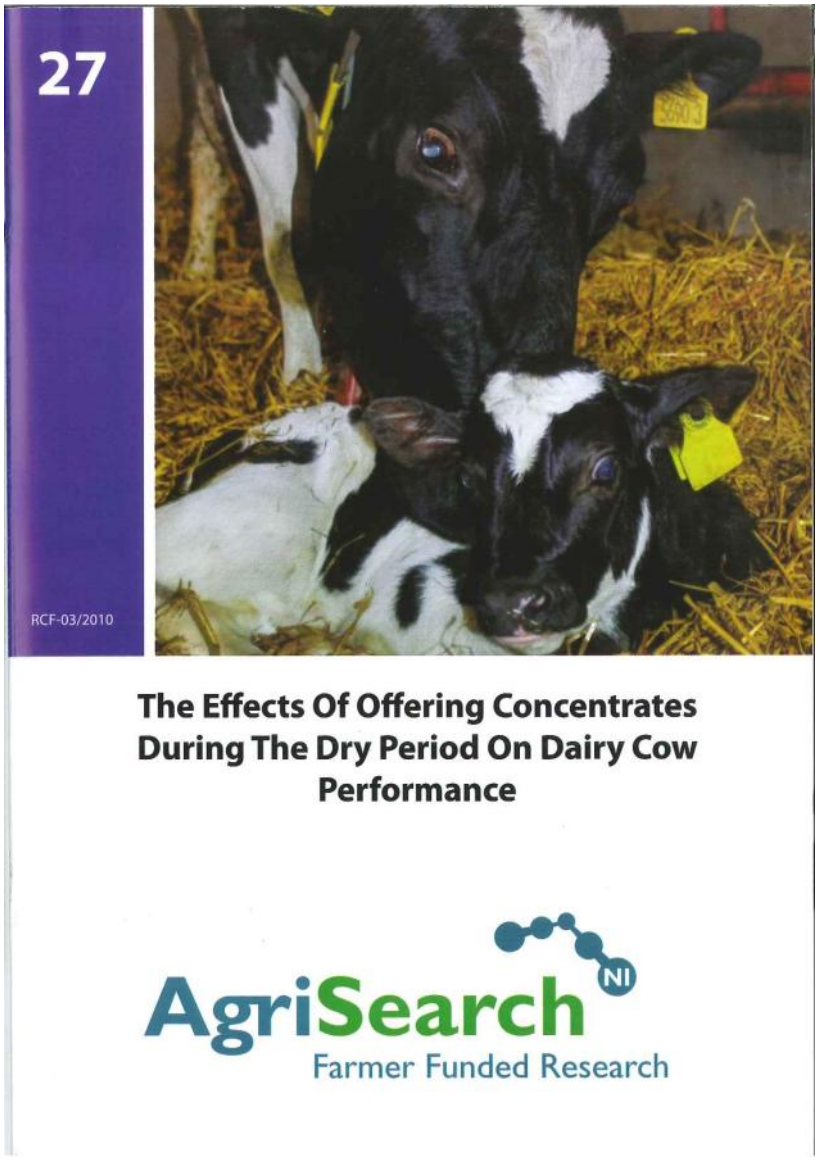
- Concentrates offered for the full 8 weeks of the dry period
- Concentrates offered for the final 3 weeks of the dry period
- No concentrates offered during the dry period

For cows managed on high input systems the results of the study support the recommendation of a target condition score at drying off of 2.75. Cows with a condition score greater than 3.0 at drying off are likely to have lower intakes and may have more health problems during the subsequent lactation. This target condition score (2.75) may not be appropriate for cows managed on low input systems.

When cows have a condition score of 2.5 or above at drying off, and are offered good quality silage together with a quality dry cow mineral supplement during the dry period, there are unlikely to be milk yield, health or fertility benefits arising from offering concentrates during the dry period.

However, when cows are very thin (condition score of 2.25 or less) at drying off, the quality of the dry cow ration would appear to be more important. Thin cows which received no concentrates during the dry period had an increased risk of being culled during the first 60 days of lactation.

Copies of the booklet can be requested from AgriSearch on 028 8778 9770, email: info@agrisearch.org or alternatively can be downloaded here



Veterinary Surgeon Embarks on AgriSearch Funded PhD

Progressive veterinary surgeon Mark Little has recently embarked upon an AgriSearch PhD.

The objective of the study is to identify relationships between nutrition and immune function in dairy cattle, especially during early lactation, and their impact on cow health and fertility (especially uterine health).

Mark is from a dairy farm in Fermanagh. In 2002 he graduated with a degree in veterinary medicine from UCD. For the past ten years he has worked as a vet in Northern Ireland and since 2006 he has worked as a dairy vet, concentrating on herd health. In 2012 he completed a post graduate certificate in dairy herd health (with first class honours) from UCD and for the 12 months prior to starting his PhD studies he worked for Pfizer Animal Health / Zoetis as their Area Veterinary Manager for Northern Ireland.

