Bio-Security, Health and Safety

In the interest of safety and disease bio-security, visitors to the Grange Open Day are asked :

- To use disinfection footbaths provided (on entering and leaving the event)
- Park in designated areas
- Stay on the Open Day route
- Not enter fields/paddocks/pens which contain cattle
- Not to handle cattle

Acknowledgements

Teagasc acknowledges FBD Insurance for their sponsorship of the Teagasc Grange Suckler Day

Special Need Assistant can be provided on the day

Suckler Beef Day at Grange:
June 15th 2011

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Introduction

The ***Derrypatrick Herd***, Grange was established in 2009 for the purposes of research demonstration to Irish suckler beef producers. The objective is to establish a high profit, grass-based, sustainable suckler beef systems research herd evaluating and demonstrating optimal animal breeding, grass-based feed nutrient supply and technical efficiency. The animals or carcasses produced will be suitable for the high priced continental EU markets i.e. lean carcasses of good conformation.

The research farm will entail ~120 spring-calving suckler cows comprising four breed types (with 30 cows per herd), these being: Limousin × Holstein-Friesian, Limousin × Simmental, Charolais × Limousin, and, Charolais × Simmental, all of known genetic merit, mated to high genetic merit, late-maturing sire breeds, producing progeny to slaughter on predominantly grass-based, calf-to-beef systems operated at a relatively high stocking rate (>220 kg organic Nitrogen/ha).

The cow breed types selected broadly represent the suckler "cow types" in the country. The suckler cow replacement breeding strategies planned for the herd is also representative of what is available to Irish farmers, that is either sourcing replacement heifers from the dairy herd (i.e. Limousin × Holstein-Friesian) or from the suckler herd (i.e. Limousin × Simmental, Charolais × Limousin and Charolais × Simmental). At purchase, the mean suckler beef value (SBV) of the Limousin x Holstein-Friesian was 81, whereas, that of the three late-maturing "continental" crossbreds was ~130, which places these animals in the top 5 to 10 % for commercial beef animals. Mean reliability of the SBV was 30%.

The breeding policy will exploit breed differences and hybrid vigour, which for crossbreeding are due to a combination of; enhanced reproductive performance, lower calf mortality and higher calf growth. For the crossbred cows this advantage can be of the order of +13% and up to +21% when a sire of a third (different) breed is used.

The herd will operate as a high stocking rate, spring-calving, grass-based calf-to-beef production system. Mean calving date will coincide with the start of the grass growing season.

Target live weights at weaning, yearling and slaughter (~20 mths) for heifer progeny of a "mature" cow herd are, ~295 kg, ~375 kg and ~565 kg, respectively. Corresponding values for bull progeny are ~320 kg, ~400 kg and ~665 (~18 mths) kg. Target carcass weights are ~310 kg for heifers and ~390 kg for bulls.

Due to the considerably lower comparative cost of grazed grass as a feedstuff, maximising the proportion of high digestibility, grazed grass in the annual feed budget, while simultaneously achieving high animal performance and providing sufficient grass silage of appropriate digestibility for the indoor winter period, is central to the production system. The annual feed budget of the calf-to-beef system will comprise approximately 60% grazed grass, 30% grass silage and 10% concentrates. The calf-to-weanling component will comprise approximately 73% grazed grass, 26% grass silage and 1% concentrates.

On display today

The performance of the herd during 2010 and 2011, to date, will be summarised to day. The herd calved for the second time in spring 2011. All animals in the herd are on display. Thus, the 1st and 2nd calving cows and their calves, will be on display as will the yearling progeny, born in 2010. The yearling males are being reared as bulls spending about 100 days at grass, as yearlings, before moving indoors to be finished (before late October) on a high concentrate diet. The yearling heifers will be on display, also, as will the replacement heifers.

Information from the herd during 2010 and 2011

During the past 12 months or so the herd has provided valuable information to the farming public on quantifying a number of beef production issues. Some examples of relate to:

1. breed comparison work, where the output from the four breed crosses in the herd are being quantified, in terms of animal feed intake, calf performance, yearling growth rates and carcass characteristics and value,
2. the value of early grass in the animals diet has been assessed where cows and their calves were given access to grass, either full-time or part-time ("on-off" grazing),
3. the animal and grass production effects of grazing to different post-grazing sward heights has been measured,
4. the effects of poor bull fertility on farm costs has been quantified,
5. the herd has been invaluable in supplying information on suckler beef system economic assessments.

It is vital that further component studies are undertaken that facilitate the evolution of the herd to the next phase so that the performance of the herd is constantly improving.

Derrypatrick Herd, Teagasc Grange – Performance 2010/2011

Mark McGee, Denis Minogue and Paul Crosson
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Background

The *Derrypatrick Herd,* Grange was established in 2009 for the purposes of research demonstration to Irish suckler beef producers.

The herd is comprised of spring-calving, Limousin × Holstein-Friesian (LF), Limousin × Simmental (LS), Charolais × Limousin (CL) and Charolais × Simmental (CS) suckler cows and is operated at a relatively high stocking rate of 225 kg organic nitrogen/ha (2.9 LU/ha). The male progeny will be produced as bulls at ~18 months of age and heifers at ~20 months of age.

The diet of the spring-calving cow is confined to high nutritive value grazed grass or moderate digestibility grass silage (plus minerals/vitamins) with the exception of first-calving animals who receive 2.0 kg of concentrate from calving until turnout to pasture. Cows and calves are rotationally grazed together during the grazing season (~March to ~November).

The only concentrates offered to calves pre-weaning is that required under the Suckler Welfare Scheme and these (~1.0 kg/head/day) are introduced at approximately 5 weeks prior to the expected weaning date. Calves are weaned gradually. At the end of the first grazing season the weanling progeny are housed indoors and offered first harvest grass silage (high digestibility) *ad libitum* plus 1-2 kg of concentrate per head per day. The objective is to grow the animals at ~0.5 to 0.6 kg live weight per day and to avail of compensatory growth during the subsequent grazing season.

At the end of the first winter they are turned out to pasture (early-mid March) and rotationally grazed. Bulls will be housed after about 3 months (~mid-end June) and finished on a high concentrate diet over 90-100 days. Heifers will be housed around mid-September and finished indoors over 60 days on grass silage *ad libitum* plus 3 kg of concentrate per head per day.

Target live weights at weaning, yearling and slaughter (~20 mths) for heifer progeny of a "mature" cow herd are, ~295 kg, ~375 kg and ~565 kg, respectively. Corresponding values for bull progeny are ~320 kg, ~400 kg and ~665 (~18 mths) kg. Target carcass weights are ~310 kg for heifers and ~390 kg for bulls.

The annual feed budget of the calf-to-beef system will comprise approximately 60% grazed grass, 30% grass silage and 10% concentrates. The calf-to-weanling component will comprise approximately 73% grazed grass, 26% grass silage and 1% concentrates.

In 2010 all cows were first-calvers and were in-calf to Blonde d'Aquitaine sires.

Herd Performance 2010

Results on cow live weight, body condition score and milk yield and, calf growth for 2010 are presented in **Table 1.** In summary, at weaning, live weight and body condition score was lower for LF than the beef crossbred cows, which were similar. Milk yield was highest for LF and lowest for CL with genotypes having Simmental ancestry been intermediate. Calf birth weight was not significantly different between the cow breed types. Differences in calf pre-weaning growth between the cow breed types largely reflected differences in milk yield. Over a 230 day pre-weaning period, this equated to LF calves being 48 kg heavier than CL calves and about 26 kg heavier than LS and CS calves.

Table 1: Performance of first-calving Limousin × Holstein-Friesian (LF), Limousin × Simmental (LS), Charolais × Limousin (CL) and Charolais × Simmental (CS) cows, and growth of their calves pre-weaning

		Cow breed type			
Cow		**LF**	**LS**	**CL**	**CS**
Live weight (kg)					
	Post-calving (Mid-March)	563	583	585	599
	June	525	578	581	590
	Weaning (Early-Nov.)	579	652	654	654
Body condition score (0-5)					
	Post-calving (Mid-March)	2.9	3.1	3.0	3.0
	June	2.7	3.1	3.0	3.0
	Weaning (Early-Nov.)	2.8	3.2	3.2	3.2
Milk yield – July (kg/day)		8.8	6.6	5.7	6.6
Calf *(average of males & females)*					
Birth weight (kg)		44.9	42.3	42.8	44.4
Pre-weaning live weight gain (Mar-Nov) (kg/day)		1.18	1.06	0.97	1.07

The degree to which these differences in calf live weight at weaning are carried through to slaughter is of particular interest. Previous research at Grange has shown that most of the differences in calf live weight at weaning (due to milk yield of the cow) still remain at slaughter. Cow intake during the grazing season is also important.

Breeding of replacement heifers and cows commenced on 11 April and 26 April 2010, respectively, and ended on 15 July 2010. Replacement heifers were bred to a Blonde d'Aquitaine stock bull. The cow herd were artificially inseminated (LF to Belgian Blue, LS and CS to Simmental and Belgian Blue and, CL to Limousin and Belgian Blue) up to 17 June 2010, followed by introduction of 2 Belgian Blue stock bulls for 28 days (11 week breeding season). When the Belgian Blue stock bulls were introduced, the cow herd was split into 2 groups of 56 cows, with one bull allocated per group. Pregnancy scanning took place on 31 August. Results (**Table 2**) showed that one of the Belgian Blue stock bulls was not working (Group 2), resulting in a substantially lower pregnancy rate than expected for this group. In the group where the stock bull was working (Group 1) total herd pregnancy rate was 91%, close to target. Mean expected calving date (scanning) for Group 1 was two days later than 2009 partially reflecting the fact that they were all first-calving cows. This date coincides with the start of the grass growing season at Grange.

Table 2: Reproductive performance of the herd (first-calvers) in 2010

	Group 1	**Group 2**
No. of cows	56	56
No. of replacement heifers	13	13
Total pregnancy rate (herd basis – cows plus replacements)	91%	54%
Pregnant to AI (cows only)	46%	43%
Pregnant to stock bull (cows only)	43%	0%
Pregnancy rate (replacement heifers only)	96%	96%
Mean service date (herd basis)	30/05/2010	22/05/2010
Mean expected calving date (herd basis)	14/03/2011	08/03/2011

Grazing Trials – 2010

1. Effect of early turnout to pasture in spring on cow and calf performance

Due to the considerably lower cost of grazed grass compared to grass silage and concentrates, maximising the proportion of grazed grass in the annual feed budget, is central to the Derrypatrick beef production system. Underpinning this is an extended grazing season via earlier turnout to pasture in spring. Previous research at Grange showed that allowing yearling cattle and lactating suckler cows restricted access time to grazed pasture daily - "on-off" grazing - is a practical strategy to permit early-spring grazing.

In spring 2010 a study was carried out between 1 March and 29 March to evaluate and demonstrate this further, using 39 cows (first-calvers) and calves from the Derrypatrick Herd. It compared (i) indoor feeding (IF): grass silage plus 2 kg of concentrate daily, (ii) restricted or "on-off" grazing (RG): 6 hours grazing daily (cows only) plus restricted access to grass silage and 2 kg of concentrate daily, and (iii) full-time grazing (FG): (cows + calves). Animals on grazing treatments were offered fresh pasture daily. To prevent grass tetany, cows on the "on-off" grazing treatment received Cal Mag daily, spread on the silage, and those outdoors fulltime were offered high magnesium buckets. At the end of the experimental feeding period (28 days) all animals were turned out to pasture full-time until weaning in early November. The main results are presented in **Table 3**.

