World Trends in Milk-Recording Management and Organization

K. Zottl[1], P. Bucek[2], J. Kyntäjä[3], F. Miglior[4], H. Leclerc[5], J. van der Westhuizen[6], K. Kuwan[7], Y. Lavon[8], K. Haase[9], C. Trejo[10], D. Radzio[11], Elsaid Z. M. Oudah[12]

[1] *LKV Austria, Dresdnerstr 89/19, 1200 Wien, Austria*
karl.zottl@lkv-austria.at (Corresponding Author)
[2]*Czech Moravian Breeders' Corporation, Inc., Benesovska 123, 252 09 Hradistko, Czech Republic*
[3]*ProAgria Agricultural Data Processing Centre, PL 251, 01301 Vantaa Finland*
[4]*Canadian Dairy Network, 660 Speedvale Avenue West, Suite 102, Guelph, Ontario, N1K 1E5, Canada*
[5]*IDELE, INRA UMR GABI, Equipe G2B - Domaine de Vilvert, Bât 211, 78352 Jouy en Josas cedex, France*
[6]*SA Studbook and Animal Improvement Association, Posbus 270, Bloemfontein 9300, South Africa*
[7]*VIT, Heideweg 1, 27283 Verden, Germany*
[8]*Israeli Cattle Breeder's Association (ICBA), P.O. Box 3015, 38900 Caesaria Industrial Park, Israel*
[9]*Northstar Cooperative Inc., P.O. Box 23157, 4200 Forest Rd. Bldg A, Lansing, MI, 48910, USA*
[10]*Cooprinsem, Freire 980, Manuel Rodriguez 1040, Osorno, 5310798, Chile*
[11]*Polish Federation of Cattle Breeders and Dairy Farmers, 22 Zurawia Street, 00-515 Warsaw, Poland*
[12]*Mansoura University, Department of Animal Production, Mansoura University, PC: 35516, Mansoura, Egypt*

Abstract

A survey was prepared by the Dairy Cattle Milk Recording Working Group together with invited milk recording organisations. This paper is one part of this project and focuses on management and organisational questions. The management of recording organizations in the current climate of growing competition is more challenging than ever. The main part of this approach is how to develop a clear relationship with customers and how to provide value to farmers in regard to collected data and samples. New tools of analysis are already very common in some countries, while other participants are now focusing on maximizing increased efficiency in data capturing and processing. In those countries whose workflow is technician-based, training and certification are major components in improving human resources. The reporting of results back to farmers is also a very challenging area. The use of paper and pdf-reports is very common, but new online technologies and smartphone usage now provide new opportunities for farmers to manage information. Real value is created by additional analyses from identified milk samples.

Keywords: ICAR, milk recording management, customer care, technician training, human resource, data capturing, sample identification, reporting to the farmer

Introduction

The milk recording business has changed a lot during the last decades. This paper as a part of the project "World Trends in Milk Recoding" of the ICAR Working Group on Dairy Cattle Milk Recording will focus on the results of this challenging change. Especially the

organisational structure of the recording organisation themselves and the involvement with the laboratories is in question as well as the need to develop a clear image of the farmer as a customer for the recording services. Thinking about the customer again changes some core issues of recording. Data capturing has to be efficient and the reporting of the results must be convenient for management purposes. The process of recording, transporting the sample and analysing them in the laboratory must be organised in an efficient and transparent way, because the customer might expect a maximum guaranteed runtime from the recorded milking to the availability of the results on his report.

Material and Methods

This paper is part of the survey "World-wide trends in milk recording", initiated and carried out by the ICAR Working Group on Dairy Cattle Milk Recording. The survey was participated by 46 organisations representing 287 milk recording providers who record data from a total of 21.5 million cows. The respondents and their respective organisations are listed in the main paper of this survey (Bucek et al., 2015). The survey was conducted as an internet survey, with a possibility to answer the same questions on paper by request. In this paper questions about managing the recording from the organisation structure to the process of recording itself and reporting the results to the customer are in the focus.

Changes in organisation structure and competition

The recording business faces very different situations in the 46 attending organisations, which range from close cooperation to competition. Therefore it is not surprising, that only 27% of the answers came from umbrella organisations. There is a maximum of 60 local or regional members in countries with umbrella organisations and a maximum of 84 organisations in countries without umbrella organisations.
Cooperation in data processing seems quite common, but 51% of the MRO's or members of the answering umbrellas compete within their country.

