
Milk recording in Germany

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Cattle production in Germany in special respect of milk recording is described in this paper. The extent of milk recording is 60 % of all dairy herds and 80 % of all dairy cows. Herd sizes are varying from 36 cows in the western part and 192 cows in the eastern part of the country. The average production in 2000 is 7019 kg milk with 4,21 % fat and 3,43 % protein with distinct differences depending on the breeds. Milk recording methods have developed in the last ten years strongly to AT- and B-Methods, also due to the development of modern Milk meters especially the Lacto Corder. 118 farms are using automatic milking systems.

Summary

Cattle production in Germany covers 14.5 million animals; 4.5 millions of them are dairy cows to fulfill the national milk quota of about 27.7 million tons. Regular and systematic cattle breeding and milk recording in Germany have a long history. The first herdbook was founded in 1876 in Fischbeck (Sachsen-Anhalt) and the first milk recording organization in 1896 in Schleswig-Holstein.

Situation

Table 1 shows the momentary extent of milk recording; 60.1 % of all dairy farms and 80.4 % of all dairy cows. The different herd sizes attract attention. In the western part of Germany the herd sizes get smaller from North to South and amount to nearly 36 cows and in the eastern part 192 cows, this is due to the industrial milk production in the to former German Democratic Republic (DDR).

Table 1. Extent of milk recording.

| Region | Recorded Herds | | Recorded Cows | | Average cows recorded herds | Av. age of recorded cows Year |
|--------------------|----------------|-------------|------------------|-------------|-----------------------------|-------------------------------|
| | Absolut | (%) | Absolut | (%) | | |
| Schleswig-Holstein | 5 050 | 74.9 | 301 583 | 84.7 | 59.7 | 4.7 |
| Hannover-Bremen | 6 834 | 69.9 | 312 360 | 82.5 | 45.7 | 5.0 |
| Weser-Ems | 7 324 | 70.6 | 305 819 | 80.5 | 41.8 | 5.0 |
| Westfalen-Lippe | 4 412 | 52.9 | 167 790 | 74.9 | 38.0 | 4.7 |
| Nordrhein | 2 872 | 68.7 | 145 421 | 86.9 | 50.6 | 2.1 |
| Hessen | 3 574 | 53.3 | 127 079 | 78.1 | 35.6 | 4.9 |
| Rheinland-Pfalz | 2 421 | 62.6 | 101 329 | 77.7 | 41.9 | 4.8 |
| Saarland | 251 | 74.0 | 12 304 | 81.8 | 49.0 | 5.0 |
| Baden-Württemb. | 10 338 | 51.4 | 309 200 | 72.1 | 29.9 | 5.2 |
| Bayern | 35 696 | 57.4 | 1 039 040 | 73.4 | 29.1 | 5.0 |
| Mecklenburg-Vorp. | 977 | 78.9 | 186 033 | 95.5 | 190.4 | 4.6 |
| Brandenburg | 809 | 77.0 | 184 030 | 93.7 | 227.5 | 4.5 |
| Sachsen-Anhalt | 791 | 79.7 | 138 837 | 90.2 | 175.5 | 4.6 |
| Thüringen | 569 | 61.6 | 131 505 | 93.1 | 231.1 | 5.2 |
| Sachsen | 1 258 | 75.3 | 206 836 | 93.8 | 164.4 | 4.4 |
| Total | 83 176 | 60.1 | 3 669 166 | 80.4 | 44.1 | 4.8 |

Table 2 shows the average production of all recorded cows. Milk Recording in Germany is done by 15 regional Milk Recording Organizations-combined in the German Cattle Breeders Organization (ADR, Bonn) - according to the rules of ICAR and national regulations. Looking at the milk yield it is meaningful, that the cows in Eastern Germany raised their yield on an average of 270 kg per year in the last 10 years after the political reunion, mostly due to intensive efforts in breeding, feeding, housing etc.

Table 3 shows the average production of all recorded cows by different breeds; Dairy breeds as for e. g. Holsteins have the highest yield followed by the dual purpose and local breeds.

