

28. august 2014

Economic optimal feeding level in OptiFor/NorFor

Background

NorFor is working on the implementation of a module, which main purpose is to help the advisor/farmer to decide the feeding level (MJ/cow/day) in the herd that will result in most profit, i.e. maximize milk income over feed costs (MOF, or milk minus feed).

Purpose

The purpose of this report is to demonstrate the functionality and exemplify how Economic optimal feeding (EOF) can/will work on a practical farm with or without feeding controls (OFC). The purpose is also to gather more insight in to how EOF becomes more user friendly and these experiences will be used in the implementation in the national IT-tools.

Results

The calculation of EOF is based on 4 OFC's from Wanas Gods in Sweden (see Table 1). The estimation of splitting up average ECM-yield between primi- and multiparous cows was based on Danish lactation curves. This resulted in 7% more ECM from older cows compared to average yield of the whole herd at 124 DIM and a 7% higher energy intake was also assumed.

Table 1. OFC-data from Wanas Gods and estimation of ECM-yield for primi- and multiparous cows.

Dato	De 4 siste OFC'er			
	Okt 2013	Dec 2013	Feb 2014	April 2014
ECM (kg/ku/dag)	29,4	30,1	29,7	29,7
NEL (MJ/ku/dag)	144	158	155	139
ECM ældre	31,4	32,2	31,7	31,7
MJ ældre	154	169	166	149
ECM 1.kalvs	25,6	26,2	25,9	25,9
tjek ECM	29,4	30,1	29,7	29,7

The estimated ECM-yield and energy energy intake from older cows in Table 1 was used to fit an ECM response function for this particular herd (see Figure 1).

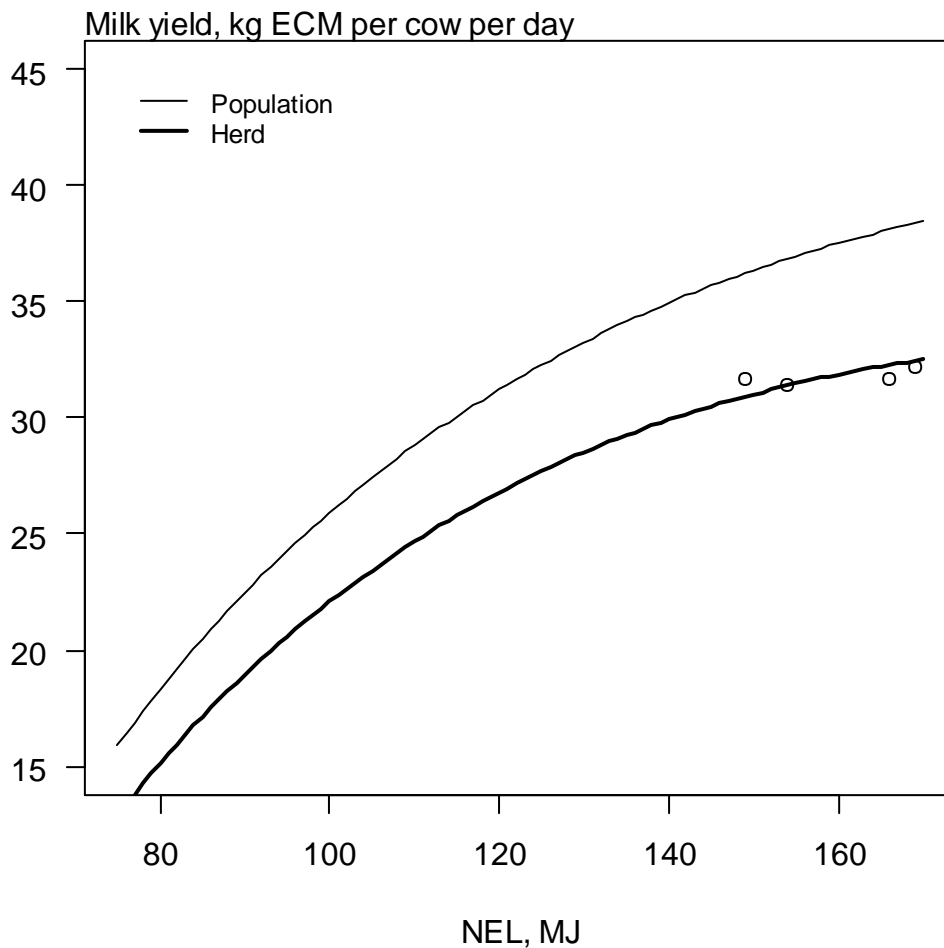


Figure 1. Response in ECM-yield based on OFC-data from the herd (thick line) and from the literature (thin line; population with DIM=124, Jensen et al., 2014) for older SRB cows. There is a lower production in the herd, partly due lactation stage (>124 DIM ?) and maybe due to an active choice regarding the use of concentrates. Notable is the different curve-shape of the response that indicates very limited response to additional energy....