Due to strategic or political decisions the number of organisations changed during the last decade in different ways. In those countries with more than one organisation, 33% states that the number did not change, while 40% say that it has decreased. Only 27% answered that the number increased. For the future, the percentage of increase is stable, while more than 27% see a further decrease and 54% of the attendants have reached a situation where the count of organisations is stable.

As milk recording is very near to the farmer, it might not surprise, that cooperatives and associations are the vast majority of the MRO's, and even if they are limited companies, milk recording is mainly organised as a non-profit business. More than 60% of the represented MRO's are owned by breeders and dairy farmers. The AI companies influence about 14%. But even commercial companies are among the owners. This situation is not likely to change much, as 95% of the answers report that no change of ownership is expected by the organisations themselves. However, external influences such as changes in EU legislation might have quite a significant impact on the MRO's and integration with other organisations involved in genetic improvement will be discussed.

The necessary access to high quality milk analyses at competitive prices brought a strong involvement between MRO's and the laboratories. Only 31% of the attendees have the lab completely outsourced, while even a bit more (33%) run it of their own. As the result of the requirement, that analyses has to be independent and objectively. In 38% of the cases the lab is operated by the authorities. But still 32% of them are run by commercial companies and 26% by the dairy industry.

Milk recording as efficient service for customers

The organisation structure and the legal form is a necessary tool for providing efficient services to the farmers and other customers like the breeding and AI business.

To develop the service according to the needs of our customers means to know them. The MRO's in the survey use different approaches to get feedback from their customers as shown in figure 1.
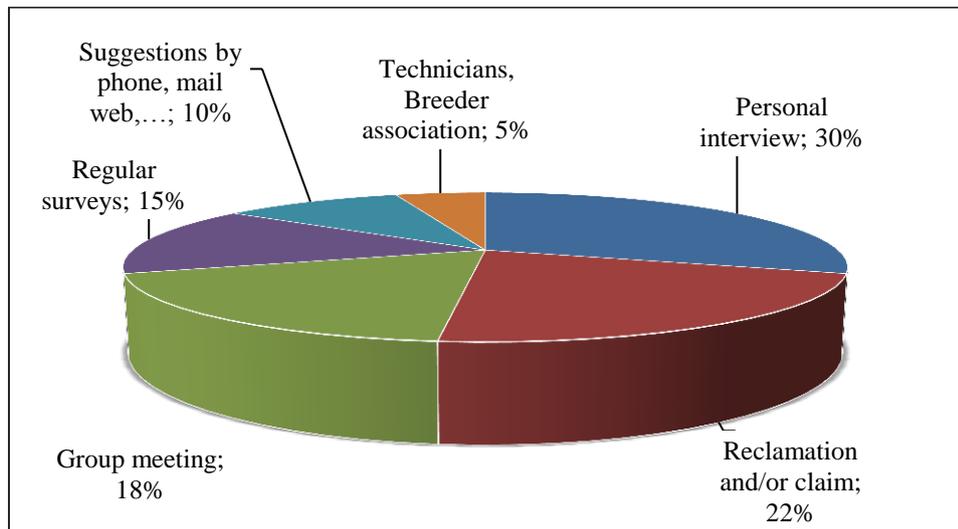

Figure 1. Feedback from the customer

The personal interview outweighs all other ways of getting feedback, but it tends to emphasise the subjective opinion and a single situation. A very important way to improve the service is to look at reclamations and react to the mentioned topics. Regular surveys are a way to get professional and unbiased information about the needs and wishes of the customer while feedback from meetings has to be interpreted carefully. Any opinion leader might get a strong impact by a question or comment on the whole mentioned topics. If some steps are taken to avoid such biases, feedback from group meetings and discussions is very useful and valuable.

A suggestion box on the website or as a phone line is surely a source for developing new services. The same comes up for feedback from the technicians and from breeders associations. But here again it is necessary to take care about possible subjective filtered information or on the other hand to invest especially in training and supervision of the staff.

