



The search for the ‘useful cow’: combining efficiency and health

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What are we after with the Holstein cow

Farmers view

- Milk production
 - Fat, protein, lactose as components -> **generating income**
- Health
 - Mastitis, fertility, calving traits, ketosis, etc -> **reducing cost**

Future of dairy sector: how will the world change?

- Increasing demand for food
- Increase of environmental awareness
- Fluctuation of milk prices
- Increase feed cost
- Increase raising cost

- Increase of influence of parties in food chain and society
- More regulation for usage medicine/ anti-biotics
- Larger herds

Dairy sector of the future: What does it mean for breeding and breed?

- Increasing demand for food
- Increase of environmental awareness
- Fluctuation of milk prices
- Increase feed cost
- Increase raising cost

Needs:
Efficient lifetime production

- Increase of influence of parties in food chain and society
- More regulation for usage medicine/anti-biotics
- Larger herds

Needs:
More health

Combining Farmers view and need for future

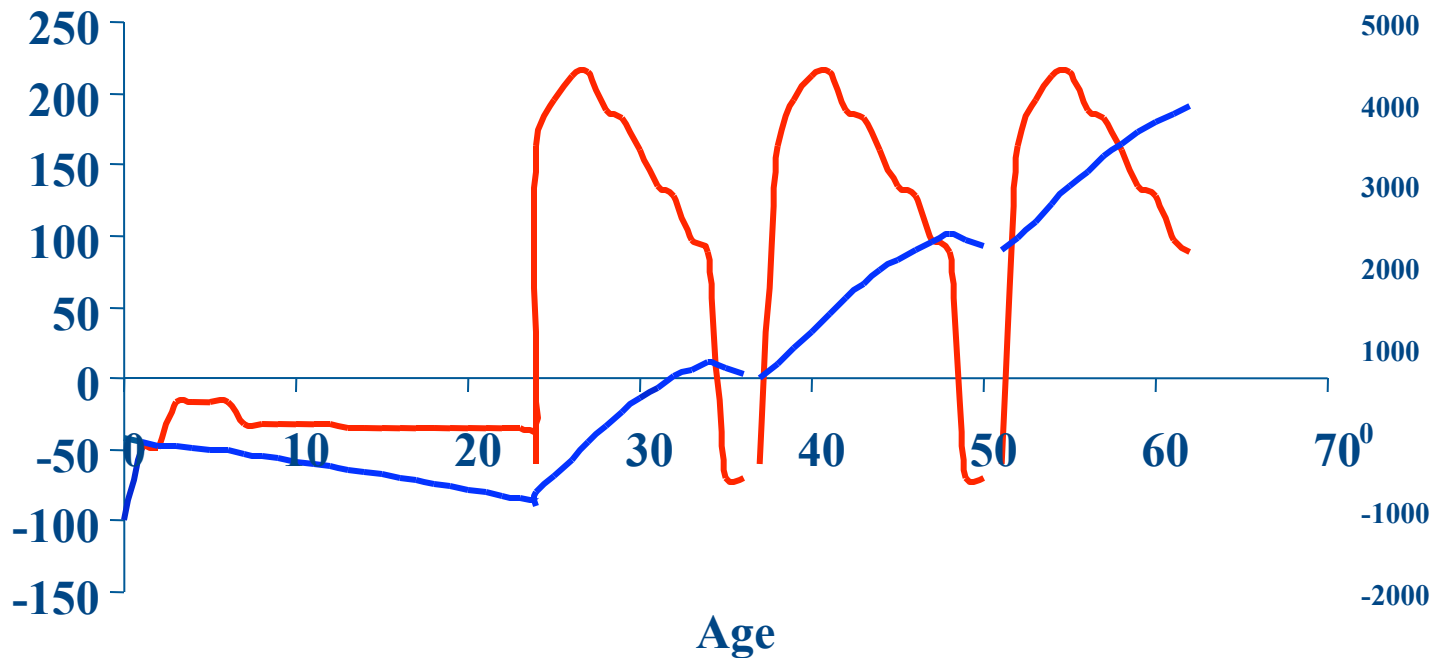
More income -> need efficient cow

Less cost -> need healthy cow (no problems)

CASHFLOW PER LACTATION AND FOR TOTAL LIFETIME

\$/Month

Cumm.



