



afbi AGRI-FOOD
& BIOSCIENCES
INSTITUTE

AgriSearch^{NI}
Driving Excellence & Innovation

 **cafre**
College of Agriculture,
Food & Rural Enterprise

LMC
Livestock & Meat Commission

Future Proofing Beef Farming

BREEDING FOR PERFORMANCE ROADSHOW

Tuesday 28 May at 7pm
BALLYMENA LIVESTOCK MARKET

Wednesday 29 May at 7pm
CLOGHER LIVESTOCK MARKET

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FORWARD

On behalf of AFBI, it is a great pleasure to welcome you to the joint AFBI, AgriSearch, LMC and CAFRE 'Breeding for Performance' event.

At this event leading scientists from AFBI and Teagasc alongside experts from CAFRE will outline the latest scientific developments and practical advice related to improving the performance of your beef herd.

This event is taking place at a time of unprecedented change and challenge. On a global scale, challenges include increased food demand to meet the needs of an increasing world population, climate change, and associated pressure on land and water resources. Locally, challenges being faced by the Northern Ireland beef sector are many and diverse.

These include:

- * Volatility in prices and profitability
- * Sub-optimum suckler herd performance
- * Bovine tuberculosis and new and emerging cattle diseases
- * Antimicrobial resistance and future limitations on antibiotic usage
- * Need to optimise grassland management and productivity
- * Need to reduce phosphorus, ammonia and greenhouse gas emissions to protect and improve the environment
- * Uncertainty associated with the UK's exit from the European Union
- * Increasing competition from other food protein options
- * Concerns about animal welfare
- * Increasing retailer and consumer pressure
- * Succession and shortage of skilled labour

While some of these challenges are outside of our control, the development of robust production systems can help ensure that farm businesses are more resilient to these outside pressures. Nevertheless, many of the challenges can be controlled, or mitigated in part, through the application of research findings and improved management strategies on farms.

Suckler cow fertility and the production of an efficient and healthy calf per cow per year continues to be of vital importance to the industry. Therefore the primary objective of this 'Breeding for Performance' event is to share the latest research knowledge and developments in innovation for beef systems. The specific topics being discussed at the event include: suckler cow nutrition and breeding technologies; importance of animal health; bull selection and bull fertility.

This booklet provides a copy of each of the talks presented during the event and I would encourage you to discuss the topics with AFBI, AgriSearch and CAFRE staff.

Research undertaken by AFBI would not be possible without the financial support from DAERA, industry levy through AgriSearch, EU grant funding, and a wide range of other funders. Their support is gratefully acknowledged.

Finally, I would like to thank Ballymena and Clogher Livestock Markets for the use of their excellent facilities; our invited speaker Professor David Kenny (Teagasc) and the CAFRE, AFBI and AgriSearch staff who have worked tirelessly to deliver this event for this beef industry.



Dr Steven Morrison (Head of AFBI Agriculture Branch)



Management of suckler cows for improved fertility

Dr Francis Lively
Dr Denise Lowe, Dr Steven Morrison
& Mrs Frances Titterington

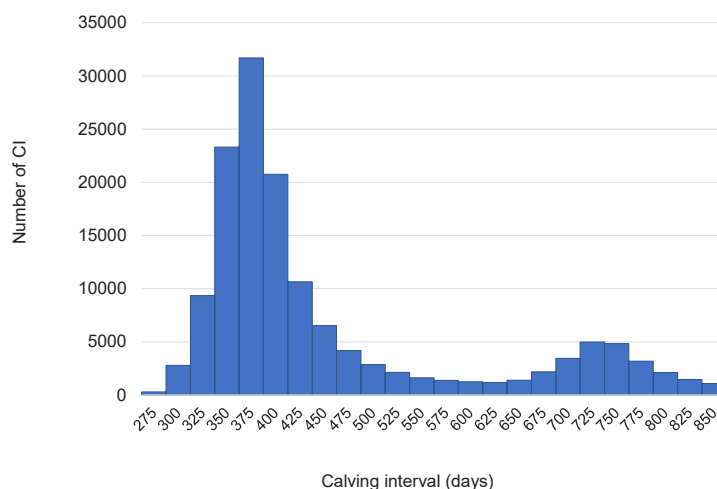
AFBI
May 2019

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Northern Ireland Suckler Herd Fertility

- Current mean calving interval 409 days
- Large peak at 350-375 days indicates the desirable calving interval
- >30% of cows have extended calving interval
- No improvement in recent years



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Setting fertility targets for suckler herds

- 365 day calving to calving interval
- <5% cows culled annually as barren
- >95% cows that calve should wean a calf
- Compact calving within 12 weeks
(80% of cows calved within 6 weeks)
- 15% replacement rate
- Replacement heifers calving at 24 months

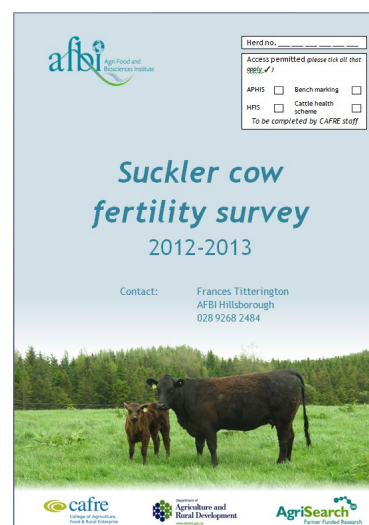


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What factors influence herd fertility?

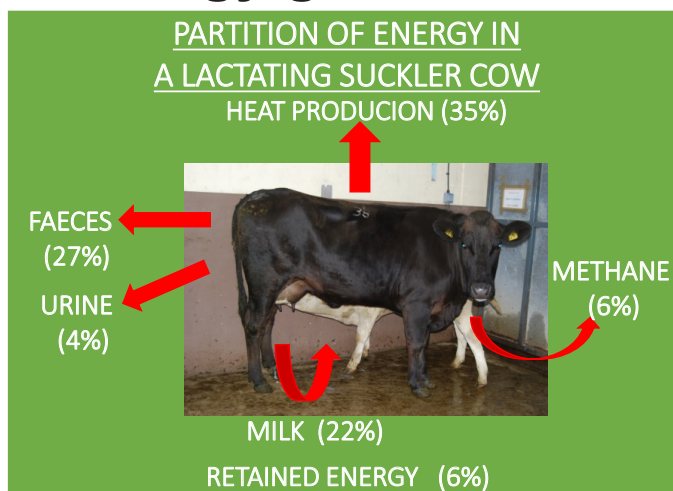
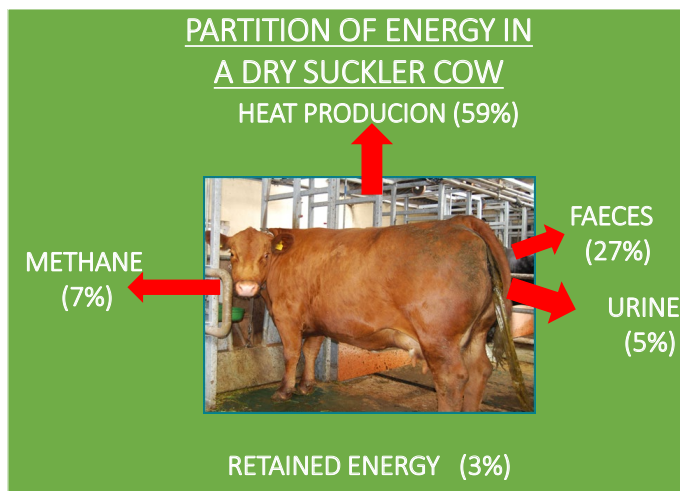
- Nutrition
- Body condition score
- Management
- Health
- Genetics



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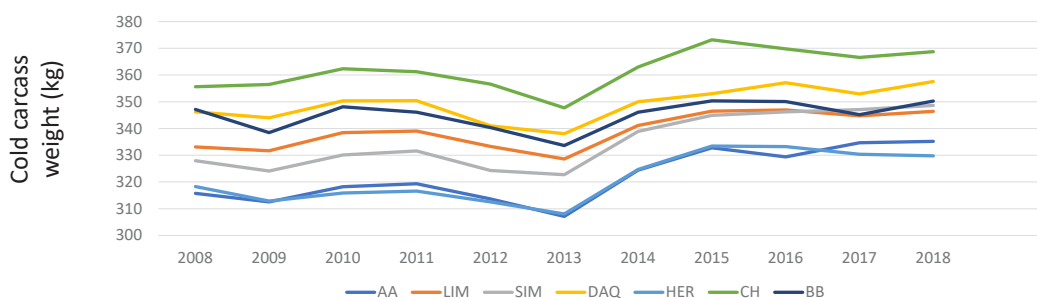
Nutrition – where does the energy go to?



