Milk recording in the Czech Republic and possible amendments of the ICAR Guidelines

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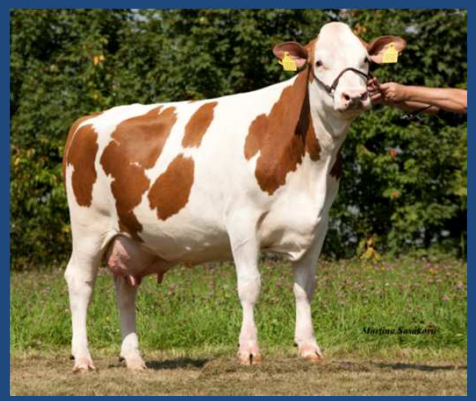
WG Dairy Cattle Milk Recording

Aarhus, Denmark

Tuesday, 28 May 2013

Outline/agenda

- Basic overview about the situation in milk recording
- Methods used in milk recording
- Organisation and planning
- Sampling
- Lactation calculation
- Practical aspects of milk recording on the farm
- Plausibility, logical checks in software and selective measurements in QA in milk recording, supervision in milk recording
- Data transfer
- ICAR Guidelines and the possible survey of our working group



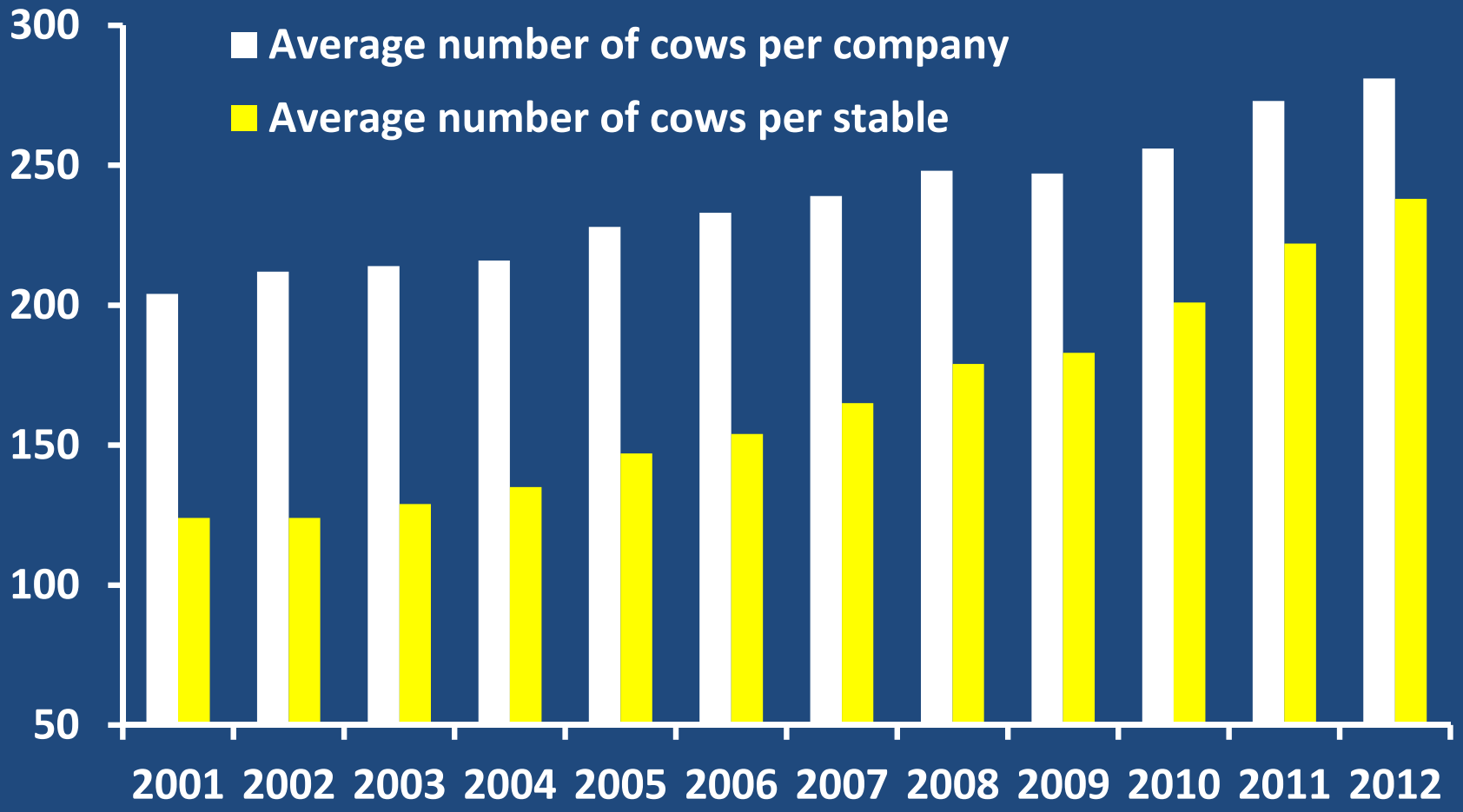
Herd size/customers´ structure in milk recording

Structure of the customers in 2011/2012

Number of cows	Companies (n = 1,251)			Stables (n = 1,477)	
	Companies (%)	Number of stables in one company	Share of cows (%)	Stables (%)	Share of cows(%)
1 - 100	26.9	1.0	5.0	30.6	7.3
101 - 200	18.8	1.1	9.8	22.0	14.3
201 - 300	15.6	1.2	13.4	17.3	18.8
301 - 400	11.5	1.2	13.7	13.2	19.8
401 - 500	**10.1**	**1.4**	**15.5**	**8.8**	**17.0**
Over 500	**17.1**	**1.9**	**42.6**	**8.1**	**22.8**
Total	100.0	1.3	100.0	100.0	100.0

- One company has more than one stable
- 58.1% of cows are in a company with more than 400 cows
- 39.8 % of stables have more than 400 cows
- 5% of cows are in small herds 1 – 100 cows (26.5% companies) and this has influence on the average herd size

Average herd size



- Average number of cows per company in milk recording in 2012 was 281 cows and per stable 238 cows

Method of milk recording in the Czech Republic

- **Method A**
- **A4**
- **AT (AT4) - only in the case of two milkings**
- Czech recording guidelines also include B and C methods. These options are not used by the breeders. Control year starts on 1 October and finishes on 30 September of the next year.

