A SELECTION INDEX FOR ONTARIO DAIRY ORGANIC FARMS

Paola Rozzi[1] and Filippo Miglior[2,3]
[1]OntarBio Organic Farmers' Co-operative,
[2]Agriculture and Agri-Food Canada, [3]Canadian Dairy Network
Guelph, ON, Canada

56th Annual EAAP Meeting, June 5-8, 2005, Uppsala, Sweden

Objectives

- Selection index based on organic farmers' priorities
- Organic Index different from conventional?
- One or several indices for organic farms?

Organic dairy farms in Ontario

- 45 certified farms = 0.9%
- Milk production = 0.4%
- 3401 dairy cows and heifers
- Present market value= $ 6.5 million
- 60 farms in transition (some with large herds)
- 100% organic feed and no antibiotics

Data

- Survey of 18 organic farms (40%)
- DHI official production data: 1998-2003
- Organic and conventional DHI records (1998-2003)

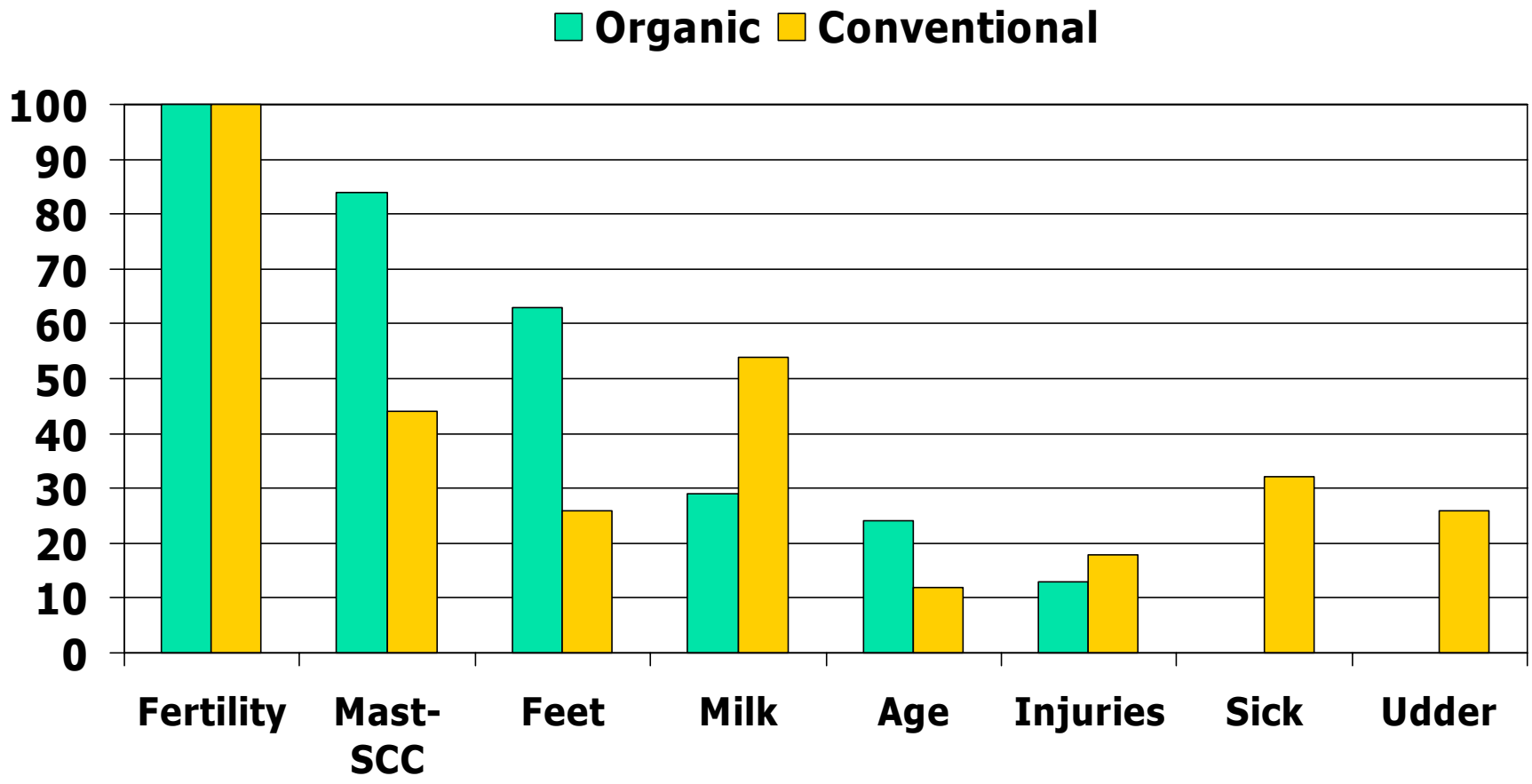
	Milking Cows #	Milk BCA kg/year	Fat %	Prot %	SCC (000)	Cows left herd * (%)
Organic	45	8069	3.93	3.23	309	28