Current guidelines underestimate maintenance requirements by ~30%

Meeting the cows nutritional needs

Cold carcass weight of cull cows slaughtered over last 10 years



- BovIS data showing a trend for increasing carcass weight of cull cows in recent years.
- Cows 24kg heavier than in 2008 = + 7MJ/day \equiv + 1 tonne silage / year

Nutrition – body condition score

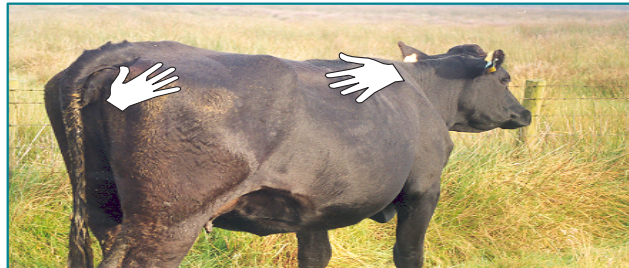
BCS at calving	Days to first heat
1.75	57
2.5	43
3.50	48

BCS at calving	Calving interval
1 – 1.5	418
2	382
2.5-3.0	364

Drennan & Berry (2006)

BCS at calving has major influence on future fertility

Condition score 2



Condition score 3



Nutrition – gaining body condition score

Cows prioritise how they use their nutrition resources:

1. Produce milk for her calf
2. Maintain her body condition
3. Get back in calf

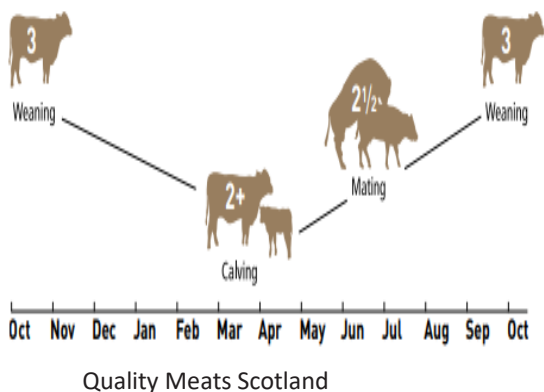


Decreasing priority



Annual targets for body condition score

Spring Calving



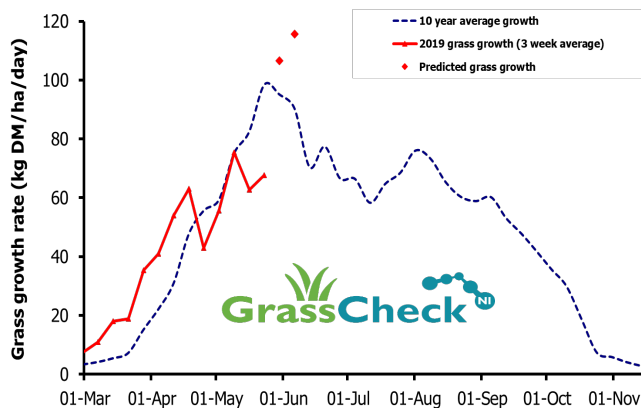
➤ Recent research at AFBI looked at the effect of BCS change from weaning to calving on the Daily Live Weight Gain (DLWG) of progeny to weaning

Cow BCS at weaning	<2.5	≥ 2.5	<2.5	≥ 2.5	<2.5	≥ 2.5
BCS change from weaning to calving	Little change +	Little change +	+ve	+ve	-ve	-ve
Calf birth weight (kg)	44	42	46	39	39	42
Calf weaning weight (kg)	305	271	266	265	270	258
DLWG birth to weaning (kg/d)	1.21	1.15	1.11	1.06	1.05	1.02

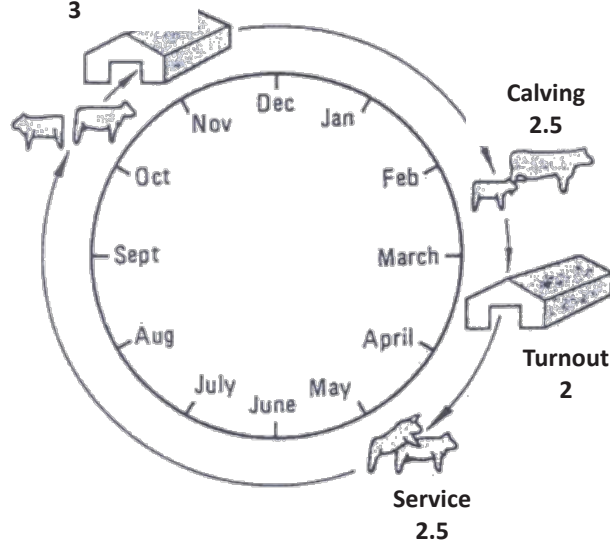
*Maximum change in BCS of ± 0.25

Making the most of grass to meet nutritional needs

- Grazed grass cheapest form of feed
- Match calving season to grass growth curve
- Don't underestimate the potential of grass



Weaning/Housing



Trace elements



- Trace element deficiency can impact significantly on herd fertility
- High levels of Iodine and Selenium deficiency
- Deficiency levels higher than previously reported

	Mean	Range across herds	Lower & Upper Limit	Cows below lower limit (%)
Copper (ugM)	11.9	0.48 – 38.0	8.8 - 20.4	15
Iodine (ug/L)	30.4	3 - >150	51 – 300	82
Selenium (uM)	0.52	0.01 – 3.7	0.91 – 1.52	79

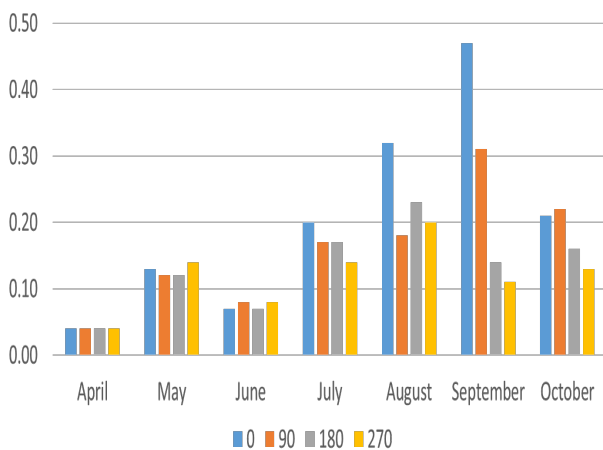
Parr *et al.*, 2018

- Monitor and consider supplementation particularly prior to breeding

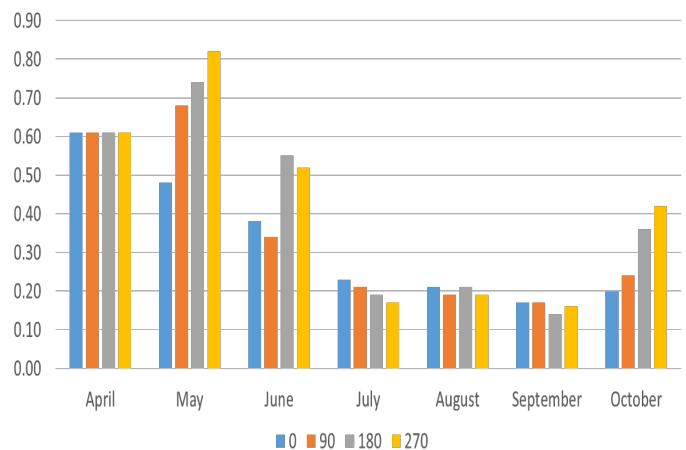
Trace elements – in grass



Impact of fertiliser N on grass selenium content (mg/kg) during the grazing season



Impact of fertiliser N on grass iodine content (mg/kg) during the grazing season



What impact has Artificial Insemination on fertility ?

- Average suckler herd size in NI has less than 20 cows
 - Potential to use superior proven genetics through AI
- However**, producers often:



- Perceive lower success rate relative to natural service
- Consider it to have a very high labour requirement
- Find heat detection difficult

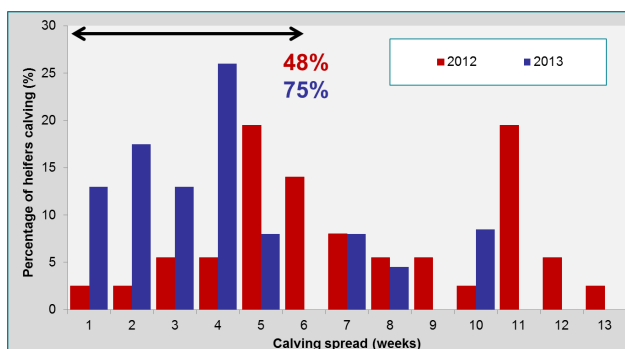


What impact has synchronisation on herd fertility?

