

Developments in Beef Cattle Breeding New Euro-Star Indexes.

Limousin meeting.
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Background.

- Euro-Stars introduced in 2007.
- Good “buy-in”, especially terminal traits.
- Concern re: maternal traits.
 - Suckler Beef Value (SBV) was too heavily weighted on terminal traits. 62% terminal beef, 23% maternal & 15% weanling export.
 - No “obvious” index for breeding/selecting for maternal attributes (bulls and/or heifers).
- Major review initiated late 2011.
 - ICBF, Teagasc, stakeholders, farmers.

Review process.

- 14 people; ICBF, Teagasc, farmers & industry.
- Group chaired by Michael Doran, beef farmer & vice-chairman ICBF.
- Extensive industry consultation; submissions, feedback, industry meetings.
- Changes endorsed at industry meeting & ICBF board meetings (May 2012).

Outcomes of review.

- New economic values – based on “new” Teagasc farm systems model.
 - Increased weighting on cost of production traits.
- Removal of Suckler Beef Value (SBV) and replaced with 3 new economic indexes; (i) maternal, (ii) terminal & (iii) dairy beef.
- Removal of sub indexes and replaced with “**key profit traits**”.

Topics to be discussed

1. Economic values
2. Maternal Index
3. Terminal Index
4. Dairy Beef Index
5. Data reliability
6. BTAP eligibility

1. Economic Values.

Derivation of Economic Values.

- Objective; to establish economic values for key traits affecting profitability at farm level.
- Based on the “new” Teagasc farm systems model (Grange calf-beef system).

Key elements;

- Steers finished at 24 months of age. Heifers finished at 20 months of age.
- Stocking rate; 210 kg organic N per hectare.
- February/March/April calving pattern of 0.50/0.40/0.10.
- Replacements bred from herd. Age at 1st calving = 24 months
- Cow numbers and nitrogen application rate fixed.
- Area farmed and stocking rate flexible. Land rented in or out.

Changes in Economic Values.

Trait	Economic Value		change	% change
	Old	New		
Direct calving difficulty (€/ % change)	-€2.96	-€5.31	€2.35	79.4%
Gestation length	-€2.12	-€1.72	-€0.40	18.9%
Progeny feed intake (€/kg DM)	-€0.13	-€0.16	€0.03	23.1%
Carcass weight (€/kg carcass)	€3.20	€3.78	-€0.58	18.1%
Replacement heifer feed intake (€/kg carcass)	-€1.22	-€2.28	€1.06	86.9%
Age 1st Calving (€/day)	-€0.96	-€1.65	€0.69	71.9%
Maternal calving difficulty (€/ % change)	-€1.81	-€2.29	€0.48	26.5%
Maternal milk (€/kg weaning wt)	€1.80	€1.81	-€0.01	0.6%
Calving interval (€/day)	-€1.37	-€2.20	€0.83	60.6%
Survival (€/ % decrease)	€2.94	€4.00	-€1.06	36.1%
Cow feed intake (€/kg carcass)	-€0.41	-€0.57	€0.16	39.0%
Cull cow weight (€/kg carcass)	€2.80	€3.04	-€0.24	8.6%

Example Nationally; Age at first calving.

Table 1: Effect of increase in age at first calving (AFC) between 2006 and 2010 in Irish suckler beef herds

Age at first calving in 2006	30.5 months
Age at first calving in 2010	32 months
Difference in AFC between 2006 and 2010	1.5 months (46 days)
Proposed economic value for AFC (per day increase in AFC)	€1.66 per day
Total cost of increase in AFC between 2006 and 2010	€76 per heifer calving
Number of first calving suckler cows in 2010	137,215
National cost to the beef sector	€10.4m

2. Maternal index.

New Maternal Index.

- What do you want when you are selecting a bull to breed maternal female replacements?
 - A cow that will have good milk, fertility, will calve herself.
- But you also want;
 - Good male (& surplus female calves) for sale and slaughter.
 - Cows that are not “too big” (cost of feed over their lifetimes).

Maternal Index – Relative emphasis for key traits.

Trait type	Trait	Relative emphasis %
Calving traits	Calving difficulty (direct and maternal), gestation, mortality	21%
Docility	Weanling and cow docility	4%
Beef	Carcass weight, conformation and fat, cull cow wt	26%
Milk	Daughter Milkability	9%
Fertility	Age 1st Calving, calving interval, survival	17%
Feed intake	Weanling, replacement heifer and cow intake	23%

- Herds breeding heifer replacements; profit = good maternal, good beef, low feed intake & easy calving.

