18 May 2005

Joint Nordic production indices

Gert Pedersen Aamand

Denmark, Finland and Sweden uses the same economic values when calculating their production index, called Y-index in Denmark, xxxx in Finland and Mjølk-index in Sweden

The following relative indices for milk production are published:

- Milk index: Breeding value for milk yield
- Fat index: Breeding value for fat yield
- Protein index: Breeding value for protein yield
- Production index: Total breeding value for yield, calculated on the basis of the breed's breeding goal for yield

The total breeding value for yield is a combination of the Milk, Fat and Protein-indices and the weight factors (V_{Milk}, V_{Fat} and $V_{Protein}$):

Production index = $V_{Milk} \cdot$ (Milk-index - 100)
+ $V_{Fat} \cdot$ (Fat-index - 100)
+ $V_{Protein} \cdot$ (Protein-index - 100)
+ 100

The economic value of 1 kg of protein is for Red breeds and Holstein set to 5.8 times the economic value of 1 kg of fat. For Jersey the relative weight on 1 kg of protein is 3 times the relative weight of 1 kg of fat.

Table 1. Breeding goal for yield of the Nordic dairy cattle breeds, expressed in weight factors for the calculation of the production index and in relative values of milk, fat and protein

	Weight factors to calculate production index			Relative value of		
	Milk	Fat	Protein	1 kg milk	1 kg fat	1 kg protein
Red Breeds	-0.25	0.25	1	-0,009	0,171	1,000
Holstein	-0.25	0.25	1	-0,007	0,170	1,000
Jersey	-0.30	0.40	0.9	-0,008	0,333	1,000

The correlations between the production index and the single yield traits are in table 2. The proportion of progress one get in the single yield trait by selection on the Nordic production index is shown in table 2. E.g. in table 2 we get 96% of the possible genetic progress in protein yield by selecting the Nordic BV for production.

Table 2. Correlation between EBVs for production index and EBVs for milk, fat, protein, % fat and % protein

	Milk	Fat	Protein	% Fat	% Protein
Red Breeds	0,76	0,86	0,96	0,22	0,05
Holstein	0,75	0,85	0,96	0,13	0,24
Jersey					