- Offers an opportunity to tighten the calving interval?
- Survey indicated herds with a tight calving spread (<12 weeks) had a 10 day lower calving interval
- Important to have a defined breeding period



Calving spread reduced with synchronisation



Synchronisation and AI



- Enables batches of cows/heifers to be bred at the one time
- Range of programs available:

Day	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Results(%) (range)
Heifer 1	Prog d. in & GnRH					Prog d. out & PG			FTAI & GnRH			55 (35-73)
Heifer 2	Prog d. In							PG	Prog d. out		FTAI	68 (44-84)
Cow 1	Prog d. in & GnRH							Prog d. out & PG			FTAI & GnRH	63% (46-79)
Cow 2	Prog d. in & GnRH							PG	Prog d. out	GnRH	FTAI	62% (55-72)

Prog d.: Progesterone device GnRH: Gonadotrophin Releasing Hormone PG: Prostaglandin FTAI: Fixed Time Artificial Insemination

Breeding for Performance

Future Proofing Beef Farming

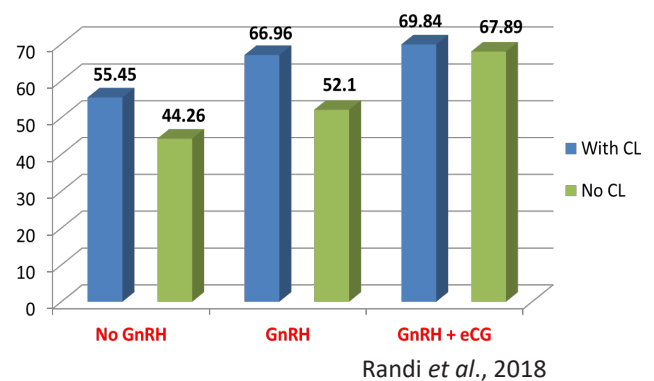
Synchronisation and Artificial Insemination?



- Limited difference in success of various protocols however protocols with reduced handlings preferred option on beef farms

- Success more related to:
 - Cow history & body condition score
 - Late calvers
 - Low body condition score
 - Semen quality
 - Good handling facilities
 - Following the protocol correctly in terms of timings, administration of products

“Cyclic activity” and Pregnancy Diagnosis



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Is it worth considering sorted semen?

- AFBI herd has been using sorted semen
 - Conception to synchronisation & AI generally lower than that from conventional semen
 - >95% of calves born are desired gender

	Heifers	Cows
Year 1	59%	68%
Year 2	22%	48%
Year 3	46%	48%
Year 4	57%	40%

- Potential to:
 - Increase the number of maternal females born for replacements
 - Reduce birth weight to aid calving ease in heifers
 - Increase the number of terminal males born for beef production
- Future research required to improve success rate

Take home messages

- Cow fertility needs to improve
- Adequate nutrition should be supplied to ensure cows are maintained at optimal body condition score
- A tight calving interval matched to grass growth curve will enable grazed grass to be the primary nutrition source
- Monitor for trace element deficiency, particular Iodine and Selenium
- Synchronisation and AI offers an opportunity to tighten the calving interval and improve genetic merit

Acknowledgements



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Notes

Selecting the Right Parents At Greenmount Hill Farm

Dr Steven Johnston
CAFRE
May 2019

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Selecting heifers

- Heifers born early (first 2 cycles)
- Mothers OK for udder conformation and temperament
- Screen again by weaning weight
- Screen for structural soundness etc
- Weigh and frame score



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Weight targets for 2yo calving

- 1kg/d on cow – 220kg at weaning
- 0.6kg/d first winter – 330kg at turnout
- 0.85 kg/d at grass – 480kg at housing
- 0.5kg/d 2nd winter – 570kg at calving

BovIS online growth monitoring tool can help manage performance

Animal Type: Suckler Herd Replacements

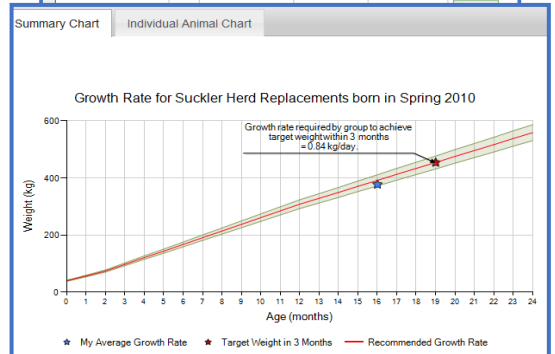
Age at first calving: 24 months

Mature Cow Weight: 620 kg

Calving Weight: 558 kg

BovIS
Bovine Information System

Animal Tag No	Sex	Breed	Date of Birth	Age (months)	Weight (kg)
UK 9 390002 8274 4	F	Aberdeen-Angus	10/02/2011	17.2	400
UK 9 390002 8282 5	F	Charolais	15/02/2011	17.0	440
UK 9 390002 8284 7	F	Charolais	20/02/2011	16.9	405
UK 9 390002 8286 2	F	Aberdeen-Angus	28/02/2011	16.6	395

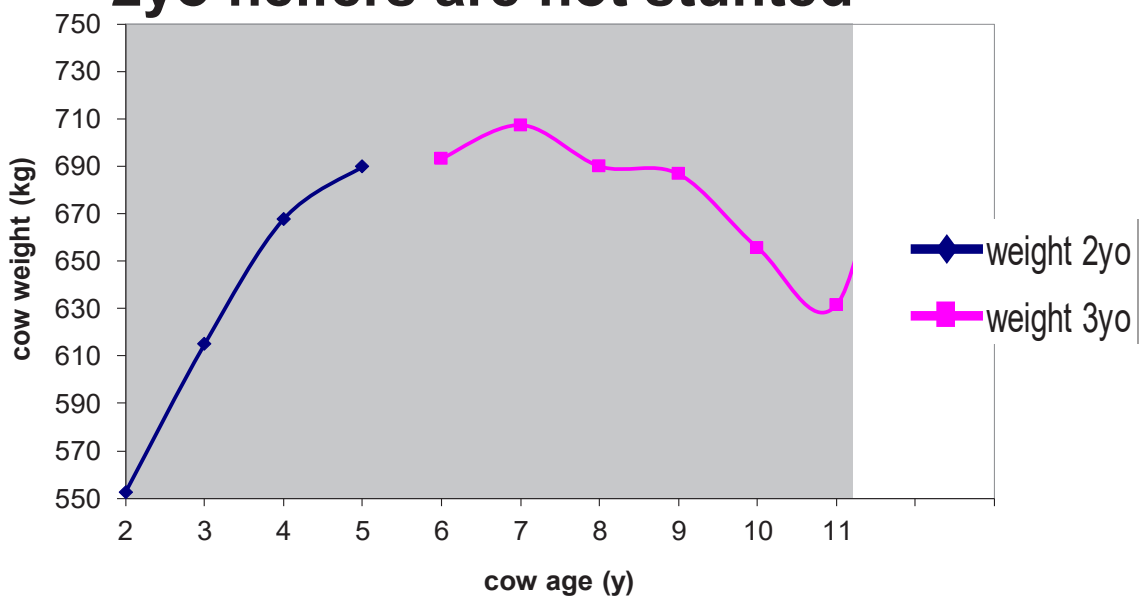


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2yo heifers are not stunted



Breeding for Performance

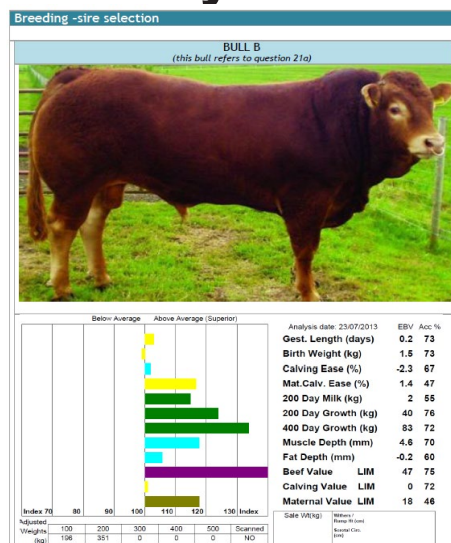
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Impact of sire selection on herd fertility

AFBI survey identified that producers who selected sires through the use of EBV's rather than visual appearance:

- Reduced calving intervals by 17 days
- Reduced the proportion of cows with extended calving intervals by 7%

Hence, **IMPROVED FERTILITY**



Comparing sire performance

- All bulls same breed, crossed with suckler bred cows and table shows steer progeny performance*

	Progeny (n)	Average carcass weight (kg)	Average age at slaughter (m)
Bull 1	142	328	33
Bull 2	123	369	27
Bull 3	127	366	26



**Please note, some of these differences will be due to management on farm, however online BovIS tools will only show performance of progeny on your farm for direct comparisons*

Using BovIS online tools you can easily compare performance of progeny from your sires
BUT only when sire has been recorded at birth!