BCA = production adjusted for breed, age (ME), stage of lactation
** includes cows culled, dead or sold, culling in 2003 was 21%*

Comparison with conventional farms

- Lower milk (- 20%)
- Higher fat % (+ 0.28)
- Similar protein% (+ 0.04)
- Smaller herd size (45 vs. 56 cows)
- Lower replacement (28 vs. 32 %)
- Higher SCC (+ 50,000)

Culling reasons relative to fertility



Health problems per year

Trait	Over all cows (%)
Feet Mastitis	~ 6
Calving Milk fever and Ketosis	~ 3
Injury and Sickness Metritis and Retained Placenta Bloat and Displaced Abomasum	< 1

Differences within organic

Milk Output by Production Level

Milk Level	Farms #	Milk kg	SCC (000)	Certification Year
High	4	9492	244	2000
Medium	8	8040	305	1992
Low	6	6980	368	1989

From high to low level:

- *higher fat%*
- *higher SCC*
- *longer in organic*

AI usage, breeds and crossbreeding by production level

Milk Level	AI cows (%)	Holstein cows (%)	Crossbred Cows (%)	Breeds of crossbred cows
High	100	100	0	none
Medium	76	91	9	BS (mostly)
Low	59	57	43	DB, MS (mostly) JE, BS (few)