Example bull – Pacha 08

Star Rating (within Limousin breed)	Economic Indexes	€uro value per progeny	Index reliability	Star Rating (across all beef breeds)
★★★★★	Maternal	€282	82% (Very High)	★★★★★
★★★★★	Terminal	€121	89% (Very High)	★★★★★
☆☆☆☆☆	Dairy Beef	€	% (N/A)	☆☆☆☆☆

Star Rating (within Limousin breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)
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Expected progeny performance

★★★★★	Calving difficulty (% 3 & 4) Breed ave: 5.33%, All breeds ave: 5.49%	4.20%	95% (Very High)	★★★★★
★★★★☆☆	Docility (1-5 scale) Breed ave: -0.06, All breeds ave: 0.00	-0.05 scale	90% (Very High)	★★★★☆☆
★★★★★	Carcass weight (kg) Breed ave: 18.61kg, All breeds ave: 18.25kg	22.93kg	93% (Very High)	★★★★★
★★★☆☆	Carcass conformation (1-15 scale) Breed ave: 1.79, All breeds ave: 1.57	1.67 scale	94% (Very High)	★★★☆☆

Expected daughter breeding performance

★★★★★	Daughter calving difficulty (% 3 & 4) Breed ave: 5.90%, All breeds ave: 6.36%	4.62%	72% (High)	★★★★★
★★★★★	Daughter milk (kg) Breed ave: -0.31kg, All breeds ave: 0.47kg	21kg	74% (High)	★★★★★
★★★★★	Daughter calving interval (days) Breed ave: 1.27 days, All breeds ave: -0.20 days	-.04days	59% (Average)	★★★★★

Maternal
index = €282

€282 more
profit per
replacement
female
compared to
bull with value
of zero.

Expressed
over animals
life-time

3. Terminal index.

New Terminal Index.

- What do you want when you are selecting a bull to breed animals for sale and/or slaughter?
 - Excellent carcass weights & grades.
- But you also want;
 - Low cost of calving.
 - Good feed efficiency (finishing period).

Terminal Index – Relative emphasis for key traits.

Trait type	Trait	Relative emphasis %
Calving traits	Calving difficulty (direct and maternal), gestation, mortality	30%
Docility	Weanling docility	2%
Beef	Carcass weight, conformation and fat, cull cow wt	49%
Feed intake	Weanling, replacement heifer and cow intake	18%

- Birth to slaughter systems; profit = High beef output, easy calving & low feed intake.

Example bull – Objat

- Terminal index = €125 (more profit per progeny slaughtered).
- Exceptional weight, grade and feed efficiency.
- Watch calving & maternal.

Star Rating (within Limousin breed)	Economic Indexes	€uro value per progeny	Index reliability	Star Rating (across all beef breeds)
★☆☆☆☆	Maternal	€57	50% (Average)	★☆☆☆☆
★★★★★	Terminal	€125	55% (Average)	★★★★★
☆☆☆☆☆	Dairy Beef	€	% (N/A)	☆☆☆☆☆
Star Rating (within Limousin breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)
Expected progeny performance				
★★★☆☆	Calving difficulty (% 3 & 4) Breed ave: 5.33%, All breeds ave: 5.49%	5.38%	79% (High)	★★★★☆☆
★★★★★	Docility (1-5 scale) Breed ave: -0.06, All breeds ave: 0.00	0.22 scale	60% (High)	★★★★★
★★★★★	Carcass weight (kg) Breed ave: 18.61kg, All breeds ave: 18.25kg	28.53kg	49% (Average)	★★★★★☆☆
★★★★★	Carcass conformation (1-15 scale) Breed ave: 1.79, All breeds ave: 1.57	2.38 scale	52% (Average)	★★★★★
Expected daughter breeding performance				
★☆☆☆☆	Daughter calving difficulty (% 3 & 4) Breed ave: 5.90%, All breeds ave: 6.36%	7.74%	44% (Average)	★☆☆☆☆
★☆☆☆☆	Daughter milk (kg) Breed ave: -0.31kg, All breeds ave: 0.47kg	-13.75kg	52% (Average)	★☆☆☆☆
★☆☆☆☆	Daughter calving interval (days) Breed ave: 1.27 days, All breeds ave: -0.20 days	6.83days	33% (Low)	★☆☆☆☆

4. Dairy Beef Index.

Dairy Beef Index

- Still under construction.
- Key traits; Calving difficulty, gestation length, beef merit, stock bull functionality (*new trait*).
- Available later this year.