Standards for Recording Interval

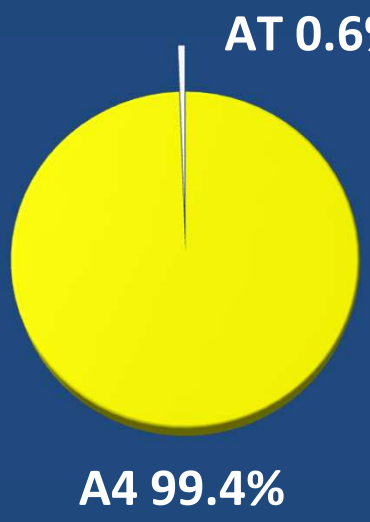
Recording Interval (Weeks)	Minimum Number of Recordings	Interval Between Recordings per Year (days)	
		Min.	Max.
4	11	22	37

New method of milk recording implemented in the Czech Republic

- We have implemented **a new method of milk recording.** The results of milk recording of animals for this method will be available in the next control year (2012/2013).
- **Milk production is measured for the whole control day** (all milking during the test day) and **sampling times alternate** in this new method which was implemented in the Czech Republic.
- Only method A is acceptable for the herd book and breeding value estimation
- **We do not accept method B for the herd book and for the breeding value estimation**

Expected trends in milk recording methods in the CR

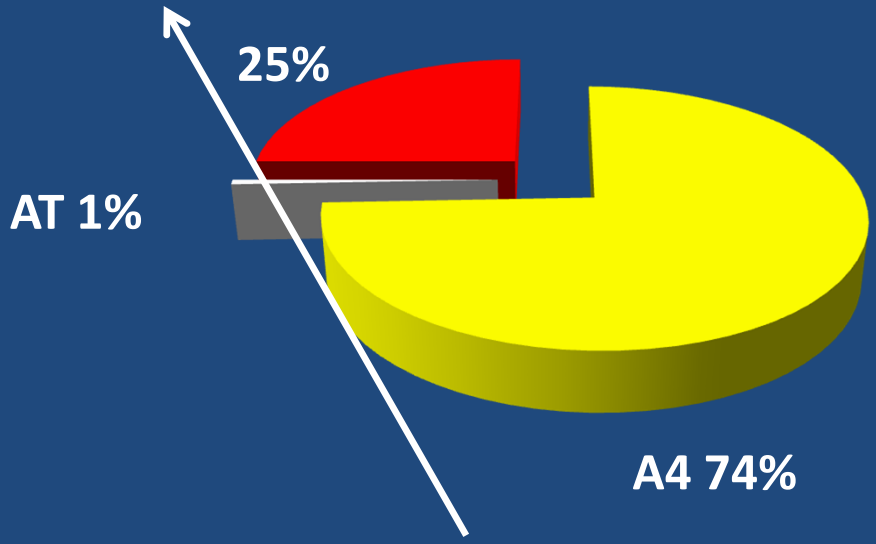
Situation in 2011/2012



- The new method of milk recording was implemented for the reason of increasing of flexibility in a big herd
- **We are not planning to accept method B for BVE and herd book in the near future**

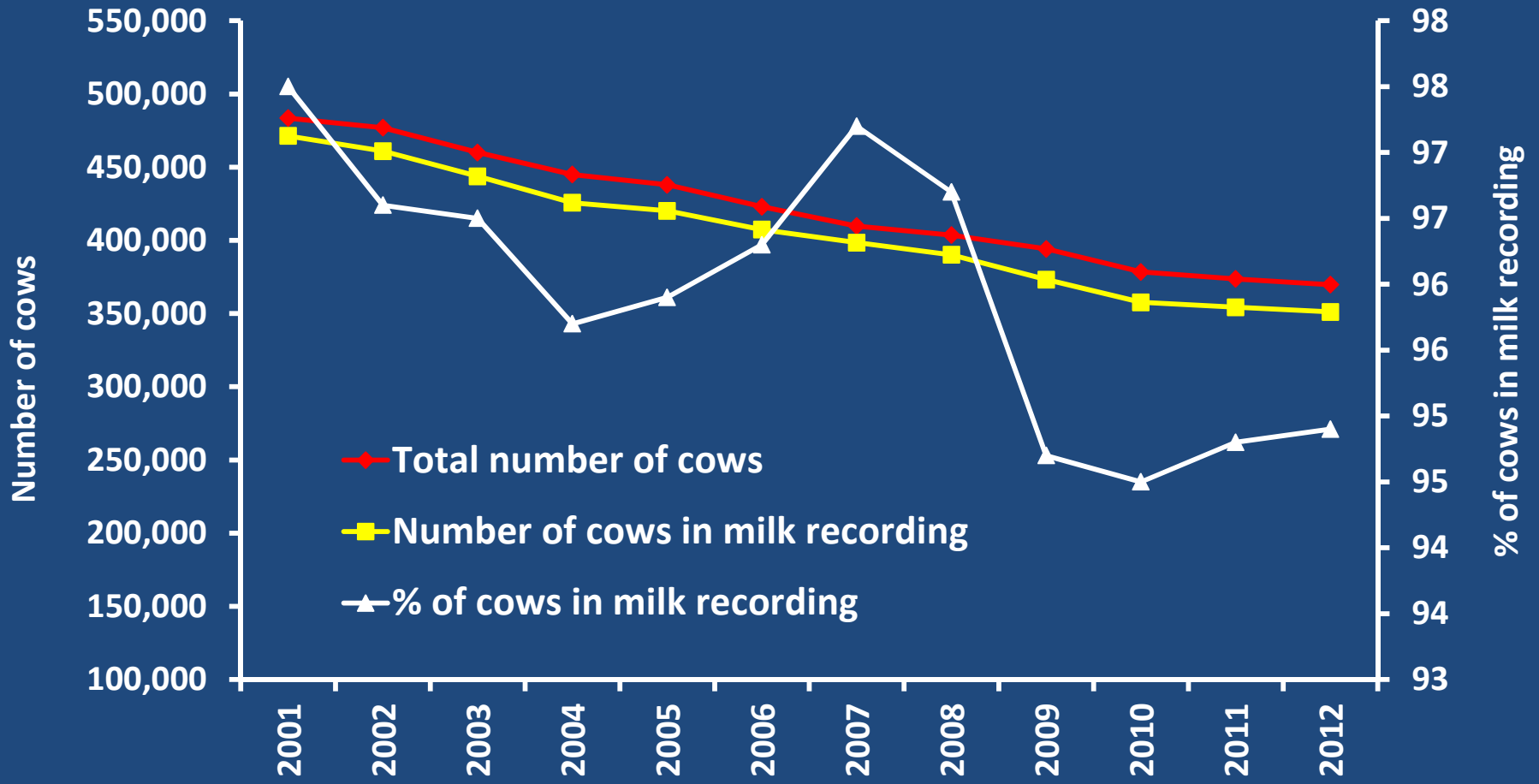
Expected situation in 2012/2013

New method of milk recording in the Czech Republic (25%)
Milk production is measured for the whole control day (all milking during the test day) and sampling is either p.m. or a.m.



We are expecting a further increase in the new method of milk recording in the future in the Czech Republic

Basic statistics in milk recording



- **The share of cows in milk recording since 2001 until 2012 was between 94.5 to 97.5%, which is one of the highest shares among the ICAR organisations**
- The total number of cows in the Czech Republic in 2012 was 369,749 and in milk recording 351,075

Organisation of milk recording in the Czech Republic

Czech Moravian Breeders´ Corporation, Inc.

Identification and registration
Milk recording
BVE and data processing
Laboratory for milk and DNA analysis
And other relevant fields in ICAR Guidelines

Only sample taking is excluded from the Czech Moravian Breeders´ Corporation, Inc.

Supervision Czech Moravian Breeders´ Corporation, Inc.