In table 4 you can see the use of ICAR-approved milk recording methods. Until 10 years ago more than 95 % of all cows were tested with the A4-method. At the moment only 53 % of all cows are tested with the A4-method and nearly 14 % with the B4-method, further 17 % are tested by the AT4- and nearly 2 % by the BT4-method. In Bayern (small herds, high costs) nearly 40 % of all milk recorded cows are tested by the AM4-system, that means milk yields at every milking time but alternating sampling. In the field of AM4- and BM4-testing the Lacto Corder is used, in Bayern about 8 000 meters.

Table 5 shows the milking equipment in recorded herds, which depends strongly on the herd size.

According to this we have to see the use of milk meters, which is shown in table 6. Of course, every assistant of the milk recording organizations still has scales. However in the case of Milk-Line-Systems and also in Milking

Table 2. Average production of all recorded cows by milk recording organization.

| Region | Cows | Milk | | Fat | | Protein | |
|--------------------|------------------|--------------|-------------|------------|-------------|------------|--|
| | | kg | % | kg | % | kg | |
| Schleswig-Holstein | 297 293 | 7 430 | 4.28 | 318 | 3.42 | 254 | |
| Hannover-Bremen | 314 960 | 7 946 | 4.26 | 338 | 3.41 | 271 | |
| Weser-Ems | 311 384 | 7 803 | 4.28 | 334 | 3.38 | 264 | |
| Westfalen-Lippe | 169 029 | 7 715 | 4.22 | 326 | 3.37 | 260 | |
| Nordrhein | 146 207 | 7 430 | 4.20 | 312 | 3.35 | 249 | |
| Hessen | 129 080 | 7 077 | 4.22 | 299 | 3.35 | 237 | |
| Rheinland-Pfalz | 104 463 | 6 693 | 4.25 | 285 | 3.32 | 222 | |
| Saarland | 12 494 | 6 556 | 4.22 | 277 | 3.32 | 218 | |
| Baden-Württemb. | 305 111 | 6 156 | 4.15 | 256 | 3.41 | 210 | |
| Bayern | 1 029 460 | 6 192 | 4.12 | 255 | 3.49 | 216 | |
| Mecklenburg-Vorp. | 185 605 | 7 486 | 4.25 | 318 | 3.47 | 260 | |
| Brandenburg | 184 604 | 7 293 | 4.24 | 309 | 3.47 | 253 | |
| Sachsen-Anhalt | 139 144 | 7 551 | 4.23 | 319 | 3.46 | 261 | |
| Thüringen | 132 946 | 7 198 | 4.26 | 307 | 3.44 | 247 | |
| Sachsen | 207 887 | 7 393 | 4.30 | 318 | 3.46 | 256 | |
| <i>Total 2000</i> | <i>3 669 667</i> | <i>7 019</i> | <i>4.21</i> | <i>296</i> | <i>3.43</i> | <i>241</i> | |
| <i>Total 1999</i> | <i>3 742 685</i> | <i>6 752</i> | <i>4.22</i> | <i>285</i> | <i>3.43</i> | <i>232</i> | |

Table 3. Average production of all recorded cows by breed.

| Breed | Cows | Milk. days | Milk kg | Fat % | Fat kg | Protein % | Protein kg |
|-----------------------------|------------------|---------------|--------------|-------------|------------|--------------|---------------|
| Holstein-Sbt | 2 039 209 | 317 | 7 624 | 4.24 | 323 | 3.41 | 260 |
| DSB ²⁾ | 2 177 | 313 | 6 397 | 4.28 | 274 | 3.53 | 226 |
| Holstein-Rbt | 315 080 | 316 | 6 901 | 4.25 | 294 | 3.37 | 233 |
| RDN ³⁾ | 61 201 | 304 | 6 408 | 4.24 | 272 | 3.45 | 221 |
| Rotvieh | 17 626 | 318 | 6 655 | 4.84 | 322 | 3.63 | 241 |
| Rotvieh alter Zuchtrich. | 396 | 289 | 6 185 | 4.34 | 268 | 3.46 | 214 |
| Jersey | 2 953 | 313 | 4 998 | 5.93 | 297 | 4.08 | 204 |
| Fleckvieh | 932 751 | 316 | 6 046 | 4.12 | 249 | 3.48 | 210 |
| Braunvieh | 207 733 | 322 | 6 182 | 4.13 | 255 | 3.56 | 220 |
| Gelbvieh | 9 315 | 314 | 5 372 | 4.13 | 222 | 3.52 | 189 |
| Vorwalder | 6 954 | 315 | 5 047 | 4.13 | 208 | 3.31 | 167 |
| Hinterwalder | 672 | 304 | 3 392 | 4.05 | 137 | 3.40 | 115 |
| Pinzgauer | 527 | 307 | 4 649 | 3.89 | 181 | 3.35 | 156 |
| Murnau- Werdenfelser | 208 | 302 | 4 242 | 3.63 | 154 | 3.28 | 139 |
| Limpurger | 143 | 311 | 4 301 | 4.02 | 173 | 3.32 | 143 |
| Sonstige ¹⁾ | 72 722 | 316 | 6 530 | 4.23 | 276 | 3.42 | 224 |
| Total 2000 | 3 669 667 | 317 | 7 019 | 4.21 | 296 | 3.43 | 241 |
| Total 1999 | 3 742 685 | 315 | 6 752 | 4.22 | 285 | 3.43 | 232 |

