IRISH CATTLE BREEDING FEDERATION

Best practice and new breeding programs for Beef.

Belgian Blue

Stephen Conroy, ICBF

14th July 2012

NDP National Development Plan Transforming Ireland

Topics to be discussed

- Increasing accuracy of Indexes
  - Best practice document
  - Herd Data Quality Index

- Breed Improvement
  - New G€N€ IR€LAND program
  - New €uro-Star Indexes

IRISH CATTLE BREEDING FEDERATION

Best practice document

Stephen Conroy, ICBF

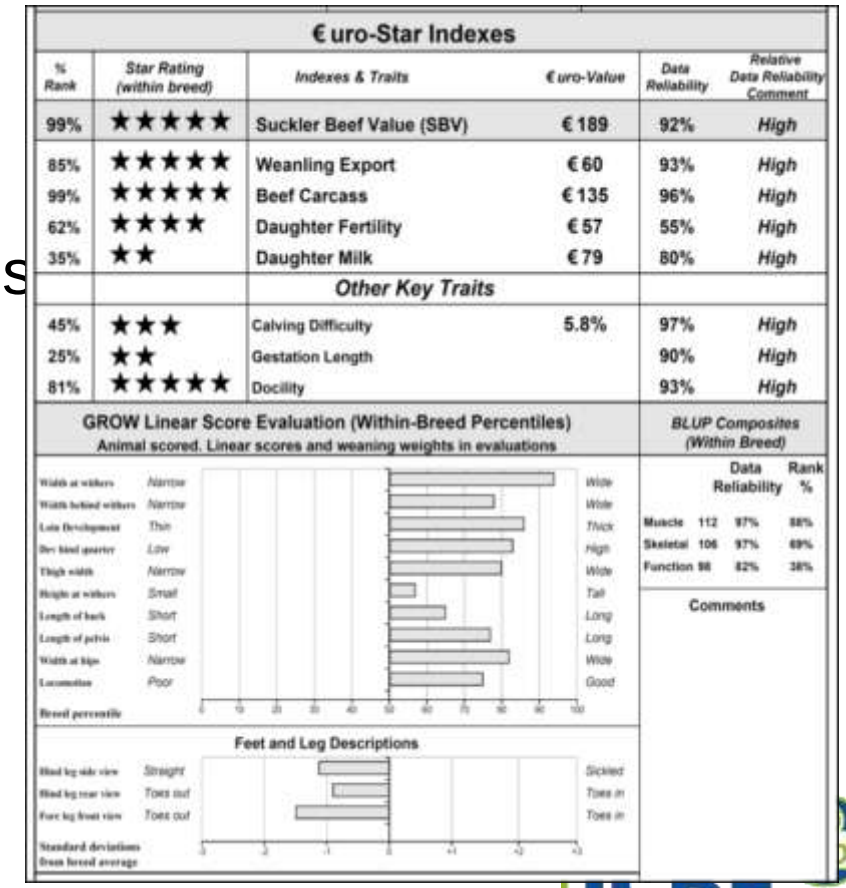
14th July 2012

Background

- No document in place
- Uncertainty for some breeders about indexes
- Help communicate and resolve queries

Objectives

- To outline the steps involved in obtaining accurate €uro-Star indexes
- Interpret €uro-Star indexes in beef cattle



€uro-Star Indexes

% Rank	Star Rating (within breed)	Indexes & Traits	€uro-Value	Data Reliability	Relative Data Reliability Comment
99%	★★★★★	Suckler Beef Value (SBV)	€ 189	92%	High
85%	★★★★★	Weanling Export	€ 60	93%	High
99%	★★★★★	Beef Carcass	€ 135	96%	High
62%	★★★★	Daughter Fertility	€ 57	55%	High
35%	★★	Daughter Milk	€ 79	80%	High
		Other Key Traits			
45%	★★★	Calving Difficulty	5.8%	97%	High
25%	★★	Gestation Length		90%	High
81%	★★★★★	Docility		93%	High

GROW Linear Score Evaluation (Within-Breed Percentiles)
Animal scored. Linear scores and weaning weights in evaluations

Width at withers	Narrow	Wide
Width behind withers	Narrow	Wide
Loin Development	Thin	Thick
Rear third quarter	Low	High
Thigh width	Narrow	Wide
Height at withers	Small	Tall
Length of back	Short	Long
Length of pelvis	Short	Long
Width at hips	Narrow	Wide
Locomotion	Poor	Good