In summary, although total DM intake was lower for FG than RG and IF, net energy intake was higher for RG than the other 2 treatments, reflecting the high nutritive value of grazed grass in spring. Cow live weight loss to the end of the experimental dietary period was greater for the two grazing treatments compared to IF but live weight loss did not differ between the feeding treatments after allowing for changes in gut-fill, or subsequently. The increase in milk yield over the experimental period was greater for FG than RG and IF, which were similar. Calf live weight gain to the end of the experimental dietary period was greater for FG compared to IF with RG being intermediate, but daily live weight gain to weaning did not differ significantly between the three feeding treatments.

Table 3: Effect of indoor feeding (IF), restricted grazing (RG), full-time grazing (FG) in spring on intake and performance of first-calving suckler cows and live weight gain of their calves in 2010

		Treatment		
		IF	**RG**	**FG**
Cow				
Dry matter intake (kg/day)	Grazed grass	0.0	7.1	9.9
	Grass silage	9.2	2.8	0.0
	Concentrate	1.6	1.6	0.0
	Total	10.9	11.5	9.9
Initial live weight (kg)		613	611	601
Live weight change	To end of exp. dietary period	-10	-43	-48
	To 7 days post-turnout of all treatments*	-59	-52	-60
	To weaning	48	55	47
Initial body condition score	(BCS) (0-5)	3.1	3.0	2.9
BCS change	To turnout of all treatments	0.0	-0.1	-0.1
	To weaning	0.1	0.2	0.1
Milk yield (kg/day)	Initial	6.0	5.9	6.1
	Change to end of exp. dietary period	1.0	1.1	2.6
Calf				
Initial live weight (kg)		56.2	56.8	56.1
Average daily gain (kg)	To end of exp. dietary period	0.83	0.92	1.07
	To 7 days post-turnout of all treatments*	0.76	0.85	0.97
	To weaning	1.06	1.03	1.13

* Weighed 7 days after turnout of all animals to allow for adjustments in gut-fill to stabilise.

Although early, partial or full time turnout to pasture in spring only resulted in short-term benefits in animal performance, replacement of more expensive feedstuffs with cheaper produced grass (and reduced slurry handling) means greater cost savings. In this instance, **feed** cost savings of €1.11 and €0.52 per cow per day were achieved by the FG and RG treatments, respectively, compared to the IF treatment.

2. Effect of post-grazing sward height on cow and calf performance

There is interest in the effect of post-grazing sward height (PGSH) on animal performance in beef production systems. In 2010 a trial was set up using the Derrypatrick herd to evaluate the effects of two PGSH on performance of first-calving suckler cows and their calves during the grazing season. Cows and calves were allocated to one of two grazing systems: a PGSH of either 4.0 cm (tight grazing) or 5.5 cm (more conventional grazing). The stocking rate (2.9 LU/ha equivalent) was the same for each grazing system. The trial was undertaken from early May to mid-October 2010 during which, cows and their calves were rotationally grazed on predominantly perennial ryegrass swards. Fresh grass was allocated to each system once the target PGSH was achieved. Grass surplus to grazing requirements was removed as silage. At the end of the grazing season (early November) animals were housed indoors and offered grass silage and additionally, calves were offered supplementary concentrates. Average pre-grazing sward height (10.1 cm) and herbage mass (1845 kg DM/ha) was similar for both grazing systems. Cow live weight gain at pasture was 24 kg lower for the 4 cm than the 5.5 cm PGSH, but live weight gain to 21 days after housing was similar for both treatments (**Table 4**). Cow body condition score gain tended to be lower and calf live weight gain was 8-10 kg lower for the 4 cm than the 5.5 cm PGSH, both at pasture and to post-housing. Cow milk yield did not differ significantly between systems.
The reduction in growth of suckler calves grazing to a lower PGSH (4.1 cm) is consistent with other recent findings at Teagasc, Grange, whereby yearling steers grazing to a lower PGSH of 3.5 cm (vs. 5.0 cm) in a dairy calf-to-beef system were 30 kg lighter at the end of the grazing season.

Table 4: Performance of first-calving suckler cows and calves grazing to two different post-grazing sward heights in 2010

		Post-grazing sward height	
		4.0 cm	**5.5 cm**
Cow			
Initial live weight (kg): May		560	561
Live weight change (kg)	May to October	62	86
	May to post-housing	94	94
Initial body condition score (BCS: 0-5)		2.99	2.97
BCS change	May to October	0.11	0.17
	May to post-housing*	0.14	0.21
Milk yield (kg /day)		6.7	7.3
Calf			
Initial live weight: May (kg)		95.5	96.3
Live weight change (kg)	May to October	169	177
	May to post-housing*	202	212

* Weighed 21 days after housing of all animals to allow for adjustments in gut-fill to stabilise.

Winter 2010 – Spring 2011

Replacement cow purchases and cull cow sales

Following the fertility issue with one stock bull, which resulted in a higher replacement rate than expected in the Derrypatrick Herd, it was decided to purchase 23 pregnant cows (~€1400 each) to replace those not in-calf due to the infertile bull. These cows were identified with the assistance of the ICBF and comprised of the same breed types as in the existing herd. They were in-calf to late-maturing sire breeds, mostly carrying their second calf and were expected to calve at about the same time as the main Derrypatrick herd. For biosecurity reasons, purchased cows were kept separate from the main herd until turnout to pasture in spring. However, they were treated the same as the "original" Derrypatrick cows in terms of feeding and management, with the exception that, prior to calving, they were lightly stocked on an out-wintering pad facility rather than indoors on slats.

Similarly, replacement breeding heifers were also purchased (~€900 each), according to the standard replacement policy, and will be bred to calve in spring 2012.

Cull cows were finished on a diet of grass silage plus ~7 kg/day concentrates and were slaughtered in February 2011. Mean carcass weight, carcass conformation and fat score (scale 1-15), and carcass price were 376 kg, 7.8 (~R=) and 8.9 (~3+), and €1146, respectively.

Winter feeding and calving

Cows

Pre-calving, cows and heifers were offered moderate digestibility (DMD ~66%) grass silage *ad libitum* plus a dry-cow mineral spread on the silage daily. Mean cow live weight pre-calving was ~675 kg and body condition score (BCS) at the start of the winter indoor period was ~3.2 (scale 0-5). Cows consumed on average, ~8.35 kg dry matter per head daily of silage, equivalent to ~1.25 % of body weight. In terms of energy intake, this diet meets ~75% of their theoretical requirements during late pregnancy. This level of energy restriction is generally adequate for cows in good BCS at the start of the winter indoor period. Average cow BCS post-calving was 2.65, meaning that BCS loss from the start of the winter indoor period to calving was ~0.55 units.

Two to five days prior to expected calving, cows were removed from the slats to individual straw bedded calving pens. After calving, they were offered grass silage *ad libitum* until turnout to pasture and first-calvers (heifers) were offered an additional 2 kg/day of concentrate. Cows remained in the calving pens for a number of days to encourage bonding with the calf. They were then moved back to the slatted pens with their calves in a separate creep area at the back of the pen. Calves had twice daily access for suckling.

For the "original" Derrypatrick animals, calving commenced on 29 January and 15 February 2011, and finished on 15 April and 1 May 2011 for the heifers and cows, respectively, with a mean calving date of 12 March. Mean calving date of the purchased pregnant cows was 2 weeks earlier. Calving performance is summarised in **Table 5**.

Table 5: Calving performance 2011

	"Original" Derrypatrick Cows	**"Original" Derrypatrick HERD Cows + heifers**		**(Purchased Pregnant Cows)**
Number calved	74	**93**		(23)
Live calves	71	**88**		(18)
Set of twins	0	**1**		(0)
Stillborn	1	**3**		(2)
Death ~calving	1	**1**		(2)
Death following caesarean section	0	**0**		(0)
Death due to calf deformity	1	**2**		(0)
Accidental death (cow lay on calf)	0	**0**		(1)
Calf mortality - to date (%)	**4.0 %**	**6.4 %**		(21%)
Live calves per 100 cows	**96**	**95**		(79)

Incidence of caesarean sections was much higher than expected, with 9, 2 and 4 sections occurring with the "original" Derrypatrick cows, "original" Derrypatrick heifers and purchased pregnant cows, respectively. The reason for these individual cases is unclear. Caesareans were predominantly associated with male calves, with very high birth weight relative to average birth weight and relative to cow live weight post-calving (**Table 6**). They occurred throughout the calving season and were not obviously related to cow body condition score (BCS) (**Table 6**), or cow feeding, as all cows were treated the same, or to any sire breed. There were no calf deaths due to caesarean section.

Table 6: Comparison of cow and calf parameters: caesarean vs. no caesarean (mean values)

	Cow and calf parameters (kg)	**No Caesarean**	**Caesarean**
DP cows	Calf birth weight	48.0	59.9
	Cow live weight post–calving	626	586
	Cow BCS post-calving	2.65	2.67
	Calf birth weight as % of cow live weight	7.7	10.2
DP heifers	Calf birth weight	37.9	52.5
	Cow live weight post–calving	598	535
	Cow BCS post-calving	2.76	2.63
	Calf birth weight as % of cow live weight	6.5	9.9
Purchased cows	Calf birth weight	46.3	57.8
	Cow BCS post-calving	2.72	2.69
	Cow live weight post–calving	595	600
	Calf birth weight as % of cow live weight	7.8	9.6

Live weight, body condition score (BCS) and calving difficulty of the four cow breed types, and birth weight and growth of their calves is shown in **Table 7**. In general, LF and LS cows were lightest and CL and CS were heaviest. Cow BCS was lower for LF than the other three cow breed types. Calving difficulty score or calf birth weight did not differ significantly between the cow breed types. Calf average daily live weight gain from birth to ~mid-May was highest for LF and lowest for CL, with LS and CS being intermediate. This cow breed type ranking in calf growth is the same as obtained in 2010.

Due to inadequate grass supply in spring because of low soil temperature, cows and calves were first turned out to pasture on 22 March.

Table 7: Performance of the four cow breed types and growth of their calves to date (2011)

	Cow breed type			
	LF	**LS**	**CL**	**CS**
Live weight (kg)				
Post-calving	580	590	615	620
Mid-May (kg)	562	590	625	635
Body Condition Score (0-5)				
Post-calving	2.6	2.7	2.7	2.7
Mid-May	2.5	2.6	2.6	2.6
Calving difficulty score (1-5)	2.1	1.7	2.4	2.0
Calf birth weight (kg)	45.7	43.1	45.1	45.4
Calf average daily gain: Birth to Mid-May (kg)	1.10	0.99	0.95	0.98

LF, Limousin × Holstein-Friesian; LS, Limousin × Simmental; CL, Charolais × Limousin; CS, Charolais × Simmental.

Weanlings/Yearlings

For the winter indoor period, the weanling progeny were offered relatively high digestibility (DMD ~73%) grass silage *ad libitum* plus a supplementary barley-based concentrate – bulls received 2 kg and heifers received 1 kg concentrate per head daily. On average, they consumed ~4.7 kg dry matter per head daily of grass silage. The objective is to grow the weanlings at about 0.5 to 0.6 kg live weight per day over the winter indoor period and subsequently, avail of compensatory growth when turned out to pasture in spring. Mean growth rate for the bulls was ~0.67 kg/ day and for the heifers was ~0.47 kg/day.

Due to the very cold weather, grass growth was (and is) below average and turnout date to pasture was delayed until mid-March (15 March for bulls & 16 March for heifers). Average daily live weight gain following turnout to pasture (mid-March to mid-May) was 1.41 kg for the bulls and 1.24 kg for the heifers.

Post-weaning performance of the progeny of the four cow breed types is summarised in **Table 8.** Progeny from LF are heavier than LS and CS, who in turn, are heavier than CL. Post-weaning average daily gain was not significantly different between the progeny of the four cow breed types, although numerically higher for LF. Consequently, weight differences are largely a reflection of pre-weaning gain.