Supervision Czech Breeding Inspection (state organisation)

Authorised organisations are responsible for the sample taking



Planning of the milk recording on the farm

Key processes of planning

- **Monthly schedule in the local organisation units**
- **Each third week during the month, there is a working meeting where the local manager plans the test days for another month**

  This respects the logistics of samples, requirements for analysis, organisational aspects, etc.
- **A record of this plan is entered into the internet application Inspector, which is kept in the Czech Moravian Breeders´ Corporation, Inc.**

Sampling in milk recording in the CR (method A4)

- Sample must be representative
- For sample taking, pipets or measuring cups are used
- Volume of sample is 25 – 30 ml
- **Halved sample** (same amount of milk from the morning and evening milking), in the case of A4 when the interval between morning and evening milking is at interval of 10 – 14 hours
- **One-third sample** in the case of three milkings per day, the same amount of milk from each milking in case the interval between the two milkings is 8 plus minus 0.5 hours
- **One-fourth sample** in the case of four milkings per day, if the interval between the two milkings is 6 hours
- **In other possible cases** in milk recording in cattle, it is necessary to take a proportional sample which means from 1 litre of milk milked a sample of 1 millilitre of milk is taken
- Milk must be mixed and conserved with Bronopol

Sampling in milk recording in the CR (new method – production for all milkings and alternating sampling)

- Milk production per test day (all milkings) and sample p.m. a.m.
- **Contents in milk are adjusted and counted according to the certified methodology**
- **Interval of milkings 8 hours –** 3 milkings per day, the sample alternates (one month in the evening and the other month in the morning, etc.), a sample from noon is not taken
- **Interval of milkings 11 and 13 hours -** 2 milkings per day, sample is taken one month from the evening milking and the other month from the morning etc.)
- **Interval of milkings 10 and 14 hours -** 2 milkings per day, sample is taken one month from the evening milking and the other month from the morning, etc.)
- **Interval 12 hours –** alternating sampling without corrections and adjustment

Test interval method – lactation calculation

2.1.4. ICAR standard methods of lactation calculation

2.1.4.1. The Test Interval Method (TIM) (Sargent, 1968)

The Interpolation Method is the reference method for calculating lactations.

The following formulae are used to compute the lactation record for milk yield (MY), for fat yield (FY), and for fat percent (FP).

$$MY = I_0M_1 + I_1*\frac{(M_1+M_2)}{2} + I_2*\frac{(M_2+M_3)}{2} + I_{n-1}*\frac{(M_{n-1}+M_n)}{2} + I_nM_n$$

$$FY = I_0F_1 + I_1*\frac{(F_1+F_2)}{2} + I_2*\frac{(F_2+F_3)}{2} + I_{n-1}*\frac{(F_{n-1}+F_n)}{2+} + I_nF_n$$

$$FP = \frac{FY}{MY} * 100$$

Where:

M1, M2, Mn are the weights in kilograms, given to one decimal place, of the milk yielded in the 24 hours of the recording day.

F1, F2, Fn are the fat yields estimated by multiplying the milk yield and the fat percent (given to at least two decimal places) collected on the recording day.

I1, I2, In-1 are the intervals, in days, between recording dates.

I0 is the interval, in days, between the lactation period start date and the first recording date.

25

In is the interval, in days, between the last recording date and the end of the lactation period.

The formulae applied for fat yield and percentage must be applied for any other milk components such as protein and lactose.

Details of how to apply the formulae are shown in the annex to the Appendix.

Range of the values during the test day:

Milk 3.0 – 90.0 kg, fat 2.0 – 7.0%, protein 2.0 – 6.0%

High fat cattle breeds

Calculation of contents during the test day
(method of milk production for all milkings, alternating sample)

Time of milking	Interval in hours	Conversion	Number of milkings
Evening (1)	8 hours, 3 milkings	*Fat: y = 0,6971 x + 1,1044* *Protein: y = 0,9219 x + 0,2291* *Lactose: y = 0,8298 x + 0,8348* *Somatic cell count: y = 0,8732 x + 43,246*	3
	Less than 11 hours	*Fat: y = 0,7552 x + 0,5126* *Protein: y = 0,9412 x + 0,1863* *Lactose: y = 0,8911 x + 0,5258* *Somatic cell count: y = 0,8592 x - 14,424*	2
	11 and more hours	*Fat: y = 0,7748 x + 0,5948* *Protein: y = 0,9319 x + 0,2063* *Lactose: y = 0,9446 x + 0,2684* *Somatic cell count: y = 0,8264 x + 10,358*	2
Morning (2)	8 hours, 3 milkings	*Fat: y = 0,6871 x + 1,3191* *Protein: y = 0,9353 x + 0,2582* *Lactose: y = 0,9348 x + 0,3065* *Somatic cell count: y = 1,0026 x + 19,591*	3
	More than 13 hours	*Fat: y = 0,8016 x + 0,9680* *Protein: y = 0,9648 x + 0,1290* *Lactose: y = 0,9421 x + 0,2753* *Somatic cell count: y = 0,9466 x + 67,530*	2
	13 and less hours	*Fat: y = 0,8754 x + 0,6841* *Protein: y = 0,9619 x + 0,1415* *Lactose: y = 0,9413 x + 0,2886* *Somatic cell counts: y = 1,0319 x + 24,719*	2
Evening (1) Morning (2)	12 hours	*Without correction*	2

Milk yield (from one milking, p.m. a.m.)

Time of milking	Interval in hours	Conversion coefficient	
		1st lactation	Other lactations
Evening (1)	10 and less hours	2.32	2.24
	10.1 – 11.00 hours	2.23	2.19
	11.01 and more hours	2.08	2.08
Morning (2)	14.01 and more hours	1.76	1.81
	13.01 – 14.00 hours	1.81	1.84
	13.00 and less hours	1.93	1.93
Evening (1) Morning (2)		1.00	1.00

Identification of samples, transport of samples to the laboratory and other relevant processes

- The technician of the authorised organisation **assigns the numbers to the appropriate samples**
- Records are kept in the **analysis certificate**
- The sample numbers are included in the analysis certificate

- Samples have to be put in the transport box **in ascending order**
- Keep the samples treated with a preservative agent in the coldest place possible (best at +5°C) and they must be protected from any misuse
- The sample arrangement in the analysis certificate always has to correspond to the sample arrangement in transport boxes in ascending order

Identification of samples, transport of sample to the laboratory and other relevant processes (position in stand)

↓

- **The sample is marked with its number (on the sample),** which corresponds to the number in the analysis certificate and the document accompanying the transport box that contains the samples
- **The box with samples has a label with the identification data**, on which there is the recorded number and name of the herd (stable)
- The box is accompanied with the analysis certificate, containing the stable number and stable name (documentation for the samples and the performance recording, the numbers corresponding to the position in the box containing the samples)

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- The technician, who took the samples immediately, delivers them to the **collection place.** He or she puts them in the cooling box
- The sample collection corresponds to the regulations in force with regard to time. No sample is valid without the number (non-identifiable)

Identification of samples, transport of sample to the laboratory and other relevant processes

- The technician delivers the boxes containing the samples to the collection place
- Czech Moravian Breeders' Corporation, Inc. – utilising a refrigerated truck, ensures sample transportation to the laboratory from the collection places

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- The control of the accordance of the numbers shown in the sample book with the ones in the attached analysis certificate is carried out in the milk analysis laboratory
- Within the sample receipt, the quantity of samples, which is stated by the analysis certificate, in relation to the actual quantity of samples, is checked
- Also the control of the sequence correctness, according to the analysis certificate, is carried out, etc.