Breed percentile

Feet and Leg Descriptions

Hind leg side view	Straight	Sickled
Hind leg rear view	Toes out	Toes in
Fore leg front view	Toes out	Toes in

Standard deviations from breed average

BLUP Composites (Within Breed)

		Data Reliability	Rank %
Muscle	112	97%	88%
Skeletal	106	97%	69%
Function	98	82%	38%

Comments

Contents

1. Overview of €uro-Star Indexes

2. Changes to beef genetic evaluations in 2012

3. Steps in obtaining accurate indexes

1. €uro-Star Indexes

- Overview of the €uro-Star index which includes:
  - Understanding SBV and sub-indexes
  - How indexes are calculated
  - Variation in Indexes
  - What is reliability
  - Why indexes change
  - How often are €uro-Stars updated

2. Changes to beef evaluations

- Milk evaluation
  - Cow milkability score
  - Foreign milk data
  - Relationship between terminal and maternal traits
- Fertility evaluation
  - Age at first calving
  - Calving interval and survival – 11th parity
  - Use of predictor traits
- Cow docility evaluation
  - Optional cow survey
- Calving ease evaluation
  - Foreign data

3. Steps to accurate indexes

- Pedigree/commercial herds
  - Sire selection
    - Reliability
  - Imported stock bulls
    - Ensure all information is entered on the database
    - How to increase reliability
  - Flushing & Embryo transfer
    - How to record events
  - Insemination
    - Timeliness and where to record the trait
  - Registration
    - Timeliness
  - DNA parentage (pedigree)
    - Recommended where multiple stock bulls or AI and stock bulls are being used

3. Steps to accurate indexes cont'd

- Suckler Cow Welfare Scheme
  - Traits to be recorded and timeliness of each trait
- Weight recording
  - Key times in the animals life to weight record
- Linear scoring
  - Criteria involved and information on scoring
- Cow docility and milkability survey
  - Information on the survey
- Missing sires (commercial)
  - Where to record this information

3. Steps to accurate indexes cont'd

- Management:
  - Genetic evaluations take into account within herd effects
  - Over and under prediction of €uro-Star Indexes
  - Inconsistency in management within herd include:
    - Preferential treatment
      - Selected animals
    - Linear scoring
      - Not scoring all eligible animals
      - Intentionally adding a poor quality animal
      - Not informing the linear scorer of different management practices
    - Docility
      - Over handling of selected animal
      - Use of chemical agents
      - Manipulating docility records

Summary

- Available on the ICBF website (www.icbf.com)
- Updated in line with the new index change
- Rolled it out to all breeders in Autumn
- Important in explaining changes to indexes
- Important part of data collection for new GI program

IRISH CATTLE BREEDING FEDERATION

Herd Data Quality Index (HDQI)

Stephen Conroy, ICBF

14th July 2012

National Development Plan
Transforming Ireland

Background

- Ensure accurate data
  - Reward herds with high quality data
- Voluntary program
- Initially available to pedigree breeders
- Linked to the best practice document
- Easy to interpret format

Objectives

- An index to help breeders improve quality of data for beef breeding

HDQI

1. Herd summary

2. Herd score card:
   - ❖ Completeness of data
   - ❖ Timeliness of data
   - ❖ Normality of data
   - ❖ Overall score

3. Individual animal report

Herd Summary

HerdPlus
Profit through Science

Herd Data Quality Index
(Pedigree animals)
2010/2011

ICBF.com

Herd summary data. Page 1 of (5)

Herd owner:	Farmer A	Beef cows	23
Address:		Beef registrations	14
Address:		Pedigree beef registrations	13
County:		Beef registration - AI bred calves	13
Herd designator:	IE1234567	ET registrations	1
Print date:	01/07/2012	Youngstock (250-500 days of age)	14
Reporting period:	1/6/2010 to 1/6/2011	Suckler beef calvings	23
LoCall 1850 600 900		Dairy calvings	1

- Overview of information in the report
- Generated for pedigree and commercial herds

ICBF.com

Completeness & Timeliness

1. Completeness (based on birth registration events with complete data)	1. Sire recording	2. Calving Survey	3. Birth weights	4. Gestation Length	5. Pre-weaning weight	6. Calf docility	7. Calf quality	8. Post weaning weight	9. Linear score.	10. Average
Number of birth registration events .	18	18	18	18	18	18	18	18	18	
Number of these events with data recorded	18	18	0	9	0	18	18	18	18	
% completeness.	100%	100%	0%	50%	0%	100%	100%	100%	100%	68%