Table 8: Post-weaning performance of the progeny of the four cow breed types

		Cow breed type			
		LF	**LS**	**CL**	**CS**
Live weight (kg) *(average of males & females)*					
Housing (Nov 2010)		316	283	264	284
At grass – (May 2011)		440	401	382	407
Average daily gain (kg)					
Indoor winter period	Males	0.71	0.63	0.63	0.72
	Females	0.51	0.49	0.50	0.45
Pasture (Mid-March to Mid-May)	Males	1.54	1.32	1.37	1.35
	Females	1.19	1.27	1.22	1.30

LF, Limousin × Holstein-Friesian; LS, Limousin × Simmental; CL, Charolais × Limousin; CS, Charolais × Simmental.

Animal health

At least 4 weeks pre-breeding cows were vaccinated against Leptospirosis and BVD. They received an IBR vaccine twice annually and were also vaccinated between 12 and 3 weeks pre-calving for E coli, rotavirus and coronavirus (calf scours). Calves received an IBR and RSV intranasal vaccine 1 week after birth plus a booster 12 weeks later. There were very few incidences of pneumonia or scours in calves this year. Pre-weaning, calves will receive a vaccine against respiratory diseases. Treatment for internal and external parasites (stomach worm, lung worm, fluke, lice) will be implemented.

Economics of suckler beef production

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Introduction

One of the objectives of the Derrypatrick Herd is to demonstrate systems of production which generate high levels of profitability. A target gross margin in excess of €1,000 per hectare was set at the initiation of the project. The general principle underpinning this economic target is a high output of beef carcass within a cost-efficient system of production. High levels of output require good reproductive performance, high liveweight per day of age and high stocking rates. Cost efficiency is largely related to operating production systems which maximise the proportion of grazed grass in the annual feed budget. Although the first production cycle is not yet complete on the Derrypatrick Herd, it is prudent to review these targets and to outline the sensitivity of these targets to price changes and production shocks.

High levels of output

The quantity of beef produced per hectare from suckler beef systems is determined by output per livestock unit (LU) and stocking rate (LU/ha). High output per LU requires good reproductive performance from breeding females and good live weight gain from progeny.

Reproductive performance

Reproductive performance can be measured by calving interval and pregnancy rate. Analysis of research farm systems at Grange over 13 years showed that good reproductive performance - a calving interval of 367 days and a pregnancy rate of 94% - can be attained in a spring-calving suckler herd. A target of 0.95 calves per cow per year, including calf mortality based on a fixed replacement rate of 20%, has been set for the Derrypatrick Herd.

Animal live weight performance

The three most important factors determining growth rate (and carcass quality) of suckler progeny are: 1) use of late-maturing continental breeds, 2) availing of hybrid vigour and, 3) milk production of the dam. The objective is to achieve a high proportion of lifetime daily gain during the grazing season so as to minimise the weight gain required during the relatively expensive indoor feeding period. The target for the Derrypatrick Herd is to achieve a liveweight per day of age of ~1.1 kg. This production system target is predicated on bulls and heifers achieving liveweights per day of age of ~1.2 kg and ~0.95 kg, respectively.

Stocking rates

Given that land area is the most limiting factor on Irish suckler farms, high levels of profitability per hectare will determine overall farm profitability. Profit per hectare, is in turn, largely dependent on high levels of output per hectare and thus, high stocking rates. The Derrypatrick Herd operates at a stocking rate of ~2.9 LU/ha (~225 kg organic N/ha). Whilst this stocking rate is higher than previous research farm systems operated in Grange, it is within permissible limits under the Nitrates Directive. Thus, this system is currently under evaluation at Grange to investigate the potential to maximise profitability within an integrated suckler calf-to-beef production system.

Costs of production

Irish grassland has the potential to produce high yields of highly digestible herbage due to favourable climate and soil types. Grazed grass costs ~50% and ~33% of the cost of grass silage and concentrates, respectively. Thus, a key objective must be to maximise the proportion of grazed grass in the annual feed budget of suckler beef systems and this achieved through a long grazing

season. Where grass is available and where grazing conditions are appropriate, early turnout to pasture in spring increases the proportion of grazed grass in the total farm feed budget and hence, improves profitability. Currently it is estimated that, on average, grazed grass constitutes 49% of the total feed budget on Irish suckler calf-to-beef farms and total herbage utilised is less than 5 t DM/ha. This is considerably lower than targets set for the Derrypatrick Herd in Grange, where grazed grass and herbage utilised is estimated to account for ~60% of the total feed budget and ~11 t DM/ha, respectively.

For spring-calving systems, date of calving is important. If mean calving date is too early, i.e. prior to the start of the grazing season, lactating suckler cows will require supplementary feeding and/or higher digestibility (more expensive) grass silage. Conversely, if calving date is delayed until after the grazing season begins, the economic advantage of early-spring grazing will not be captured i.e. dry, pregnant cows typically remain indoors on more expensive grass silage despite the availability of cheaper grazed grass. Consequently, coinciding mean calving date with the start of the grass growing season is critical.

Financial targets

Financial targets for the Derrypatrick Herd are outlined in Table 1 and indicate that gross and net margin targets are considerably higher than those achieved on National Farm Survey (NFS) and eProfit Monitor (ePM) farms. Production measures indicate that output per LU is between 37% and 31% greater, and when allied to the much higher stocking rates for the Derrypatrick Herd, output per hectare is between 2.2 and 3.8 times greater than ePM and NFS farms, respectively. Consequently, output value is much higher for the Derrypatrick Herd.

Table 1. Benchmarking production and financial performance for National Farm Survey (NFS), eProfit Monitor (ePM) and Derrypatrick Herd suckler beef production systems.

	NFS 2009[1]	ePM 2009[2]	Derrypatrick target	Derrypatrick 2011
Area farmed (ha)	44	56	65	
Cow numbers	25	-	116	
Cattle finished	-	-	108	
Stocking rate (LU/ha)	1.0	1.8	2.9	
Output (liveweight/LU)	333	318	435	
Output (liveweight/ha)	333	573	1263	
Financial (€/ha)				
Output	483	930	1,927	1,767
Variable costs	370	562	885	910
Gross margin	**113**	**368**	**1,042**	**856 (1,105[4])**
Fixed costs	146	508	474	476
Net margin[3]	-33	-140	573	388

[1]Teagasc, National Farm Survey. Single suckling to finish systems. [2]Teagasc, eProfit Monitor. Single suckling to beef systems. [3]Net margin excludes land and labour costs.[4]Derrypatrick Herd expected gross margin in 2011 where beef price is €3.60/kg carcass.

A key indicator of technical efficiency is the gross margin to output value ratio. This indicates the proportion of gross output that is retained as gross margin. For the Derrypatrick Herd the target ratio is 54%, which is higher than either NFS (44%) or ePM (40%) farms. The key factor influencing this level of technical efficiency is achieving high beef output per LU and a high proportion of lifetime daily gain from grazed grass. The final column in Table 1 indicates the expected gross margin for the Derrypatrick Herd in 2011 assuming the same prices as the target system. In this case a number of production shocks are taken into account; replacement rate is increased from

20% to 35% to account for the high number of non-pregnant cows that were replaced in 2011 due to an infertile bull, calf mortality was increased from 5% to 9%, largely due to high calf mortality in purchased pregnant cows, incidence of caesarean sections was increased to 12%, and liveweight per day of age of progeny was reduced by 3% to take into account that all current yearling heifers and bulls are from first-calvers. The net impact of these factors is to reduce expected gross margin in 2011 by 18% to €856/ha, assuming a beef price of €3.25/kg carcass.

Table 2. Sensitivity analysis of price and production factors on the gross margin (GM) of the Derrypatrick Herd.

Factor	Target	Sensitivity	Effect on GM (€/ha)
Replacement rate (%)	20	30	-27
Maiden heifer price (€/head)	900	1000	-31
Incidence of caesareans (%)	4	10	-32
Fertiliser price	-	+20%	-35
Concentrate price	-	+20%	-55
Liveweight per day of age (g)	1065	1015	-64
Calf mortality (%)	5	10	-78
Beef price (€/kg carcass)	3.25	3.60	+244
Stocking rate (LU/ha)	2.9	2.2	-252

Sensitivity analysis

As stated previously, the first production cycle of the Derrypatrick Herd has not yet been completed and thus, production and financial parameters outlined are targets rather than results. However, the previous section also set out the expected financial performance of the Derrypatrick Herd in 2011 given deviations in performance factors from targets. To elaborate on this analysis, the sensitivity of the Derrypatrick financial targets to a number of critical factors were quantified independently (Table 2). It is apparent that the two factors having the greatest impact on gross margin are beef price and stocking rate. However, calf mortality, liveweight per day of age and concentrate price are also critical factors influencing profitability. The remaining factors; fertiliser price, incidence of caesarean sections, maiden heifer price and replacement rate, whilst not unimportant, have lesser impact on system profitability for the range of values and assumptions investigated in this analysis.

Concluding comments

Although profitability is currently low on suckler beef farms in Ireland, there is reason for optimism. The recent increase in beef prices will have a significant impact on farm margins in 2011 and, as indicated by Tables 1 and 2, would result in a large increase in gross margin for the Derrypatrick Herd were they maintained until date of slaughter. However, price inflation for inputs can potentially offset much of the likely gains in output value. In terms of production efficiency, the capacity of Irish grasslands to grow high yields of herbage at low cost must be exploited, particularly given the competitive advantage of grass-based beef systems when compared to concentrate-based meat production systems. Systems of production should be based around a number of key principles. This involves operating production systems tailored to maximise animal performance within grass-based production systems and producing carcasses that are suitable for high-value markets. The sustainability of Irish production systems is also of interest given the reliance of the beef sector on export markets. In this regard, recent research indicates that the carbon footprint of Irish beef is amongst the lowest measured globally.

Bulls from the Suckler Herd

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Introduction

There is considerable interest in bull beef production and national slaughtering trends suggest that the proportion of male cattle being reared as intact bulls is increasing rapidly. Bulls have an inherent growth rate and lean meat production advantage, on reaching puberty, compared with steer due to the benefits of the male hormone, testosterone. An improved efficiency of 10 – 20% is the generally accepted advantage of bulls over steers.

Bull production systems

There are a number of suckler bull beef production systems which gives farmers the option of producing animals over a wide range of slaughter ages and weights. Depending on the market, carcass weight and fatness, and slaughter age requirements, the system options include:

1. Bulls are housed in Autumn and offered *ad libitum* concentrates and slaughtered at 15-18 months of age.
2. Bulls have a store period of growth indoors that is followed by an accelerated finishing period and slaughter at 16-20 months of age.
3. Weanling bulls are housed in late autumn and offered good quality grass silage (or alternative forage) supplemented with 4 - 6 kg concentrates/day and slaughtered at 17-20 months of age. Again, this will depend on carcass weight and age requirements.
4. Bulls can be stored for the 1st winter, as yearlings spend some time (100 days) at grass and then receive a rapid (90-100 days indoors) finishing period on *ad libitum* concentrates. Any store period or time at grass as yearling will inevitably mean bulls are older at slaughter.