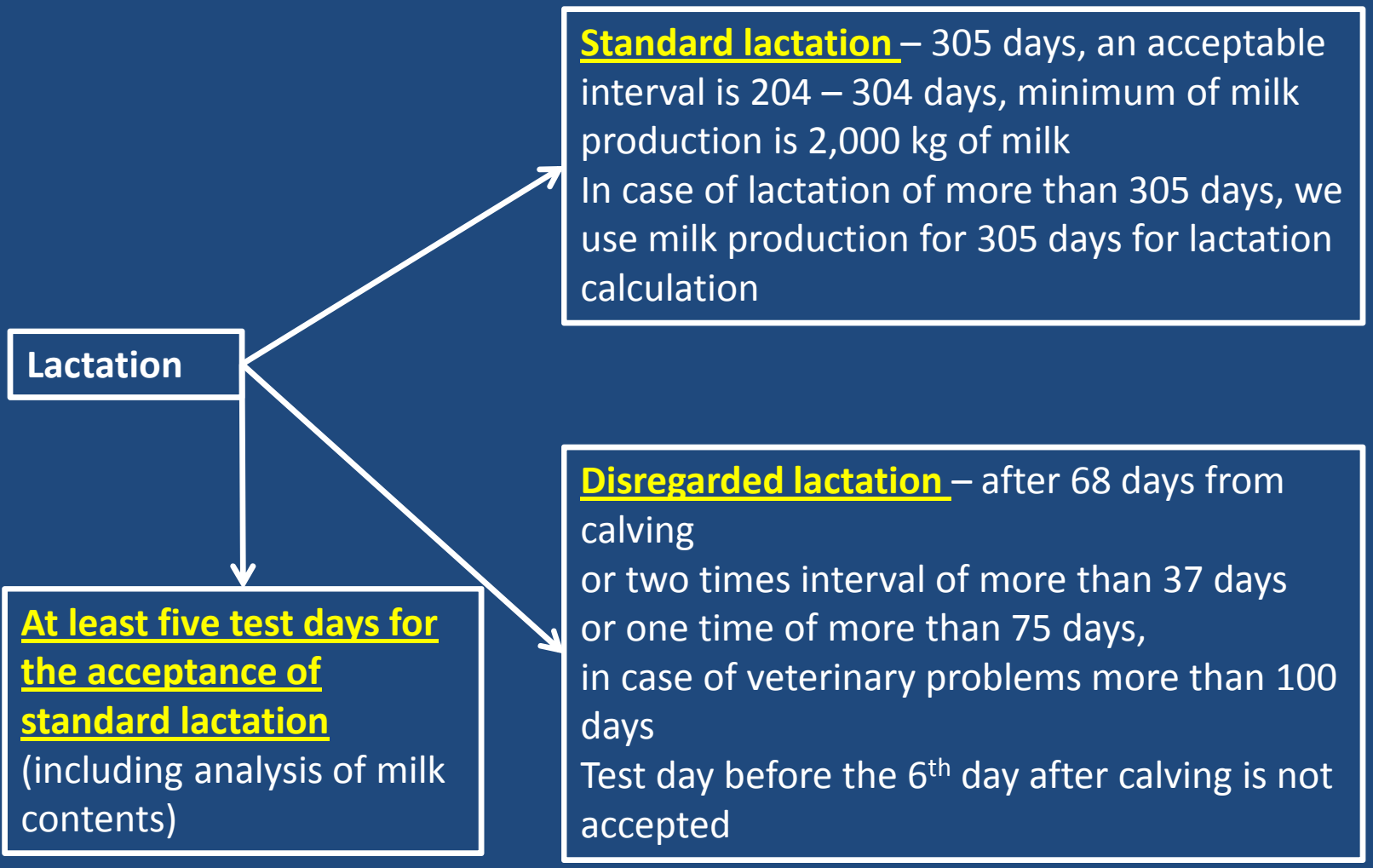
Perspective for the future – electronic identification of sample in the Czech Republic

Bar code

- **Investment in the bar code reader and its software**
- **Testing of PDA for the data capture and bar code from different companies**

- **Data transfer: XSD, XML, WSDL**
- **ICAR project the Czech Republic, the Netherlands, France and Germany**
- Data transfer AMS to MRO, MRO to AMS
- AMS, we are planning to test this approach for electronic milk meters in milking parlours

Lactation


Lactation
Standard lactation – 305 days, an acceptable interval is 204 – 304 days, minimum of milk production is 2,000 kg of milk
In case of lactation of more than 305 days, we use milk production for 305 days for lactation calculation
Disregarded lactation – after 68 days from calving
or two times interval of more than 37 days
or one time of more than 75 days,
in case of veterinary problems more than 100 days
Test day before the 6th day after calving is not accepted
At least five test days for the acceptance of standard lactation
(including analysis of milk contents)

How does the data arrive at the centre and by what route (Production records, somatic cells)?

- A sample collection in a milking shed or a cowshed, recording the drawn milk amounts, filling in the printed forms (milk recording technician)
- Sending the samples and printed forms to the milk analysis laboratory
- Analysis in the laboratory, creation of data sets containing the analysis results
- Sending to Plemdat (FTP data transmission) (every day)
- **Data processing obtained from the laboratory (every day; data check, storage into database)**
- Printing reports containing the milk analysis results and counts from the lactation start (daily)
- Sending reports to the selective breeding centres (daily or weekly)
- Sending data to the system Chovatelská data-Breeders' data (daily)
- Breeding values estimation with application of Test day model (3 times a year); (publishing the results-Internet, printed reports, data files)
- Sending BV to Interbull (3 times a year); (publishing the results-internet, data files)

Supervision programme

- The inspectors, who ensure the supervision of the performance recording, have their allocated areas in the Czech Republic where they carry out the controls
- Within the Application Inspector, they obtain an overview, where in their area they perform the performance recording
- In the field, they collect data on the control and submit data to the server
- According to the date of control, recent controls at the end (a possibility of selection, where the control was not performed)
- Factor of the results from the control and supervision – discrepancies within the performance of the efficiency control
- It is determined when he or she has to visit the breeding
- The application determines the order

Remedial measures

- Serious misconduct is handled by the superior officer with perhaps a repetition of the control
- Minor warning
- Low quality data are not utilised in the official results
- Super control
- Financial and other sanctions are imposed by the Breeding Inspection - external audit