2. Timeliness (based on records received within 21 days of event date)	1. Sire recording	2. Calving Survey	3. Birth weights	4. Gestation Length	5. Pre-weaning weight	6. Calf docility	7. Calf quality	8. Post weaning weight	9. Linear score.	10. Average
Number of birth registration events with data recorded.	18	18	0	10	0	18	18	18	18	
Number of these events, where the data was recorded within 21 days	16	16	0	0	0	18	18	18	18	
% on time	88%	88%	0%	0%	0%	100%	100%	100%	100%	64%

Normality & Overall Score

3. Normality (based on data presented for genetic evaluations).	1. Sire recording	2. Calving Survey	3. Birth weights	4. Gestation Length	5. Pre-weaning weight	6. Calf docility	7. Calf quality	8. Post weaning weight	9. Linear score.	10. Average
Number of birth registration events with data recorded.	Under development									
Number of these events, where the data is outside normality ranges.										
% non normal data.										
4. Overall score (based on completeness & timeliness)	1. Sire recording	2. Calving Survey	3. Birth weights	4. Gestation Length	5. Pre-weaning weight	6. Calf docility	7. Calf quality	8. Post weaning weight	9. Linear score.	10. Average
Calculated as; (0.50 * % complete) + (0.50 * % on time) .	84%	84%	0%	25%	0%	100%	100%	100%	100%	67%

Individual Animal Report

HerdPlus
Profit through Science

Herd Data Quality Index.
Births during 2010/2011

ICBF.com

LoCall 1850 600 900

Herd owner	Farmer A
Herd designator	IE1234567
Print date	01/07/2012
Page	1 of (5)

Table 2. Individual animal data.

This report lists birth registration data, and related events (nine in total) for all cows with a birth event on your farm during 2010/2011. Summary data from table 1 are directly related to data recorded in this table.

Cow Tag Cow FB Breed	Calf tag Sex Breed	Last insem Birth date Wean date		1. Sire ID	2. Calving Survey	3. Birth weight	4. Gestation Length	5. Pre-weaning weight	6. Calf docility	7. Calf quality	8. Post weaning weight	9. Linear score.
123456712346	23456	01/05/2011	*1. Completeness.*	CF52	1	43		305	G	VG	778	8
345	Male	01/01/2012	*2. Timeliness (days)*	+4 days	+ 4 days	+ 4 days	+ 4 days	+1 days	+3 days	+3 days	+1 day	+1 days
CH100%	CH100%	01/08/2012	*- date of event*	1/1/11	1/1/11	1/1/11	1/1/11	1/7/11	1/8/11	1/8/11	1/9/11	1/9/11
			3. Normality	*Under development*								

- Check for errors/completed records
- Individual report based on each breeding female

ICBF.com

Summary

- Design and spec are now finalised
- Development stage
  - Completed Autumn 2012
- Trail in pedigree herds
  - Feedback from pedigree breeders
- Move to implementation