Mark Little

Mark's first experiment is already underway, and has been designed to identify if 'pushing' individual cows within a 'feed to yield' system results in suppressed immune function. The experiment will involve 100 cows on 2 different feeding strategies; a flat rate total mixed ration and 'feed to yield' system.

In addition to Mark, the research team comprises dairy researchers from AFBI Hillsborough (Conrad Ferris & Alastair Wylie) veterinary researchers from AFBI-VSD (Michael Welsh & Simon Doherty) and Niamh O'Connell from QUB.

Commenting on the new PhD Study AgriSearch Dairy Advisory Committee Chairman Gary McHenry said "AgriSearch are delighted to have Mark Little on board as a PhD student. He brings a huge amount of knowledge and experience with him. This study will tackle an area of great importance to Northern Ireland dairy farmers and we look forward to seeing the results."

Effects of a difficult birth on the health, welfare, performance and survival of replacement dairy heifers.

Dr Gareth Arnott

The birth of a heifer calf represents a long term investment in the future dairy herd, and much has been written regarding optimal calf rearing strategies. However, the birth itself is of critical importance for the future development of the calf and this issue is frequently overlooked. The experience of a difficult birth (termed dystocia) is traumatic with adverse implications for both the dam and calf. Despite affecting up to one-third of births in dairy cattle, studies on effects of dystocia on calves have been mostly limited to the first day of life, with a major focus on the association between a difficult calving and stillbirth. Recently, a series of studies have examined the longer term impacts of dystocia on dairy calves, with findings that have implications for farm efficiency and calf welfare.

Barrier and colleagues at SRUC investigated the neonatal physiology, survival and health of dairy calves following a difficult birth (The Veterinary Journal, 2013, 195, 86-90). A total of 455 live born Holstein calves were grouped by degree of calving assistance required (from no assistance, to a difficult calving and the requirement of a veterinary surgeon), and followed from birth to first service. Calves that experienced a difficult

birth had evidence of a greater stress response following birth (higher levels of the stress hormone cortisol in the first 24 hours of life compared to calves that did not require calving assistance). In addition, there was a negative effect of calving difficulty on immunity, with more than 43% of dystocial calves diagnosed with absolute failure of transfer of passive immunity from colostrum (compared to 26.8% for non-assisted calves). Behavioural studies from Barrier and colleagues (Preventive Veterinary Medicine, 2011, 103, 248-256) suggested the lower passive immunity in dystocial calves resulted from lower vigour following a difficult birth, with delays in standing and sucking, and lowering of colostral intake.

Unsurprisingly, the effects of a difficult birth on immunity had negative implications for the health of the calves in the first 60 days of life (with heifers from a difficult calving having almost three times as many days treated for disease than those from a non-assisted calving). Finally, survival to

weaning (50 days of age) was reduced in heifers from a difficult calving, with overall mortality rates being nearly 3 times higher than for non-assisted heifers. This finding is consistent with another study by Barrier and colleagues (Journal of Dairy Science, 2012, 95, 6750-6754) using historical data from live-born Holstein heifer calves born from cows with various birth difficulty scores, and finding a higher mortality risk to weaning and to first-service in heifers that experienced a difficult birth compared with those born naturally.

Recent studies also highlight the longer term impact of dystocia on production performance. For example, Eaglen and colleagues (Journal of Dairy Science, 2011, 94, 5413-5423) examined a dataset comprising approximately 10,000 UK Holstein-Friesian heifer calves, finding that calves born with difficulty showed a significant reduction in milk yield in their first lactation. Compared with non-assisted calves, veterinary assisted calves showed a loss of 710 kg in accumulated 305-d milk yield.

These studies highlight both the welfare and farm efficiency implications of a difficult birth. Dystocia negatively affects the welfare of live born dairy calves. However, it is also a direct economic cost to the producer, increasing replacement rearing costs, reducing lactation performance, and limiting the rate of genetic herd improvement for production and welfare traits. Reducing dystocia will therefore benefit welfare and productivity.

Potential preventive measures include improving the peripartum environment and nutrition of the dam, increasing genetic selection for calving ease, and optimal heifer rearing. Furthermore, adequate calving skills are essential to enable timely and hygienic assistance of the dam when necessary, as well as providing tailored care of the dystocial calf to minimise the adverse effects of a difficult birth.

Emerging parasitic diseases of sheep

Take home message: Changes to the presence and distribution of sheep parasite infections coupled with the continuing emergence of treatment resistance means continued vigilance, and refinement and development of parasite control strategies are essential to ensure viability of sheep production.

Talking about his recent publication Dr Michael Taylor said his aim was, "To summarise globally important sheep parasites, where changes in their distribution, occurrence and inability to be controlled have been reported."

"In recent years, many sheep rearing-countries around the world have reported changes in the emergence and inability to control a number of sheep parasites," added Dr Taylor.