Recording the sire

Notify Birth

Animal Number	UK 9 xxxxxx 1234 5	▼
Colour	BLACK	▼
Breed	ABERDEEN ANGUS	▼
Sex	FEMALE	▼
Date of Birth	26/11/2017	☰ Clear
Dam Number	UK 9 xxxxxx 1234 5	▼
Add Sire Information?	<input checked="" type="radio"/> Yes <input type="radio"/> No	

- When registering birth select “Yes” to register Sire information

Breeding for Performance

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Recording the sire

Sire (Stock Bull) UK9 xxxxxx 1234 5 ▼

Select from list the tag number of any sire which has been registered to your herd in the past 12 months

Breed ABERDEEN ANGUS ▼

Select from list the breed of the sire

NMR AI Code:

Enter the NMR AI code, available online or from your AI technician

Other:

Enter any free-form identifying names for the sire

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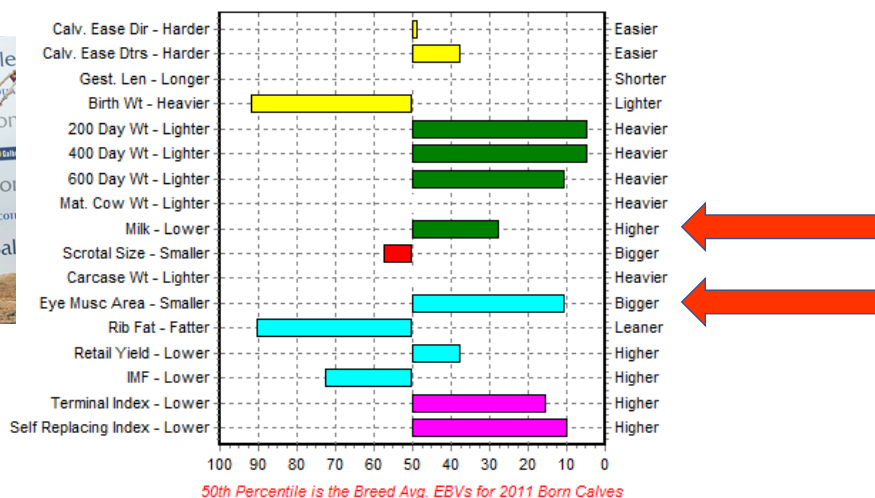
Selecting sires

- Stock bulls for use on cows
 - Top 25% milk and muscle
 - Usually Top 25% growth



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EBV Percentiles for CHAPELTON EMIR (P) (UK582662-403642)

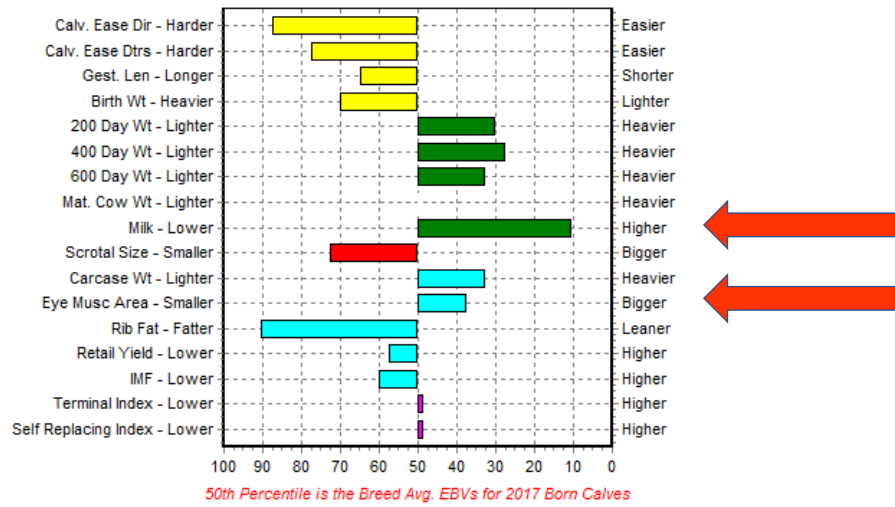


Traits Observed: CE,BWT,200WT,400WT,600WT,SS,FAT,EMA,IMF

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EBV Percentiles for CHAPELTON EMIR (P) (UK582662-403642)



Traits Observed: CE,BWT,200WT,400WT,600WT,SS,FAT,EMA,IMF

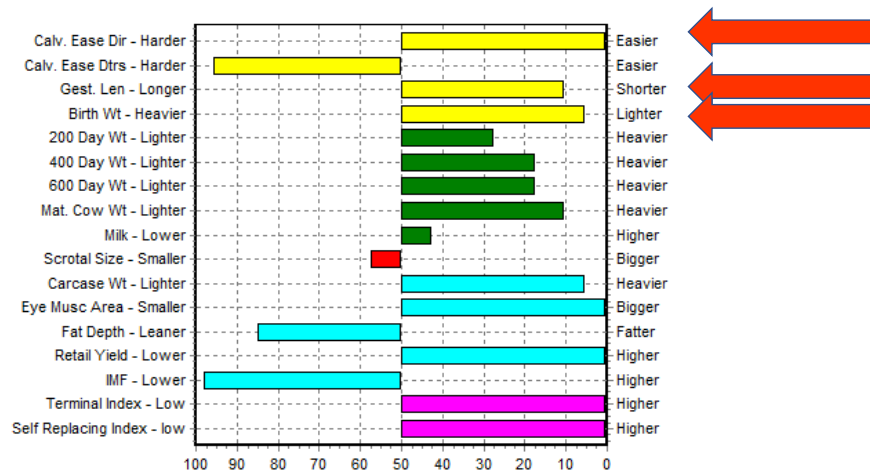


Selecting sires

- For use on heifers through Ai
 - Top 25% or better for (short) gestation length,
 - (high) easy calving and
 - (low) birth weight



EBV Percentiles for NETHERTON AMERICANO M703



50th Percentile is the Breed Avg. EBVs for 2017 Born Calves

BWT,200WT(x2),400WT,SS,FAT,EMA,IMF

Statistics: Number of Herds: 156, Progeny Analysed: 550, Scan Progeny: 79, Number of Dtrs: 18

Did you notice anything worrying about the two bulls?

Yes Calving ease daughters!

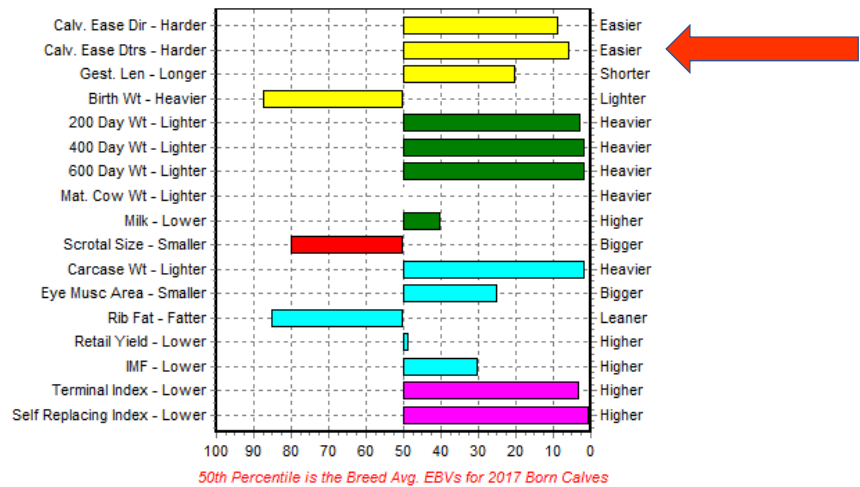
Lessons

- selection criteria are not fixed
- find the latest information
- review it
- use it.

We required our next bull to have good calving ease daughters



EBV Percentiles for WILLINGHAM KAIKOURA (H) (UK141079-500293)



Traits Observed: GL,BWT,400WT(x2),600WT,SS,FAT,EMA,IMF

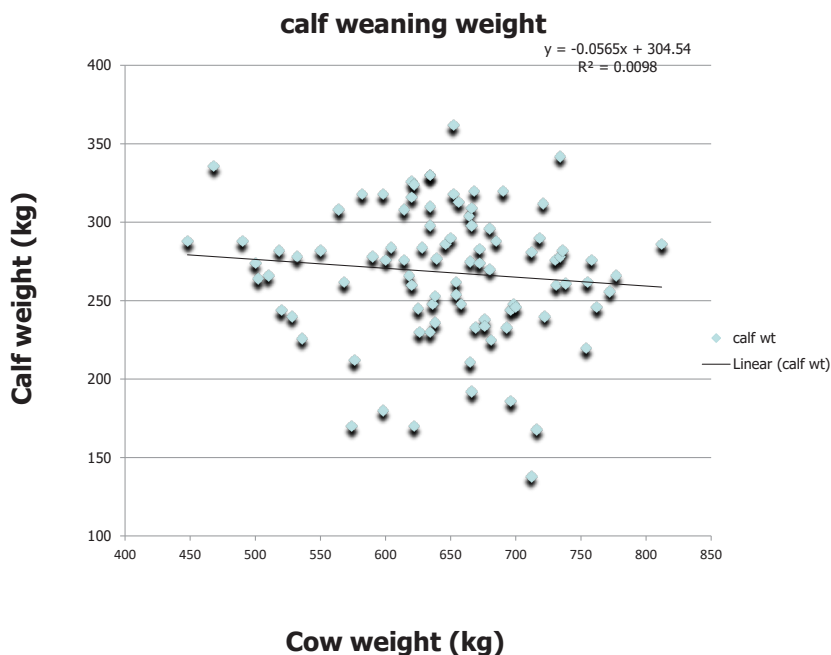


Future Direction

On top of everything else we need to focus on reducing

Cow size

And so it keeps changing



As bigger cows don't wean bigger calves

For further information contact

CAFRE Senior Beef and Sheep Technologists

Steven Johnston 028 94426748

Graeme Campbell 028 94426641



Disease factors affecting reproductive performance in beef cattle: BVDV LEPTO

Dr Barry McInerney

AFBI
May 2019



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Bovine Viral Diarrhoea Virus (BVDV)