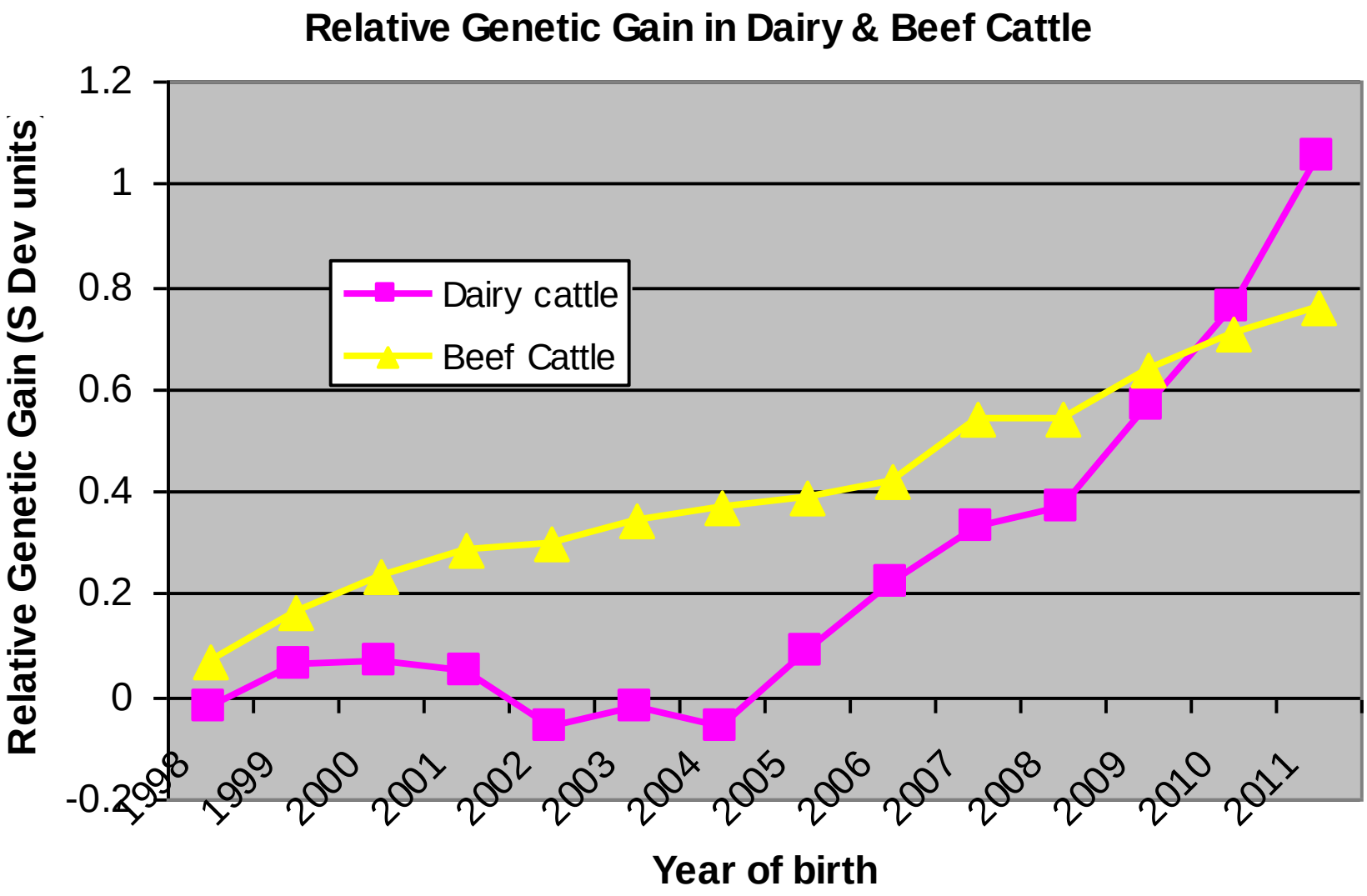
IRISH CATTLE BREEDING FEDERATION

New G€N€ IR€LAND program.