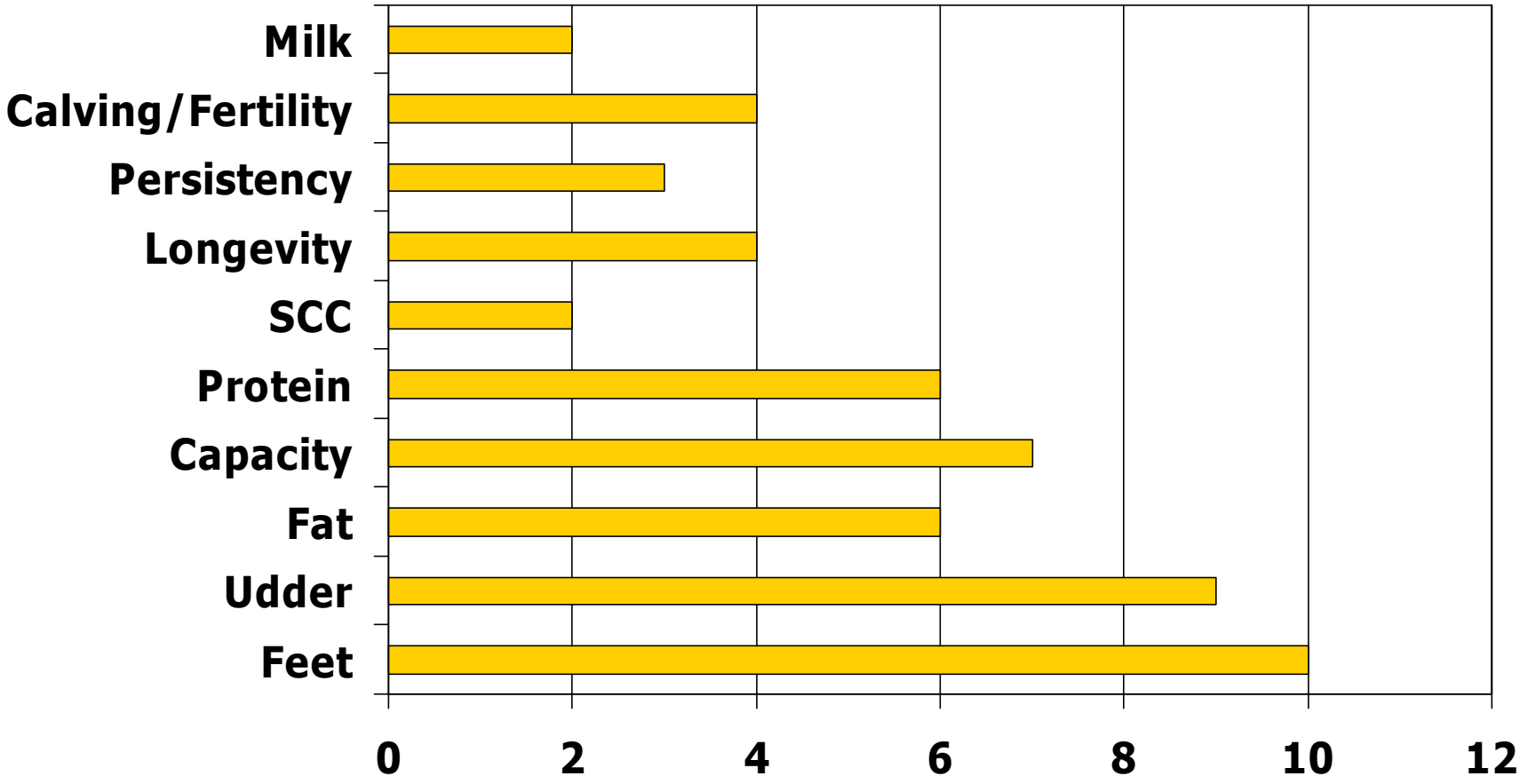
DB = Dutch Belted, MS = Milking Shorthorn
BS = Brown Swiss, SI = Simmental, JE= Jersey

Selection priorities for organic

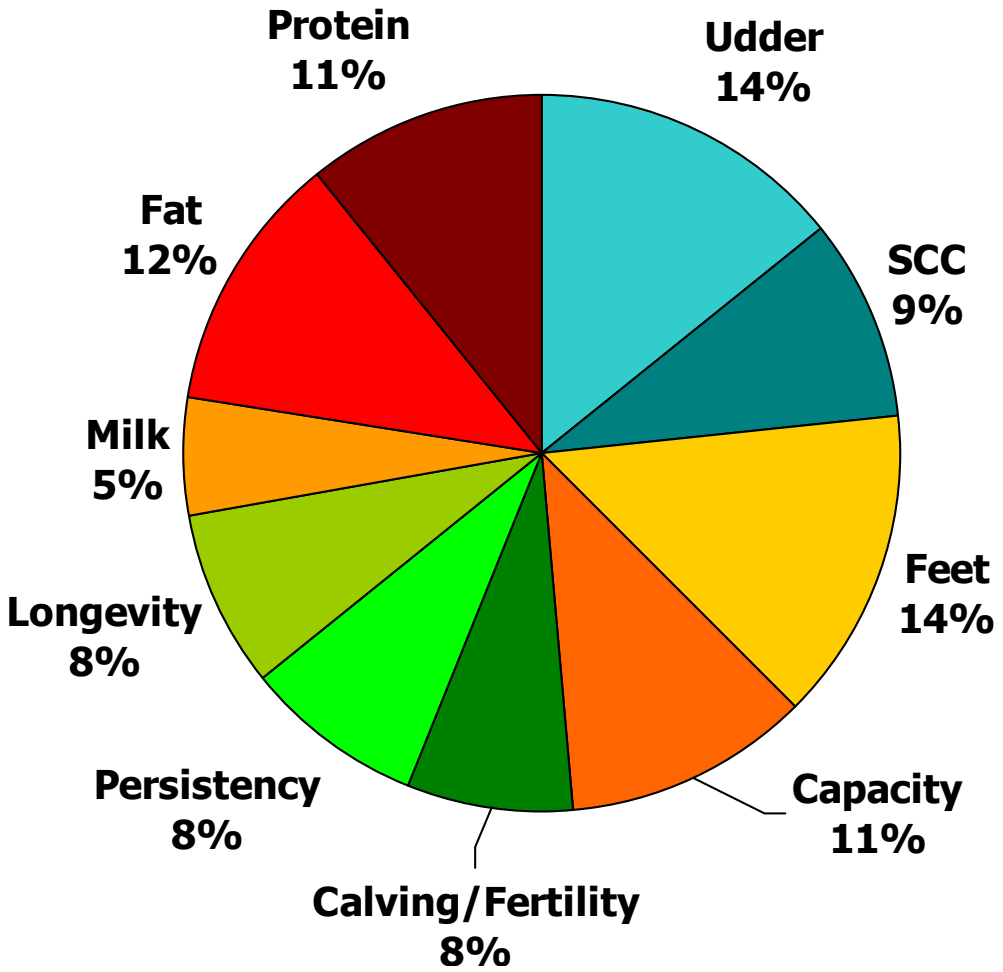
- Traits selected:
  - 1 = least important
  - 5 = most important
- **Functional traits more important than production**
- Average score by trait:

