AMS in Germany – dataprocessing in milkrecording

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vit – Who we are!

- non profit organisation, owned by DHI, AI and Herdbook organisations
- vit provide services for
  - Herdbook and AI-organisation (all Germany and Luxemburg)
  - Genetic evaluation (all Germany, Austria and Luxemburg)
  - Identification and registration (regional)
  - Milkrecording organisation (DHI)
- our service for milkrecording organisation
  - data collecting software for electronic devices
  - laboratory software to connect farm data and milksample data
  - data processing and verification
  - data supply for all kind of herd management
    - paper
    - software
    - web based
  - ....
- 8 of 12 milkrecording organisation in Germany (and Luxembourg) use our services

vit – member organisation in milkrecording

- 14,600 farms

- 1,760,000 Cows

- mostly Holstein

- these are 75 % of
 milk recorded Holstein cows
  in Germany
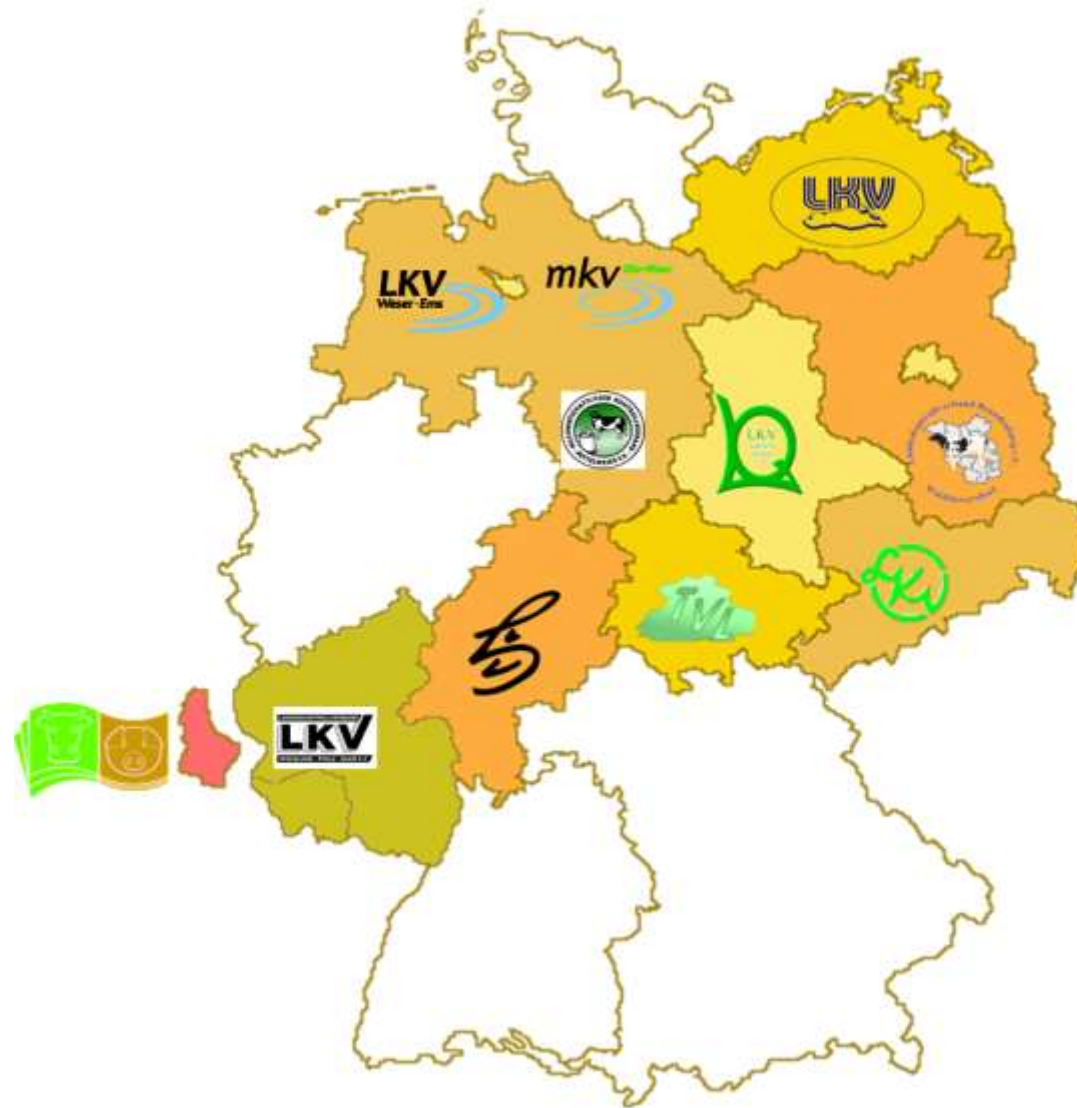
Introduction of AMS in Germany

