

Joint Nordic fertility index

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In the NAV-evaluation for fertility we consider the following fertility traits:

- AIS: Number of insemination (heifers and cows)
- ICF: Interval from calving to first insemination (cows)
- IFL: Interval for first to last insemination (heifers and cows)
- NRR: Non-return rate (heifers and cows)
- HST: Heat strength (heifers and cows) (only data from Sweden)
- FRT: Fertility treatments (cows)

A common Nordic fertility index is calculated by weighing AIS, IFL, ICF, and FRT together based on their economic value:

The economic value for each trait includes:

- AIS (heifers and cows): Cost of semen and work associated with the insemination
- ICF (cows): Cost of one more day open
- IFL (cows): Costs of one more day open (equal to ICF)
- IFL (heifers): Costs of a day later calving age
- FRT (cows): Costs of a fertility treatment

Given these definitions of economic values, the economic value of HST and NRR are zero. This means that the economic value of HST and NRR are expressed through the other fertility traits. The only economic weight, which HST has in this case, is a value due to less work when detecting heat when HST is stronger. This value is assumed to be zero.

Note that HST and NRR are still important traits as they work as indicator traits for the other fertility traits in the multi trait evaluation.

Table1. Traits included the index and in the breeding goal for fertility

	Traits in index	Traits in breeding goal
AIS heifer	x	x
IFL heifer	x	x
Heat strength, heifers	x	
ICF cows	x	x
AIS cows	x	x
IFL cows	x	x
Heat strength, cows	x	
% Fertility treatment, 1. lactation cows	x	x
% Fertility treatment, 2. lactation cows	x	x
% Fertility treatment, 3. lactation cows	x	x

Economic values

Pedersen, et al. 2003 did a very detailed calculation of economic values for fertility traits. These calculations are modified and used as the fundament for the joint Nordic economic values for the fertility index (table 2). In table 1 the economic values per unit of each trait is expressed in DKR. Pedersen, et al. 2003 did the calculations per breed and found very small breed differences. The values in table 1 are expressed per animal, but it does not matter in this case since we only look at traits expressed at females.

In the table all values for the cow traits AIS, ICF and IFL include first and later parities (on average 2.5 lactation) since we use a repeatability model for these traits. Heifer traits are only expressed once.

Table 2. Economic values of fertility traits, NAV fertility index (expressed in Danish kroner, DKK)

Trait	Economic value, DKK expressed per 1. lact cow
AIS heifer, per extra ins	200
IFL heifer per day	6
ICF cows per day	13
AIS cows per extra ins (incl later lact. it means times 2.5)	500
IFL cows per day (incl later lact it means times 2.5.)	17
% Fertility treatment, 1. lact cows	6
% Fertility treatment, 2. lact cows	6
% Fertility treatment, 3. lact cows	6