Udder	**4.0**
Feet	**4.0**
Capacity	**3.1**
SCC	**2.5**
Persistency	**2.3**
Longevity	**2.2**
Calving/Fertility	**2.1**
Fat	**3.3**
Protein	**3.0**
Milk	**1.5**

Selection Priorities for organic
n. score=5



Traits expressed in relative terms



Relative emphasis in Holstein selection indices

Country	Production Traits	Functional Traits
Israel PD01	80	20
Great Britain PLI, Ireland EBI Australia APR, New Zealand BW	75-66	25-34
Italy PFT, The Netherlands USA TPI, Canada LPI Switzerland ISEL	59-53	41-47
Germany RZG, France ISU Great Britain TOP	50	50
Denmark S-Index Sweden TMI	34-29	66-71
Organic Ontario	28	72

Van Raden, 2004; Miglior et al., 2005

Ontario Organic index and LPI

Index	Relative weights	
	Production	Functional
LPI	54	46
ORGANIC	28	72

Bulls	Correlations with LPI
ALL	0.878
Top 1000	0.701
Top 100	0.652

LPI and Organic: differences in main weights (%)

TRAIT	ORG	LPI
Fat	12	20.5
Protein	11	31
Herd Life	8	7
Feet & Legs	14	11
Capacity	11	4
Mammary System	14	14
SCS	9	3
Persistency	8	0
Fertility	8	5

Average EBV of top 100 bulls for Organic and LPI

	ORGANIC	ORG-LPI (SD)
Milk	917	-0.46
Fat	37	-0.52
Protein	31	-0.60
Herd Life	3.17	0.26
Feet & Legs	6	0.27
Capacity	4.8	0.61
Mammary System	9.1	0.25
SCS	2.80	-0.47
Persistency	68.8	0.25

Organic Index versus LPI

- Low correlations between Organic and LPI
- Organic:
  - far less weight on protein and fat
  - more on: persistency, capacity, SCS
- **Selection Index for Ontario organic farms is needed!**