¹Also cows in mixed herds

²Holstein-Sbt, Dual purpose

³Holstein-Rbt, Dual purpose.

Table 4. Use of ICAR-approved milk recording methods (cows).

| Region | AS ¹⁾ | | BS ²⁾ | | AT ³⁾ | | BT ⁴⁾ | | AM ⁵⁾ | | BM ⁶⁾ | |
|--------------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|------------|------------------|-------------|------------------|------------|
| | (n) | (%) | (n) | (%) | (n) | (%) | (n) | (%) | (n) | (%) | (n) | (%) |
| Schleswig-Holstein | 59 614 | 19.8 | 103 293 | 34.2 | 70 518 | 23.4 | 34 840 | 11.5 | 9 618 | 3.2 | 23 700 | 7.9 |
| Hannover-Bremen | 268 749 | 86.9 | 6 471 | 2.1 | 30 399 | 9.8 | 966 | 0.3 | | | | |
| Weser-Ems | 280 842 | 91.9 | | | 24 886 | 8.1 | | | | | | |
| Westfalen-Lippe | 148 505 | 88.5 | 16 066 | 9.6 | 3 219 | 1.9 | | | | | | |
| Nordrhein | 112 972 | 77.7 | | | 32 443 | 22.3 | | | | | | |
| Hessen | 116 983 | 92.0 | 10 158 | 8.0 | | | | | | | | |
| Rheinland-Pfalz | 101 329 | 100.0 | | | | | | | | | | |
| Saarland | 12 095 | 98.1 | 240 | 2.0 | | | | | | | | |
| Baden-Württemb. | 235 776 | 76.3 | 63 345 | 20.5 | 7 081 | 2.3 | 2 998 | 1.0 | | | | |
| Bayern | 188 376 | 18.2 | 2 289 | 0.2 | 419 773 | 40.6 | 91 | | 410 183 | 39.7 | 12 183 | 1.2 |
| Mecklenburg-Vorp. | 25 787 | 27.9 | 66 548 | 72.1 | | | | | | | | |
| Brandenburg | 96 843 | 52.6 | 84 511 | 45.9 | 115 | 0.1 | 2 561 | 1.4 | | | | |
| Sachsen-Anhalt | 73 661 | 53.1 | 46 585 | 33.6 | 219 | 0.2 | 10 417 | 7.5 | 396 | 0.3 | 5 475 | 3.9 |
| Thüringen | 50 619 | 38.5 | 50 896 | 38.7 | 452 | 0.3 | 7 589 | 5.8 | 1 189 | 0.9 | 20 760 | 15.8 |
| Sachsen | 115 153 | 55.9 | 32 585 | 15.8 | 16 324 | 7.9 | 6 616 | 3.2 | 17 292 | 8.4 | 18 138 | 8.8 |
| Total | 1 887 304 | 53.0 | 482 987 | 13.6 | 605 429 | 17.0 | 66 078 | 1.9 | 438 678 | 12.3 | 80 256 | 2.3 |

ICAR approved milk recording methods in Germany in 1999:

