Breeding for stronger youngstock

NAV has introduced a new breeding value for survival of heifers and young bulls in the rearing period. The index is only be shown for proven bull, but in 2015 it will also be available for genomic tested young bulls.

Calves and youngstock that die during the rearing period result in lost revenue by causing fewer heifers for replacement or slaughter and often in higher veterinarian costs. It is also an animal welfare issue.

Index for youngstock survival is published on NAV Bull Search. The index is planned to be included in NTM later in 2015.

Two periods for heifer and young bull
Data to calculate the index comes from heifers and young bulls. For both heifers and bulls rearing period is divided into 2 periods. The early period is from day 1 to day 30 after birth. The late period is from day 30 to day 184 after birth for bulls and day 458 after birth for heifers.

The most important reason for having 2 periods is that the genetic correlation between the 2 periods is quite low (0.5). This implies that it is different genes that affect survival of calves that are few weeks old, and calves that are several months old.

Another reason is that a large part of bull calves are moved to fattening herds and some of the heifers are moved to herds specialised in raising heifers around day 30 after calving. Dividing the rearing period into two parts makes it possible to more correctly adjust for differences in management level.

From Denmark and Finland data from both young bull calves and heifers are included in the genetic evaluation for youngstock survival, whereas only data from heifers is available from Sweden.

Low heritability but large variation
The heritabilities of the early and late period in young bull calves and heifers are low (1-3%). However proven bulls have large groups of male and female offspring which means that the reliabilities of breeding values are high. Also because we have collected data on survival for young animals for many years already, we have a good basis for calculating reliable genomic breeding values for this trait.

There are large differences in survival between progeny groups of best and worst AI bulls. This means that it is possible to breed for better survival and to achieve genetic progress. In table 1 is an example for 2 bulls. The good bulls' calves have survived much better than the bad bulls' calves. This is also reflected in the index for youngstock survival, and the good bull will get 124, whereas the bad bulls get 76

Table 1. Example of differences in youngstock survival between two bulls

	Good bull		Bad bull		%Difference in survival
	Number of calves	%Survived	Number of calves	%Survived	
Heifers, early period	3400	97.9	4300	97.0	0.9
Heifers, late period	2200	98.5	4200	94.6	3.9
Bulls, early period	2100	97.2	4400	95.1	2.1
Bulls, late period	2000	97.1	4100	91.6	5.5

Constant genetic level

The genetic level for youngstock survival has been quite stable or slightly favourable during the past 20 years (figure 1).
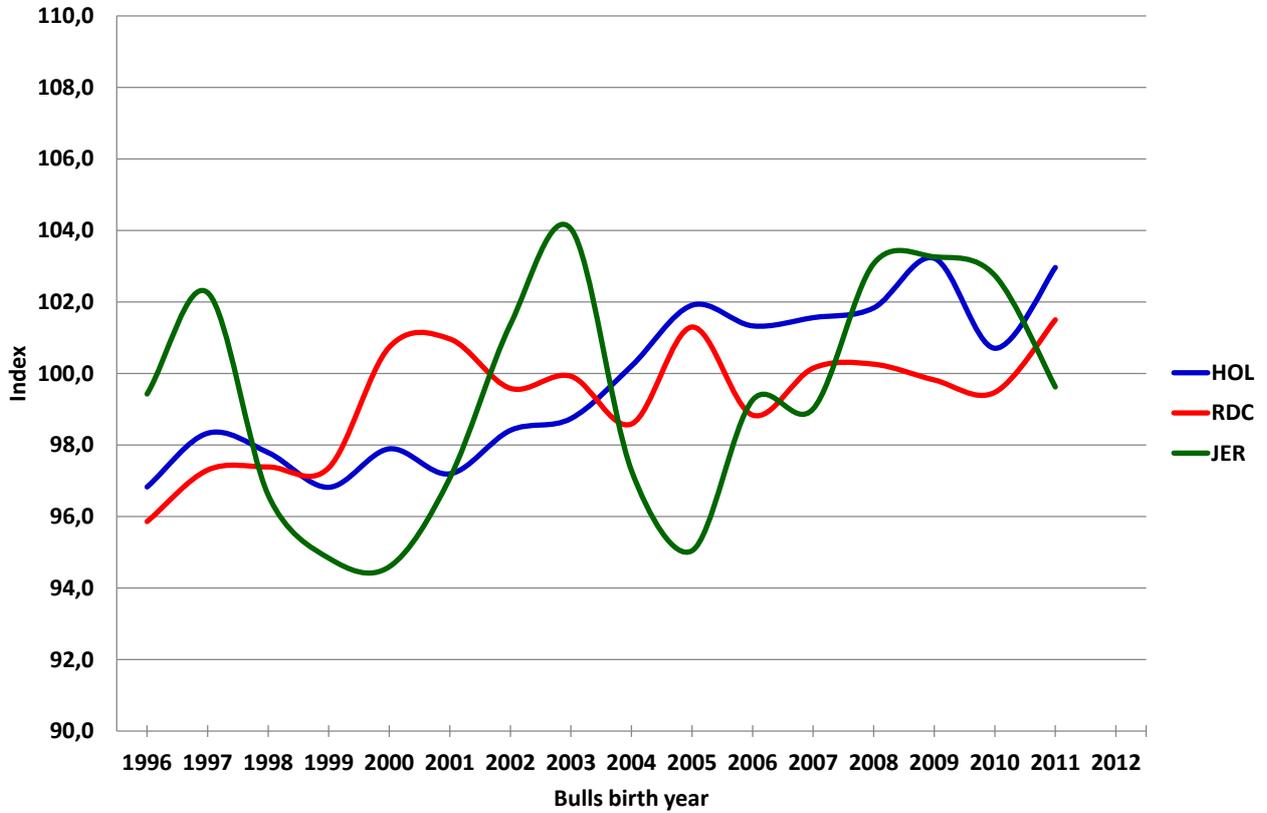

Figure 1 Genetic trend for youngstock survival for RDC, Holstein and Jersey bulls born from 1996-2011