5. Data reliability.

- Focus on Euro-Stars, but also data reliability.
 - <20% = Very low = Stock bull, limited data and/or ancestry performance.
 - 21-40% = Stock bull, good data &/or ancestry performance.
 - 41-60% = Medium = AI sire &/or well proven stock bull.
 - 61-80% = High = Proven AI sire.
 - 81-100% = Very High = Well proven AI sire.
- New developments for late 2012; GEN€ IRELAND bull breeding stamp & data quality index.
 - These herds are involved in voluntary ICBF breeding herd data quality initiatives. Quality of data from their herds has been “independently” verified.

Example bull – ERE

Star Rating (within Limousin breed)	Economic Indexes	€uro value per progeny	Index reliability	Star Rating (across all beef breeds)
★ ★ ★ ★ ★	Maternal	€-143	51% (Average)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Terminal	€5	67% (High)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Dairy Beef	€	% (N/A)	★ ★ ★ ★ ★
Star Rating (within Limousin breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)

Expected progeny performance

★ ★ ★ ★ ★	Calving difficulty (% 3 & 4) Breed ave: 5.33%, All breeds ave: 5.49%	22.07%	97% (Very High)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Docility (1-5 scale) Breed ave: -0.06, All breeds ave: 0.00	-0.07 scale	50% (Average)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Carcass weight (kg) Breed ave: 18.61kg, All breeds ave: 18.25kg	23.69kg	52% (Average)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Carcass conformation (1-15 scale) Breed ave: 1.79, All breeds ave: 1.57	1.99 scale	47% (Average)	★ ★ ★ ★ ★

Expected daughter breeding performance

★ ★ ★ ★ ★	Daughter calving difficulty (% 3 & 4) Breed ave: 5.90%, All breeds ave: 6.36%	1.4%	55% (Average)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Daughter milk (kg) Breed ave: -0.31kg, All breeds ave: 0.47kg	-.73kg	21% (Low)	★ ★ ★ ★ ★
★ ★ ★ ★ ★	Daughter calving interval (days) Breed ave: 1.27 days, All breeds ave: -0.20 days	5.94days	25% (Low)	★ ★ ★ ★ ★

- 22% calving difficulty (97% reliability)

Calving difficulty - ERE

Sire Progeny and Progeny Herdmate Information

Date of Evaluation	No. of Births	Herd Mate Births	Scored 3 or 4 (%)	Herd Mate Scored 3 or 4 (%)	Male Births	1st Parity		2nd Parity		3rd parity	
						Records	Scored 3 or 4 (%)	Records	Scored 3 or 4 (%)	Records	Scored 3 or 4 (%)
Aug 2012							%		%		%
Apr 2012	90	555	27	7	49 (54%)	31	29%	15	40%	44	20%

Indexes – Summary.

- New indexes will facilitate easier identification of bulls/cows for specific purposes.
 - Maternal, terminal & dairy beef.
- Importance of costs of production traits are apparent. These bulls (& breeds) have benefited from the new indexes.

6. BTAP eligibility

Example bull – Pacha 08

Aug 2012 Eligible for BTAP (on MATERNAL)

Apr 2012 Eligible for BTAP (on SBV)

Number progeny records included in evaluation

Evaluation Run	Calving			Weanling and Carcass records							Daughter Maternal Records				
	Calving Diff	Gest	Mort	Wean Weights	Live Weights	Linear	Docility	Farmer Calf Qual	Mart pperkg	Carcass weight	Age First Calving	Mat Calv Diff	Mat Wean Weight	Daughter Calving Interval	Daughter Surv
Aug 2012	194	42		42	34	93	92	18		42		111			
Apr 2012	199	46	204	41	34	92	90	14	2	41	47	87	16	59	69
Dec 2011	197	46	202	41	34	93	90	15	2	39	47	46	14	43	49
Aug 2011	196	44	201	41	33	92	89	14	2	32	37	63	21	15	26
Apr 2011	192	43	197	41	30	93	89	14	2	28	33	46	14	10	23
Dec 2010	188	43	195	32	21	92	87	13	2	25	29	35	13	6	19
Aug 2010	186	43	193	29	19	90	89	9	1	19	24	28	11	5	9
April 2010	175	41	182	26	19	89	83	9	1	11	20	25	6	3	4
Jan 2010	171	38	178	25					1	8	12	20	3	1	4
Aug 2009	160	31	167	24					1	6	8	8	2	0	2