— Month — Cumulative

Efficiency – focus on cow's life (1)

% energy intake during the whole life converted into energy output in milk (and its components)

$$\text{Efficiency} = \frac{E_{\text{lifetimeproduction}}}{E_{\text{life}}} = \frac{E_{\text{lifetimeproduction}}}{E_{\text{raising}} + E_{\text{maintenance}} + E_{\text{lifetimeproduction}}}$$

Lifetimeproduction depends on:

- lactation production
- lactation length -> calving interval
- herd life

Maintenance depends on:

- body weight
- body composition

Raising depends on:

- age first calving
- body weight

Feed intake



Efficiency – focus on cow's life (2)

$$\text{Efficiency} = \frac{E_{\text{lifetime production}}}{E_{\text{life}}} = \frac{E_{\text{lifetime production}}}{E_{\text{raising}} + E_{\text{feed intake during productive life}}}$$

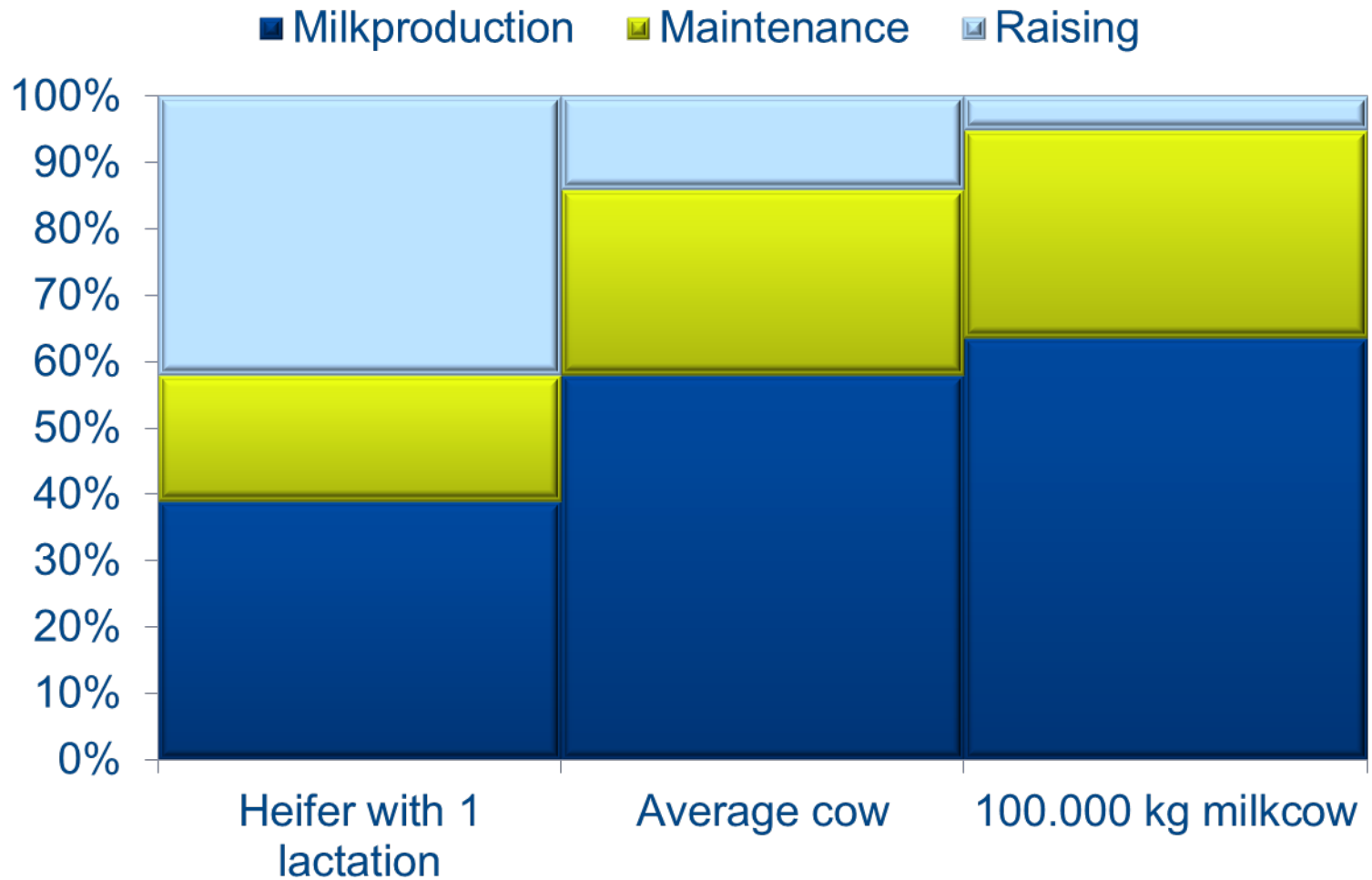
All derived from traits/breeding values:

- milk, fat and protein production
- herdlife
- calving interval
- age first calving
- feed intake