Depending on the weanling starting weight and the system employed, bulls from the suckler herd, can be finished at 15-22 months of age and at carcass weights within the range of 350-450 kg.
In any bull system, knowledge of the market requirements must be known at the outset. Profitability is determined by the difference between receipts and costs. Receipts are determined by carcass value which in turn is largely influenced by carcass weight and grade. Costs of producing the animal are largely determined by weanling purchase price (or suckler cow production/maintenance costs, if the weanling is retained on the farm of birth), feed input costs, level of performance, veterinary costs and animal losses. Intensive finishing of bulls to produce a finished carcass at a young age invariably involves high inputs of concentrate.
In an effort to minimise the lifetime concentrate input, and thus reduce costs, recent studies at Grange have focused on the role of grazed grass in the diet of suckler bulls. During the 2009 and 2010 grazing season young bulls, which were purchased the previous November, were turned out to grass in spring and spent from 3 to 6 months at grass and were then finished indoors on *ad libitum* concentrates.

Bulls from a grass based system

Suckler weanling bulls, mainly out of Charolais and Limousin sires, weighing approximately 340 kg live weight at purchase in November, were housed for the first winter and fed grass silage *ad libitum* plus 1.5 kg concentrates/head/day. Typical winter live weight gain was 0.5 – 0.65 kg/day and the bulls went to pasture at 410 - 430 kg in March.

Performance at grass
Yearling bulls were grazed in group sizes of 38 (in 2009) and 30 (in 2010) at a stocking rate of 3.3 – 3.8 bulls/ha. No supplements were fed at grass. Bulls rotationally grazed ryegrass dominant swards to a stubble height of 4-5 cm. Performance at grass was disappointing during 2009 (very wet season) and daily live weight gains of only 0.9 kg/day were achieved over the first 100 – 170 days at grass. Daily live weight gain decreased as the season advanced. Performance at grass was much improved in 2010. Daily live weight gains of over 1.3 kg/head were observed over the first 140 days at grass and gains of 1 kg/head/day were observed over a 210 day grazing season. On reaching approximately 550 kg (in 2009) or 580 kg live weight (in 2010), bulls were housed.

Performance indoors while finishing
Bulls were accommodated in a slatted floor shed for the duration of the 100 day finishing period. They were immediately introduced to concentrates, and, over a 3-week period had their allowance increased to attain *ad libitum* concentrate intake at the end of the build-up period. In 2009, daily gain indoors was 1.7 – 1.9 kg/head/day (including the build-up phase) and animals reached a slaughter weight of 725 – 730 kg live weight within 100 days of housing. In 2010, bulls gained 1.6 – 1.8 kg/head/day over the 100 day finishing period reaching a slaughter weight of 740 - 760 kg live weight.

Carcass weight and finish
At the end of the 100 day finishing period, bulls attained average carcass weights of 410 and 420 kg in 2009 and 2010, respectively. In 2009, carcass fat class score was 3 (on 5 point scale) and, in 2010, graded fat class 3= (15 point scale). In 2009, carcasses graded mainly U's and R's. In 2010, they graded U-, on average.

Feed inputs
Average concentrate intake for the first 3 weeks was approximately 4.5 – 5.5 kg/day (fresh weight). Total concentrate intake during the finishing period was approximately 1,200 kg/head (fresh weight) in 2009 and, approximately 1,350 kg/head in 2010. Accounting for the silage consumed during the first winter and during the finishing phase, total silage requirement was estimated to be 5 tonnes fresh weight. Grazed grass input was approximately 1.3 tonnes dry matter.

Bull age
The outlined is the calf is born in mid-March, spends 100 days at grass at the yearling stage, followed by a 100 day finishing period. The bull is, in the best case scenario, 18 – 19 months of age at slaughter.

Financial performance
While bull beef is potentially an efficient system of male animal production, due to the inherent growth potential of the intact male, financial margins can, nevertheless, be modest. At current input prices, feed costs alone are likely to exceed €600/head. Production costs may mount to €1,300 /head when the animal purchase price, feed & veterinary costs and livestock losses are accounted for,. Selling a carcass of 400 kg (at €3.70/kg) generates a gross receipt of €1,480, leaving a margin of €180/head (not all variable costs included). Fixed costs have not been included in this cost.

Summary
Based on the performance over the last two years, it is suggested that spring born weanling bulls weighing 340 kg in early November can achieve carcass weight of 400 – 420 kg at 18 - 19 months of age. Carcasses in this weight range are deemed to have an adequate fat cover. Feed inputs include 5 tonnes of silage (fresh weigh), 1.3 tonnes of grazed grass dry matter and 1,300 – 1500 kg concentrates.

Management Tools to Increase Grass Utilisation on Beef Farms

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Introduction

There are now a number of management tools which are being successfully employed on beef farms that are resulting in significant gains in the quantity of grass grown and utilised. This facilitates increased stocking rates and hence increased output at very little extra annual costs. What these tools are and how they are used are outlined below. Before a grass farm can be run to its full potential it is important to have: (i) a rotational grazing system, (ii) a proper water supply, (iii) an adequate soil fertility, and, (iv) a planned reseeding programme, in place.

Closing in the Autumn

The management calendar starts in the autumn each year. Closing date and how the farm is grazed out in the months of October and November has a direct effect on the amount of grass available and how the farm will be grazed the following February and March. The plan must be to close a set amount of the grazing area each week until the whole grazing area is closed. In the following spring some of the farm will have considerably more grass than other parts. The first fields/paddocks closed in the autumn should be the ones that will be grazed first in the spring.

The ***60:40 Autumn Planner*** is the tool now being used by progressive beef farmers to plan the last grazing rotation. With this planner they aim to start closing paddocks from early October and to have 60% of the whole farm closed by the 10th November. The remaining 40% is closed between then and housing. A consistent amount is closed each week until the 60% is achieved. Therefore, over a five week period, 12% of the farm would be closed every seven days. By the time all of the stock is housed , the farm should have an adequate cover of grass going into the winter. A target average cover at closing for the whole farm is 500 – 600 kg DM per ha (approximately 6 cm in height). The paddocks closed first might be have 800 – 900 kg with the last closed paddocks having covers of 200 – 300 kg DM/ha. By having a set area of the farm to graze each week it helps to make decisions on whether the last rotation is being grazed too fast or too slow, especially in October and early November. If too little of the area is being grazed the rotation needs to be speeded up. This can mean leaving out some stock longer than was intended or grazing some lighter covers before heavier covers. If the rotation is being grazed too fast extra stock need to be housed earlier than was planned.

Spring Rotation Planner

The way the first round of grazing is completed in spring can have a direct effect on the next two to three grazing rotations, so it is critical that it is managed properly. Where turnout is **too late** all of the silage ground may not be grazed before the target silage closing date. It can also lead to the last paddocks to be grazed in the first rotation having very heavy covers and these are often not grazed out properly. This can then lead to a lower quality of grass in the following rotations. If this surplus grass is taken out in April (as round bales) to solve the problem, it can sometimes lead to a very short second grazing rotation which may lead to a deficit of grass, if growth rates are poor in the weeks that follow. When turnout is **too early** or the first round of grazing is completed too quickly there can be a shortage of grass for the second rotation and this may lead to cattle being re-housed or silage ground grazed again leading to either a delayed first cut, or having lower yields on the original planned silage cutting date.

To avoid both these scenarios the ***Spring Rotation Planner*** is the grassland management aid to use on beef farmers. Like the 60:40 Autumn Planner it is based on grazing a set area of the farm each week until all of it is grazed. On dry early farms, the plan is for the first round of grazing to last 50 to 60 days, starting in early to mid-February and ending in early to mid-April. On wetter, later farms a 50 day first rotation starting and ending slightly later should be aimed for. By having such a long first rotation the paddocks grazed first in Spring (those closed first in the autumn) will have adequate rest time to have enough re-growth when the second rotation begins in April. Some grazing paddocks should be grazed before the silage ground is grazed as these will be the first to be grazed in the second rotation. As a general rule of thumb, beef farms with a reasonable amount of dry land should aim to have 30% of the farm grazed by the 1st March, 60% grazed by the 17th March, and, the remaining 40% grazed by the 10th April. The number and type of stock turned out at different stages will drive the daily and weekly herd feed demand for grass. Where the target area to be grazed by a certain date is not being achieved more stock need to be turned out. If the target is being exceeded, grazing needs to be slowed down. This may involve feeding some silage at grass, if conditions allow, re-housing some stock or delaying your planned turnout date for other stock.

Pre- and Post-Grazing Heights

To achieve maximum weight gain in beef cattle and milk production in suckler cows the objective must be to supply them at all times with a constant supply of leafy grass that is highly digestible and low in stem and fibre. The higher the covers that cattle graze each rotation the more grass that is left behind as the year progresses and the more stem that builds up in the sward which leads to lower weight gains. Grazing very low covers to an extremely tight post-grazing height has a negative effect though on annual yield of grass and should also be avoided. Recent research work at Teagasc Grange has shown tight grazing to have a negative affect on animal performance at grass. In the first rotation, it is desirable to graze swards to 3.5 to 4 cm to remove all the old dead material and to allow light to the base of the sward thus encourages tillering and thickening of the sward.

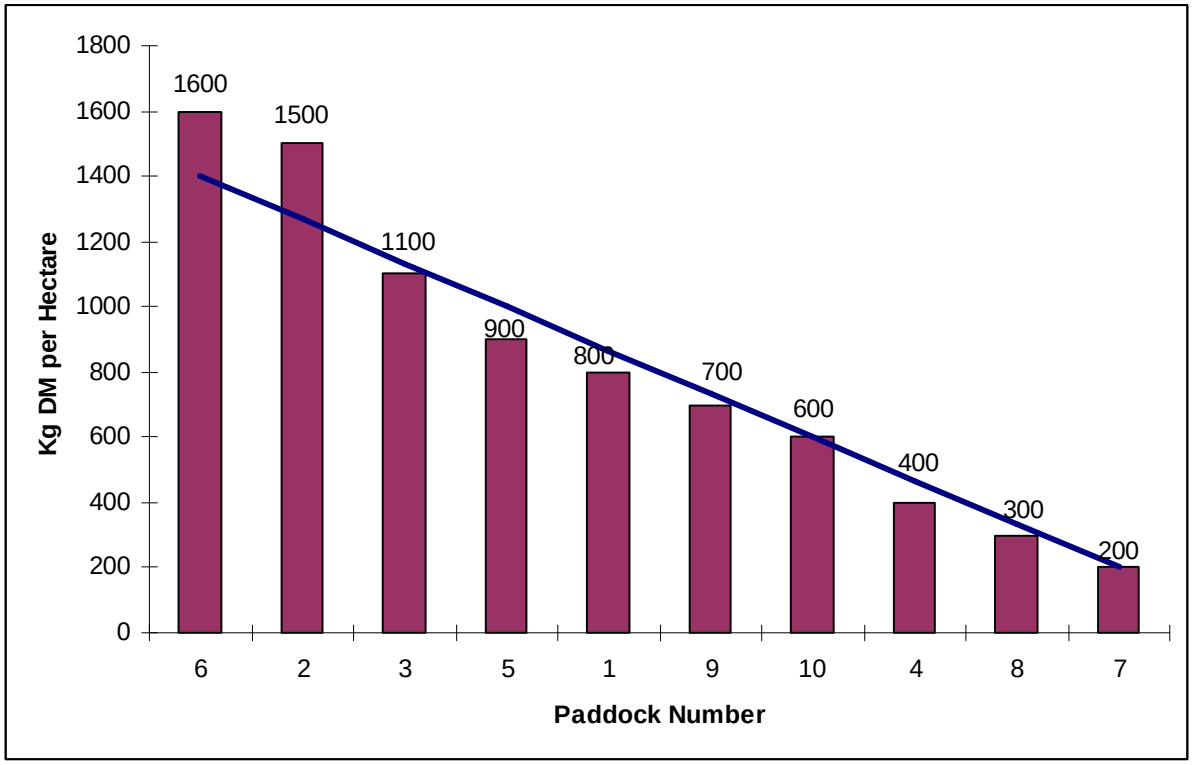
Target pre-grazing grass covers for cattle are in the range 1,200 - 1,600 kg DM/ha (9 to 10 cm) if swards are to be grazed out correctly. Paddocks with higher covers should be considered for cutting as baled silage, particularly if there is enough grass on the rest of the farm. On lowly stocked farms the pre-grazing cover should be less at 1,200 - 1300 kg DM/ha. As the grazing season progresses, towards the autumn, slightly higher covers will have to be built up (1,800 kg DM per ha or greater) if a bank of grass is to be accumulated before growth rates declines. This bank of grass is important so that stock can graze for longer in the autumn. During the main growing season the post-grazing sward heights can be kept tight at 4.5 –5 cm.

