The economic aspects of dairy heifer management

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Increasing productivity of dairy cattle has long been the goal of farm development. During recent decades, the productivity of dairy cows has increased as a result of advances in animal breeding and modern technology. Modern methods of dairy cattle husbandry are based on effective herd management. Breeders want to know the definition of optimum size are mostly based on live weight and some body measures because they are relatively easy to be determined. But recommended values should reflect much more complicated relationships, they should take into account body condition, reproductive performance, feed consumption, etc. The objective of rearing dairy heifers is to produce high-quality dairy replacements at low costs. A basic approach in reducing period by lowering the age at parturition. In Slovakia the rearing period lasts 23 – 26 months.

However, because of various biological interactions with growth rate, the ultimate economic outcome of such a reduction in rearing time will depend on the balance between the possible advantages (such as decreased feed costs and lower overhead costs) and disadvantages (such as lower conception rates and reduced milk production per lactation).

The objective of this paper is to describe the general outline of a stochastic dynamic programming model developed to optimize the rearing strategy of individual heifers. The parameters (age, season, body weight, reproductive state and maximum prepubertal growth rate) of the heifer model have been chosen to represent the Holstein population in the Slovakia. However these input factors can easily be modified and adapted to reflect the conditions of a different production system.

The basic rule of replacement heifer rearing optimization is a shortening of nonproductive period by earlier mating and lower age at first calving. Advantages of this approach are a decrease in fed costs, increase in production calculated per age and decrease in costs per animal.