

## **The Israeli Selection Index**

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The Israeli breeding program is monitored by the Israeli Breeding and Herdbook Committee, which includes representatives of the Sion A.I. Company, the Israeli Cattle Breeders Association, and scientists of the Department of Ruminant Science of the Institute of Animal Sciences of the Agricultural Research Organization.

## **PD11 – The Israeli Breeding Index**

Index coefficients for milk, fat, and protein were computed to maximize expected farmer profit. The index coefficients were computed by differentiating the profit equation with respect to each component. The index coefficients were normalized so that one standard kg of milk with 3.574% fat and 3.186% protein would have a unit value. The index coefficient for somatic cell score (SCS) was computed so that expected changes for SCS would be close to zero. The index coefficients for daughters' fertility, herd life, persistency, and calf mortality were computed to account for the economic value of those traits relative to milk production. The current Index PD11 was updated in January 2011, to adjust for the increase in the price for milk fat in the world market. PD11 is as follows:

$$\text{PD11} = 7.9 (\text{Fat Kg}) + 23.7 (\text{Protein Kg}) - 300 (\text{SCS}) + 26 (\text{Fertility \%}) + 0.6 (\text{Durability days herd life}) + 10 (\text{Persistency \%}) - 3 (\text{Dystocia \%}) - 6 (\text{Calf Mortality \%}).$$

Expected genetic gains after ten years of selection using this index are: 509 kg milk, 20.0 kg fat, 17.7 kg protein, - 0.11 SCS, 1.2% daughters' fertility, 107 days herd life, 1.7% persistency, -0.83% dystocia, and -0.67% calf mortality.

## **Genomic Evaluations**

In 2013 Sion initiated a project with CRV of the Netherlands for joint genomic evaluations of bulls, cows, and calves based on the Illumina 54K BeadChip. Results of extensive evaluations for ten traits indicate that reliabilities of genomic evaluations of young bulls are increased to 50% relative to parent averages for the Israeli breeding index. Routine genomic evaluations of young bulls should be implemented by 2015.