The Grass Wedge

During the main grazing season the objectives must be to, provide a constant supply of grass to the grazing animals, and to keep the quality of the grass on offer at its highest. Both objectives are interlinked. Where there is too much grass available the quality can deteriorate rapidly, however, constantly grazing very low covers to maintain quality can lead to a situation where grass quickly run out. The ***Grass Wedge*** is the latest approach to be used to address these situations and is an importantly aid to recognise, in advance, when grass surplus or deficit is likely to happen in the coming weeks. It requires walking the farm weekly and making an estimate of grass cover in each paddock. This can be done by using a plate meter, the cut and weigh method, or, by eyeballing swards and making an informed decision. The method used is not important, the most important point is that each paddock is walked and a figure recorded and that use is made with these figures. There are number of easy-to-use grass computer programs that can generate the grass wedge or it can be done manually on a sheet of paper just as quickly. The end result is the same. The chart

below shows the estimated grass cover (kg DM/ha) on the vertical axis and the paddock numbers along the bottom axis. The paddock with the highest cover is shown first, on the left, followed by the next highest and so on until the last bar is the paddock with the lowest cover. A feed demand line is then drawn, starting at about 1,400 kg DM/ha on the left, and that is the target cover to be grazed. The line is drawn from that point (1,400 kg DM/ha) to the target post-grazing cover (e.g. 200 kg DM/ha) on the lowest pasture cover paddock (last bar on right). In an ideal situation the pasture covers on all paddocks exactly matches the demand line.

Figure 1. Example Grass Wedge



If there are a lot of bars above the demand line the farm will have surplus grass and the needs to consider taking out surplus grass. It is good practice to take these out as soon as possible to allow them to start growing again for the next rotation. While the quantities of bales made per hectare can be low, their quality should be excellent.

If there are a lot of bars below the demand line there is either a current grass shortage, or will be a shortage a short period of time. Likewise, paddocks due for immediate grazing might have the target covers, but if paddocks in the middle of the wedge are well below the target line, then future (10-14 days) grass supply might be limited. Thus the feed wedge concept allows an insight into future grass supply and therefore allows the farmer to take action to remedy the situation.

Achieving a 365-day Calving Interval in Beef Cows.

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Introduction

Reproductive efficiency is a major factor determining production and ultimately the profitability of the beef cow enterprises. In Ireland there is much evidence that, less than 10% of heifers first calve at 24 months of age, the calving-to-calving interval is frequently in excess of 400 days and that less than 25% of cows produce a calf in a 12-month period. Compact calving (80% of cows calved in 60 days), and a 365-day calving interval and low culling rates (<5%) for barrenness are key targets for beef cow herds. The achievement of these targets is extremely challenging for beef herds for the following reasons:

Long gestation length: The majority of beef cows in Ireland are now continental breed crosses and are bred to continental bulls. Typical mean gestation length is 290 days. This only leaves, on average, 75 days for cows to resume cyclicity, display oestrus, be detected in oestrus and be successfully re-bred in order to maintain a 365-day calving interval. Individual cows will have gestation lengths approaching 300 days, further reducing the time for successful re-breeding to occur.

Long post-calving anoestrous interval: Beef cows are on average much longer calved when they resume oestrous cycles than dairy cows. Studies at Teagasc, Athenry recorded average calving to 1st ovulation intervals of 50-55 days in beef cows, which is almost twice as long as the interval is in dairy cows. For first-calving beef cows (heifers) this interval is usually 10-15 days longer than mature cows. This extends mean calving to first service interval to 60-70 days for first calvers. The predominant reason for this long anoestrous interval in beef cows, compared with dairy cows, is the strong maternal-offspring bond that exists between the dam and her calf. This bond is predominately effected through sight and smell and to a lesser extent by the direct suckling effect of the calf. Furthermore, in 90+% of cows the 1st ovulation post-calving is not accompanied by overt signs of heat and typically (in about 85% of cows) the cow will display a normal fertile heat 8-12 days later. Studies at Atherny have shown the “cow-calf bonding effect” is further compounded by having beef cows in a low body condition score (BCS) at calving. The effects of low BCS at calving are only partially reversed by putting cows on a high plane of nutrition after calving. The combined effects of long gestation lengths and long post-partum anoestrous intervals leaves a very short interval to ensure the achievement of a 365-day calving interval and 95% of cows successfully bred. It is critical that cows calve in a moderate BCS (2.75-3.25) and are placed on a good plane of nutrition after calving.

Conception rate: In beef cows there is no substantial evidence of a decline in conception rate and typical conception rates of 60-70% are achievable to either AI or natural service unless there are problems with semen quality, AI technique or bull fertility. Conception rates reach a normal level in cows bred at 60 or more days after calving. However, when cows are bred at 40 days or less after calving conception rate is usually <40% but it is still advisable to breed such cows once breeding has commenced. What’s more, post-calving conception rates are often lower for first-calvers compared to mature cows, which is a reflection of the increased nutritional demands of the young cow for growth, in addition to maintenance and lactation requirements.

Breeding

From the above it is vital that cows calve in a moderate to good (2.75 to 3.25, scale 0-5) body condition score. Where AI is used on cows, ideally a vasectomised teaser bull, fitted with a chin ball, or a recently castrated yearling steer should be placed with the cows and cows checked twice daily for heat. Records should be kept and submission rate evaluated at the end of a 3-week period. For beef cows, a target of 70% of cows calved >30 days at start of breeding should be inseminated in the 1st 3 weeks of the breeding season. Cows calved more than 70 days (and not showing heat) should be identified and treated as described below. Breeding of heifers should commence at the start of the planned mating period. Late-calving heifers invariably produce late-calving cows. For farms that use natural service, bulls should be regularly checked for mating ability, lameness and the identity of cows mated should be recorded and the first number of cows mated should be scanned for pregnancy when 28-35 days bred. The best measure of a bull's fertility is his ability to get cows pregnant. About 4% of bulls are infertile and up to 30% of bulls can be sub-fertile. It is difficult to give precise recommendations regarding cow-to-bull ratio but a general guideline is, up to 30 cows with a young bull and up to 45 cows with an older bull.

Puberty in heifers

In the heifer, puberty is defined as the age of 1st oestrus accompanied by spontaneous ovulation. The age of first oestrus varies considerably due to breed and growth rate effects. A low plane of nutrition reduces growth rate and delays puberty by weeks and months. Of the European cattle breeds, heifers of dairy breeds or breeds of dairy origin (Jersey, Friesian-Holstein, Simmental) reach puberty at the youngest ages, followed by British beef breeds (Aberdeen Angus and Hereford) with the larger continental breeds (Charolais, Limousin and Blonde d'Aquitaine) being oldest when they reach puberty. As conception rate is as low as 20% to 30% following breeding at the first or second heats after puberty and only reaches normal levels at subsequent heats, ideally heifers should have reached puberty 2 months before the start of planned breeding. For seasonally calving herds and where the aim is to calve heifers at 2 years of age, it is important that ALL replacement heifers reach a minimum threshold weight 14 months of age (see Table below).
This will ensure not only that heifers are regularly cyclic at start of the breeding season but that heifers are on a growth rate trajectory that will ensure that they reach 85-90% of their mature weight at time of 1st calving, have improved calving ability and consequently, reduced calving difficulty and finally resume cyclicity quickly after their 1st calving. Recommended target weight at 14 months of age for heifers of some of the common beef types are presented in the table below. There is also evidence that there is a direct relationship between age at puberty in heifers and the subsequent length of the anoestrous period in them as beef cows. While it is possible to get heifers pregnant at lighter weights, the major problem arises after 1st calving with a prolonged anoestrous period in such 1st calvers.

Recommended target weight at 14 months of age for heifers of some of the common beef breed types

Breed	Target weight at 14 months of age
Aberdeen Angus X	370
Hereford X	370
Shorthorn X	370
Simmental X	400
Limousin X	420
Charolais X	430

To achieve these target weights at 14 months of age, heifers need to be on a very good plane of nutrition from birth. The objective is to get replacement heifers bred early to calve in the 1st 6 weeks of the calving season and that any possible slippage in mean calving date that occurs in older cows can be counterbalanced by having heifers calve early. Furthermore, having heifers

calve early will ensure that a high proportion of them are cyclic at planned start of the mating season. It is not desirable to breed heifers that are old when they show heat for the first time.

Dealing with late-calving cows and cows that are anoestrus

In all herds there are a proportion of cows that fail to show heat by 60-70 days after calving and, consequently, will be later calving the following year unless actions are taken to induce cyclicity. Generally, these will be young cows, cows in low BCS (<2.0) at calving and or twin producing cows. Similarly, it is desirable to bring forward the next calving date for late-calving cows. There are three options to address these conditions.

1. Calf removal/separation.

The bonding that exists between a suckler cow and her calf is the major factor delaying onset of cyclicity after calving. Breaking this bond, allows the cow to resume cyclicity. For late-calving cows, cow-calf separation should commence when cows are 30 days calved and should continue for 2-3 weeks with calves allowed to suckle morning and evening. Teagasc results, and results from farms that practice this, show that about 85% of cows will exhibit heat by the time they are 50 days calved. It is important that calves are removed at least 50 metres from cows but not necessarily out of sight or earshot. This is a cheap non-hormonal option but demands time and appropriate facilities (e.g. very good fencing, roadways, …etc). However, evidence suggests that cows and calves readily adapt to this practice. Calf removal/separation can equally be applied to cows that are longer calved and are anoestrus and again about 85% of cows will show heat within 2-3 weeks of commencement of the separation. Once cows show heat and are bred there is no benefit of continuing the calf separation. Indeed, if heat is not induced by 3 weeks of calf separation it is highly probable that the cows are in nutritional anoestrus and a more aggressive treatment such as the use of a PRID or CIDR is warranted. These animals will also require a longer period of high-plane feeding to overcome the deeply imbedded nutritional effects on the reproductive system and to resume cyclicity.

2. Hormonal treatment.

The insertion of an intravaginal progestagen device such as a PRID or CIDR for 8 days is capable of inducing heat in about 80-90% of anoestrous cows. Based on recent studies the following protocol is recommended for beef cows:

Recommended protocol to induce heat in anoestrous beef cows

Day	Action
Day 0, am (Monday)	PRID or CIDR insertion + 2.5 ml Receptal at insertion.
Day 8, am, (Tuesday)	PRID or CIDR removal + 2 ml of a prostaglandin and 500 i.u. PMSG at time of removal.
Day 9 (Wednesday)	Cows will start to show standing heats late pm and through the night. Observe and record cows in heat and active.
Day 10 (Thursday)	Most heat expected. AI all cows observed in heat on the evening of Day 9 and on Day10. Heat check cows and record all cows active or in heat (if required).
Day 11 (Friday)	Continue heat detection and AI cows observed in heat. AI all cows not observed. in heat and administer 2.5 ml of Receptal to these cows.

Notes: 8-day treatment can be substituted with either a 7-day or 10-day treatment.

