

New technology and optimisation improve dairy farms' competitiveness

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Adopting automated milking systems improves the productivity growth of dairy farms and, thus, their prospects of long-term survival. The treatment of diseased cows, along with production of replacement stock in a planned manner and with new technology, is economically justifiable. In her doctoral thesis, Anna-Maija Heikkilä, Lic.Sc. (Agriculture and Forestry) of MTT Agrifood Research Finland studied technology choices and optimal herd replacement on dairy farms.

Her dissertation shows that an increase in farm size leads to greater productivity growth, irrespective of the milking system. However, the growth was found to be most pronounced on farms that had adopted robotic milking.

"The direct effect was linked to technological change, but automation may also solve problems related to the availability of skilled labour. Thereby, automatic milking opens access to larger herd size, which is a condition for improving productivity growth in the Finnish dairy sector," Heikkilä comments.

Investment subsidies play a significant role in farmers' investment decisions. This was evident both from the modelling of the switch to robotic milking and the changeover to loose-housing technology, a prerequisite for robotic milking.

In her dissertation, Heikkilä examined tactical and strategic choices, made by dairy farmers, as a means of improving the economic

performance of Finnish [dairy farms](#), and, thus, their competitiveness in the market.

Treatment of diseased cows is economically profitable

The optimal rules for disposal of [dairy cows](#) are almost identical for healthy and diseased cows. The results show that, as a general rule, treating a diseased cow is more profitable than replacing the animal with a first-lactation cow. However, a permanently low milk-production capacity makes it economically justifiable to remove the cow from the herd.

"Therefore, farmers' awareness of the real costs of premature culling and the gains that can be achieved by treating a diseased cow must be improved. Optimisation tools, based on farm-specific input data, are needed for determining the best replacement decisions and, hence, optimal reproduction policy," Heikkilä says.

New technology has worthwhile benefits in herd reproduction

Heifer-calf production can be accelerated through the use of sex-sorted sperm in insemination. Sex-sorted sperm should only be used with heifers; for cows, the traditional insemination method is a more profitable choice. Embryo transfer alone produces a favourable economic result, without any need for selection of the calf's sex in advance.

"The optimal combination of the various reproduction methods must be determined herd-specifically, since it is affected by many farm-specific factors, along with current price relationships," Heikkilä reminds us.

Provided by MTT Agrifood Research Finland

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