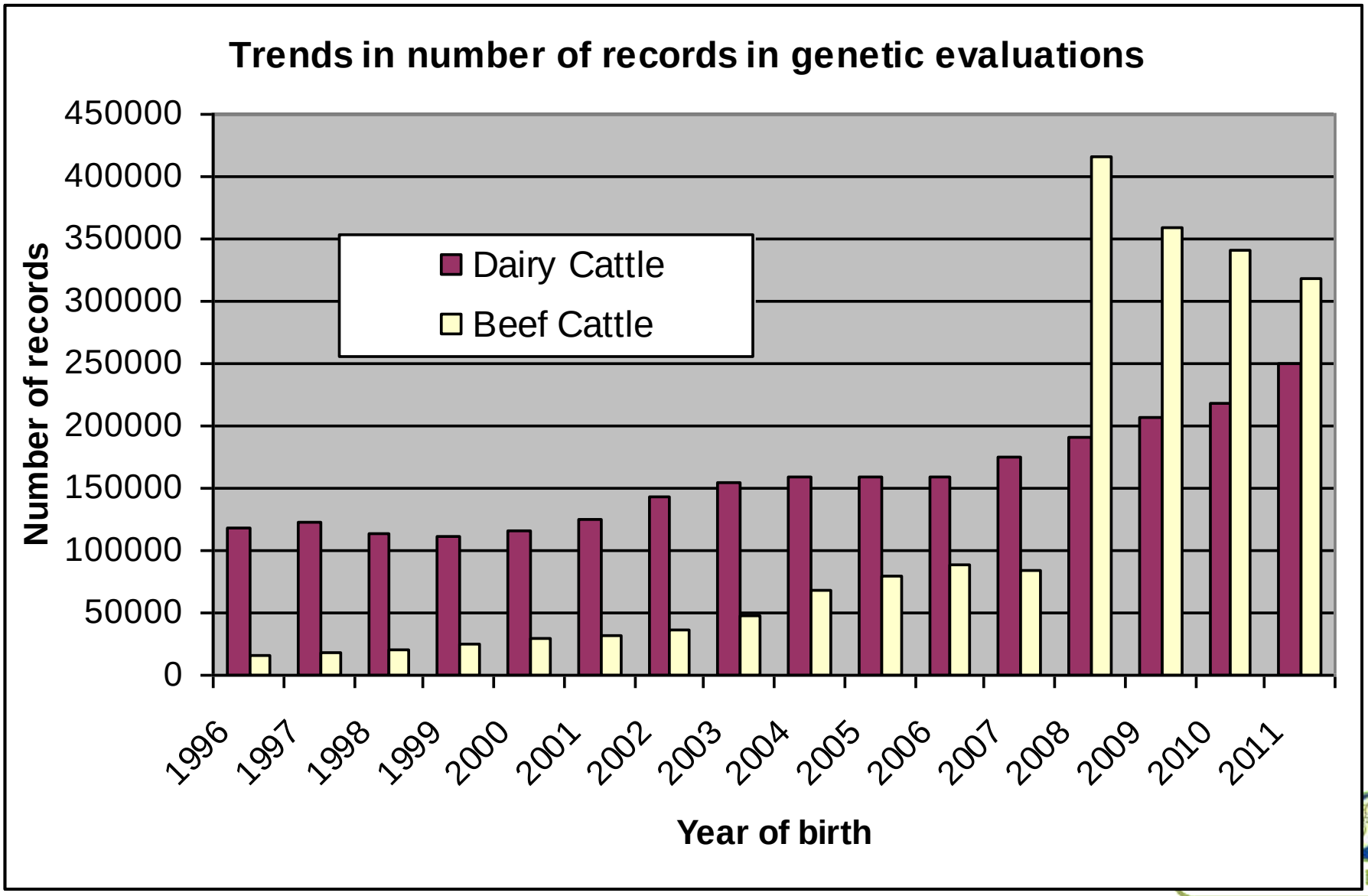
Stephen Conroy, ICBF

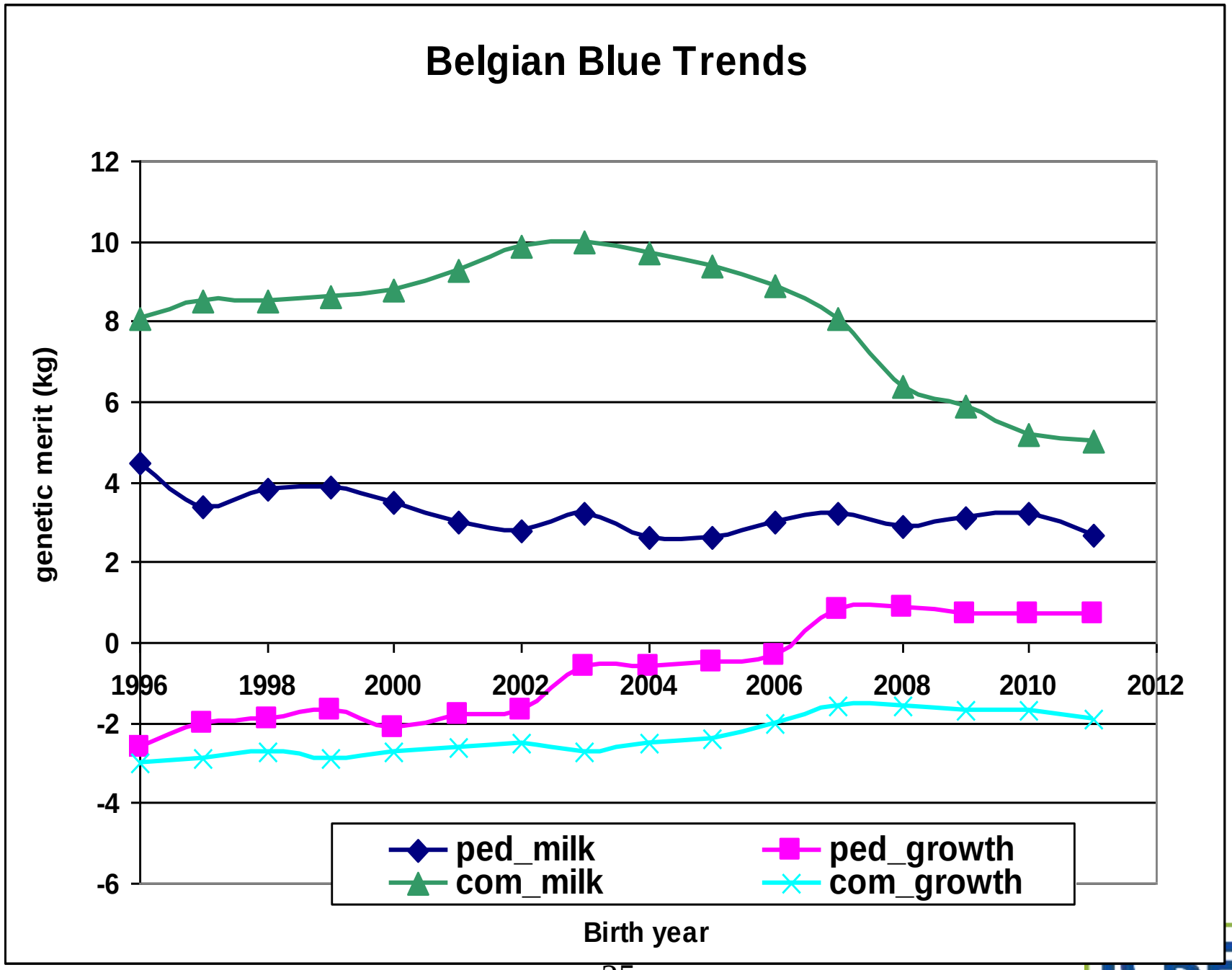
14th July 2012

Genetic Gain in Ireland



Data quantity & quality




Belgian Blue Trends
genetic merit (kg)
12
10
8
6
4
2
0
-2
-4
-6
1996
1998
2000
2002
2004
2006
2008
2010
2012
ped_milk
com_milk
ped_growth
com_growth
Birth year

Background

- ICBF invests €700/year into beef breeding programs
  - €300k into Tully.

- Genetic gain in beef is principally through use of stock bulls.
  - Need AI to generate stock bulls.
    - ✓ 70% pedigree females bred to AI
  - AI important role in breeding maternal female replacements.

- Primary markets for beef AI is;
  - Easy calving (dairy)
  - Weanling export.
  - Not maternal traits.

Background cont'd

- Beef AI is a high cost
  - Low value business compared to dairy.
- Increase genetic gain
  - Need to progeny test more bulls.
- Not commercially viable for AI companies to invest in these bulls.
- Need a "new entity" to purchase these bulls.

New G€N€ IR€LAND program

1. Bull breeder herds
   - ✓ Best practice for herds
   - ✓ Benefits to the breeder

2. Bulls in AI
   - ✓ Selection
   - ✓ Collection and distribution of semen
   - ✓ Purchase and sale of bulls

3. G€N€ IR€LAND progeny test
   - ➢ Progeny test structure
     - ✓ On-farm
     - ✓ Tully

1. Bull breeder herds

- G€N€ IR€LAND (GI) prepares terms and conditions
- GI recruits the herds
  - Voluntary program
- GI provides a range of services
  - Mating advice for elite cows
  - Access to stored semen from GI AI bulls
- GI gives guidance on best practice for:
  - Data collection
  - Health
  - Genetics
  - Rearing

1. Bull breeder herds

- Access to information quality
  - Data herd quality index

- GI determines if the herd has complied with best practice
  - Herd score annually
  - GI stamp

- Fee
  - €250 per annum

2. GI AI bulls

- GI decides selection
  - New maternal index
  - Relatedness to Irish herd
  - Disease status
- GI purchases the bull
  - 5k on average
- 1000 doses of semen collected
  - 500 doses for progeny test
  - 500 doses retained for elite mating's
    - ✓ GI herds have access to this semen
- Bulls sold
  - AI (first option)
  - Commercial herds
  - GI ownership (short period of time)