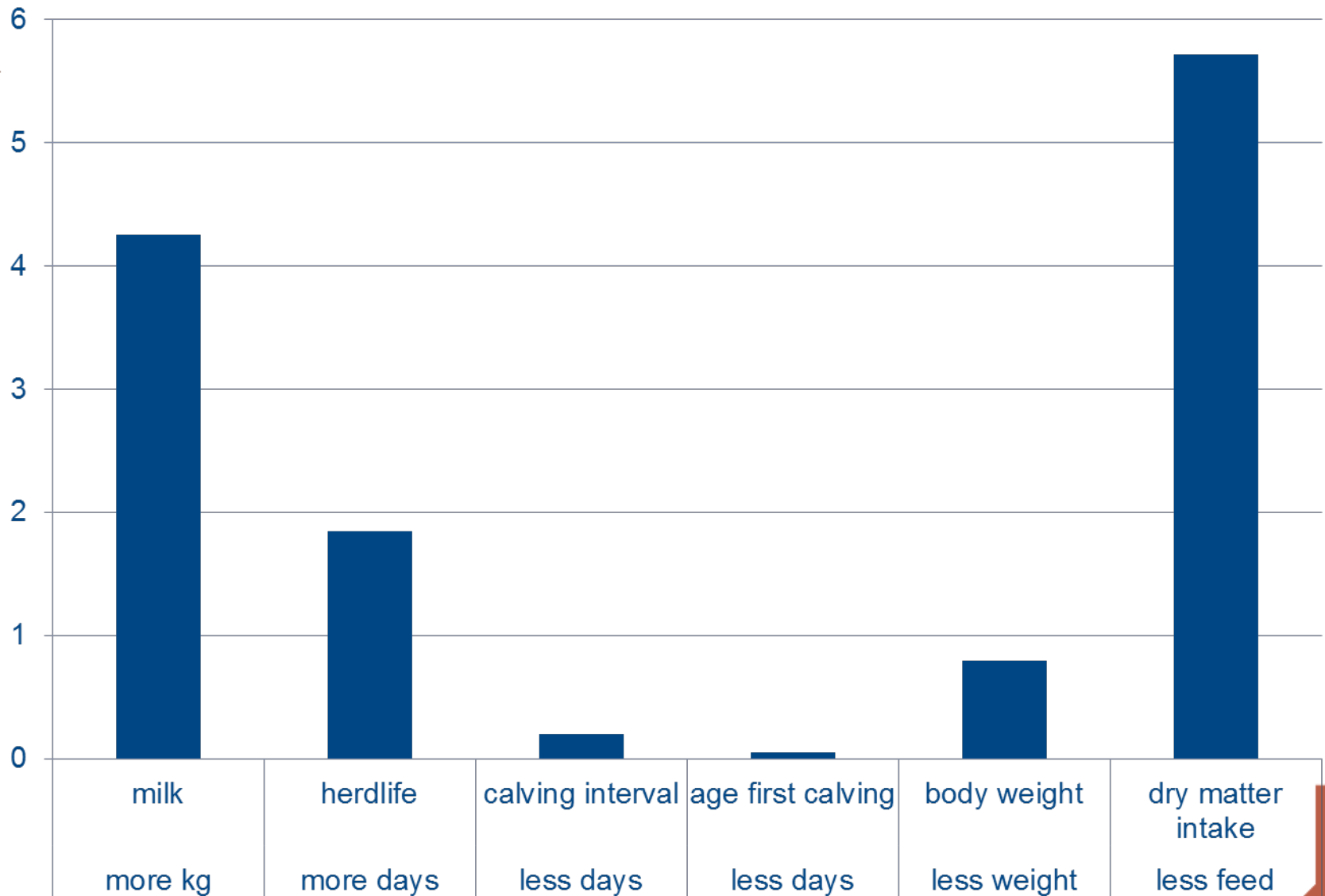


➔ Better Life Efficiency




How older, the more efficient



Effect change of trait on efficiency



Example in practice -> Better Life Efficiency

	 Delta Atlantic	 Cookiecutter Mom Hunter	 Snowrush
Efficiency (%)	+3	+5	+11
Milk	193	812	2052
Fat	3	29	45
Protein	23	26	43
Herdlife (days)	515	256	507
Calving Interval	106	102	98
Age first calving	104	109	103
Body weight	107	103	102
Dry Matter Intake	0.95	1.71	2.40

Efficiency: the risk for health?

Breeding for Efficiency means:

	efficiency
milk	+0.57
herdlife	+0.80

production ↑
 longevity ↑
 calving interval ↓
 age first calving ↓
 body weight ↓
 feed intake in relation with production

Health traits	milk	Inet	herdlife
clinical mastitis	-0.22	-0.20	+0.47
conception rate	-0.28	-0.27	+0.32
claw health	-0.10	-0.10	+0.54
ketosis	-0.30	-0.13	+0.12

Health index

Example: Better Life Health (BLH)

Traits in BLH
Mastitis
Claw health
Birth traits
Livability
Fertility
Ketosis



	Efficiency (BLE)
clinical mastitis	+0.30
conception rate	+0.10
claw health	+0.23
ketosis	-0.07

Correlation Efficiency – Health : 0.2 to 0.3

Relationship among health traits

	mastitis	Conception rate	Claw health	ketosis
Mastitis				
Conception rate	0.29			
Claw health	0.16	0.25		
ketosis	0.19	0.18	0.10	

- Among health traits : positive

- But every trait is different

-> separate breeding values needed for different health traits

Final remarks

Useful cow = more income and less problems
= efficiency + health

Efficiency and health go together

better than production and health

Increase herd life

-> better efficiency

-> better health

For the future

big role for feed intake

more information used in selection on health

Thank you for your attention!