Repeat Sampling (super control) - methodology

- Check of milk recording after the finished test day
- Repeat sampling made by the inspector of Czech Moravian Breeders´ Corporation, Inc.
- **Fat percentage outside interval**
- Herds which produce bulls for AI, cows with high milk yield, etc.
- Repeat sampling is ensured **no later than 48 hours after routine test day**
- There are two possibilities: repeat sampling of all animals from the test day or comparison of a group of selected animals
- **The key indicator is the fat percentage:** selection of herds, average value of fat was calculated from the weighted means of on-going lactations in milk recording in the Czech Republic, interval plus minus 2 standard deviations
- Differences are analysed separately in each particular animal
- Cancelling of results from the test day or repeating of test day

Plausibility checks (logical checks in software)

- **Other checks are in other parts of collecting data**
- Inspectors for performance recording
- Czech Breeding Inspection
- Super control – repeat sampling
- Managers of Czech Moravian Breeders' Corporation, Inc.
- **Checks in software**

- **Each event has its own numerical code and these codes are used for the changes in the database (new status of animal or specific action)**
- **In some cases, a letter or non-numerical mark is used**

- **Checks in software-conception frame**
- Error-printing report
- Errors marks * are not processed, in other cases alarm messages are printed

An example of plausibility checks (logical checks in software)

- 11 * Double report (same cow, same date of control day)
- 12 * Report form, non recorded stable
- 13 * Cow is not registered
- 14 * After 305 days after calving milk production increases more than 6 kilograms
- 15 * Milk and milk contents outside intervals
- 16 * Test day, or fat content reported after 365 days after calving, test day after finished
- lactation
- 17 * Test day is less than 6 days after calving
- 18 * Date of test day is less than process day
- 19 * Illogical date of test day, illogical time of milking, illogical interval between milking

- **Reports deal with changes of calvings and movements**
- 30 * Illogical sex of calve, unacceptable eartag
- 31 * Double report of change
- 32 * Movement to stable which is not on the list of stables in milk recording
- 33 * Cow is not registered
- 34 Chest girth, calving difficulties outside intervals Heifer pedigree is not available, Age at first calving is outside interval, pedigree is not accepted
- 35 * Mark of change does not exist
- 36 * Move down cow already exist
- 37 * Reported of change till closed lactation and unculled cow
- 38 * Illogical date of calving (outside interval)
- 39 * Calving interval outside interval

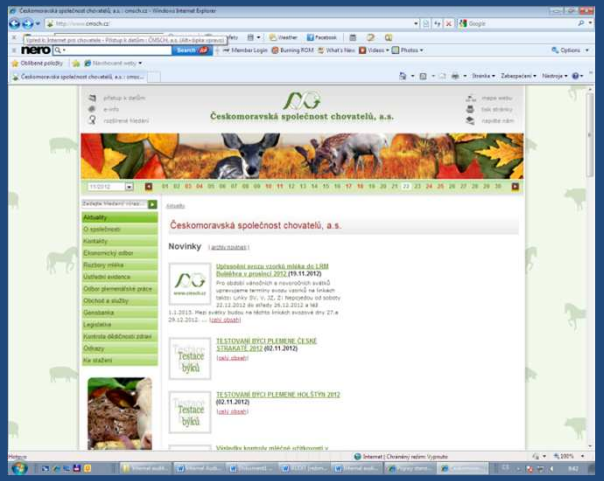
Plausibility checks (logical checks in software)

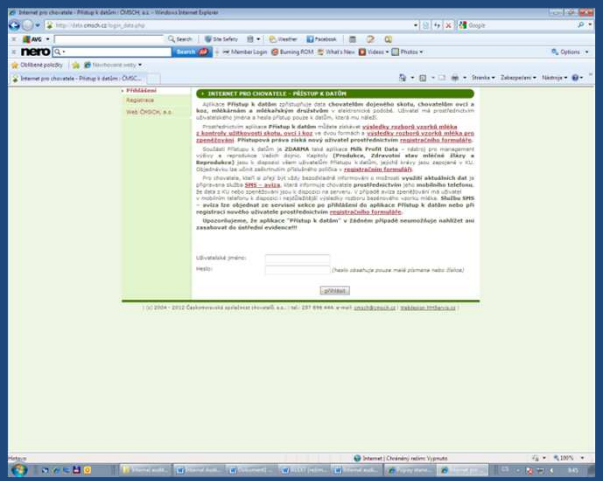
- **Overall milk yield – report of possible correction**
- 80 * Wrong number of cows
- 81 * Cow is not registered
- 82 * Lactation is not registered
- 83 * Lactation has not all information or this information is wrong
- 86 * Wrong value – chest girth
- 87 * Mistake in date of birth
- **One can also find some other reports and error checks in herd book processing, double calves, and reports for corrections in the whole live lactation of cow and errors in pedigree (only main points were mentioned)**
- **Other logical checks in software (plausibility checks reproduction, identification and registration, conformation, calving ease, herd book, quality assurance in laboratory……..etc.**

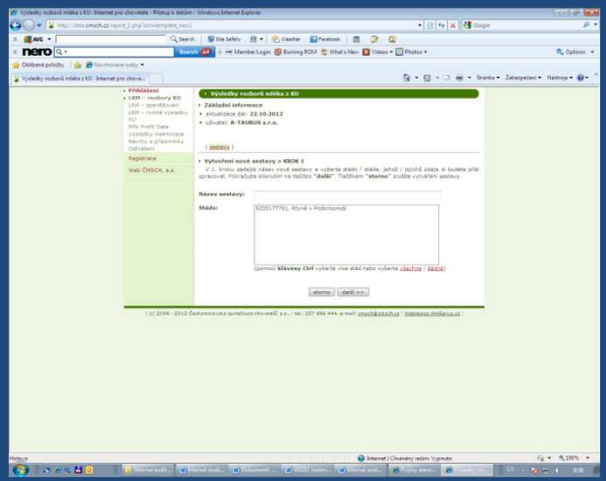
Outputs and information for breeders

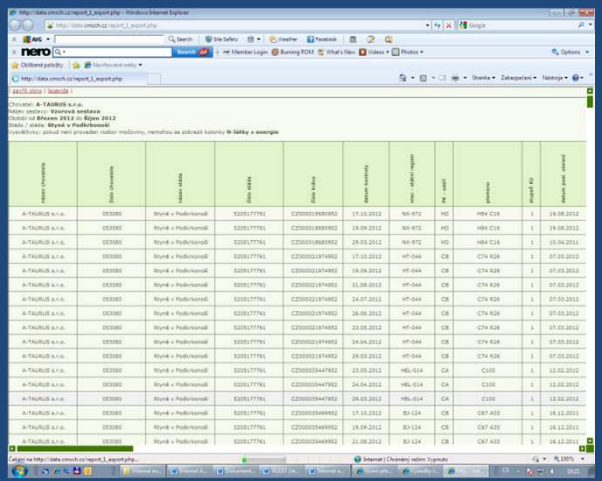
- **WWW pages – Easy data access available on line**
- There is a service which is called “easy data access”
- The breeders access results of milk analysis in real time
- Farmers find it easier to handle and process the data more suitable for herd management
- The data access is secured by password, supplied by the administrator after filling in the registration form
- Farmer can make data available to other people
- Quick overview about particular cows and their results
- The advantage of this application is the possibility of further processing of data
- The output data can be obtained in html, xls, txt, or csv formats
- It also makes it possible to create an overview for particular herds