- similar to other european countries
- structural differences in the mid 90's in Germany
  - family driven farms in the west part
    - herd size around 40 cows
    - often breeders
  - cooperations in the east part
    - herd size around 200 cows (with a high percentage of bigger farms)

- first AMS on production farms are installed in the mid 90's
  - mostly on family farms
    - more flexibility
    - open for innovation
  - upcoming interest since the last 10 years of bigger farms
    - problems to require good staff for milking
    - rationalization

Development of AMS in vit milkrecording organisation
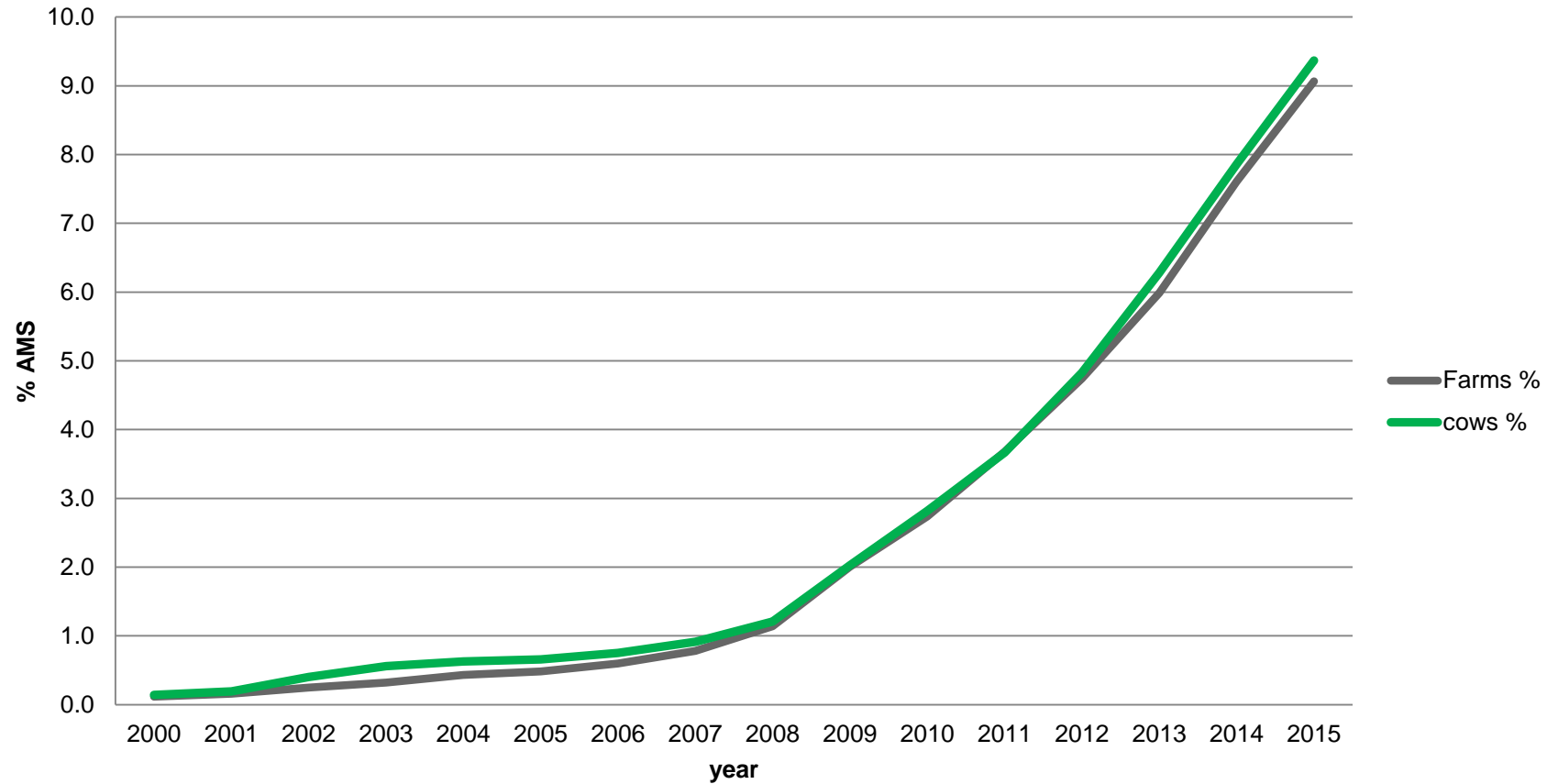
Milkrecording in AMS