- Pestivirus
- Worldwide spread
- Economically important



Annual Losses to BVD	Estimated Costs/Cow /Yr NI (£)	Estimated Annual Total Costs NI (£)
Suckler	£24	>6 million
Dairy	£46	>14 million
Total		>20 million

Other Costs

CO2 Equivalent Emissions £3.64 million/yr

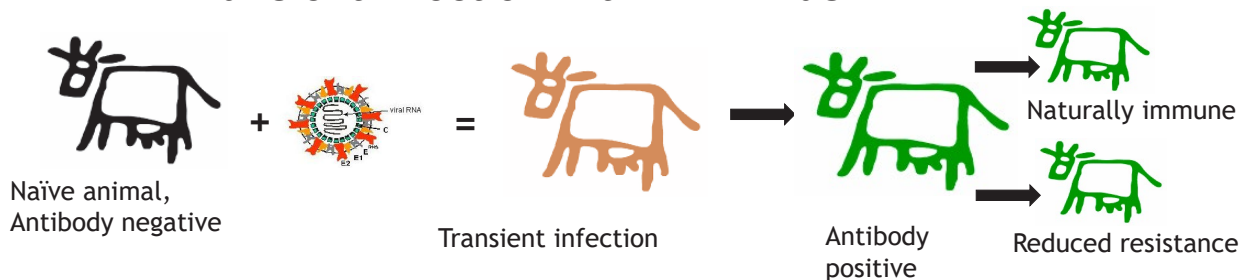
Increased antimicrobial usage

Probable interactions with other diseases

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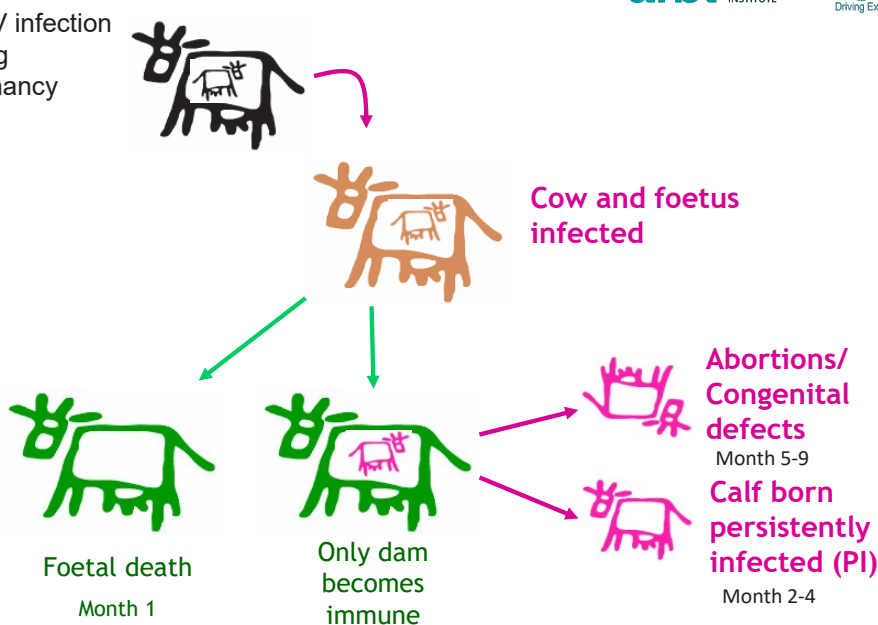
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Transient infection with BVD virus



- Common
 - 98% seroprevalence in beef herds (Cowley et al 2012, 2014)
- Weakening of immune system:
 - pneumonias/scours
- Reduced milk yield, increased somatic cell count
- Bulls- infertility, virus transfer in semen
- Pregnant cattle

BVDV infection during pregnancy



<ul style="list-style-type: none"> • Prevalence (testing herds) - 6.57% • Prevalence (animal level) – 0.42% <p>Source: AHWNI</p>
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Adapted from Joe Brownlie © 2008 Royal Veterinary College

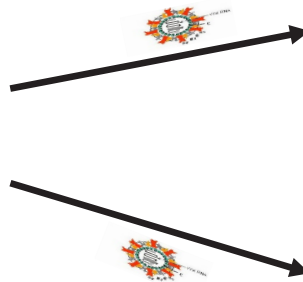
Persistently Infected (PI) animals



Calves born on the same day – PI on left



PI versus normal calf of same age



Rare

- >2 million tests
- 19,691 herds
- 11,419 direct positives (source AHWNI)

Normal or stunted

Death within hours/days

Poor doers

Frequent severe infections

Lifelong virus positive

Death by mucosal disease (6-24 months)

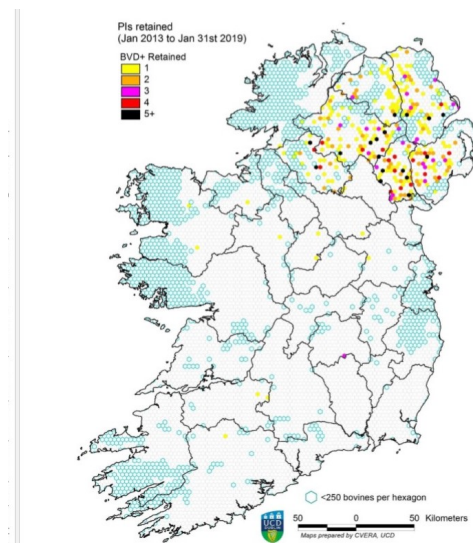
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Persistently Infected (PI) animals



- Primary source infection
- Efficient transmitters
- Virus in all secretions/excretions
- Lifelong virus positive
 - Shed high levels of virus
 - Antibody negative



Source AHWNI

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How is BVDV introduced in a herd?

- Buying pregnant cows carrying a PI calf (antibody positive - Trojans)
- Buying transiently infected (TI) animal
- Contact: over the fence, shows, break in/out, co-grazing
- Biosecurity - visitors and equipment

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BVD eradication programme NI

- Administered by AHWNI
 - Identification/removal of PIs by ear notch testing
- AFBI designated laboratory
- Benefits of BVD Eradication
 - Early removal of persistently infected (PI) calves
 - reduced associated maintenance costs
 - Improved fertility
 - Healthier calves
 - Reduced antimicrobial usage
 - Increased milk yield
 - Underpinning of live trade
 - Direct and indirect benefit in the control of many common diseases

35% decrease in rolling annual animal prevalence levels

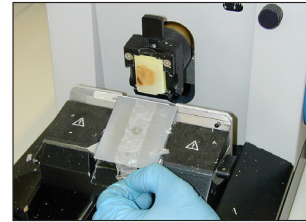
39% reduction in rolling annual herd prevalence

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Leptospirosis

- Leptospirosis is a bacterial disease of cattle
 - *Leptospira interrogans* serovar *hardjo*
- Characterized by reproductive failure
 - Abortions - 6-12 weeks after infection
 - Infertility - due to poor conception rates or early embryo losses
 - Stillbirths – infection in late pregnancy
 - Birth of weak calve – infection in late pregnancy
 - And also milk drop – severe reduction in milk production in acute phase of infection



Following infection subsequent pregnancies are unlikely to be aborted, although calves may be weak at birth and have a poor survival rate.

Leptospirosis

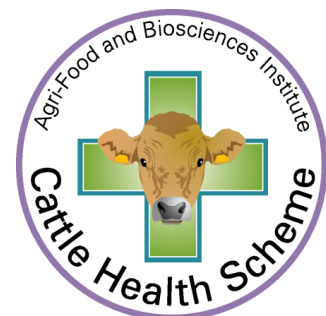
- Localises in the kidneys/urinary tract/reproductive tract
 - both males and females
- Become “maintenance host”
 - harbour bacteria months/years
 - intermittent shedding of high numbers of leptospires in urine
 - acting as a reservoir of infection for other cattle
- Carriers in kidney/urinary tract
- Zoonotic disease –
 - capable of causing illness in humans (severe flu like symptoms)
 - acquired from contact with the urine, afterbirth or aborted foetus of an infected animal or with contaminated water

Leptospirosis

- Beef herd seroprevalence NI - 100% (22 herds, Barrett et al 2018)
- Within herd mean seroprevalence NI - 60.7%
- 50% herds vaccinating
- Conclusion:
 - carrier animals actively transmitting leptospire
 - positive association between herd seroprevalence and herd size (similar for BVDV, IBR and Neospora)
 - Increased efforts required to avoid introduction and spread of various pathogens
 - Increased efforts to determine health status of herds and mitigation measures to address risks

AFBI Cattle Health Scheme

- Examines and assures health status of herds for the following diseases:
 - BVD
 - Leptospirosis
 - IBR
 - Johnes disease
 - Neospora
- Membership includes:
 - Veterinary advice on testing, results and biosecurity
 - Annual certification of disease free status, when achieved
 - Certification for batches of accredited animals going to sales



Summary

- BVD and Lepto have a significant presence in beef herds
- BVD and Lepto have a significant effect on herd fertility and performance
- To do:
 - Assess and improve on farm biosecurity
 - Assess health status of herd and identify any issues or risks
 - Discuss herd health plans with PVP including vaccination where applicable
 - Speak to AFBI re Cattle Health Scheme

Thank You



The Irish Agriculture and Food Development Authority

Management of bull fertility in suckler beef herds



Prof. David A. Kenny

Animal and Bioscience Department, Animal and Grassland Research and Innovation Centre, Grange, Dunsany, Co. Meath, Ireland.