Human resources

To get reliable results from the milk recording, it is important to train the sample technicians. For providing reclamations for management decisions in the recording organisation itself, this is even more crucial. From the survey the clear picture arose, that many organisation work with employed technicians as well as with the farmer or farm staff in the method B. The sum in figure 2 is more than 100, due to this reason.
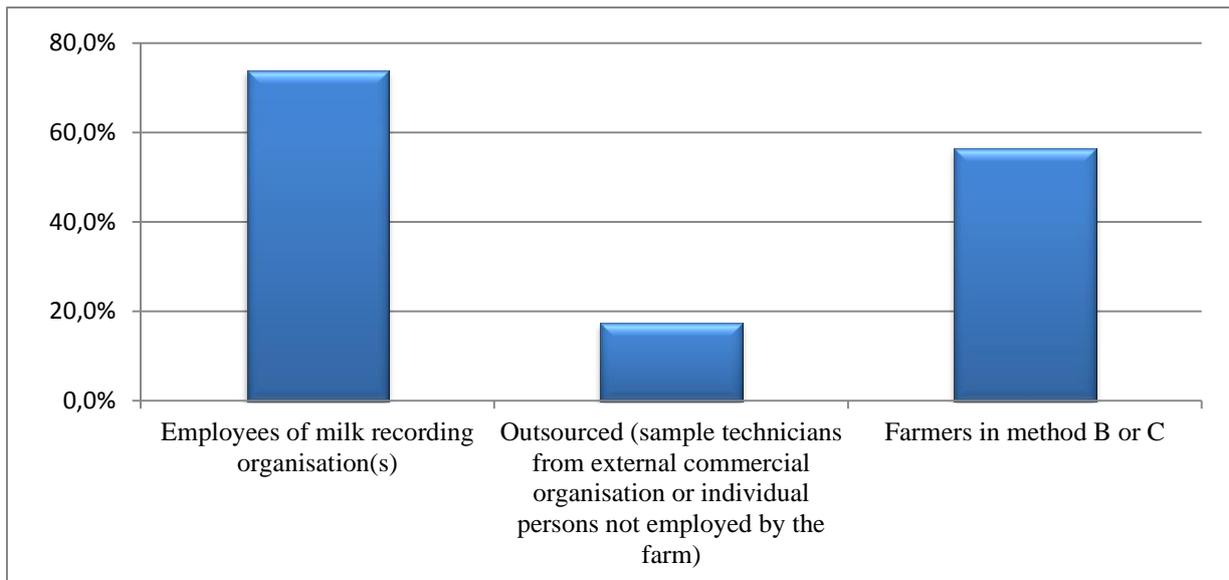
Figure 2. Who employs the sample technicians?

Although all organisations respect the core function of the technician as the "recording organisation" in situ and have some sort of training for new technicians, a certification protocol for them is in 45% of the attending organisations not in charge.

In order to ensure that recording is done consistently in each session and in any herd, a regular training is maybe more necessary than an initial certification. It will be the same, if anything in the recording process has to be added like new traits or to be changed – implementing a new data capturing procedure or identification scheme for the samples, just to mention some aspects from the core of recording.
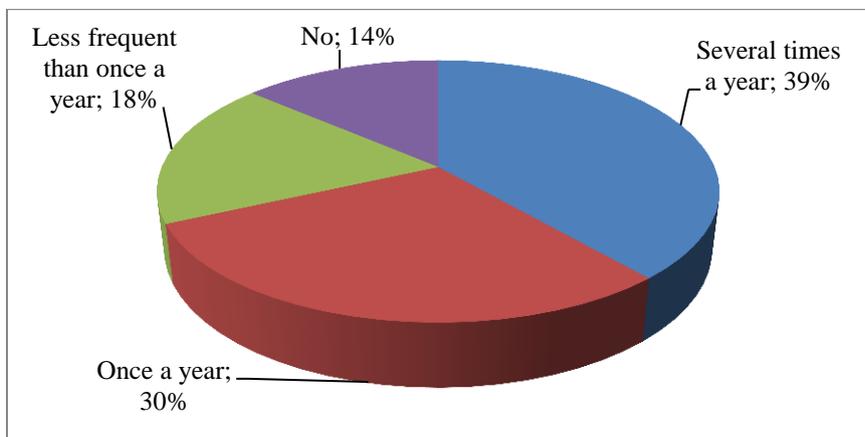

Figure 3. Technicians training and frequency

The knowledge that was provided to the technicians in their training is still not the same as knowing that the information is really applied. This can be shown in exams, which are implemented by 28% of the organisations, yet.

Finally, the starting point of anyone's career in recording is influenced by the personal level of education. As in any service company the education level requirements differ depending on the technicians duties. An agricultural graduation is preferred but in at about 50% there are no defined requirements, because the skills and knowledge needed for recording can be learned in courses during the initial training scheme.