3. GI Progeny Test Herds

- GI produces the catalogue
- GI recruits herds to use the semen
  - Test herd participation rules
  - Semen distributed through AI field service providers
  - Monitor test herds to ensure best practice
- GI purchases progeny to be evaluated at Tully
  - Feed intake/efficiency
  - Carcass/meat eating quality
  - Health/disease traits

Ownership, Funding & Direction

- Program would be “owned” by ICBF.
- Funded from ICBF’s annual budget.
- Technical direction provided by stakeholder group.
  - Breed specific for larger breeds.
  - Bulls selected on New Maternal Index, genetic diversity, health & visual (functionality).
- Reporting to ICBF board.
- Scale-able budget, with small net surplus.

Summary

- Strong, simple & low cost program.
  - More effective use of ICBF funding (€300k/yr).
  - Scale-able, with no impact on ICBF budget.
  - Builds on G€N€ IR€, SCWS & New Maternals.
- A breeding program. NOT a commercial business.
- Purchase and ownership of bulls.
  - No commercial transactions.
  - Bulls in ownership for short period.
  - Semen collection & processing by AI partners.
  - Open to all AI partners.

Summary cont'd

- Potential to test 20..40…80 bulls/year.
- Brings together all elements of beef breeding industry (AI, breeders, herdbooks, farmers, ICBF…..).
- *Worth ~€100m to Irish beef industry over 10 yrs.*

IRISH CATTLE BREEDING FEDERATION

Developments in ICBF Beef €uro-Stars.

National Development Plan
Transforming Ireland

Background

- €uro-Stars introduced in 2007.
- Strong uptake, especially terminal traits.
  - 719k beef bull searches on ICBF website.
- 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).
  - Maternal performance has been declining.

Decline in Female Fertility Traits

	2007	2008	2009	2010	2011
Calving Interval (Days)	398	396	397	404	405
Calves/cow/ year	0.87	0.87	0.85	0.84	0.85
Age at 1st calving (months)	30	31	31	31	32

€uro-Star stakeholder group

- Request for original €uro-Star group to be reformed.

- Terms Reference: *To advise on the further development of information services (€uro-Stars) provided by ICBF to support the breeding or more profitable beef cattle in Ireland*".

Approach taken

- Team of 14 people; stakeholders (7) and technical support (7).
- Series of six “team” meetings over 4 months.
- Additional meetings with industry, including invited submissions.
- Process: Economic values -> impact on indexes -> index selection -> recommendations.

Indexes – Key outcomes

i. Terminal – replace weanling export and carcass

ii. Dairy beef – Which traits

iii. Maternal – cow traits and calf quality

iv. Overall –no need an overall

Terminal Index

- To introduce a new Terminal index, for the identification of sires suitable for breeding high profit animals (males and females) for slaughter.
- Combines weaning and slaughter index along with calving traits.
- It would be published in the units of €/progeny.

Terminal Index cont'd

- Cost of calving (CD%, gestation length & mortality) should be included.

- Correlations between New terminal & weanling export & carcass are high (~0.70).

	Weanling export	Carcass	New Terminal
Weanling export	1.00		
Carcass	0.88	1.00	
New Terminal	0.61	0.83	1.00

Dairy beef index

- To introduce a new Dairy beef index, for the identification of sires suitable for use on dairy cows.

- The index would be published in units of €/progeny.

- Takes into account:
  - Mortality, gestation lenght, calf price
  - More work on traits and economic values.

Maternal index

- To introduce a new Maternal index, for the identification of animals (sires and/or suckler female replacements), suitable for breeding and selecting high profit replacement females.

- The index would replace the current milk and fertility sub-index.

- It would be published in the units of €/progeny.

Maternal Index cont'd

- Range of potential maternal indexes considered; SBV, maternal replacement, pure maternal….

- Maternal replacement index selected.
  - Includes pure maternal, calving & terminal. More balanced.
  - Covers requirement of replacement heifer selection.

New Indexes - Relative weightings

	Suckler Beef Value	New Maternal Index	New Terminal Index
Calving	19%	22%	32%
Terminal	60%	36%	68%
Maternal	21%	42%	
Total	100%	100%	100%

Implementation

- Three sub-groups established.
  - Research.
  - Presentation of material.
  - Implementation plan.

- Rolled out for next Autumn 2012 breeding season.


Any Questions