Outline



- Background
- Nutritional management
- Health
- Mating management
- Summary



The Irish Agriculture and Food Development Authority

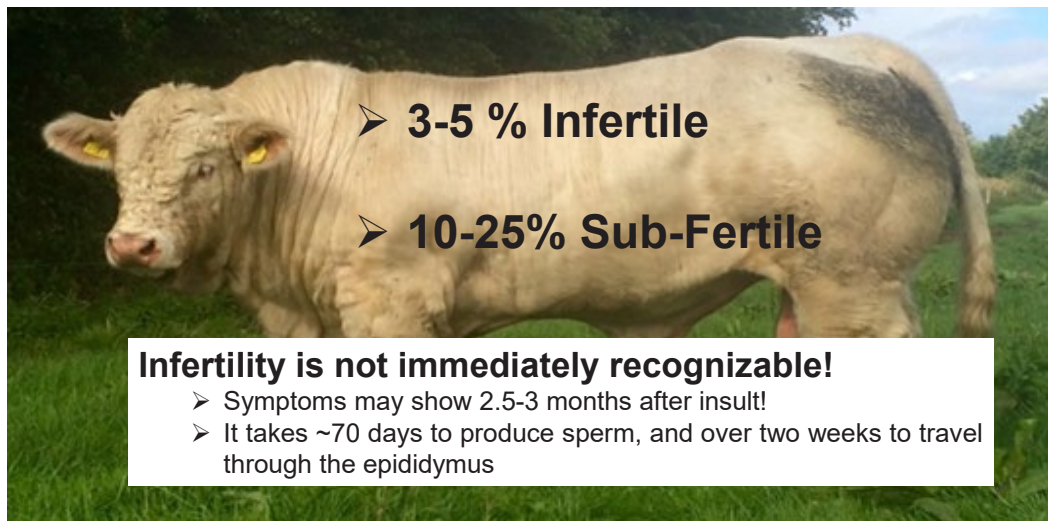
Bull Fertility



- Bull fertility central to genetic progress for beef herds
- 80% of calves born to suckler beef cows sired by natural service bulls
- Contributes to 50% of herd genetics
- Small herd size and predominate use of single sire mating
- Fertility of the stock bull is of major importance to both the size and timing of the subsequent calf crop
- Age at puberty influenced by early life nutritional status



Bull Fertility



Subfertility

- Subfertility may be caused by low libido, sperm quality/quantity, defects or physical factors affecting bull mobility or mating ability
- While a subfertile bull may be capable of getting some cows pregnant
 - low pregnancy rates
 - extended calving interval
 - reduced calf weaning weights
 - higher involuntary culling of cows for barrenness
- unless bull is operating within a herd with a very low cow:bull ratio

Subfertility

- No guarantee that a bull will retain his fertility from season to season or even within a season.
- Subfertile bulls often go undetected until late in the season
- Need to be continually vigilant for potential fertility problems so that corrective action can be taken before it's too late!



Reasons for Culling

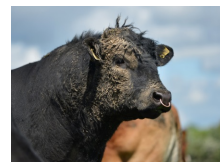


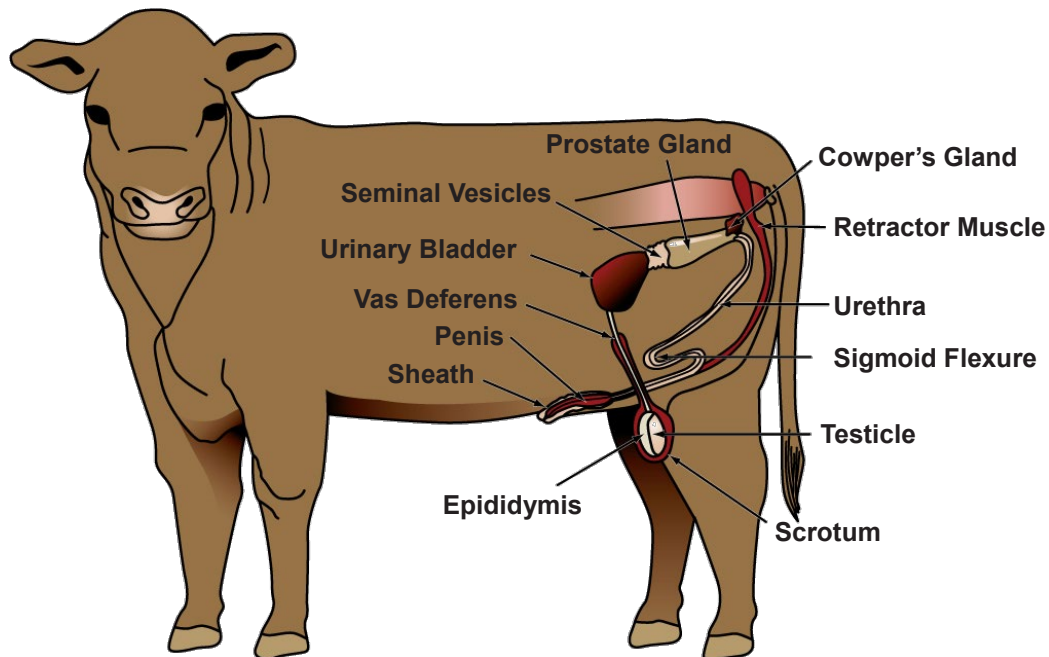
Table 5.

Overview of Pedigree bulls used in BDGP herds born since 2013, Summary of reasons for culling from BDGP herds to May 2018.

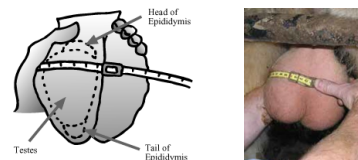
Reasons for culling	Bull Count	% total
Docility	26	8.5%
Low Euro-Star values	33	10.8%
Feet/legs & lameness	67	21.9%
Risk close mating's	51	16.7%
Injury	71	23.2%
Infertility	22	7.2%
Poor progeny	11	3.6%
Surplus to requirements	25	8.2%
Total	306	100.0%

Corridan *et al.* (2018)

Reproductive System of the Bull

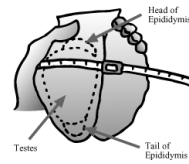


Scrotal size

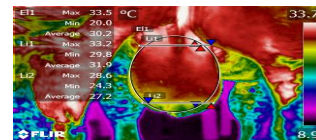


- Scrotal circumference → paired testis weight → sperm production and semen quality.
- Generally, bulls with larger testes produce more and better quality sperm.
- Heritability of scrotal circumference is relatively high
- Positive relationship between sire scrotal circumference and daughter fertility?
- Excessively large scrotal circumference and, or a pendulous scrotum can lead to injury
- Scrotal circumference measurements are part of BBSE and a pre-requisite for entry to most elite pedigree bull sales.

Scrotal size



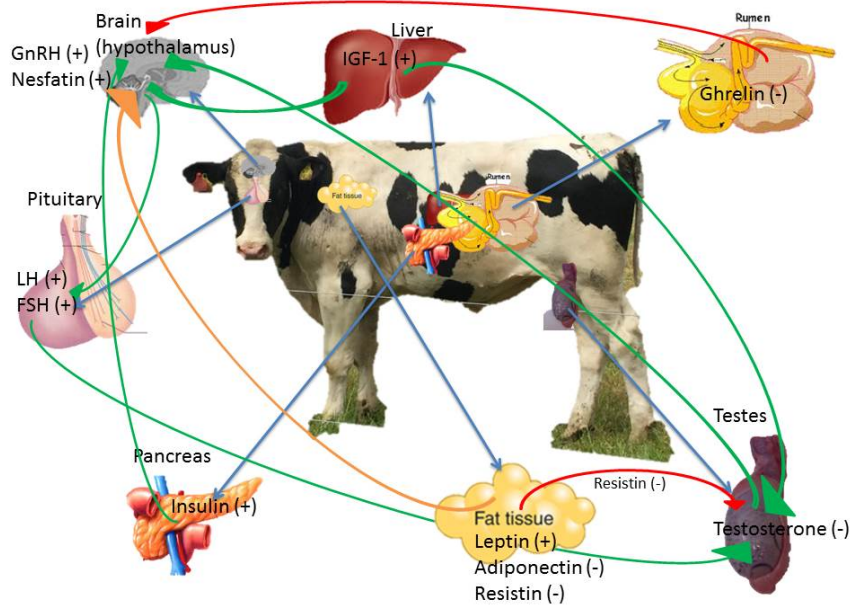
Scrotal temperature



- Temperature of the testes must be 2-6°C lower than core body temperature
- Increased testicular temperature, irrespective of the cause, reduces semen quality and can cause of infertility in bulls
- Duration of the decrease in semen quality related to severity and duration, with sperm morphology.
- At least 6 weeks to recover normal spermatogenesis
- Resumption of normal fertility may take longer
- Increased scrotal temperatures may be a consequence of:
 - contraction of disease
 - injury
 - increase in fatness of scrotum



