



Economic selection indices for various breeds under different farming and production systems in Slovenia

Marija Klopčič, Roel F. Veerkamp, Silvester Žgur, Abele Kuipers, Pat Dillon & Yvette de Haas

Stavanger, 30th August, 2011

Current index in Slovenia

- TMI (Total Merit Index)
- 30 traits
 - Milk production
 - Fertility and calving ease
 - Conformation traits
 - Meat production



Case Slovenia

In Slovenia:

- TMI is not based on economics
- Farm profit is what farmers trigger
- Prices and costs becoming more difficult to predict with increased fluctuations

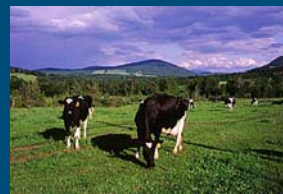


Aim of this study



- Study economic indices under various farming systems and future uncertainty concerning costs and prices in a more global economy

- Holstein-Friesian
- Brown Swiss
- Simmental



Economic index



- Breeding goal
 - Highest profit at farm level
- Index to rank bulls
 - Only farm profit counts
- Index based on economic values of traits that affect farm profit
 - Milk production, Milk contents,
 - Longevity, Fertility (Calving interval),
 - Beef (Daily gain)

Example of calculation of economic value

- Longevity (%):
 - How much do you earn when cow lives 1% longer?
 - Example: Current involuntary culling% on farm is 20%
→ longevity is 80%.
 - When involuntary culling is improved with 1%, this means 1% of 20%, which is 0.2%
 - Culling% on farm is then 19.8%, and longevity 80.2%
- Irish model* is used as a start but adapted to Slovenian farming circumstances

* Reference: Veerkamp, Dillan, Kelly, Cromie and Groen (2002). Dairy cattle breeding objectives combining yield, survival and calving interval for pasture-based systems in Ireland under different milk quota scenarios. LPS 76: 137-151.

Relative economic weights per breed

	Holstein Friesian	Brown Swiss	Simmental
Milk (kg)	-0.47	-0.22	-0.23
Fat (kg)	0.28	0.61	0.61
Protein (kg)	1.00	1.00	1.00
Longevity (%)	0.39	0.35	0.22
Calving int. (d)	-0.33	0.36	0.28
Daily gain (gr/d)		0.19	0.49

Weights on traits per breed

	Holstein Friesian	Brown Swiss	Simmental
Milk (kg)	19.0%	8.1%	8.1%
Fat (kg)	11.3%	22.3%	21.6%
Protein (kg)	40.5%	36.6%	35.3%
Longevity (%)	15.8%	12.8%	7.8%
Calving int. (d)	13.4%	13.2%	9.9%
Daily gain (gr/d)	-	7.0%	17.3%

Holstein-Friesian bulls with TMI and E.I.

Name of bull	TMI	E.I.
BRONCO	1	3
FLES	2	6
VIKI	3	1
BREF	4	11
SIJ	5	13
LUKAS	6	12
ARPUN	7	8
MUNDO	8	14
ASCO	9	9
BEND	10	18
LAH	11	10
CRES	12	4
LASO	13	15
BONO	14	7
ZAB	15	5
CARGO	16	2
LOVEBOY	17	17
BELAK	18	16
ZVAR	19	19

Spearman
Correlation Holstein-
Friesian : **0.393**

Correlation Brown
Swiss : **0.485**

Correlation
Simmental : **0.556**

Effect of economic index

- Low correlation (<0.6) between ranking with TMI and ranking with Economic Index (EI)
 - Significant re-ranking of sires
- Reason: several traits in TMI are not affecting farm profit directly, but those traits have a strong weight in the TMI



Breeding is for the future:

Effects of different costs & prices

Yes if correlation between ranking "E.I.-base" and "E.I.-changed" < 0.99

	-25%	+25%
Milk price	Yes	Yes
Beef price	No	Yes
Value animal	Yes	Yes
Hay silage making	No	Yes
Labour	No	No
Concentrate	No	No
Veterinary	No	No

Conclusions sensitivity analyses

Effects of different costs & prices

- Milk price affects ranking of sires significantly
- Beef price might affect ranking of Brown Swiss-sires and Simmental-sires slightly
- Value of the animals might affect ranking of sires slightly



Case: Slovenia - Conclusions

- Economic index ranks bulls differently from current TMI
- Economics need to be part of breeding goal
- **Proposal:** publish economic index on relative scale and continue scoring & publishing all traits that are scored now
- **Future scenario** part of breeding goal and economic index: which costs & prices under uncertainty?
 - Index is robust towards most of prices and costs on the farm
 - Milk price important for ranking of bulls; value of animals, beef price and production level affect ranking a bit

Further research questions

- Add somatic cell count as udder health trait to E.I.?
Calculation is somewhat complex
- Separate construction for a 'milk index' and 'beef index'?
- **Separate construction for 'organic index'?**

Acknowledgement

- Farmers
 - For providing information
- Breed association
 - For providing information and input
- Moorepark, Ireland
 - For using their farm-economic model as a basis
- EU
 - For funding Twinning project
- Department
 - Milena, Špela, Silvo, Stane, Marko, Gregor, Prof. Osterc for fruitful discussions and significant helping with adjustments
- Many more people
 - Abele, Roel, Damjan, Anka, ...



Thank you for your attention



Any questions?