- The administration of 500 i.u. of Pregnant Mares Serum Gonadotropin (PMSG) at time of insert removal will enhance heat response (by 5-10 percentage points) and also conception rate (by 5-10 percentage points)
- Cows must be in moderate BCS score (2.5 –3.0) at time of treatment. It is equally important that cows are a minimum of 30 days calved at time of PRID or CIDR insertion and are on a good plane of nutrition for minimum of 3-4 weeks prior to, during and after treatment (plentiful supply of grass).

- Typical conception range of 30- 40% would be expected in cows that are anoestrous at time of device insertion. However, cows that fail to conceive will repeat and normal conception rates of 60-70 % should be expected at this heat.
- Synchronization should only be used in herds where the level of management and heat detection skills, particularly to detect repeats, is likely to be good. Alternatively, a bull should be turned in with cows following the synchronized AI.
- All synchronization treatments are under veterinary control (POM).
- It is vitally important that high fertility semen is used and the competence of the inseminator is high. The correct site for semen deposition is in the common body of the uterus. Each straw should be thawed separately.

  3. Longer-term solutions: Ensure that cows calve down in good BCS (3.0+). Ensure that replacements heifers are well grown at time of 1st breeding and are bred to calve at the start of the calving season.

Herd Health in Suckler Beef Systems

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Introduction

Health and performance of a suckler herd depends on minimising animals' exposure to disease and maximising their defence against disease. Emphasis on prevention is critical, limiting the need for subsequent intervention, particularly with the management of diseases of the gastrointestinal and respiratory systems. A veterinary practitioner should always be consulted with regard to specific health problems and farm biosecurity.

Prevention of disease

In minimising a calf's exposure to disease, providing a clean, disease-free environment is fundamental. This includes:

- Thorough cleaning and disinfection, before and during the calving season, of all areas used by calves.
- Providing a clean, straw-bedded lying area with no draughts and good ventilation.
- Accommodating cows and calves in batches based on order of calving so that young calves are never mixed with or accommodated in areas used by older calves.

In maximising a calf's defence against disease, control measures include:

- Adequate nutrition of the pregnant cow, including feeding a suitable mineral supplement pre-calving.
- Vaccination of cows for control of any organism(s) known to be responsible for infection on the farm in calves e.g. *E. coli*, rotavirus and coronavirus.
- Disinfecting the calf's navel immediately after birth.
- Regular temperature checking is useful to guide both diagnosis and observation of a clinical problem.

Colostrum

Calves are born without any immunity. Ensuring that each calf receives sufficient colostrum (first milk) immediately after calving is one of the most important factors in ensuring their survival and health. Colostrum contains both antibodies (immunoglobulins - Ig), which protect against specific diseases, such as rotavirus, coronavirus, and anti-infective protective agents, such as lactoferrins, which prevent bacterial growth. Receiving adequate immunity from colostrum generally depends on the volume and quality of colostrum ingested, and how soon after birth the calf receives it.

As the ability of the calf to absorb immunoglobulins starts to decline progressively after 4 to 6 hours, and ceases around 24 hours after birth, the earlier a calf is fed/suckles, the greater the level of immunoglobulin absorption. Research at Teagasc, Grange, has shown that feeding the suckler calf 5 % of its birth weight (e.g. ~2 litres of colostrum for a 40 kg calf), within 1 hour of birth with subsequent suckling of the dam 6 to 8 hours later ensures adequate passive immunity.

Research at Grange on spring-calving suckler cows has shown that:

- The quality (Ig level) of colostrum is similar between quarters (teats) of the udder and is also similar within a quarter, that is, as the quarter is milked / suckled out for the first time.
- The quality of second-milking colostrum is only half that of first-milking colostrum. This highlights the importance of the colostrum present in the udder at birth, which should be consumed first before returning to a quarter previously milked / suckled.

• Calves from beef breed cows have a lower immune status than calves from beef × Friesian cows (Table 1). The main reason for this is that colostrum yield of beef cows is lower than that of beef × Friesian cows. In general, calves from suckler cow breed types with lower milk yield potential have a lower immune status than calves from suckler cow breed types with higher milk yield potential. Again, this largely relates to differences in colostrum yield.

A calf that does not receive adequate Ig at birth is very susceptible to pathogens such as *E. coli, Salmonella sp*., rotavirus and coronavirus.

Table 1: Colostrum yield and immunoglobulin (Ig) levels of Beef and Beef × Friesian cows, and their calves' immune status (Ig levels)

	Cow breed type	
	Beef	Beef × Friesian
Colostrum yield (Litres) [First milking]	2.7	3.9
Colostrum Ig Total level (mg/ml)		
First milking	165	195
Second milking	80	97
Calf Ig Total level (serum)		
(mg/ml)	46	64
ZST (Units)	19	25

Source: Teagasc, Grange.

Calf scours

Scours are the main causes of calf mortality. The majority of calf scours are caused by viruses, rotavirus and coronavirus, bacteria, *E. coli* and *salmonella*, and protozoa, cryptosporidia and coccidia. The most common cause of severe diarrhoea in young suckled calves is caused by rotavirus infection. Viral infection can produce clinical signs ranging from no observed abnormality through to severe diarrhoea and dehydration with high mortality. Suckler calves are mostly affected at 8 - 14 days of age when there is an acute onset of diarrhoea (passage of very watery yellow/green faeces) and this infection spreads rapidly among young calves in the group. The calf can become dehydrated very quickly and the stomach and intestines are often distended with fluid and gas. Outbreaks of calf coronavirus diarrhoea is much less common than rotavirus, however, symptoms may be more severe than those observed for rotavirus infection. Coronavirus infections generally cause diarrhoea in calves up to 20 days-old, although disease can occur in older calves. Annual vaccination of the dam with a combined rotavirus, coronavirus and K99 combined vaccine is an effective way to combat viral infections but cannot solely be depended upon for prevention. However, vaccination alone is not a replacement for good management, good hygiene or good biosecurity.

Cryptosporidiosis is a zoonotic disease (it affects humans) and causes a profuse watery diarrhoea in calves with rapid dehydration. Suckler calves aged 10-21 days old are most commonly affected. There is no vaccine available to combat cryptosporidium. Good hygiene and management practices reduce the likelihood of infection from cryptosporidium.

Pneumonia

The causes of pneumonia or bovine respiratory disease (BRD) in cattle are multiple and complex. Factors associated with susceptibility to pneumonia are; stress (disbudding, castration, weaning), overcrowding, inadequate ventilation, draughts, fluctuating temperatures, poor nutrition and/or concurrent disease. Three features, stress, viral infection and bacterial infection, are almost always involved in severe cases. The main viruses that cause outbreaks are infectious bovine rhinotracheitis (IBR), respiratory syncytial virus (RSV), parainfluenza-3 virus (PI-3 virus), and bovine virus diarrhoea/mucosal disease (BVD/MD virus). These also occur in older cattle. In most cases the main infective agent is a virus, which causes respiratory tract damage. This effect is worsened by *Mycoplasmas* and secondary bacterial infections (e.g. *Mannheimia (Pasteurella) haemolytica)* which extend and increase the severity of primary lung damage. The most common

signs of pneumonia are nasal and eye discharges, coughing, fever, decreased appetite, varying degrees of breathing difficulty and noise, rapid breathing, depression, droopy ears, open mouthed breathing and death. These vary greatly, depending on the stage and extent of the disease process. Viruses and *Mycoplasmas* are unaffected by antibiotics, however, antibiotic treatment is usually administered to kill off the secondary bacterial infections and offer the calf the opportunity to fight the disease. The priority is to prevent severe lung damage and immune suppression caused by the viruses in order to reduce the opportunity of secondary infections by bacteria and *mycoplasmas*. A cost-effective approach to vaccination against a multi-agent disease, such as BRD, is to know the herd's prevalent respiratory pathogens so a specific prophylactic regimen can be administered. Veterinary advice should be sought. The widest protection against pneumonia will be achieved where a vaccination programme includes the three most common respiratory viruses (IBR, RSV and PI-3) and the bacterial pathogen *Mannheimia (Pasteurella) haemolytica.* Vaccination alone is not a replacement for good management, good hygiene or good biosecurity.

Stomach worms, lung worms (hoose) and fluke

The two main types of parasitic roundworms for grazing cattle are stomach worms (*Ostertagia)*, which cause scouring, and lung worm (*Dictyocaulus)*, which causes parasitic pneumonia of the lungs (hoose). Animals affected with hoose have difficulty in breathing, develop a characteristic deep, husking cough and lose condition extremely fast. Both species of roundworm over-winter on pasture and, therefore, can affect calves relatively shortly after turnout to pasture. It is necessary to dose young calves with anthelmintics in their first summer at grass and again at the end of the grazing season – the specific timing of the treatment depends on the product used. Yearling cattle and cows that have previously been exposed to a low level of parasitic challenge can develop an effective immunity, but treatment may be required. The drugs that control stomach worms also cover lungworm.

Liver fluke disease (Fasciolosis) is a common parasitic disease caused by *Fasciola hepatica*. The disease manifests itself mainly in two forms, acute and chronic. During wet summer conditions, grazing cattle ingest the intermediate stages of the fluke from contaminated pasture, which later invasion the liver causing disease during the winter months. The major presenting clinical findings are persistent diarrhoea and chronic weight loss with resultant poor thrive. A control programme should include a flukicide treatment. Some flukicides are only effective against adult fluke. In terms of dosing, consider rotating from one flukicide type to another in order to slow the development of resistance.

Testing representative faecal samples can be used as a means to more effectively target treatments of worms and fluke.

Diseases affecting cow fertility

Introduction of diseases such as bovine viral diarrhoea (BVD), leptospirosis, neosporosis and *Campylobacter fetus* (vibriosis) into herds can have a devastating effect on fertility. *Campylobacter* can be isolated from aborted foetuses and foetal membranes – the bacterium is found in about 3% of abortion cases in which a diagnosis is made. Veterinary advice should be sought.

Neosporosis, a significant cause of abortion in cattle worldwide, is caused by infection with the protozoa *Neospora caninum* and is *known to be* a significant cause of abortion in the UK, New Zealand and in the United States. The dog and the fox are the definitive hosts. Transmission from cow to calf (known as vertical transmission) is the most common way by which infection spreads within the herd. Over 95% of calves born to dams with antibodies to Neospora will have been infected *in utero*. The importance of transmission between cattle is less clear. Nevertheless, vertical transmission alone can maintain infection in a herd. To eliminate *Neospora* you need to identify infected cattle and cull them. Prevention must include high hygienic standards at calving and prompt disposal of foetal membranes (cleansings). Do not allow dogs or foxes access to areas where cattle consume food. If considering embryo transfer, while the donor cow may be negative, the recipient should be tested as it may introduce the pathogen to the foetus.

Potential for Increased Profitability on Irish Cattle Farms - Lessons from the Teagasc/Farmers Journal Better Farm Programme

Aidan Murray, *Teagasc Beef Specialist*

Introduction

The Teagasc/Farmers Journal BETTER farm beef programme was launched in September 2008. The programme is sponsored by The Farmers Journal, Dawn Meats, Kepak, AIBP and FBD Trust. The aim of the programme is to develop a roadmap for profitable beef production through focussing on improving technical efficiency at farm level. In order to increase profitability the programme has focused on, increasing farm output and controlling production costs.

Baseline information

In order to have accurate baseline information at the beginning of the programme all participating farmers were required to complete a 2008 profit monitor and sign up to ICBF Herdplus by January 2009. This information was used to help identify a number of key production indicators (KPI's) and to assess the starting position of each farm. It also allows progress over the course of the 3 years to be monitored.