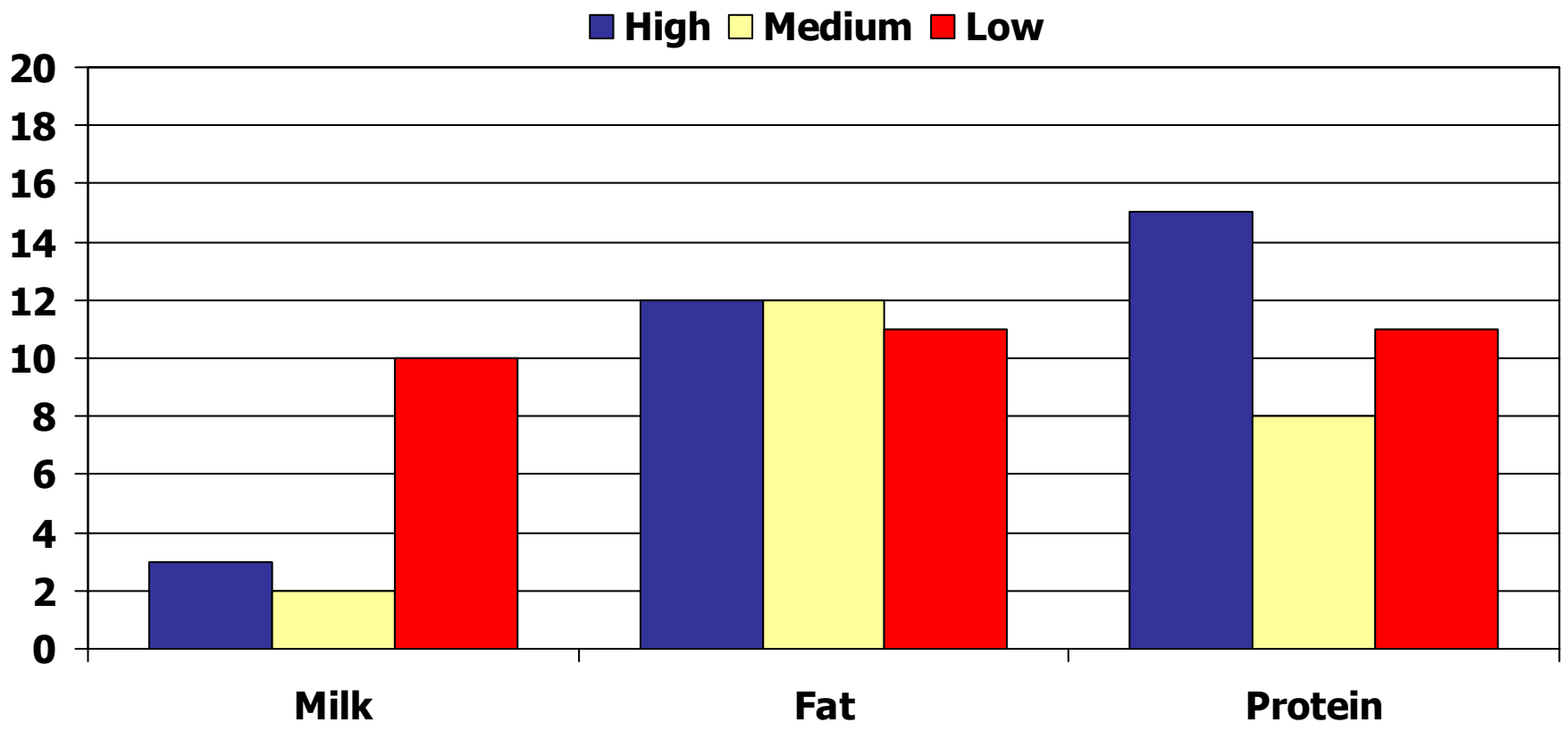
Different indices for organic?

