

STUDY REGARDING THE USE OF PEDOMETERS IN DAIRY FARMS

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Abstract. Dairy equipment designed for automatic milking requires advanced systems, which integrate the most innovative automation technologies for the mechanical milk collection process. Without exception, these installations are run by computerized processes. Nowadays, in developed countries, the milking parlors in dairy farms are equipped with electronic computers which serve the milking process and farm management.

Keywords: identification, automation, optimization, management

INTRODUCTION

With the help of new technologies dedicated to dairy farms we aim, on one hand, to optimize the interrelationship between the animal and the milking machine, on the other hand, to increase the productivity of milk processing. Different levels of automation control are available. You can automate the entire operation or selected parts.

Milking parlors with partial automation, perform the milking process automatically, except that the attachment of milking cluster is done manually.

These installations are equipped with computerized programs, which include: automatic attach and detach equipment of the milking cups, electronic devices for detecting and processing the parameters of the milk flow rate through the milk analyzers (provides an accurate, adjustable algorithm for automatic stoppage of milking when milk flow decreases, and timed vacuum closure for smooth release of the cluster from the udder), automatic pre-milking stimulation device, which optimizes the functional parameters of the milking installation and allowing adjustments of rates and ratio or automatically adjusted pulsation according to the flow of milk.

Moreover, every field of activities in the farm is automatized, that will help you manage: the flow of the herd throughout the farm and directing them to the milking platform: entry gate in the milking parlour; rapid exit gates; preparing the udder for milking process, disinfection of teats after milking; washing and disinfection of milking installation.

MATERIAL AND METHOD

The items of automatization (fig.1) are usually applied at the milking platform, as well as at the milking installation situated in the stall. This comprehensive management software for advanced dairy farm and herd management enables: detach and automatic cluster removal, simplifying the work of the milker and increasing the milk productivity; the milk output is carried out by milk pumps, provided with special filters situated at the way out, facilitating the path of the milk to the cooling and collection systems; washing and disinfection of the milking equipment is achieved in the milking parlour, without the need to disassemble the equipment, it is done automatically, closed circuit, based on electronic

controlled programs. The washing programs adapt perfectly to each type of milk parlour, no matter the design of the parlour, length or number of devices; automatic identification

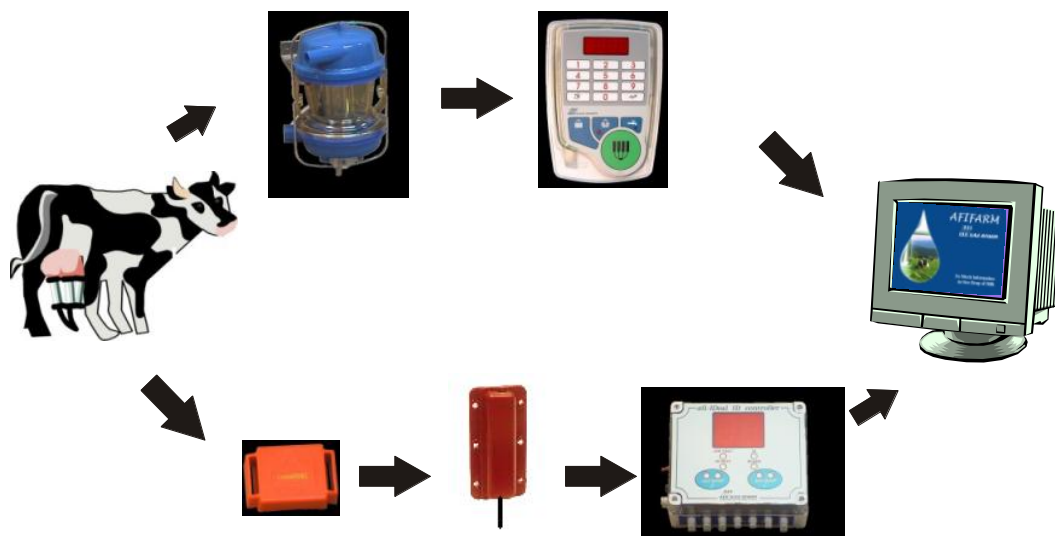


Fig.1 Tools for comprehensive management with computer display for herd and milking process automatization by tracking the animal during and after milking (source SC AFIBANAT)

RESULTS AND DISCUSSION

In the current case study we will approach the issue that refers to animal identification tools (fig.2) (attached to each cow, either in the ear, neck or leg-**pedometer**).