- in 1997 the first farmers required for milkrecording with AMS
  - their requirement to data processing:
    - comparable results for daily milk yield and contents to conventional herds
    - calculation of a "true lactation yield"

  - requirement of data processing center's:
    - one interface for all supplier's
    - raw data for all further calculation

- national DLQ guideline 1.8 "Milkrecording in AMS"
  - definition of interface
  - definition of 24h milk yield and test day result for ingredients
  - definition to calculate lactation yield

Calculation of contents at testday

- at testday from every milking during a period of 24h should a sample be taken
- accuracy versus costs
- example:

	Date	time	TBM	MYkg	F%	P%
1	20160913	1:35	351	9.9	5.92	3.07
2	20160912	19:44	533	14.1	4.92	3.18
3	20160912	10:51	684	17.4	4.53	3.17
4	20160911	23:27	557	14.6		
5	20160911	14:10	899	18.3		

48 h

- calculation of fat % at testday:

F% = (9.9 MYkg x 5.92 F% + 14.1 MYkg x 4.92 F% + 17.4 MYkg x
     4.53 F%) / (9.9 MYkg + 14.1 MYkg + 17.4 MYkg)

  = 5.00 % fat at testday

Calculation of daily milk yield

- use of all milking's during 48 h backwards from last sample of each animal
- corrected on 24 h
- example:

	Date	time	TBM	MYkg	ΣTBM	Σ MYkg
1	20160913	1:35	351	9.9	351	9.9
2	20160912	19:44	533	14.1	884	24.0
3	20160912	10:51	684	17.4	1568	41.4
4	20160911	23:27	557	14.6	2125	56.0
5	20160911	14:10	899	18.3		

48 h

- calculation of testday milk yield:
  - milking No 1 is last sample at testday for the cow
  - milking No 1 to 4 are full integrated in the interval of 48 h (=2880 min)
  - milking No 5 is only partly integrated in the interval of 48 h (2880 – 2125) = 755 min)
  - 18.3 MYkg / 899 Min. TBM x 755 Min. = 15.4 Mykg