Inspecting the quality of recording and sampling

A tool to measure the quality of the service is auditing or inspecting the work of the technician e.g. the recording and sampling process on the farm. This is done at 44% of the attendants in this survey. Most inspectors are sent by the government (45%), but 20% are commercial auditors. In some countries an internal training and certification scheme for inspectors is approved by the national breeding and/or recording authorities. This provides specialised auditors and approves a high quality of the inspection itself.

Notifying the farmer about the recording

Milk recording must bring a representative result of the cattle performance and shall not be influenced, neither intentionally nor unintentionally. To achieve this aim in 25% of countries it is practice to notify the farmer only a very short period of time before the recoded milking. This means either no notification or just after the milking before the recorded milking.

On the other hand especially in countries with bigger farms or with the B method it is necessary to provide the labour force for the recording. Therefor at least some days before the recording or on the previous test day notification is given. Up to 40% of the organisations have a scheme, where the test days are scheduled over the long term, e.g. over a whole year.

Especially in growing herds with employed labourers a surprised recording is very difficult, so other reglementations, like bulk tank comparisons, have to be in charge to ensure a representative result of the recording.
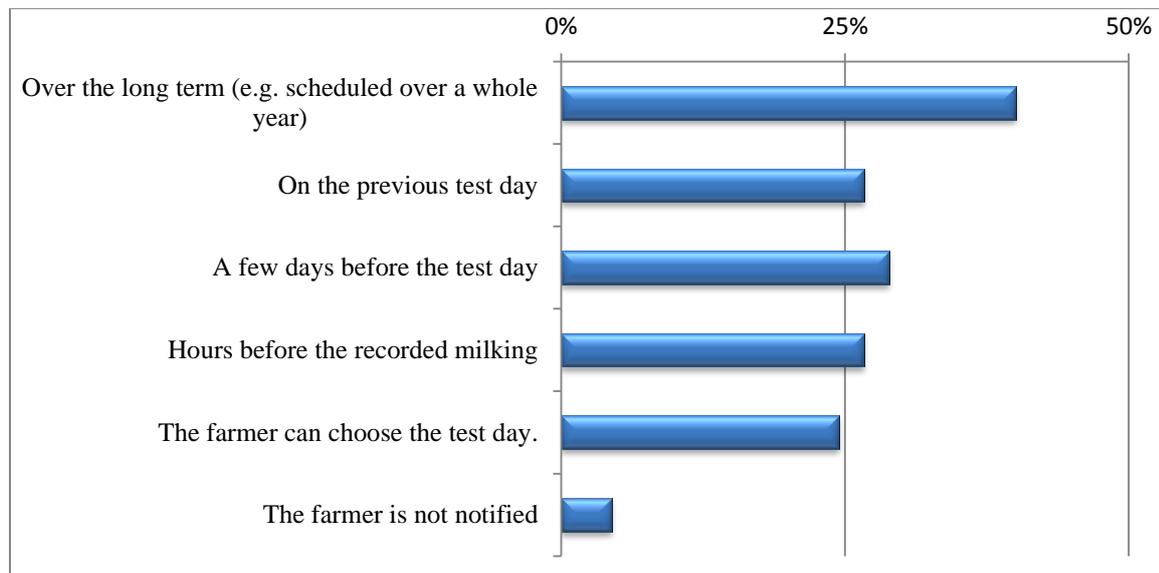

Figure 4. How much notice is given before the recording to the farmer?

Notifying the farmer by phone call happens in 70% of the cases. But as the availability of the people on the phone decreases other ways of communication have been established. So the second most common way of notification is now a short message to the mobile followed by an e-mail, maybe to be read on the mobile, too. Fax has lost importance very much. Other ways are short notices, left at the previous recording or even letters.

Data capturing

Quod scriptum est manet – the motto of ICAR is surly meant for data processing. But to provide reports, records or estimated breeding values to the farmer means to capture data on

farm in an efficient and safe way. Even in 2015, paper is still the most common way to do it. But entering the data on farm directly to the database (via online access or by transmitting a data file) using a laptop or PC has reached a similar level. As a single method or hardware PDA's or data handlers have the same spreading as Laptops.