Pedometer's purpose is to track the daily activity of the animals through counting the steps of the animals (in order to detecte heat). Some types of pedometers record physiological parameters including the rest period.

The synchronisation efficiency of artificial insemination in the optimal moment of heat determines, the increase of pregnancy rate, avoiding loss of cycles and implicitly increase in milk production. Improves herd management and saves money and time, though increase profitability. This tool which measures the activity assures a transmission by radio frequency, which sends data every hour day and night, regardless of the cattle position throughout the farm.



Fig.2 Pedometer (source www.Afimilk.com)

Data recorded by the pedometer, are sent to the module in PC, through the use of an antenna, which processes and generates reports necessary for the farm management, but also for health alerts, heat and calving.

The core of an excellent monitoring activity is to provide quality data. These tools used to measure activity are last generation systems dedicated to detecting the optimal insemination period, providing a clear image on the animal behaviour, together with detailed information.

From the study case we can observe the fact that all of the large companies producing dairy equipment focus on improving the animal welfare. Globally, the first company to produce these pedometers is “Afimilk” from Israel, represented in our country by “Afibanat” company headquartered in Timisoara.

The efforts made nowadays to increase the cow’s comfort requires performance monitoring and control means. The pedometer combines standard activity data with valuable information about the cow, its rest and restlessness. This combination includes most parameters necessary to assess correct the comfort and welfare of the cows.

Currently, in our country, some farmers already use this identification and monitoring system for animals, which can be used either for cattle or small ruminants. Through these pedometers, the farm manager is able to detect in real time individual modifications or group behaviour for animals and also he has the possibility to interfere and avoid immediately serious health problems, maintaining the herd on a high comfort range.

Below, in the pictures, we can observe (graphical) informations transmitted by the pedometer to computer: rest time (fig. 3), animal activity (fig. 4), restlessness rate (fig. 5), for each animal. Afterwards the information is collected and evaluated for each animal.

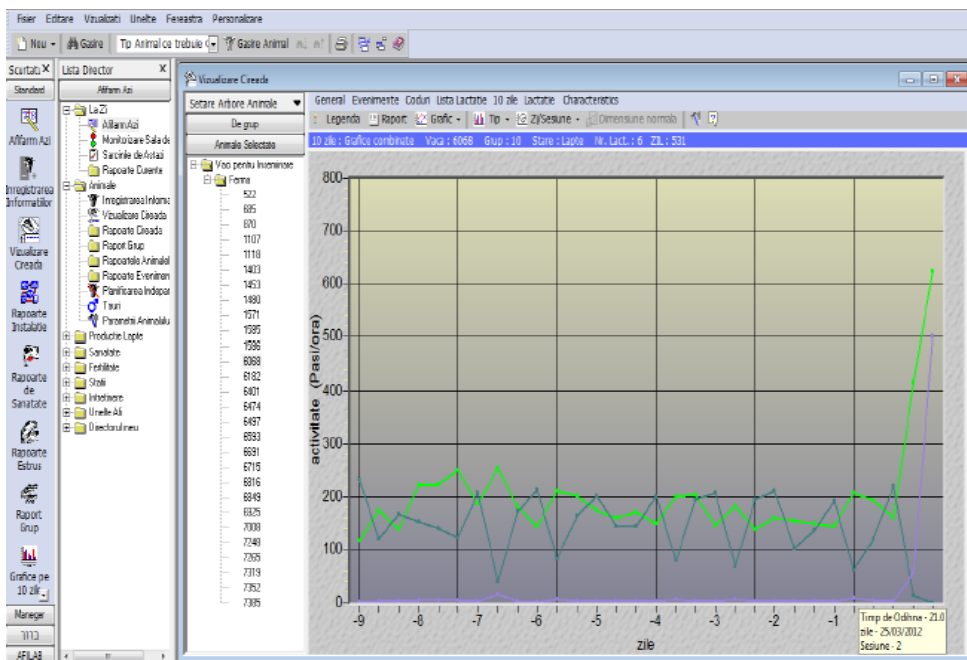


Fig. 3. Rest time (source S.C. AFIBANAT)

