Economic consequences of immediate or delayed insemination of a cow in oestrus

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In several previous studies the optimal calving interval of a dairy cow was determined. Knowing the optimal calving interval is however not very useful because insemination decisions have to be made at the moment the cow is in oestrus. In the current study, a user friendly decision support tool that can be used by dairy farmers to determine the economic consequences of immediate or delayed insemination for a cow in oestrus is developed. The tool is a deterministic model and build in Microsoft Excel. The whole lactation of an individual cow was simulated and daily milk yields were estimated using modelled lactation curves. The probability of oestrus detection and conception are made cow-specific and are dependent on the daily milk production. The user of the tool has to enter average herd and cow characteristics, such as 305-day milk production, day in lactation and parity. The user of the tool also has to enter economic parameters such as the revenues for a calf and the costs per insemination. The tool calculates the expected number of calves, the number of inseminations, the probability of culling, the calving interval and the milk production of a cow for both insemination alternatives. These numbers were used in a partial budget approach to compare the costs and revenues of both insemination alternatives. The utility of the tool was illustrated using data on 90 cows in oestrus (provided by ten Dutch dairy farmers). For the majority of cows the best decision was to immediately inseminate the cow in oestrus, but for most heifers with a flatter lactation curve the best decision was to delay the insemination. The economic effect of delaying the insemination was however small, on average -€18 per cow per year. This tool can be used by farmers to help making the best economic decision for a cow in oestrus.