As a very favourable way of entering the data to the database of milk recoding automated data exchange will be the hot issue for the rest of the decade either with milking robots, stationary electronic meters in the milking parlour or farm management software.
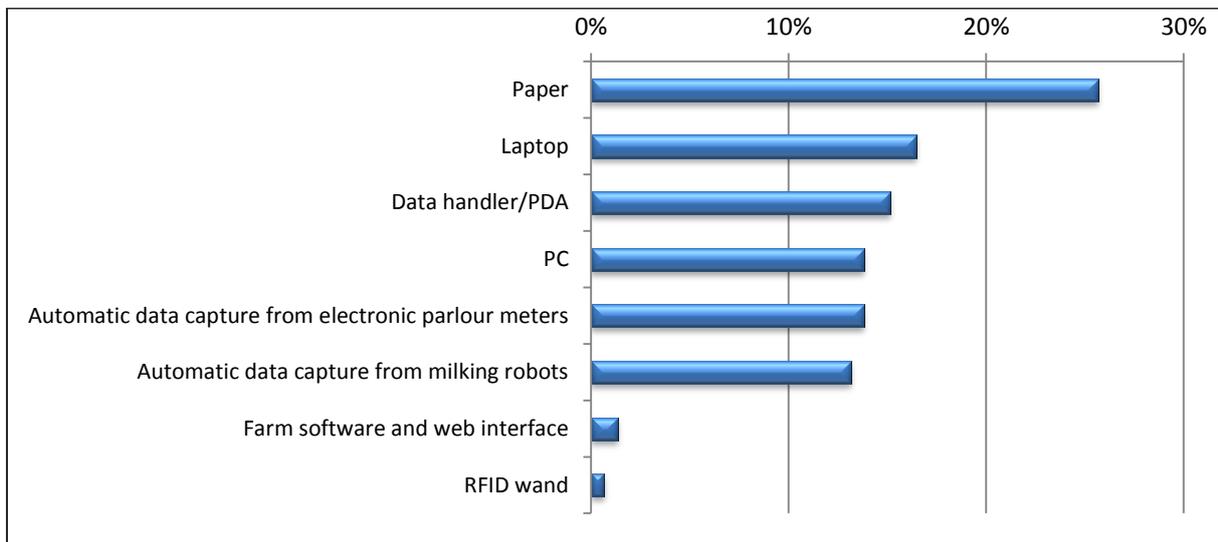

Figure 5. Tools for data capture on farm

The expectations for the future are, that with the increasing number of milking robots the direct data exchange will get more and more common. For the recording organisation it might be crucial to show the competence to do so and provide processed results to the management software on the farm.

In manual data capture a change is on the way. Paper will get a strong competition from the electronic devices like smartphone or tablets, which can in many cases be directly linked to the database and therefore provide a very favourable situation to do data checks almost in real time while entering the data or at least before leaving the farm.

In the same growth rate as internet services are provided by the recording business to the farmer there will be web applications running, which offer the possibility to enter not only information for management proposes but records for breeding or performance calculation in real time either from mobile devices or from any PC or laptop.

Sample identification and transport

A clear and safe identification of the sample, which is never lost during the whole process is one key to success in milk recording. Therefore due to general industrial standards the bar code system is actually the most spreaded ID scheme in milk recording. A very simple and still safe system is manual marking of the vial with the ID. A very common and cheap system is the position in the racket. This system requires a high level of exercise to be sure, that no mistakes happen, but it is a very quick and powerful system then.

A technically more sophisticated way of sample identification is the RFID tag. If implemented in the recoding system it allows additional information to be directly connected to the sample. To get the whole benefit of the system, this way of identification and smart information has to be implemented in the recording process and in the laboratory. There RFID

allows a high level of automation, too. The full dataset and requests for analyses can be stored on the RFID device. In this case, the box must be marked only with the address of the lab.

The additional information on or in the box with the vials for analyses is mainly to provide basics for plausibility checks in the lab like the number of samples and maybe some hints to sour samples, if the day of sampling is gone too long.