WWW pages – Easy data access to the results of milk recording





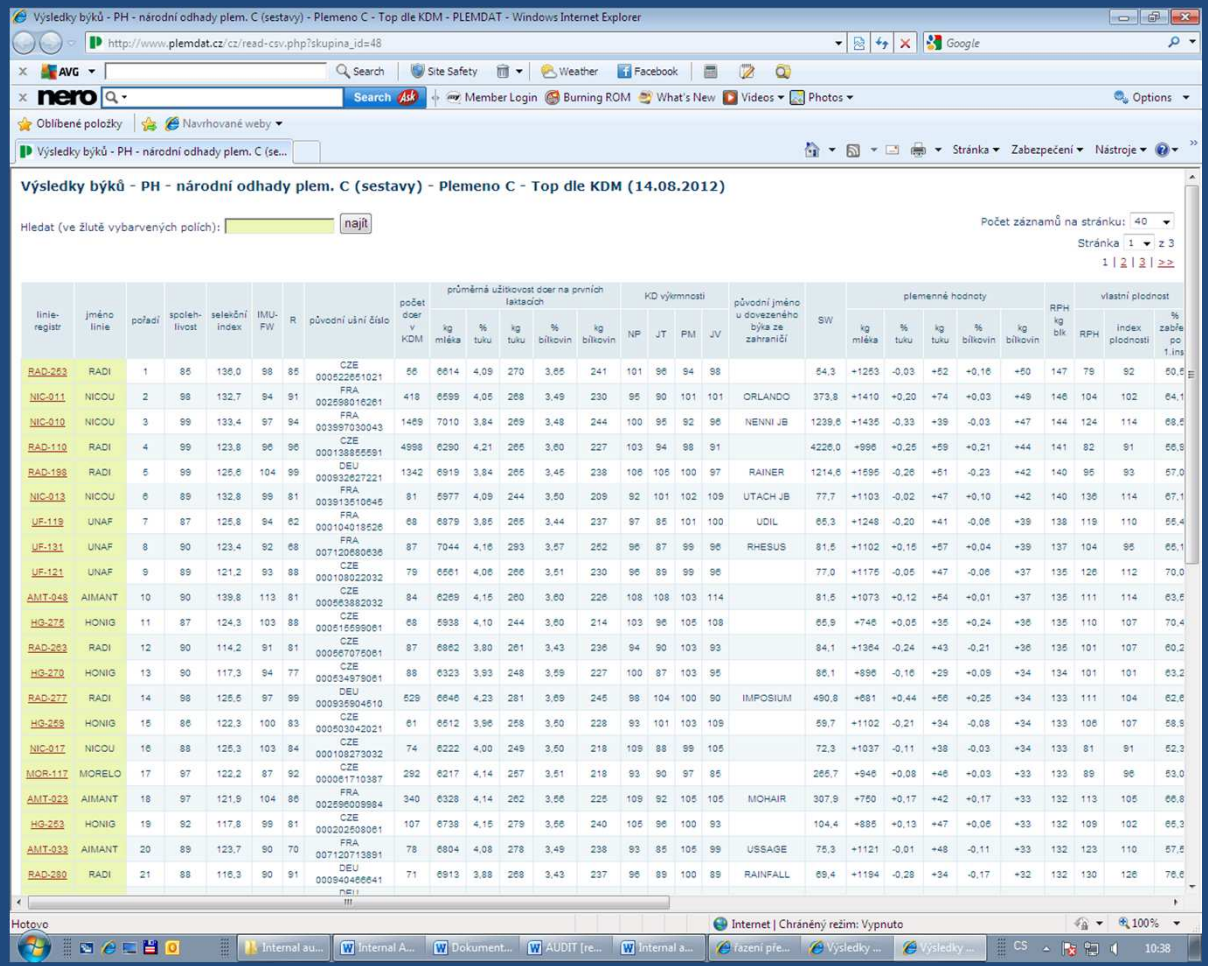




- **<u>It includes a different section:</u>**
- Analysis for milk recording
- Analysis for milk payment
- Quick results of milk recording
- Milk profit data used for management on the farm
- Results of artificial insemination

Results of BVE

- Available on line
- Different options and possibilities to sort animals according to the different criteria



Výsledky býků - PH - národní odhady plem. C (sestavy) - Plemeno C - Top dle KDM (14.08.2012)