Bull Nutrition



Nutrition



- Reproductive system of sexually mature male – robust to moderate fluctuations in dietary energy and protein intake?
- No obvious impairment to semen quantity/quality or IVF based fertility following high rates of bodyweight gain during calthood and early post-pubertal periods (~1.6 kg/day)
- Transient induction of sub acute acidosis in bulls – induced sperm abnormalities for up to 90 days (Callaghan *et al.*, 2016)
- Latent risks of intensive feeding regimens including impaired libido, GIT and hepatic ulceration, as well as laminitis and musculoskeletal problems may impact fertility and herd survival



Micronutrition

- Minerals divided into major (e.g. Ca, P, K, Na, Cl, S, Mg) and trace elements (e.g. Fe, Cu, Co, I, Zn, Se, Mn, Mo)
- Correct ratio often as important as meeting minimum requirement
- Imbalance can cause problems
- Establish herd status
- Variable responses to supplementation
- Different forms fed – organic v inorganic
- Cu, Zn, Se – important; also Vit E

Zinc
Copper
Manganese } lower oxidative stress to sperm

Zinc

- Testosterone synthesis
- Important component in enzymes associated with sperm function

Trace element	Mean	Range (across herds)	Lower and Upper limit*	% cows below Lower limit
Copper (µM)	11.91	0.48 – 38.00	8.78 – 20.40	15%
Iodine (µg/L)	30.37	3 – >150	51 – 300	82%
Selenium (µM)	0.52	0.01 – 3.70	0.91 – 1.52	79%



Health



- Purchase of a stock bull - one of the largest routine investments on suckler herds
- Disease prevention management same as for breeding females
- Prophylactic care including vaccination programmes and parasite treatments
- Screened for infectious agents prior to entry to herd - quarantined on the farm following purchase until status known
- Only purchase from reputable breeders with herd health plan
- Main breed societies have strict health criteria and testing requirements for bull sales



Infectious diseases

Pathogen	Sero-prevalence % (Vaccinating)	No. of herds	Within - herd Range %	Sero-prevalence % (Non-vaccinated)	No. of herds	Within - herd Range %
Lepto	87% (2760/3128)	78	0 - 100%	68% (1942/2780)	91	0 – 100%
BVDV	90% (2134/2314)	54	43 - 100%	78% (2826/3594)	115	0 -100%
IBR	33% (512/1518)	32	0 – 100%	42% (1985/4390)	137	0 – 100%
Neospora canium	-	-	-	5% (330/5908)	155	0 - 29%

Parr et al. (2018)



Penile warts

- Caused by bovine papillomavirus and normally only seen in young bulls (< 3yo)
- Relatively infrequent
- Can be venereally transmitted to females
- Single pedunculated masses or large broad-based cauliflower-like lesions on the glans penis and prepuce which may prevent intromission
- Spontaneous regression occurs in most cases
- Surgical removal
- Bulls with penile warts should not be certified as suitable for breeding



Limb and hoof health



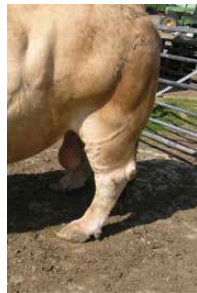
- Maintaining good hoof and limb health - critical importance to both the longevity and fertility of bulls
- Swedish study found that many relatively young beef bulls culled for infertility had evidence of arthritic lesions in their limbs, though they did not show overt signs of lameness
- Vets should pay particular attention to the bulls' hind limbs and gait when performing bull breeding soundness evaluations (BBSE)



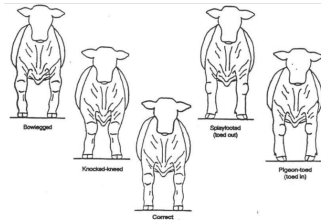
Hoof and limb issues



Post legged



Sickled hock



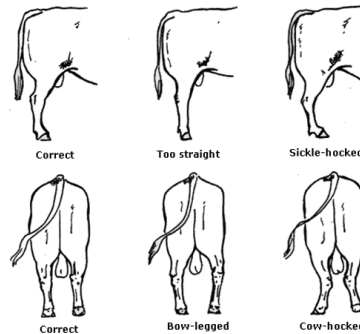
Cork screw claw



Interdigital Fibroma (corns)



Laminitis



Source: Dr. Colin Penny

Bull Breeding Soundness Evaluation

- Should be conducted on a yearly basis by a veterinary surgeon at least 60 days prior to the start of the breeding season
- Facilitates re-testing and ultimately timely replacement of bulls that may fail the examination
- The British Cattle Veterinary Association (BCVA) introduced a certification protocol for evaluating bulls for breeding purposes which involves 4 main steps:
 - i) Physical examination
 - ii) Semen examination
 - iii) Assessment of mating ability (not generally performed)
 - iv) Classification or overall prognosis
- Bulls failing to reach a certain threshold classified as “unsatisfactory”
- System does not classify a bull as “fertile” or “infertile” - objective is to reduce the risk of poor fertility performance in stock bulls
- A pre-requisite for all bulls entered into most breed society sales
- No single diagnostic test can accurately predict fertility, although an appropriate combination of tests can be more informative and will help to avoid costly incidents of infertility



Bull Breeding Soundness Evaluation



BCVA Bull Pre-Breeding Examination Certificate

Client Name: _____ Date: _____
 Farm Name: _____
 Address: _____
 County: _____
 Telephone: _____

Examiner Name: _____
 Registration No: _____
 Date of Exam: _____

Parameter	Normal	Abnormal	Score
General appearance	<input type="checkbox"/>	<input type="checkbox"/>	
Penis	<input type="checkbox"/>	<input type="checkbox"/>	
Scrotum	<input type="checkbox"/>	<input type="checkbox"/>	
Semen	<input type="checkbox"/>	<input type="checkbox"/>	
Overall	<input type="checkbox"/>	<input type="checkbox"/>	

Remarks: _____

Signature: _____ Date: _____

Mating management

- How many cows or heifers per bull?
- Often recommended to assign one female for each month of age
- Young bulls 15-20 cows in first season
- However, every bull is different and scrotal size and level of sexual maturity will vary with breed and nutrition

Observation during the breeding season

- Important to check a bull for locomotion, any evidence of injury or arthritic problems, and that he is physically capable of mating cows
- Best evidence of a bull's fertility potential is his ability to get cows pregnant
- Record identity of first cows bred and either for repeat to service or confirm pregnancy by scanning cows 28+ days after breeding
- Particularly important for young bulls joining the herd

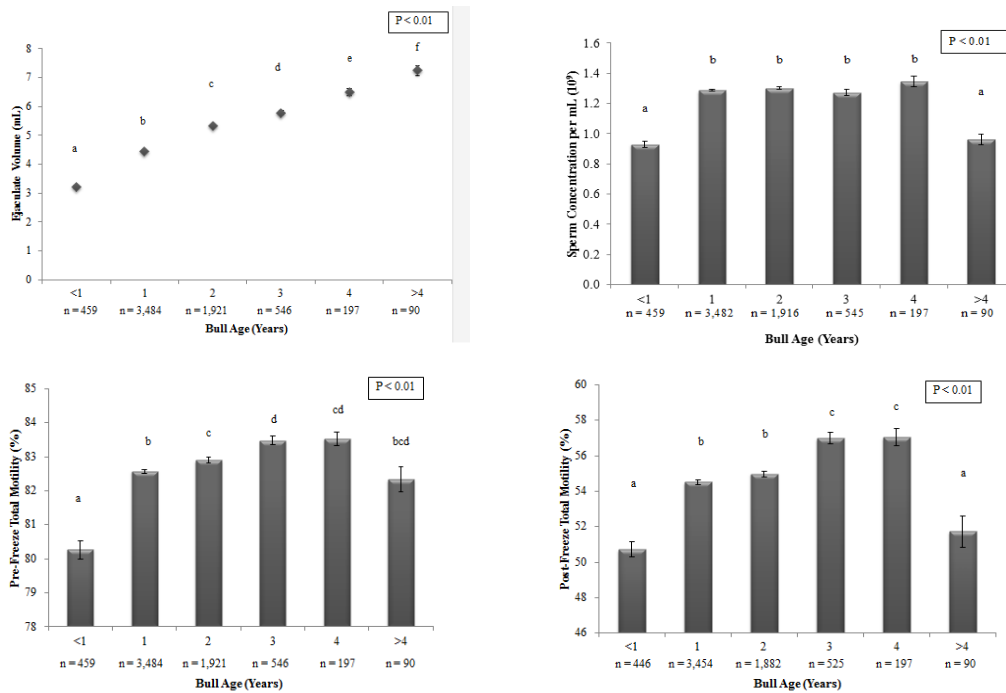


Young v mature bulls

- **Mature Bull**
 - 10 billion sperm per ejaculate
 - » (10 mLs of semen @ 1 billion sperm per mL)
 - 500 frozen semen doses
 - Collect 2-3 times per week
- **Young Bull**
 - 2 billion sperm per ejaculate
 - » (5 mLs of semen @ 400 million sperm per mL)
 - 150 frozen semen doses
 - Collect once per week