A change in the way of identifying the samples is in milk recoding connected to the installation of new meters in recording, which need an identified vial or new equipment in the laboratory, which allows a direct link between sample taking and recording result. Currently, 70% of the organisations are not planning to change their sample ID-system. Those organisations, which are to change the sample ID have decided for bar codes or RFID.
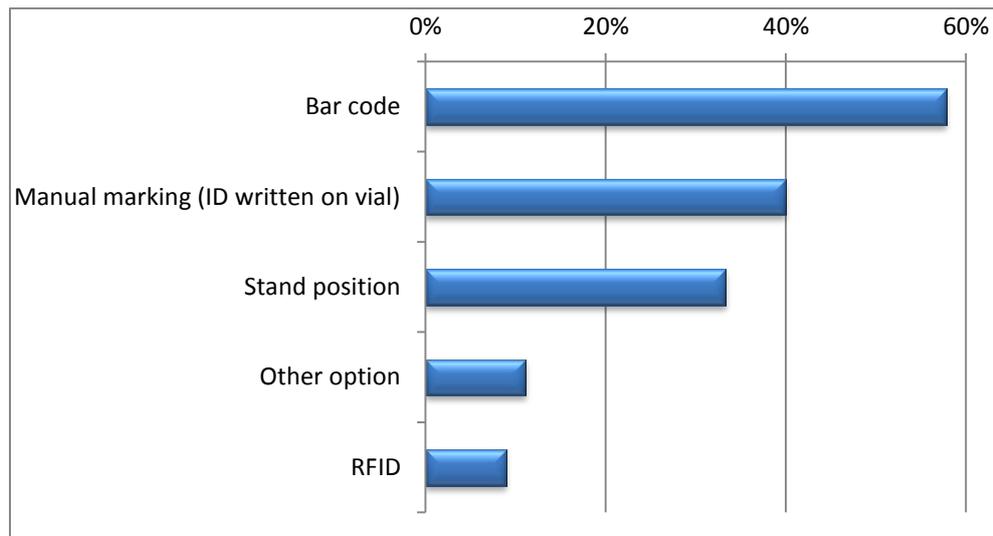

Figure 6. Implemented identification systems for the milk sample (multiple answers)

In order to minimize the number of sour milk samples, the vast majority of the organisations (90%) preserve the milk sample, mainly with Bronopol or similar chemical products. As a result, in many countries the rate of sour samples is less than 1%. A monitoring for the sample quality is done by each organisation and enables the possibility to react if the share of bad samples is rising.

The transport of the samples to the laboratory is the next step. It has to be done quite quick in order to get the results for proper herd management but especially in countries with smaller herds it would be too expensive to send the samples from each recoding directly to the lab. So they are gathered by technicians and the transport takes place at regularly intervals.

In order to keep the sample quality as good as possible, 25% of the organisations have temperature requirements and loggers for the transport. Those requirements are between 4°C and 8°C. In addition, 13% use isolated transport boxes to prevent the samples from freezing in winter or to avoid the warming during transport in summer. Almost two-thirds of the organizations do not have any temperature requirements for the sample transport and have still a very low figure of bad samples.

The transport of the samples themselves is in 17 cases outsourced to mail or courier service. Even in 22 cases a lorry or van with a refrigerator does this, which is maybe a reason for not defining a temperature requirement for the sample itself. About half of the samples are sent directly to the laboratory or transported via a fixed route with collecting points.

As the sample is together with the collected data the core of the recording business in two-thirds of the cases the transport is duty of the technicians of the milk recording organisation. This might add up if you consider that in method "B" the farmer is responsible for the transport (13%). The remaining 20% are managed by the dairy companies, again a business very strongly related to the milk farmer and depending on correct sample analyses.

Milk analyses and reporting the results to the customer

In the laboratory infrared analyses as a powerful, reliable and efficient method is nowadays the standard. While fat and protein is anywhere part of the milk recording and paid by the recoding fee, urea (19 cases), somatic cell count (7 cases) and lactose (2 cases) are analysed at an additional charge. In addition to the standard analyses mentioned the labs offer a big range of additional services like fatty acid analyses, total solids, ketone, citric acid and even a lot disease control checks out of the recording sample to add value to the sampling process and provide benefit to the farmer out of the correct identified sample.

The reporting process brings the results of the recorded milking and of course the analyses from the laboratory back to the farm. Taking into consideration, that the captured data have to be available in the database and the sample must be transported and analysed this takes some time. But on the other hand the farmer has to decide within a very short time about milk quality, health questions and of course feeding. Therefore a quick response is asked.

Due to the transporting and the workflow in the lab in best cases the reports are after 48 hours available in the database. The average runtime for this is a bit above 5 days and 90% of the reports are delivered at an average just below 6.7 days. As a clear sign of customer care 2/3rd of the attending organisations have already a guaranteed reporting time, which on average is about 7.1 working days.