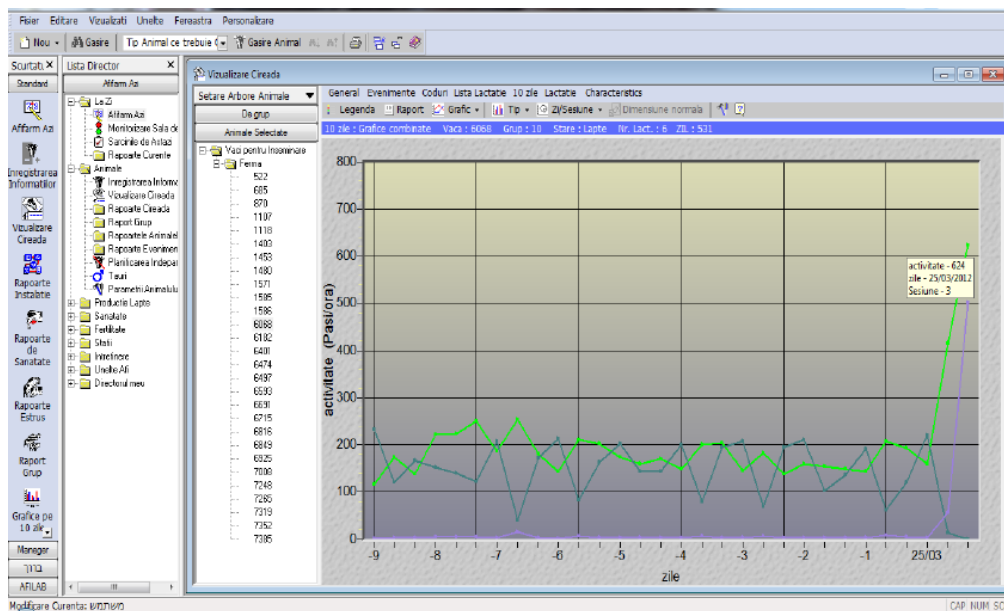


Fig. 4. Daily activity (source S.C. AFIBANAT)

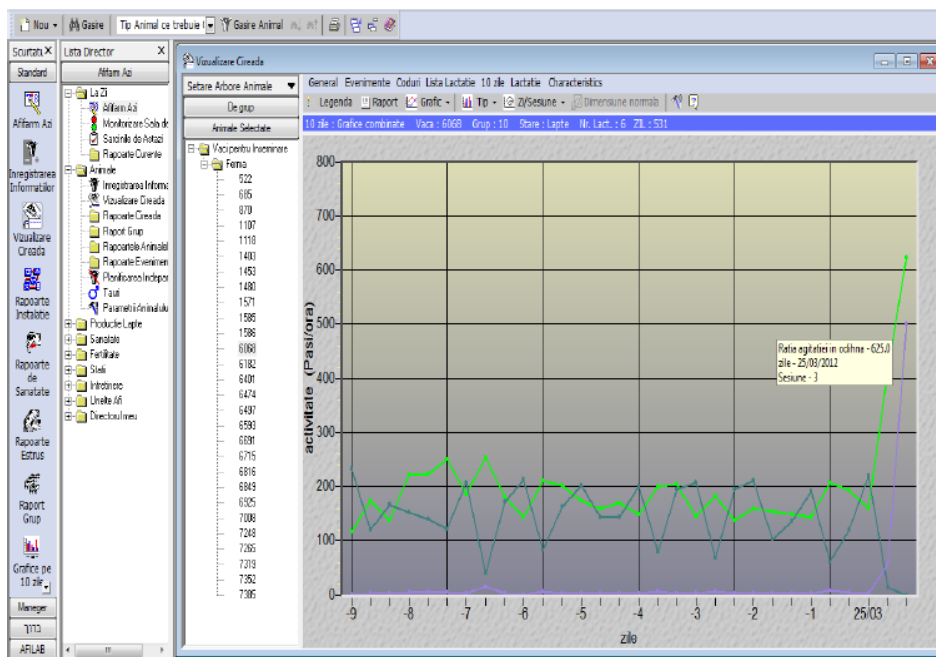


Fig. 5. Restlessness ratio (sursa S.C. AFIBANAT)

These parameters are compared with past activity of the animal behaviour and then are reported automatically to the group of which they belong. Thereby, by means of calculation generated by AfiFarm programme, irregularities can be identified in the animal’s behaviour from that day.

These irregularities may be due to health, heat period or external factors such as weather, personnel, equipment in the farm or a bad condition of the stall.

CONCLUSIONS

The pedometer enhances dairy farmer’s decision-making capabilities and farms profitability, by improving the cow welfare the dairy achieves higher production and better milk quality.

Animals in heat can be detected in time, thus having the possibility to obtain continuous lactation cycles.

Diseases can be detected early enough and so, the days of treatment are reduced, and by immediate intervention, more serious health issues are avoided, costs reduced, and herd health and comfort levels are maintained.

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