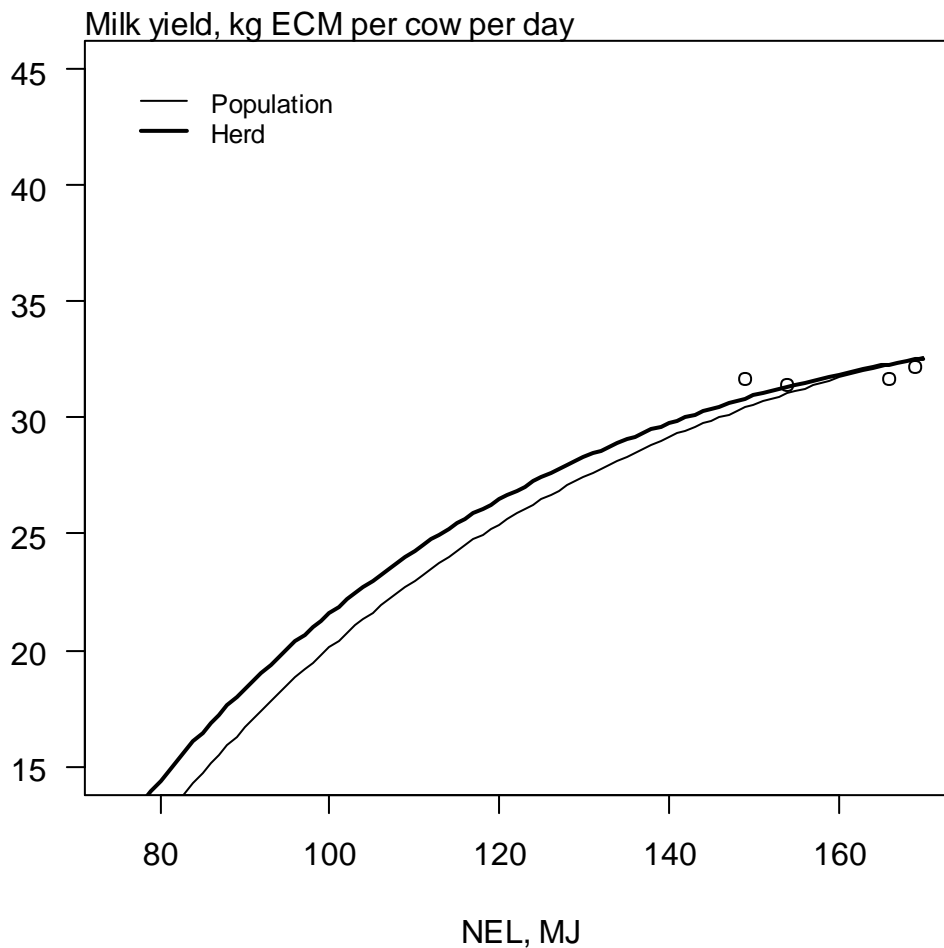


Figure 1. Response in ECM-yield based on OFC-data from the herd (thick line) and from the literature (thin line; population with DIM=70, Jensen et al., 2014) for older NRF cows.

Based on the herd specific response function and prices of milk (4,45 kr/kg ECM), meat (30 kr/kg SW), feed (0,51 kr/MJ conc & 0,31 kr/MJ roug) and roughage quality (6,5 MJ/kg DM & 0,47 FV/kg DM) the optimal feeding level was estimated to 172 MJ for older cows (see figure below), i.e. a higher energy level than what is used today (160 MJ in the high yielding group, according to MiaD).

Recommendation: Increase concentrates allocation (1/2 kg/d) to cows in the first half part of lactation and monitor if production will increase accordingly