Of course this is influenced by speed and way the data are provided, which might especially in method B add some time if you have to ask the farmer to forward the dataset and the analyses result is already available.
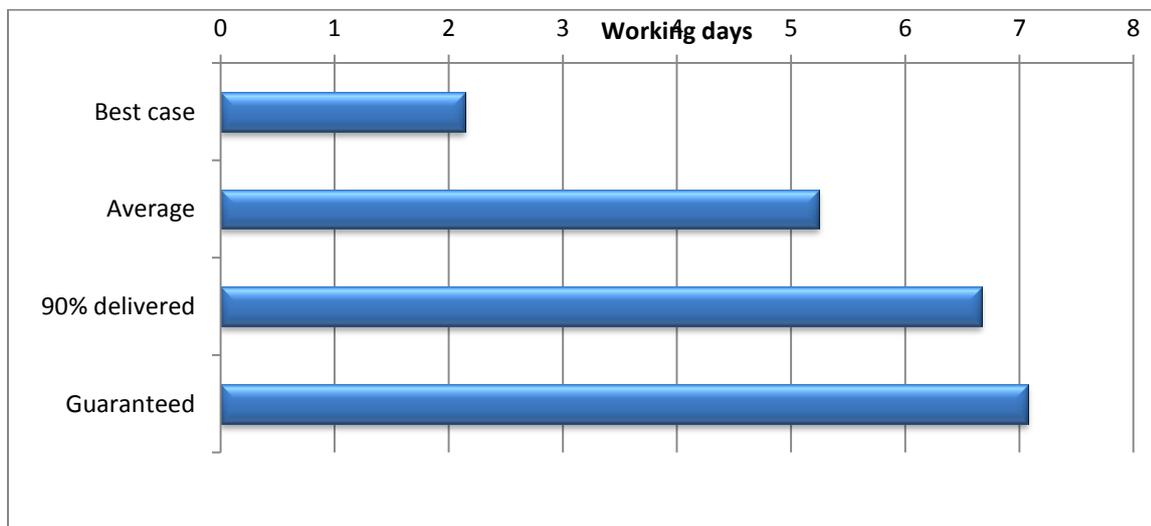

Figure 7. Runtime from recording to reporting the result to the farmer

The most powerful data capture combined with the quickest transport and sample analyses will lose all advantages if the report itself has to be printed and sent to the farm per surface mail. Although this is still the most common way of reporting, the farmer's demand for a quick response and the organisations are seeking ways to fulfil this. During the last decade web based services became very important. Almost 75% of the reporting is done via web applications and data files and e-mail reports are provided to the customer in 2/3rd of the answers. More than half of the attendants provide their own farm management software, where the new results are added in a very convenient way.

Mobile communication has of course reached the herds over the last years. Actually 16 organisations provide the possibility of an SMS – alert for available results. In combination

with an application for mobiles this allows the responsible person to get the information very quick for management decisions. 13 organisations use this service in early 2015.
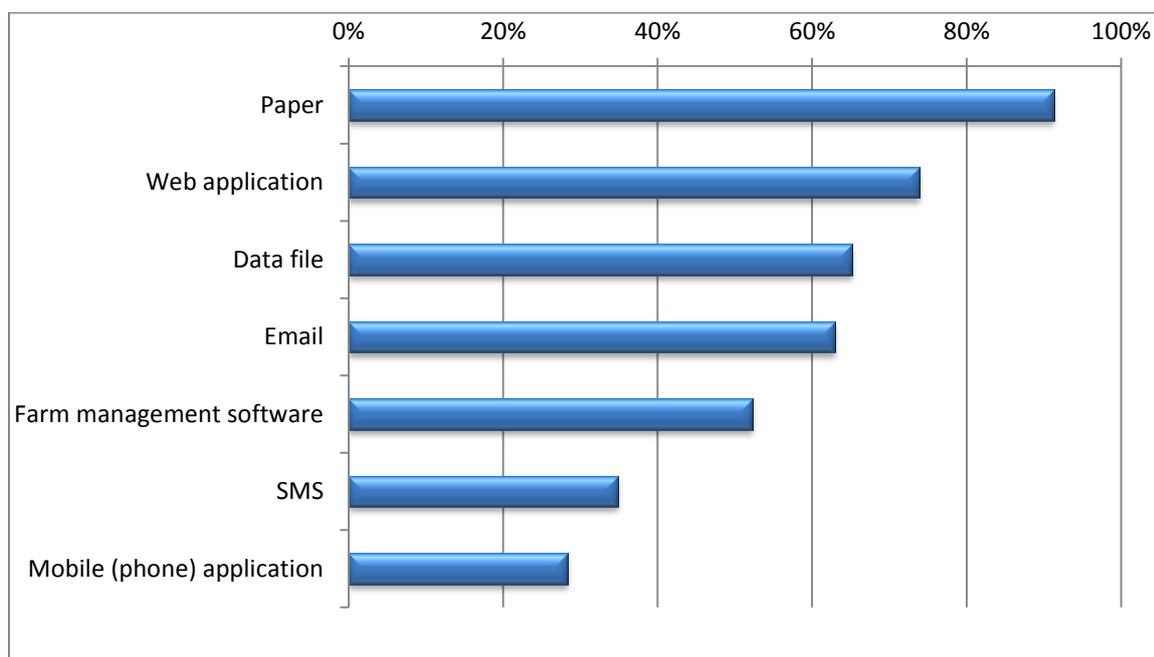