The farm plan

A farm plan was agreed for each farm which summarised the starting position of each farm in terms of key physical and financial indicators and also sets out the targets to be achieved by the end of the 2011. In addition the plan identified a number of keys areas to be targeted such as financial and physical performance, grassland management, animal breeding performance, winter feeding and animal health. The plans are reviewed annually, and, if necessary, amended to reflect changes in the market or to change something was not working on the farm.

Increasing output

The programme has targeted an increase in output both in terms of live weight produced and increased output value. This increased output has been targeted through increasing stocking rate, improving breeding performance, improving individual animal performance and more astute marketing of produce.

Stocking rate

At the start of the programme the average stocking rate on the BETTER farms was 1.85 LU/ha. The target was a increase stocking rate to 2-2.2 LU/ha by 2011. The stocking rate increased to 1.93 and 2.02 LU/ha in 2009 and 2010, respectively. A number of the farms have brought about this increase by increasing stock/cow numbers.

Breeding and animal performance

The progress on breeding performance is quite evident. Calves/cow/year has increased from 0.87 in 2007/08 to 0.90 in 2009/10. Females not calved in the herd is down by 2%. Mortality at birth has dropped from 4.5% at the start of the programme to 2.8% last year. Mortality at 28 days is down only marginally to 5.1%, despite better hygiene and management around calving.

With improved breeding, more and better quality calves can be expected. To capitalise on this, the programme has targeted achieving good weight-for-age in as a means of having more live weight to sell. This gain has to be achieved efficiently and costs of production controlled.

Grassland

Grassland management is a key focus area of the programme. A lot of time and effort was put into grassland management in the first year of the programme to show the benefits of what could be achieved from grass and to give the farmers the skills and confidence to become competent grassland managers. All these improvements (reseeding, setting up paddocks, addressing low phosphate and potassium problems on farms) have come at an immediate cost. However, over the medium to longer term, the farms will be better placed to exploit the potential of grazed grass.

The measures mentioned have clearly had an impact on the output on the farms. The live weight/ha have increased by 155kg from 536kg/ha to 691 kg/ha an increase of 29% since 2008. Likewise, output/livestock unit is also up by 49 kg/LU over the same period from 292kg/LU to 341kg/LU.

The magnitude of this increase is best illustrated by the fact that total of live weight produced per farm has increased by 11,261kg since 2008. This is an increase of 32.8%.

Gross output

Increased stocking rate, improved animal performance and improved management have all contributed to delivering more live weight output on the farms. Combine this with more targeted selling, the higher gross output values on the farms is evident.

The chart below shows how gross output on the farms has increased from €1016/ha in 2008 to €1276/ha in 2010. This is an increase of 25.6%.

Variable Costs

The graph also plots the movement in variable costs associated with achieving this extra output from 2008 to 2010. Variable costs have increased by 13% from 2008 to 2010. As a proportion of gross output, variable costs in 2008 accounted for 62% of output. This dropped to 60.8% and 55.8% of output for 2009 and 2010, respectively.

While the trend towards lower variable costs as a % of output is positive, variable costs are still high. The target is to achieve variable costs at 45% of gross output.

The farms have incurred higher variable costs than norm on foot of increased reseeding costs. Fertiliser costs have increased due to extra P&K being applied to address soil imbalances. These costs will have lead to better cost savings in the future as the farms make better use of grass.

With increased fuel (contractor), feed and fertiliser costs in 2011, it will be difficult to achieve substantial reduction in variable costs.

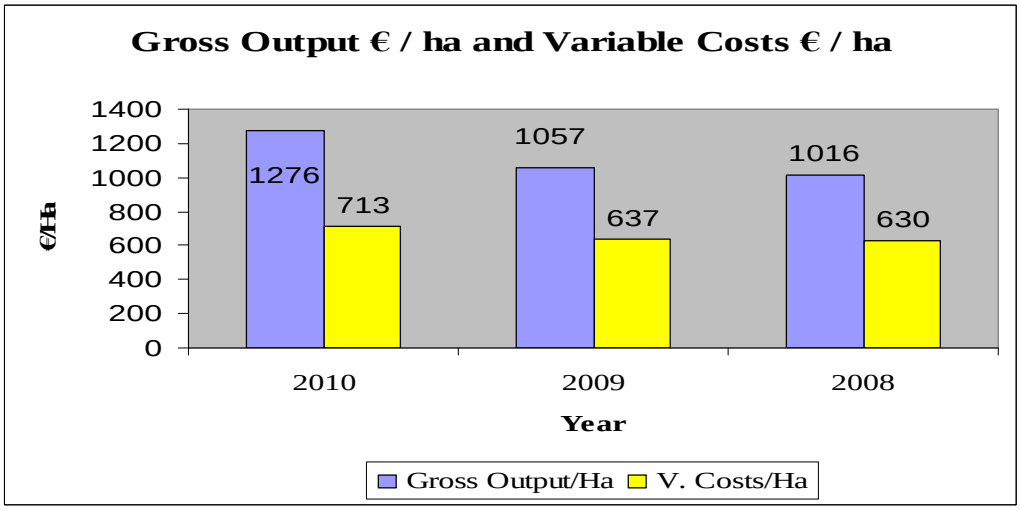


Figure 1. Gross Output € / hectare and Variable costs € / ha 2008-2010

Gross Margin

Although the target of a gross margin of €1000/ha has not been achieved to date, the farms on the programme have made steady progress when compared with the average suckler farm completing the profit monitor. In 2008 the BETTER farms had a gross margin of €386/ha compared to €395/ha for average farm in the profit monitor (see figure below). In 2009 the BETTER farms increased gross margin to €419/ha while the other group fell to €313/ha. In 2010 the BETTER farms showed a further increase to €563/ha and the profit monitor group moved to €367/ha. Over the 3 years, an improvement of 45.8% in gross margin has been achieved, while the average suckler farm in the profit monitor has seen gross margin decrease by 7%.

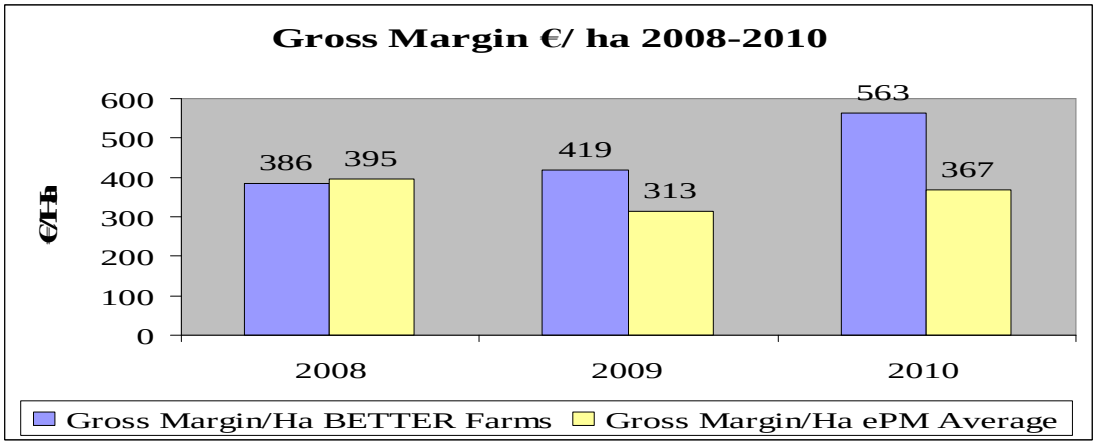


Figure 2. Gross Margin/ha on the BETTER farms, compared with the average suckler farm completing the profit monitor 2008-2010.

Realistically, it would be expected that the average gross margin on the BETTER farms will be €700-800/ha in 2011. Most of this will come from further improvements in output both in terms of live weight produced and improved store and beef price. However, with fertiliser costs up more than €100/t, increased fuel costs and high concentrate prices, it is unlikely that substantial savings can be made in this area.

Prospects for Irish beef trade

An Bord Bia

Introduction

Against a background of significant improvement in market demand across International markets and tighter availability of numbers in key countries, the European beef trade has benefited significantly over the last four months with male cattle prices across Europe running 8% ahead of the same period in 2010. This leaves prices at their highest levels in more than 15 years. In Ireland, the anticipated tightening in finished cattle supplies has emerged over recent months with disposals to date running 5% lower. This lower production coupled with an improved European market environment and a stronger fifth quarter trade has helped prices, with prospects looking positive for the remainder of 2011.

Irish cattle supplies to tighten further in 2011

Irish finished cattle availability to date has been characterised by a significant tightening across most categories. Up to the end of April, total disposals were some 5% lower at 498,000 head. With carcass weights largely maintained, overall beef production is estimated to have decreased by a similar percentage. The main factors driving lower availability to date include a: lower carryover of finished prime cattle into 2011, strong live trade for young cattle in 2009, and, slowdown in cow disposals. The only category to show a rise has been young bulls, with disposals to date running 31% higher at 75,600 head. This reflects the fact that increased numbers of producers are finishing young bulls due to greater efficiencies of terms of feed to meat conversion ratios.

The prospects for the rest of 2011 point to a further tightening in finished cattle availability. This is largely due to the strong performance in live exports in 2009, which saw shipments rise by 140,000 head or almost double relative to 2008. This was followed by a further rise of 19% in 2010 to 339,000 head, the highest levels recorded since 2000. For the year, finished cattle supplies are expected to fall by around 8% to around 1.53 million head.

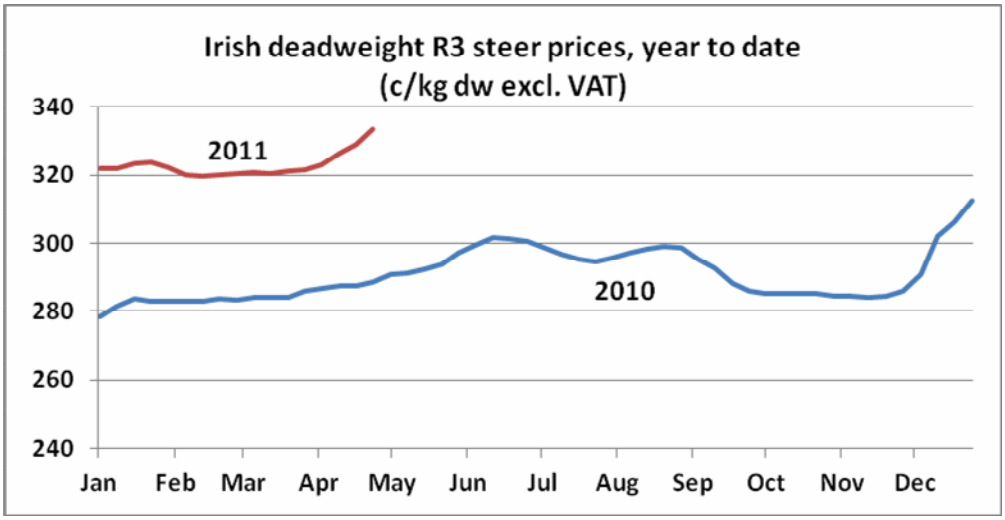
Export focus on Europe continues

For 2011, beef exports are anticipated to fall by 8% to around 465,000 tonnes. The UK market will continue to account for over half of Ireland's beef exports, although the emphasis on other European markets continues to grow.

The UK remains in a deficit beef position, with the latest forecast indicating the UK will have an import requirement of 390,000 tonnes for 2011. The current market position of Irish beef in the UK leaves the industry well placed to fill any increased requirements. Continental European markets continue to grow their share of Irish exports with 47% of exports destined for this region in 2010. Key markets include France, Italy, the Netherlands and Scandinavia, which between them account for more than 80% of exports to the region. Overall volumes to the Continent in 2011 are expected to drop in 2010, reflecting lower availability. However, some further growth in the share of exports destined for the region is expected. Across Europe (UK, Netherlands, France, Italy, Spain, Portugal, Sweden, Germany) Irish beef is stocked in 3 or more of the top 10 retailers in each market and in over 70 retailers in total.