Broad changes in climate could lead to substantial shifts in the distribution and importance of particular parasites. Parasites such as Nematodirus battus, which has previously only been associated with British sheep, have now recently been reported in several other European countries. Increases in temperatures could result in lengthened fly activity resulting in a higher incidence of strike.

"Reports of liver fluke are up," commented Dr Taylor, "And drier areas not traditionally associated with fluke, such as Eastern regions of Britain, are showing increased reports. Increases in organic farming, a reduction in the use of herbicides and the ability of animals to gain access to water courses due to an increase in flooding may account for this increase in infection."

Increases in numbers of ticks and mites have been reported as a result of a decreased use of organophosphate, due to human health concerns. Consequently this is not only of importance to sheep, but also many other hosts, including increased human zoonotic risks.

"Coccidiosis in lambs is also of increasing importance in the UK as stocking densities increase and availability of pasture is reduced."

Dr Taylor concluded that changes in the presence and distribution of several globally important parasitic infections of sheep might occur as a result of an increase in global trade and climatic changes. "And with increasing reports of parasites resistant to all three main anthlemintics the viability of small ruminant industries is under threat."

Full paper: Taylor, M.A. (2012). Emerging parasitic diseases of sheep. Veterinary Parasitology 189, 2-7.

This paper comes from Animal Bytes a website run by the British Society of Animal Science. Animal Bytes is co-funded by AgriSearch and a number of other UK levy bodies such as EBLEX and DairyCo. Its objective is to provide short and incisive 'bytes' of information on topical themes and current research within the field of UK Animal Science.

The Animal Bytes website can be viewed at:

www.animalbytes.org

Focus on synchronisation of sucklers at Sam's

On-farm research commissioned by AgriSearch to investigate the role of synchronisation and artificial insemination (AI) for beef heifers was the main feature at a recent farm walk held on the farm of Sam Chesney, Kircubbin.

Francis Lively (AFBI) explains the potential benefits of synchronisation

Sam and his family run 130 Limousin cross suckler cows on 190 acres of grassland with an emphasis on high herd health status and using stock, regardless of breed, with proven genetic potential.

Francis Lively from AFBI Hillsborough explained the potential benefits of synchronisation of suckler heifers. These include ensuring that heifers produce their first calf early in the season, batch calving, and of course the ability to use proven superior genetics with high estimated breeding values (EBVs).

The pilot study involved 140 suckler heifers on five farms across Northern Ireland. Two of the farms used heat detection and the remaining three farms used fixed-time AI. Support for this project was also received from Zoetis, Genus ABS and AI Services (NI) Ltd. Representatives from all three industry partners were on hand at the event to give the farmers attending the benefit of their considerable experience.

Achieving target weight (60%+ of mature weight) prior to mating; a good plane of nutrition; sound animal health status; having the necessary vaccinations completed pre synchronisation and; following the synchronisation protocol in a timely manner were all key elements of success. The importance of planning ahead and making the necessary arrangements with your vet and AI technician were highlighted as was the use of the correct size of needle for administering the prostaglandin.

Results from the pilot study showed that both synchronisation systems (heat detection & fixed time) resulted in a very similar conception rate (57%) and the use of synchronisation significantly reduced the calving spread of the heifers.

William Sherrard from Zoetis

Francis Lively (AFBI), Jason Rankin (AgriSearch), Sam Chesney, Loranne Chesney, Brian Kennedy (AI Services), Neville Graham (CAFRE), and Dominic Mason (Genus ABS)

Another busy year for AgriSearch

James Campbell reflected the activities of AgriSearch during the 2012/13 financial year at it's AGM in Greenmount Campus.

James Campbell
AgriSearch Chairman

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 the years, the total expenditure on the research and development supported by AgriSearch since its formation in 1997 is over £20.7m.

"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. Currently, further commitments of £165,000 have been made since the end of the financial year.

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.

"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 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.

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.

"I wish to acknowledge the considerable

AgriSearch Trustees
(standing from left) Phelim O'Neill, Mervyn King, Mary McCormack, John Martin, Wilbert Mayne
(seated from left) Oision Murnion, David Workman (Vice-Chair), James Campbell (Chair),
Jason Rankin (Project Manager), Henry Jordan

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 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. AgriSearch looks to these volunteers to pick up the baton with fresh enthusiasm.

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 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."

Wilbert Mayne

NEW TRUSTEE

Wilbert Mayne was elected onto the Board of Trustees at the AGM, replacing Douglas Rowe as a one of the three UFU farmer representatives.

No stranger to agricultural organisations Wilbert has previously chaired the UFU's Legislation and Rural Development Committees and is currently Vice-Chairman of the UFU Environment Committee and has just completed a term of office on the UFU Board.

Paying tribute to the service of Douglas Rowe James Campbell said "Douglas showed great commitment throughout his nine years as a trustee. His genuine interest in the work of AgriSearch and his considerable experience representing farmers were always apparent in his contributions to the work of the board."

A copy of AgriSearch's Annual Report is available on request phone 028 8778 8206 or Email: info@agrisearch.org, alternatively an electronic copy can be downloaded here.

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