

The Israeli Selection Index

Ephraim Ezra — Herdbook Manager, ICBA [ephraim@icba.co.il]

Dr. Joel I. Weller – Institute of Animal Sciences, Dept. of Genetics, A.R.O.
[joel.weller@mail.huji.ac.il]

The Israeli breeding program is monitored by the Israeli Breeding and Herdbook Committee, which includes representatives of the farmers, the Israel Cattle Breeders Association, scientists of the Department of Ruminant Science of the Institute of Animal Sciences of the Agricultural Research Organization, the SION AI Institute and the Hachaklait Veterinary Services.

PD16 — 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 PD20 was updated in December 2020, to adjust for the increase in the price for milk fat in the world market. PD20 is computed as follows:

PD20 = 9.94 (Fat Kg) + 19.88 (Protein Kg) — 300 (SCS) + 26 (Female fertility %) + 0.6 (Days herd life after first calving) + 10 (Persistency %) — 3 (Dystocia %) — 6 (Calf Mortality %).

Expected genetic gains after ten years of selection using this index are: 952 kg milk, 40.0 kg fat, 29.8 kg protein, – 0.13 SCS, 0.43% daughters' fertility, 137 days herd life, 3.28% persistency, -0.76% dystocia, and -0.28% calf mortality.

Genomic Evaluations

In 2013 Sion and ICBA initiated a project with CRV of the Netherlands for joint genomic evaluations of bulls, cows, and calves. Results of extensive evaluations for ten traits indicated that reliabilities of genomic evaluations of young bulls are increased by 50% relative to parent averages for the Israeli breeding index.

Routine genomic evaluations of young bulls were implemented in 2015.

Approximately 200 bull calves are currently genotyped each year.