

Developments in Beef Cattle Breeding New Euro-Star Indexes.

Salers Meeting.
4th September 2012.



Stephen Conroy, ICBF



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.
 - 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

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 - Buron

Star Rating (within Salers breed)	Economic Indexes	Euro value per progeny	Index reliability	Star Rating (across all beef breeds)
★★★★★	Maternal	€292	73% (High)	★★★★★
★★★☆☆	Terminal	€64	85% (Very High)	★★★☆☆
☆☆☆☆☆	Dairy Beef	€	% (N/A)	☆☆☆☆☆

Star Rating (within Salers breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)
--------------------------------------	-------------------	-------------	----------------------	---

Expected progeny performance

★★★☆☆	Calving difficulty (% 3 & 4) Breed ave: 3.29%, All breeds ave: 5.49%	3.23%	91% (Very High)	★★★★★☆☆
★★★★★	Docility (1-5 scale) Breed ave: -0.09, All breeds ave: 0.00	0.03 scale	86% (Very High)	★★★★★☆☆
★☆☆☆☆	Carcass weight (kg) Breed ave: 13.11kg, All breeds ave: 18.25kg	6.3kg	92% (Very High)	★★★☆☆☆☆
★★★★★☆☆	Carcass conformation (1-15 scale) Breed ave: 0.92, All breeds ave: 1.57	.96 scale	92% (Very High)	★★★☆☆☆☆

Expected daughter breeding performance

★★★☆☆	Daughter calving difficulty (% 3 & 4) Breed ave: 7.25%, All breeds ave: 6.36%	7.43%	56% (Average)	★★★☆☆☆☆
★★★★★	Daughter milk (kg) Breed ave: 10.27kg, All breeds ave: 0.47kg	15.31kg	51% (Average)	★★★★★☆☆
★★★★★	Daughter calving interval (days) Breed ave: -2.97 days, All breeds ave: -0.20	-4.82days	46% ..	★★★★★☆☆

Maternal
index = €292

€292 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 – Scorpion

- Terminal index = €297 (more profit per progeny slaughtered).

- Exceptional weight, grade and feed efficiency.

- Watch calving & maternal.

Star Rating (within Salers breed)	Economic Indexes	€uro value per progeny	Index reliability	Star Rating (across all beef breeds)
★★★★★	Maternal	€297	74% (High)	★★★★★
★★★★★	Terminal	€120	86% (Very High)	★★★★★
☆☆☆☆☆	Dairy Beef	€	% (N/A)	☆☆☆☆☆
Star Rating (within Salers breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)

Expected progeny performance

★★★★★	Calving difficulty (% 3 & 4) Breed ave: 3.29%, All breeds ave: 5.49%	2.02%	93% (Very High)	★★★★★
★★★★☆	Docility (1-5 scale) Breed ave: -0.09, All breeds ave: 0.00	-0.07 scale	89% (Very High)	★★★★☆
★★★★★	Carcass weight (kg) Breed ave: 13.11kg, All breeds ave: 18.25kg	23.25kg	91% (Very High)	★★★★★
★★★★★	Carcass conformation (1-15 scale) Breed ave: 0.92, All breeds ave: 1.57	1.42 scale	91% (Very High)	★★★★★

Expected daughter breeding performance

★☆☆☆☆	Daughter calving difficulty (% 3 & 4) Breed ave: 7.25%, All breeds ave: 6.36%	8.49%	68% (High)	★☆☆☆☆
★☆☆☆☆	Daughter milk (kg) Breed ave: 10.27kg, All breeds ave: 0.47kg	-1.9kg	47% (Average)	★☆☆☆☆
★★★★★	Daughter calving interval (days) Breed ave: -2.97 days, All breeds ave: -0.20 days	-5.3days	55% (Average)	★★★★★

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; GENÉ 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 – Brownhall Laurence

Star Rating (within Salers breed)	Economic Indexes	€uro value per progeny	Index reliability	Star Rating (across all beef breeds)
★★★★☆	Maternal	€219	22% (Low)	★★★★★
★★★★☆	Terminal	€79	28% (Low)	★★★★☆
☆☆☆☆☆	Dairy Beef	€	% (N/A)	☆☆☆☆☆

Star Rating (within Salers breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)
--------------------------------------	-------------------	-------------	----------------------	---

Expected progeny performance

★☆☆☆☆	Calving difficulty (% 3 & 4) Breed ave: 3.29%, All breeds ave: 5.49%	4.20%	37% (Low)	★★★★☆
★★★★☆	Docility (1-5 scale) Breed ave: -0.09, All breeds ave: 0.00	-0.07 scale	39% (Low)	★★☆☆☆
★★★★★	Carcass weight (kg) Breed ave: 13.11kg, All breeds ave: 18.25kg	20.32kg	30% (Low)	★★★★☆
★★★★☆	Carcass conformation (1-15 scale) Breed ave: 0.92, All breeds ave: 1.57	1.08 scale	25% (Low)	★★☆☆☆

Expected daughter breeding performance

★★★★☆	Daughter calving difficulty (% 3 & 4) Breed ave: 7.25%, All breeds ave: 6.36%	7.13%	22% (Low)	★★☆☆☆
★★★★☆	Daughter milk (kg) Breed ave: 10.27kg, All breeds ave: 0.47kg	12.67kg	12% (Very Low)	★★★★★
★☆☆☆☆	Daughter calving interval (days) Breed ave: -2.97 days, All breeds ave: -0.20 days	-1.61days	12% (Very Low)	★★★★☆

- Low reliability
- Linear scored

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.

BTAP eligibility

Example bull - Buron

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	174	24		164	99	156	162	105		63		34			
Apr 2012	170	24	162	127	92	123	129	74	0	51	20	27	0	4	4
Dec 2011	164	24	156	127	86	123	129	79	0	51	20	4	0	4	4
Aug 2011	134	24	126	127	83	121	127	75	0	40	0	4	4	0	4
Apr 2011	134	24	126	88	64	82	88	44	0	34	4	4	0	0	0
Dec 2010	125	21	117	88	41	82	88	43	0	33	4	4	0	0	0
Aug 2010	90	16	84	76	41	76	95	19	0	25	0	0	0	0	0
April 2010	90	16	84	53	36	53	53	19	0	7	0	0	0	0	0
Jan 2010	78	12	72	53					0	7	0	0	0	0	0
Aug 2009	52	9	52	37					0	0	0	0	0	0	0