

WHEN TO SELL THE ILL COW?

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In Hungary hundreds of thousands of cows produce milk for us. A common disease of them is mastitis, that influences their productivity and profitability substantially. The usual practice is to decide on a rule of thumb basis whether the ill cow should be kept or sold. E.g. they are kept till the fifth mastitis case occurs. The present study investigates this problem from a mathematical modelling point of view. The relative amount of the possible lost profit is in the order of magnitude of 10s of percentages, which is quite large, especially regarding the profitability outlooks of the dairy branch.

The problem lies in the personal relationship of the farmers to the cows, and in the complexity of the estimation of the uncertain future scenarios. We present a model that is based on collected historical data on the distribution of several model parameters such as the length of the illness, the amount of medicine needed, the number of inseminations required to get into the next lactation cycle etc. The applied methodology is microsimulation (i.e. we simulate all possible event one-by-one) and stochastic optimization. Our typical result is a suggested decision on the basis of the expected value of the profit/loss for the given animal.

The simple program that is capable to solve such problems with straightforward input data is available for smart phones and tablet (having Android 6.0 or newer operating systems) at

www.inf.u-szeged.hu/~banhelyi/Buu

In the conference talk we shall report on the first results that confirm our research expectations in terms of improvement of the business decision. The ongoing research will focus on a recommendation system type data mining technology that can utilize the local specialties of the actual dairy farm in question, and to validate the additional advantage involved in it.

References

Economic modelling of the transition from a travel times based to a travel time based ticket system. Research Report for the Szeged Transportation Inc., in Hungarian (Az utazásszám alapú jegyrendszer időalapú jegyrendszerre történő átállításának gazdasági modellezése), KNRet, Szeged, 2010.

Bernát Almási and Endre Palatinus: Computational modelling of the economic effect of the travel time based ticket system (In Hungarian). Student Research Competition (TDK) University of Szeged, 2010.