Effect of age on semen parameters



Young bull management



- Purchase at least 2 months in advance
- Pair with a heifer/allow to gain some experience → suitable accommodation
- Acclimatisation to new diet → introduce change gradually
- 'Fit' not 'fat' → could lose 10%+ of bodyweight during breeding season
- Observe mating behaviour closely – physically large enough to mate cows – no obvious morphological deformities

Bull mating heifer.mp4

Young bull management



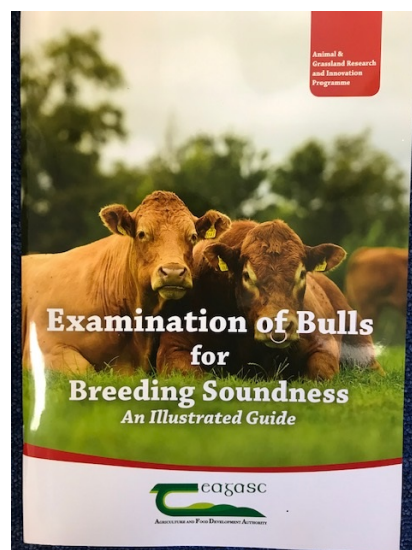
PURPOSE BUILT PEN



Summary

- Valuable animal – requires special care and attention to ensure functionality and longevity
- Purchase young bulls well in advance of breeding season
- Purchase from reputable breeder/breed society sale
- Never assume fertility – on-going vigilance important
- Always take utmost care around bulls!

Further Information





Notes

Notes



Future Events

- Friday 14th June 1pm – OPA Awareness Event – Greenmount Hill Farm, Glenwherry
- Monday 1st July 9am-5pm - NSA Sheep NI Event – Ballymena Livestock Mart
- Tuesday 9th July at 7pm – Breeding for Performance (Sheep) – Omagh Livestock Mart
- Tuesday 3rd September at 7pm - Finishing Lamb – Swatragh Livestock Mart
- Wednesday 4th September at 7pm - Finishing Lamb – Hilltown Livestock Mart
- Tuesday 10th September at 7pm – Finishing Beef - Ballymena Livestock Mart
- Thursday 12th September at 7pm – Finishing Beef - Markethill Livestock Mart
- Wednesday 2nd October at – Sheep Conference – Greenmount Campus
- Thursday 3rd October – Sheep Conference – Silverbirch Hotel, Omagh
- Tuesday 26th November - RUAS Premier Beef & Lamb Championships – Balmoral Park
- Thursday 12th December – RUAS Winter Fair – Balmoral Park

Details subject to change – check farming press for details nearer to time

SUPPORTING SUSTAINABLE BEEF PRODUCTION IN NORTHERN IRELAND

SUMMARY

- AgriSearch is an independent organisation whose purpose is to help make the Northern Ireland ruminant livestock sector become more competitive, profitable and sustainable.
- The value of the outputs of AgriSearch to farmers is many times greater than the levy investment
- A wide range of resources are available on our website www.agrisearch.org



What is AgriSearch

AgriSearch (The Northern Ireland Agricultural Research and Development Council) is an independent charity. It was formed in 1997 to help beef, sheep and dairy farmers become directly involved with production-oriented research and development and to ensure a continuation of government funding for such research. Our mission is to drive profitability and sustainability of the ruminant livestock sector. We do this through funding and commissioning research directly applicable on farms to farmers. AgriSearch welcomes innovative ideas and identified needs for research that may solve problems. Farmers are involved throughout our decision-making processes. We are an independent organisation (separate from AFBI) governed by a Board of Trustees (who are directors of a Company Limited by Guarantee and registered with the Charities Commission for Northern Ireland).

The value of the levy investment

Northern Ireland's beef industry needs to continuously improve technical efficiency to remain in business. At AgriSearch, we aim to provide the current and next generation of beef farmers with the research-based knowledge they will need to build efficient, sustainable and profitable farming businesses which can help them compete in a global marketplace. To achieve this AgriSearch works with research organisations and industry bodies across Europe bringing innovation to Northern Ireland.



A review of AgriSearch co-funded research carried out in 2006 showed a 22:1 return on farmers levy, assuming adoption rates of between 5 and 10% for the various recommendations arising from the research.

AgriSearch has been heavily involved in funding a wide range of beef research activities spanning subjects such as nutrition, improved grassland utilisation, heifer rearing and use of synchronisation in sucker herds.

With levy investments of around £400,000 per year over the past 20 years we have been able to play a key role in large scale research projects co-funded by more than £48 million of contributions from industry organisations, government and international bodies. This collaboration has brought considerable benefit to Northern Ireland farmers. Much of the 'cutting edge', independent research is generated within Northern Ireland at AFBI Hillsborough and on farms of co-researchers.

In addition to the potential gains to be made from applying the findings of research conducted under Northern Ireland conditions, one direct financial payback of the data collected under the “GrassCheck” programme was that Northern Ireland was able to obtain £4.57M in 2002 for ‘weather aid’ payment. This source of data was also used to provide a business case for the 2013 fodder transport scheme, which brought aid of £1M to the qualifying farms in Northern Ireland. In 2018 GrassCheck weather data was used as evidence by DAERA to make a case to the European Commission for an uplift in the rate of advance payment of BPS from 50% to 70%. The 2002 aid alone is equivalent to more than 10 years of AgriSearch levy income.

It should also be noted that the on-farm BVD prevalence study which was led by AgriSearch provided the business case for Animal Health and Welfare Northern Ireland’s BVD eradication scheme. Research carried out into the diagnosis of Johne’s disease has also been incorporated into AHWNI’s Johne’s control programme.

Pioneering on-farm research

Together with researchers at AFBI, AgriSearch has pioneered the use of on-farm research. Key benefits for both farmers and scientists include:

- Much greater numbers of animals, leading to more robust data
- Range of genetics, environments and farm management systems
- First-hand farmer experience
- These on-farm research projects often involve industry partners who bring knowledge and experience to the project as well as other in-kind contributions of products and services.



How is it funded?

AgriSearch is funded by means of a voluntary levy collected by dairy and red meat processors. The levy rate for beef is 40 pence per head of cattle (of which 10 pence is passed on to AHWNI to assist with the BVD eradication programme).

Who makes the decision on how the beef levy money is spent?

Research projects are recommended for funding by Sectoral Advisory Committees (Dairy, Beef and Sheep). These are composed mainly of farmers along with a processing representative and an independent scientific expert. Stewardship of AgriSearch resides with the Board of Trustees. The guiding principles behind all AgriSearch projects are that they will provide research which will be of practical benefit to farmers and provide them with tools to help reduce costs, increase performance, drive innovation and improve welfare and environmental sustainability.

Why should farmers fund research, should the government not fund it all?

Government still does fund a considerable amount of research. Understandably this tends to focus on evidence needs for guidance of policy makers. However, by the industry being willing to commit some contribution of money and by making the case for particular projects, we are able to ‘lever’ government funding from the available budget to commission research. In the financial year 2017/18, for every £1 committed to research projects by AgriSearch there was a further £20 obtained from other sources.

There have been very significant changes to research funding mechanisms over the past seven years. Across all funding streams there is a requirement for active industry involvement and leadership. Collaborative projects are becoming more common and this trend is likely to continue.

Future Proofing Beef Farming

In circumstances where AgriSearch's levy income on its own will not go far in payment for research, the real value of AgriSearch is the industry engagement it can bring and represent in a project, particularly the ability and experience in facilitating on-farm research.

Conclusion

AgriSearch's primary focus is to provide a return to Northern Ireland's dairy, beef and sheep farmers for the levy investment they put in. Reviews have estimated that return to be between 20 to 1 and 40 to 1 (based on 5 to 10% adoption rates).

AgriSearch provides farmers with the latest research and knowledge to help them improve technical efficiency.

AgriSearch provides a means for farmers to have a voice and role in research projects, the findings of many of which will inform government policy in the future as well as providing farmers with the tools and information needed to compete in an ever-changing world.

Get the most out of your levy by engaging with AgriSearch, bring forward questions / research needs and use the information available on the website www.agrisearch.org and following our social media channels.



CURRENT BEEF RESEARCH PROJECTS:

- Beef from Grass: An evaluation of beef grazing systems and trace element supplementation within suckler beef production
- Development of systems to improve dairy origin beef young stock health and performance
- BovIS Mart Data Project
- Rumen fluke in cattle and sheep: measuring impacts and improving diagnosis
- Redefining nutrition standards for improving beef production efficiency
- An evaluation of rumen temperature as proxy for the indication of key stages in the lifecycle of breeding beef animals
- Strategic Antimicrobial Use in Dairy, Beef and Lamb Production (STAMP)
- Food Futures: Smart Sustainability Tool
- Evaluation of ammonia emissions from livestock enterprises
- SUPER-G: Developing sustainable permanent grassland systems and policies



AFBI, AgriSearch, CAFRE and LMC would like to thank the staff of Ballymena and Clogher Livestock Markets for hosting these events