- **Three Indices for Ontario organic:**

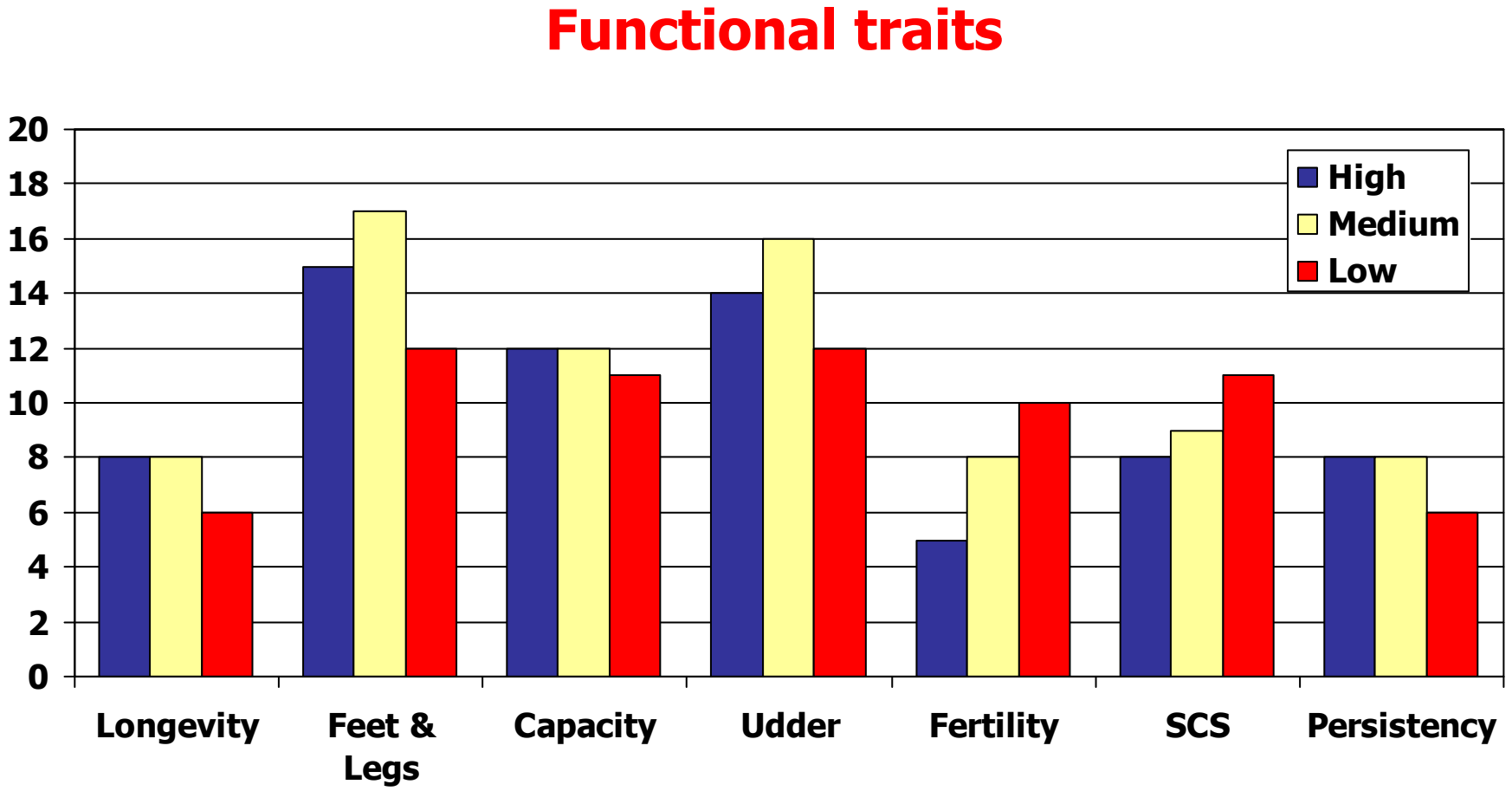
- Different selection policies at high, medium and low production
- Trait scores averaged by production level
- Index weights based on average scores by level

Relative Weights (%) in 3 Organic Indices: High, Medium and Low

Production



Relative Weights (%) in 3 Organic Indices: High, Medium and Low



Different indices for organic?

Correlations between Overall Organic Index and those based on milk level

Bulls	High	Medium	Low
All	0.995	0.992	0.995
Top 100	0.965	0.947	0.954

Grazing traits important for organic

- In Ontario survey, 40 % for grazing traits
- In Swiss survey, 77% asked for forage absorption capacity (Haas,2004)
- **Organic farmers want selection for better grazers**

Conclusions

- **Ontario organic producers should use specific selection index, not LPI**
- **Different organic selection indices not justified**
- **Research needed to identify and select for grazing traits**

Acknowledgements

- Financial support from OntarBio
- Production Data from CanWest DHI
- Surveyed farmers for their patience and cooperation