Cattle prices increase strongly

A tighter availability of finished cattle combined with better demand for beef and a much improved fifth quarter market has led to some significant strengthening in Irish cattle prices. Average R3 steer prices to date are running around 14% higher and currently prices are almost 16% ahead of the comparable time last year.



Source: DAFF

Slower live exports

Irish live cattle exports have eased to date in 2011 with all categories showing lower shipments, reflecting stronger relative prices for Irish cattle and some tightening in supplies. Up to the end of April, total live cattle exports were 36% lower at 105,500 head. Calf exports remain the most important category, accounting for 62% of the total, with most calves destined for either the Netherlands or Belgium. Calf exports to date are back 37% to 65,600 head. Shipments of weanlings, stores and finished stock to date have dropped by a third.

Improved market environment for Irish beef

There are a number of positive drivers that have helped improve returns for Irish beef over the last six months. These principally include, tighter European availability, improved trade in International markets, limited import volumes, and, more stable consumer demand in many of our markets. In terms of beef supplies, net beef production in EU-15 region is expected to fall by 1% to 7.2 million tonnes for 2011. Some key beef producers, including Germany, Italy, Spain and the UK are expecting lower output in 2011, with most of this occurring during the second half of the year. However, this will be partly offset by increased production in France and Poland.

Further rise in exports to International markets

Turkish beef import demand has remained reasonably strong over recent months, despite a rise of 10% in import tariff levels for the remainder of 2011 in Turkey. During the six month period to the end of March, Turkish beef imports amounted to 94,000 tonnes with the majority being supplied by Germany and Poland. The recent move by Russia to suspend imports of Brazilian beef should create further demand for European beef. During the first quarter of 2011, Russian imports jumped by almost 60% to 93,000 tonnes cwt with Brazil supplying 30% of the total. These developments follow a more than doubling in EU exports during 2010 to 275,000 tonnes.

Limited import volumes

EU beef imports, fell by 12% to 369,000 tonnes during 2010. This trend has continued into 2011 with volumes for the first two months some 23% lower at 46,000 tonnes, falling by 25% - 30%. For 2011, South American countries will remain the principal suppliers to the EU market, although there is likely to be some shift in the volumes shipped by the main suppliers. Between Brazil and Argentina volumes of beef imported were back 26% to 21,300 tonnes for the first two months of the year. Brazilian imports fell by 25% due to rising domestic consumption levels and an appreciating Real against the Euro. Shipments from Argentina fell by 26% for the first two months of the year, reflecting the on-going decline in beef output there. For the year, a fall of around 6% in Argentinean beef exports to 375,000 tonnes has being projected following the on-going liquidation of the beef herd and Government restrictions on exports. Stronger imports, albeit from a small base were evident from the US in the form of higher value cuts and the Oceanic region.

Stable Consumer Demand

Recent months have seen some indications that consumer demand for beef across Europe is starting to level off and in some cases improve, albeit with a continued bias remaining for lower value cuts. Latest household purchase data from the UK shows that for quarter ending 17th April, the volume of beef sold showed a fall of almost 3%. However, for the year the volume of beef purchased was steady. French beef consumption remains under some pressure with a 3% fall in retail sales recorded for the year ending the 20th February. Consumer decisions will be closely related to economic developments and with most of our main European markets still undergoing austerity measures, the potential for increased consumer spending appears limited. However, the results from the recent EU beef forecasting working group meeting points to some recovery in consumption during 2012.

Irish exporters continue to deal with on-going challenges like currency fluctuations and more long term challenges, such as the potential shape of any EU/Mercusor bilateral trade agreement. Currency movements have the ability to affect the competitiveness of Irish exports. In this context, the Euro by the end of April 2011 was almost 11% weaker against Sterling 3 years ago. To date this year, the Euro has strengthened by just over 2% against the Sterling. However, it remains unclear as to whether the Euro can sustain this moderate level of appreciation, reflecting the uncertainty surrounding the Euro currency**.** Indications regarding the impact assessment of a EU/Mercusor bilateral trade agreement undertaken by the EU commission suggests the potential for a significant negative impact on the EU beef sector from any agreement. It is critical that any potential increase in access relates to the natural proportion of the animal rather than selected cuts and ensure the equivalence of standards between both regions.

Irish Cattle Breeding Federation

Pat Donnellan
ICBF

Introduction

ICBF is focused on providing benefits to Irish cattle farmers, the cattle breeding industry & its member organizations. It does this by working with its members to deliver the following benefits;

- Increased levels of ancestry recording in non-pedigree cattle.
- Increased levels of performance recording in pedigree & non-pedigree cattle.
- The establishment of breeding objectives & selection criteria.
- Greatly increased availability of breeding indexes.
- Increases in the genetic merit of the semen available.
- Improved farm management as a consequence of having better information.

One of the most well known Beef Breeding Developments to be produced by ICBF is the Beef €uro – Star breeding Index for Beef cattle. This Index reflects how much Profit (€) a farmer can expect to realise from making a breeding decision.

€uro-Star Index

The €uro-Star Index is designed to help farmers increase returns from cattle breeding and is based on available data on all animals in the ICBF Cattle Breeding Database. The data comes from a range of sources within the beef industry, all of which are adding data on a continuous basis to the ICBF database.

€uro-Star Index - Explanation

Suckler Beef Value (SBV) Measure of the Overall Beef Value of an animal.

Weanling Export	Measure of genetic merit of a Bull to produce profitable Weanlings.
Beef Carcass	Measure of genetic merit of a Bull to produce profitable Carcasses.
Daughter Fertility	Measure of genetic merit of a Bull to produce daughters with good fertility.
Daughter Milk	Measure of genetic merit of a Bull to produce daughters with good milk production.

€uro – Stars	5 Stars = Top 20% of the Breed.
★★★★★	4 Stars = Between Top 40% & Top 20% of the Breed.
	3 Stars = Breed Average.
	2 Stars = Between Bottom 40% & Bottom 20% of the Breed.
	1 Star = Bottom 20% of the Breed.

€uro-Star Index – Data sources

Index	Information Source
Weanling Export	1. Individual On-Farm & Mart Weanling Weights (150-300 days old). 2. Individual Weanling price/kg from mart sales. 3. Linear Scoring information recorded by ICBF trained Scorers. 4. Calf Quality recorded by Farmer through Suckler Cow Welfare Scheme.

Beef Carcass	1. Carcass Weight, Conformation & Fat data from Irish Factories. 2. Feed Intake measured at Tully Bull Performance Test Centre. 3. Linear Scoring information recorded by ICBF trained Scorers. 4. Weaning Weight & Live Weight Information.
Daughter Fertility	1. Daughter Age at first calving from calf birth records. 2. Daughter Calving difficulty recorded through Animal Events. 3. Daughter Calving Interval from Calf birth records. 4. Daughter Survival to calve again from calf birth records.
Daughter Milk	1. On Farm & Mart Weaning Weights (150-300 days old).

Herdplus®

Herdplus ® is the ICBF Cattle Breeding Information Service for both Dairy & Beef Farmers. Herdplus® uses Cattle Breeding Information from 'Animal Events' (Calving Survey, Milk Recording, Insemination, Linear Score, Weight Recording, Slaughter data etc) to generate valuable reports for your herd. These reports will allow you analyse your own herd's performance as well as allowing you compare your results to National Average Figures.

To find out more about 'Herdplus', call ICBF today on 1850 – 600 – 900 or (www.icbf.com).

BVD- Where are we now?

David Graham
Programme Manager for Bio-Secure Diseases, Animal Health Ireland

Bovine viral diarrhoea (BVD) continues to be a significant problem on Irish farms, and is one of the diseases prioritised for action by Animal Health Ireland (AHI). AHI set up a consultation process in November 2010 to establish views on a co-ordinated, industry-led programme to eradicate BVD from the national herd. This asked a series of questions, including whether respondents supported such a programme, the timescale over which it should run and the need for legislation to deal with the disposal of persistently infected (PI) cattle. This consultation process closed at the end of February and the results have been analysed.
Overall, there was considerable support for an industry-led, co-ordinated programme, with respondents commenting on the;

- cost of BVD to farmers and industry,
- progress being made in other countries which have eradication programmes in place
- potential implications for Irish exports.

The majority of respondents wanted a relatively short time period for the eradication programme. It was felt that it would be difficult for farmers to stay committed and not lose interest if the programme were to run over a long period of time.
There was a clear recognition of the threat posed by the selling of PI cattle, and the need to adequately address both the unintentional and the intentional sale of these animals. The introduction of legislation was suggested as a possible way to deal with this threat.

In relation to the test methods, several were suggested, including ear notch or tissues testing of calves, whole herd blood testing and preliminary screening of young stock using blood samples.
Comments were also made on the role of the veterinary profession in the programme and the requirement for appropriate accreditation of laboratories testing for BVD. Testing (ear notch testing or blood testing) had to be at a reasonable cost with a realistic turnaround time for the results. It was also suggested that the test results should be made available in a format that could be used to confirm non-PI status of cattle offered for sale.
Such an eradication programme was also seen as an opportunity for Ireland to promote a clean green image, to protect exports and to adopt best practice which would serve as a template for dealing with other diseases.

Based on the response to the consultation process and discussions with industry stakeholders, Animal Health Ireland now believes there is a mandate to proceed to the planning and implementation stage of an eradication programme. As a result, a BVD Implementation Group, drawn from across industry and including representatives from the IFA and ICMSA, has recently met to begin the process of planning an eradication programme to begin in 2012.
One of the first tasks will be to decide on the structure of the programme. One option is the approach taken in Scandinavia, where herds were initially tested using screening methods such as a young stock blood testing. Herds that were subsequently categorised as high risk tested all individual animals to eliminate PI cattle.

While this has been successful, it has taken over 10 years to effectively remove the disease from the national herd in these countries. It would also pose a problem for farmers wishing to sell their individual animals “PI free” as with this type of screening; the disease status applies to the herd, rather than the individual animal.
The other approach which has been used in the Swiss programme is the use of ear notch or tissue tag testing. The ear notch test has been successful in reducing the percentage of PI calves born

on farms from 1.5% to 0.1% over two years. A similar national programme, based on tissue tag testing of all new born calves was launched in Germany this year.

Benefits of this approach include:

- early identification and removal of PI calves at an age that reduces both the cost to the farmer and the potential for spreading the disease by selling a PI animal.
- by knowing the PI status of the calf, you know the disease status of the dam; if the calf is infected, the dam should also be checked for infection.
- the ease of testing for farmers using the ear notch test. It allows farmers to combine the testing while at the same time inserting the official identity tag (these tags are to be available for use in 2012).
- test results can be linked to official cattle IDs and which could form the basis of "PI free" sale declarations.

AHI has commenced work on some aspects of the project, particularly in relation to laboratories and the recording or databasing of the results. An initial meeting has been held with the laboratories to encourage all laboratories testing for BVD to operate at a certified accredited standard.

AHI has also emphasised to the laboratories the need to be able to handle large volumes of samples, the need to report results to farmers quickly and accurately, and the need for results to be held centrally on a database. ICBF (an AHI stakeholder) have begun developing this database on our behalf.

While there are many uncertainties about how the BVD eradication programme will eventually roll out, it is evident even at this stage that the support and engagement of all stakeholders, including farmers will be critical to its successful delivery.

For further information on BVD, please see our website: www.animalhealthireland.ie