Hledat (ve žlutě vybarvených polích): najít

Počet záznamů na stránku: 40

Stránka 1 z 3

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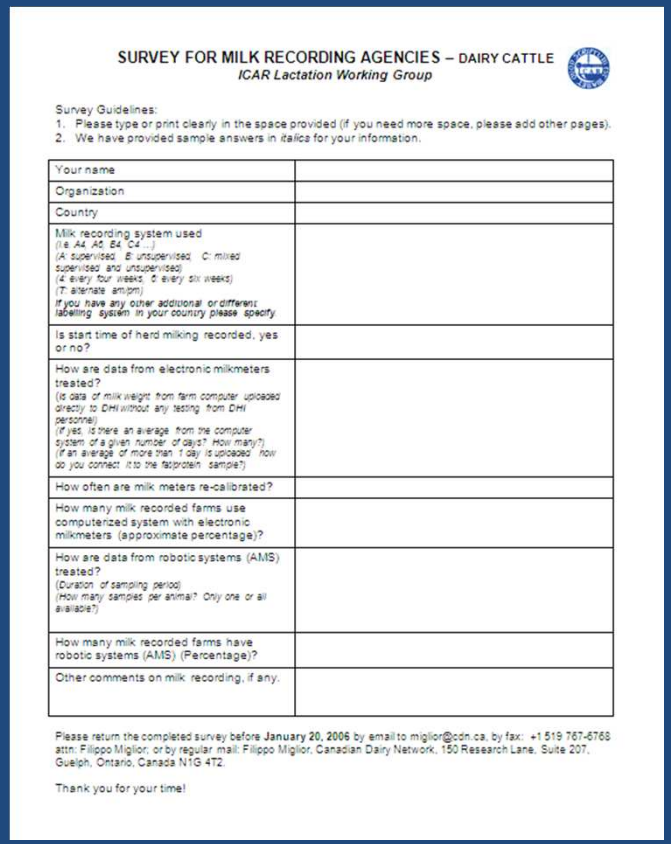
linie-registr	jméno linie	pořadí	spoleh-livost	selekční index	IMU-FW	R	původní ušní číslo	počet dcer v KDM	průměrná užitkovost dcer na prvních laktacích				KD výkrmnosti				původní jméno u dovezeného býka ze zahraničí	SW	plemenné hodnoty					RPH kg blk	vlastní plodnost		
									kg mléka	% tuku	kg tuku	% bílkovin	kg bílkovin	NP	JT	PM	JV			kg mléka	% tuku	kg tuku	% bílkovin	kg bílkovin		RPH	index plodnosti	% zabře po 1.ins
RAD-253	RADI	1	86	136,0	98	85	CZE 000522651021	56	6614	4,09	270	3,65	241	101	96	94	98		54,3	+1253	-0,03	+52	+0,16	+50	147	79	92	50,5
NIC-011	NICOU	2	98	132,7	94	91	FRA 002698016261	418	6599	4,05	268	3,49	230	95	90	101	101	ORLANDO	373,8	+1410	+0,20	+74	+0,03	+49	146	104	102	64,1
NIC-010	NICOU	3	99	133,4	97	94	FRA 003997030043	1469	7010	3,84	269	3,48	244	100	95	92	96	NENNI JB	1239,6	+1435	-0,33	+39	-0,03	+47	144	124	114	69,6
RAD-110	RADI	4	99	123,8	96	96	CZE 000138855691	4998	6290	4,21	265	3,60	227	103	94	98	91		4226,0	+996	+0,25	+59	+0,21	+44	141	82	91	56,9
RAD-198	RADI	5	99	125,6	104	99	DEU 000932627221	1342	6919	3,84	265	3,45	238	106	105	100	97	RAINER	1214,6	+1595	-0,26	+51	-0,23	+42	140	95	93	57,0
NIC-013	NICOU	6	89	132,8	99	81	FRA 003913510645	81	5977	4,09	244	3,50	209	92	101	102	109	UTACH JB	77,7	+1103	-0,02	+47	+0,10	+42	140	136	114	67,1
UF-119	UNAF	7	87	125,8	94	62	FRA 000104018526	68	6879	3,85	265	3,44	237	97	95	101	100	UDIL	65,3	+1248	-0,20	+41	-0,06	+39	138	119	110	55,4
UF-131	UNAF	8	90	123,4	92	68	FRA 007120680636	87	7044	4,16	293	3,57	252	96	87	99	96	RHESUS	81,5	+1102	+0,15	+57	+0,04	+39	137	104	95	65,1
UF-121	UNAF	9	89	121,2	93	88	CZE 000108022032	79	6561	4,06	266	3,51	230	96	89	99	96		77,0	+1176	-0,05	+47	-0,06	+37	135	126	112	70,0
AMT-048	AIMANT	10	90	139,8	113	81	CZE 000563882032	84	6269	4,15	260	3,60	226	108	108	103	114		81,5	+1073	+0,12	+54	+0,01	+37	135	111	114	63,6
HG-276	HONIG	11	87	124,3	103	88	CZE 000515599061	68	5938	4,10	244	3,60	214	103	96	105	108		65,9	+746	+0,05	+35	+0,24	+36	135	110	107	70,4
RAD-263	RADI	12	90	114,2	91	81	CZE 000567075061	87	6662	3,80	261	3,43	236	94	90	103	93		84,1	+1364	-0,24	+43	-0,21	+36	135	101	107	60,2
HG-279	HONIG	13	90	117,3	94	77	CZE 000534979061	88	6323	3,93	248	3,69	227	100	87	103	95		86,1	+896	-0,16	+29	+0,09	+34	134	101	101	63,2
RAD-277	RADI	14	98	125,6	97	99	DEU 000935904510	529	6646	4,23	281	3,69	245	98	104	100	90	IMPOSIUM	490,8	+681	+0,44	+56	+0,25	+34	133	111	104	62,6
HG-259	HONIG	15	86	122,3	100	83	CZE 000503042021	61	6512	3,96	258	3,50	228	93	101	103	109		59,7	+1102	-0,21	+34	-0,08	+34	133	106	107	58,9
NIC-017	NICOU	16	88	125,3	103	84	CZE 000108273032	74	6222	4,00	249	3,50	218	109	88	99	105		72,3	+1037	-0,11	+38	-0,03	+34	133	81	91	52,3
MOR-117	MORELO	17	97	122,2	87	92	CZE 000661710387	292	6217	4,14	257	3,51	218	93	90	97	86		265,7	+946	+0,08	+46	+0,03	+33	133	89	96	53,0
AMT-023	AIMANT	18	97	121,9	104	86	FRA 002596009984	340	6328	4,14	262	3,56	225	109	92	105	105	MOHAIR	307,9	+750	+0,17	+42	+0,17	+33	132	113	105	66,8
HG-263	HONIG	19	92	117,8	99	81	CZE 000202508061	107	6738	4,15	279	3,56	240	105	96	100	93		104,4	+885	+0,13	+47	+0,06	+33	132	109	102	65,3
AMT-033	AIMANT	20	89	123,7	90	70	FRA 007120713891	78	6804	4,08	278	3,49	238	93	85	105	99	USSAGE	75,3	+1121	-0,01	+48	-0,11	+33	132	123	110	57,6
RAD-280	RADI	21	88	116,3	90	91	DEU 000940466641	71	6913	3,88	268	3,43	237	96	89	100	89	RAINFALL	69,4	+1194	-0,28	+34	-0,17	+32	132	130	126	76,6

Outputs for the farmers

- On line data access to the results of bulls and cows with all available results of performance and BVE
- Paper summaries
- Other possibilities (e. g. data files, etc.)
- One can also find other examples of services, reports and summaries for dairy cattle. Example listed above covers only selected services and reports
- The results are delivered to the farmers with a relatively extensive set of possibilities

Guidelines and survey

- Previous survey was well prepared
- Maybe it would be possible to add selected areas valuable for Guidelines and/or workshop and/or practical paper and recommendations from our working group valuable for the ICAR members



SURVEY FOR MILK RECORDING AGENCIES – DAIRY CATTLE
ICAR Lactation Working Group

Survey Guidelines:
1. Please type or print clearly in the space provided (if you need more space, please add other pages).
2. We have provided sample answers in *italics* for your information.

Your name	
Organization	
Country	
Milk recording system used *(i.e. A4, A6, B4, C4 ...)* *(A: supervised, B: unsupervised, C: mixed supervised and unsupervised)* *(4: every four weeks, 6: every six weeks)* *(T: alternate am/pm)* ***If you have any other additional or different labelling system in your country please specify.***	
Is start time of herd milking recorded, yes or no?	
How are data from electronic milkmeters treated? *(Is data of milk weight from farm computer uploaded directly to DHI without any testing from DHI personal)* *(If yes, is there an average from the computer system of a given number of days? How many?)* *(If an average of more than 1 day is uploaded, how do you connect it to the fat/protein sample?)*	
How often are milk meters re-calibrated?	
How many milk recorded farms use computerized system with electronic milkmeters (approximate percentage)?	
How are data from robotic systems (AMS) treated? *(Duration of sampling period)* *(How many samples per animal? Only one or all available?)*	
How many milk recorded farms have robotic systems (AMS) (Percentage)?	
Other comments on milk recording, if any.	

Please return the completed survey before **January 20, 2006** by email to miglior@cdn.ca, by fax: +1 519 767-6768 attn: Filippo Miglior; or by regular mail: Filippo Miglior, Canadian Dairy Network, 150 Research Lane, Suite 207, Guelph, Ontario, Canada N1G 4T2.

Thank you for your time!