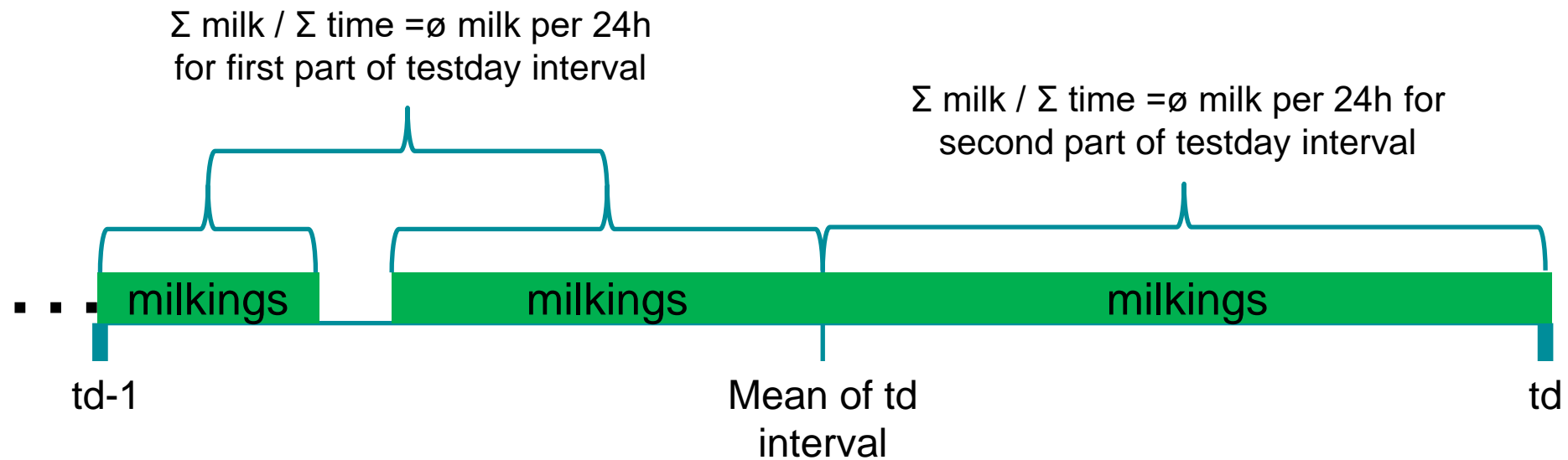 $\Rightarrow$ **(56.0 kg + 15.4 kg) / 48 h *24 h = <u>35.7 Mykg at testday</u>**

Calculation of lactation

- Germany use TIM to calculate lactation

- requirement of farmer
  - lactation yield near to the truth
  - use of all milking between two testdays to calculate lactation yield

- very easy in theory
  - sum up all single milkings!

- Very hard in praxis
  - missing data
    - too short period exported by the farmer
    - cows out of system
      - treatment
      - show
  - data loss

AMS - Challenge of data processing

- mass of data - up to more than the 90-fold per cow/testday
  - 35 day testday interval X 2.6 milking per day

- storage of an average milk yield for both of the two parts of testday interval is the solution

Σ milk / Σ time =ø milk per 24h for first part of testday interval

Σ milk / Σ time =ø milk per 24h for second part of testday interval

milkings   milkings   milkings

td-1   Mean of td interval   td

Calculation of lactation

Use of testday interval

event	date	days		Σ MYkg*	Ø Mykg**	calculation	Σ MYkg
calving	01.09.15						
1. td	11.09.15	10		271.0	27.1	10 x 27.1	271.0
2. td	15.10.15	34	17	481.1	28.3	17 x 28.3	481.1
			17	552.5	32.5	17 x 32.5	552.5
3. td	20.11.15	36	18	621.0	34.5	18 x 34.5	621.0
			18	774.0	43.0	18 x 43.0	774.0
lactationyield at 20.11.15:				**2669.6**			**2.699.6**

* Sum from all single milking in the period

** This milk yield has to be stored additional to the testday result, to calculate lactation

Special quality check during data processing

- data format
  - animal ID

- milk per minute for every single milking

- identification of data loss

- number of sample per testday

- average number of sample per cow

- average milk per milking

- …

Arguments for milkrecording in AMS

- check farm data against information in other (official) database
    - Identification and registration

- approved combination of milkyield data with herdbook and AI data

- approved calculation methods which allow to compare
    - animals
    - farms
    - group of farms
        - same production trades
        - same size
        - same breed

Thanks for your attention!

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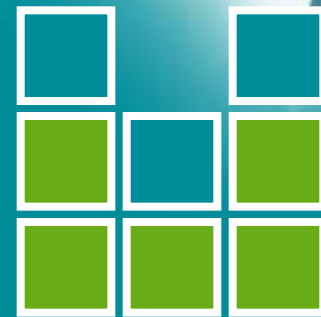
IT-Solutions for Animal Production