Figure 8: Reporting the results to the farmer

Conclusion and outlook

The milk recording business has always been in strong relationship with data processing and providing results for management decisions, first on a more strategic level for selecting the herd and providing data to breeding value estimation for the breeding programs. In addition, the ready availability of reliable recorded data is now a daily part of management decisions on farms, which has in turn strengthened the relationship between customer and MRO.

Currently, customer (farmer) care is one of the core issues as in any other service related business. So modern reliable tools like surveys and reclamation reviews provide input to develop the recording business that will fit to the needs and expectations of the customers, who have to pay for it.

The employed technicians bring additional feedback from the herds. Training and certification of the staff is another issue to ensure that the processes are running in a proper way. Especially if changes in any steps of the recording or reporting have to be done, it is necessary to provide the information to the employees and farmers in training sessions. But even in doing the recording in the usual way, regular training is very useful to keep experienced technicians on a high level of skill. Witness audits like in the ICAR certificate of quality are a simple tool to check those skills and identify ideas for the business or the need for training.

In sample identification the clear message is accuracy first. The bar code system is dominant and will stay so for some more time. Manual systems like stand and position or marking the vial with the written ID are common, too. Those few organisations, which are planning to change their system, are heading towards bar codes or maybe more convenient RFID systems.

Transporting and analysing the samples has to be handled in a very efficient way. The correct identified sample in the lab brings even in the near future some very interesting possibilities for additional analyses as the broad field of available analyses tools provided by the manufactures of infrared devices show. Necessary disease checks and parameters for

advisory services like ketones are today very common. Additional benefit is added by new services like the pregnancy test, which seems to be already part of routine today. This test is a very simple proof, how customer oriented and innovative recording organisations and laboratories are.

Data capturing and reporting is still very paper based. But in both situations mobile devices have entered the parlour. In data capturing the possibility to enter the records on farm directly into the database provides a high degree of plausibility and completeness checks. Therefore data handlers, PDA's or mobiles and tablets will in the near future be the backbone of data capturing. On the other hand, automatic data exchange between the recording database and the systems on the farm will increase, too. Especially when considering milking robots this brings safety to the data and convenience to the farmer.

In reporting back to the farmer, the printed report, even if sent by e-mail, is some kind of a backup system, which will stay. But modern communication has found its way to the herds. After about 15 years of developing web based services and management software to be run on the PC, no matter if on or offline, the next step is asked by farmers. They want available information in shed and parlour. The mobile gadgets can be bought in each store around the corner and the recording organisations already provide SMS - alerts for new results and mobile applications.

So the identified trends out of this survey are
- the clear statement about customer care,
- the way to electronic data capture by using mobile devices and automatic data exchange,
- innovative laboratory analyses are quickly implemented and
- reporting to the farmer has reached the mobile world in apps and SMS

Acknowledgements

References

Bucek, P., Zottl, K., Kyntäjä, J., Miglior, F., Leclerc, H., van der Westhuizen, J., Kuwan, K., Lavon, Y., Haase, K., Trejo, C., Radzio, D. & Elsaid Z. M. Oudah 2015: World-wide Trends in Milk recording, ICAR Technical Session 2015, Cracow, Poland.