Report of the ICAR Working Group on Lactation Calculation Methods
A survey on milk recording strategies in dairy cattle

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Summary

A survey was prepared by the Lactation Working Group in order to get relevant information in various countries on milk recording with electronic milk meters, automatic milking systems, labeling and milk recording strategies. The survey was delivered in January 2006 to forty-four ICAR member organizations from 39 countries. Thirty-six organizations from 30 countries answered the survey, giving a response rate of 82%. More and more farms are investing in milk recording systems with electronic milk meters or robotic systems which allows for storage and transmission of possibly more accurate data to dairy herd improvement (DHI) organizations. Many countries still do not offer am/pm or unsupervised milk recording, thus, limiting the range of services (and prices) offered to DHI clients.

Keywords: Survey, automated milking systems, electronic milk meters

Introduction

The ICAR Lactation Working Group completed a survey in 2000 among ICAR member countries (Miglior et al., 2000). The focus of the survey was to assess daily yield and lactation calculation methods in various countries. Relevant information was compiled in order to update and propose new guidelines concerning the calculation of daily yield, when data has been collected with flexible recording or automated milking systems (AMS). Since 2000, several research projects have been carried out by lactation working group members who subsequently updated existing guidelines on milk recording, and developed new guidelines for lactation calculation methods, alternate milk recording and milk recording in AMS herds. Missing in the 2000 survey was information on distribution and protocols for milk recording in farms with electronic milk meters. Electronic milk meters (EMM) are more widely used than AMS and there are no clear guidelines for milk recording in farms with EMM, especially for data updated directly from farm computers to DHI data base. Thus, a new survey was prepared by the Lactation Working Group in order

Guidelines and survey – new schemes of milk recording and precision marking of the milk recording method and sampling

Marking of the different method and sampling

→ **Germany – very sophisticated description of method and sampling**

↓ **Czech Republic – milk yield from all milkings and sampling p.m. a.m.**

- Survey – we could analyse the marking of less used methods and different approaches to sampling
- Guidelines – is there a need to have highly sophisticated marking system for sampling?
- In some specific cases (e. g. big herd) are these less used methods potentially valuable

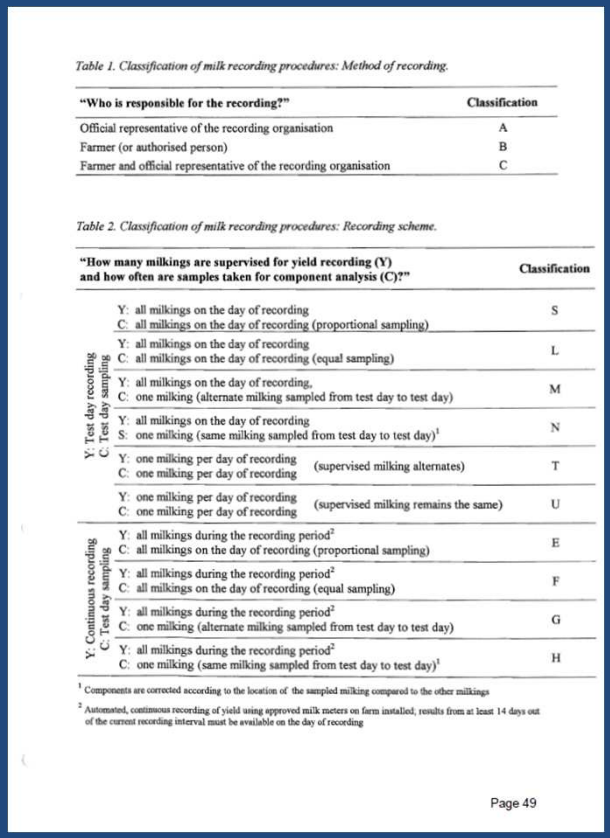

Table 1. Classification of milk recording procedures: Method of recording.

"Who is responsible for the recording?"	Classification
Official representative of the recording organisation	A
Farmer (or authorised person)	B
Farmer and official representative of the recording organisation	C

Table 2. Classification of milk recording procedures: Recording scheme.

	"How many milkings are supervised for yield recording (Y) and how often are samples taken for component analysis (C)?"		Classification
Y: Test day recording C: Test day sampling	Y: all milkings on the day of recording C: all milkings on the day of recording (proportional sampling)		S
	Y: all milkings on the day of recording C: all milkings on the day of recording (equal sampling)		L
	Y: all milkings on the day of recording, C: one milking (alternate milking sampled from test day to test day)		M
	Y: all milkings on the day of recording S: one milking (same milking sampled from test day to test day)[1]		N
	Y: one milking per day of recording C: one milking per day of recording	(supervised milking alternates)	T
	Y: one milking per day of recording C: one milking per day of recording	(supervised milking remains the same)	U
Y: Continuous recording C: Test day sampling	Y: all milkings during the recording period[2] C: all milkings on the day of recording (proportional sampling)		E
	Y: all milkings during the recording period[2] C: all milkings on the day of recording (equal sampling)		F
	Y: all milkings during the recording period[2] C: one milking (alternate milking sampled from test day to test day)		G
	Y: all milkings during the recording period[2] C: one milking (same milking sampled from test day to test day)[1]		H

[1] Components are corrected according to the location of the sampled milking compared to the other milkings

[2] Automated, continuous recording of yield using approved milk meters on farm installed; results from at least 14 days out of the current recording interval must be available on the day of recording

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Supervision, quality assurance and repeat sampling Guidelines and survey

Harmonisation with ICAR CoQ, Guidelines for auditor

Quality of milk recording

Repeat sampling – which approach is used?

Logical checks in software (plausibility checks)

Supervision – which tools are used?

Some of the issues could be useful and valuable on how to improve ICAR Guidelines, for survey or practical oriented paper

Maybe it would be possible to add some short recommendations (points) to ICAR Guidelines in these fields

Processes in milk recording guidelines and/or survey

Not necessary to analyse all processes, possible approach is to select only valuable for Guidelines or practical workshop

Mapping of different processes in milk recording

- Sample identification and transport
- Organisation and planning
- Practical working procedure
- Tools for data capture and processes in milk recording
- Practical working procedure
- Lactation calculation method

To select key processes for the survey and then to use for Guidelines and/or practical workshop and/or paper with recommendations

Output from milk recording - survey

- Parameters and its statistical formulation
- Possible issue for our survey
- Partly relevant for amendments of ICAR Guidelines and maybe for paper and/or workshop about milk recording
- Advisory
- Supervisory and its connection with the Guidelines for ICAR CoQ

Milk meters in the Czech milk recording scheme (2011)

Type	Number of meters
Tru-Test Auto sampler	646
Tru-Test HI	2,192
Tru-Test WB	356
Afikim (Fullflow)	1,788
Afifflo 2000	1,561
Afifflo 9000	790
BouMatic Perfection 3000	865
Dairy Master Weighall	104
Favorit International	658
Flowmaster 2000/Alpro Flowmaster Pro	590
Metatron	2,186
MR 2000 (Combina 2000)	64
Pulsameter 2	20
Afilite	1,245
Insentec	666

Thank you for your attention!