1) AS: 4 weeks, assistant

2) BS: 4 weeks, farmer

3) AT: 4 weeks, alternating, assistant

4) BT: 4 weeks, alternating, farmer

5) AM: 4 weeks, alternating sampling, assistant

6) BM: 4 weeks, alternating sampling, farmer

Table 5. Milking Equipment in recorded herds (percent).

| Region | Bucket sets | | Milk-line-system | | Milking parlors | |
|--------------------|-------------|--------------|------------------|--------------|-----------------|--------------|
| | Abs. | % | Abs. | % | Abs | % |
| Schleswig-Holstein | 61 | 1.11 | 1 664 | 30.28 | 3 771 | 68.61 |
| Hannover-Bremen | 558 | 7.10 | 4 010 | 48.42 | 3 684 | 44.48 |
| Weser-Ems | 486 | 6.00 | 4 067 | 50.24 | 3 542 | 43.76 |
| Westfalen-Lippe | 236 | 4.72 | 2 841 | 56.83 | 1 922 | 38.45 |
| Nordrhein | 71 | 2.24 | 1 350 | 42.68 | 1 742 | 55.07 |
| Hessen | 345 | 8.82 | 2 360 | 60.34 | 1 206 | 30.84 |
| Rheinland-Pfalz | 98 | 3.84 | 1 312 | 51.35 | 1 145 | 44.81 |
| Saarland | - | - | 110 | 41.51 | 155 | 58.49 |
| Baden-Württemb. | 2 040 | 18.67 | 5 710 | 52.25 | 3 179 | 29.09 |
| Bayern | 4 897 | 13.36 | 24 813 | 67.70 | 6 941 | 18.94 |
| Mecklenburg-Vorp. | 37 | 3.58 | 146 | 14.12 | 851 | 82.30 |
| Brandenburg | 22 | 2.59 | 154 | 18.10 | 675 | 79.32 |
| Sachsen-Anhalt | 40 | 3.98 | 205 | 20.40 | 760 | 75.62 |
| Thüringen | 82 | 12.69 | 229 | 35.45 | 335 | 51.86 |
| Sachsen | 74 | 5.89 | 351 | 27.95 | 831 | 66.16 |
| <i>Total 1999</i> | | <i>10.18</i> | | <i>55.33</i> | | <i>34.48</i> |
| <i>Total 1998</i> | | <i>11.30</i> | | <i>57.19</i> | | <i>31.51</i> |

Parlors mostly the Tru Test Milkmeter is in use, nearly 48 000 all over the country. Milk jars are installed mainly in the north-western part of Germany, especially in Weser-Ems.

Bigger farms with loose housing systems, milking parlors and modern herd management systems have electronic milk meters, mostly in the northwestern part of Germany (Schleswig-Holstein, Niedersachsen) and especially in the eastern part of Germany with the big herd sizes of approximately 200 cows, at the moment more than 50 % of all milk recorded herds in Eastern Germany have such techniques.

Table 6. Use of milk meters.

| Region | Scales | Tru Test | Waikato | Milko | | Electronic MM | |
|--------------------|--------------|---------------|------------|------------|---------------|---------------|---------------|
| | | | | Scope | Jars | Meters | farms |
| Schleswig-Holstein | 133 | 3 500 | 13 | 12 | 3 292 | 2 539 | 478 |
| Hannover-Bremen | 298 | 5 103 | 126 | - | 1 303 | 3 183 | 284 |
| Weser-Ems | 622 | 4 708 | - | - | 8 507 | 4 029 | 444 |
| Westfalen-Lippe | 130 | 2 400 | - | - | 823 | 1 468 | 180 |
| Nordrhein | 340 | 3 188 | - | - | 568 | 617 | 60 |
| Hessen | 500 | 2 480 | - | 6 | 128 | 745 | 82 |
| Rheinland-Pfalz | 250 | 1 200 | - | - | - | 34 | k A |
| Saarland | 6 | 200 | - | - | 450 | 73 | 8 |
| Baden-Württemb. | 1 215 | 5 747 | - | 147 | 569 | 2 282 | 270 |
| Bayern | 3 650 | 9 700 | - | - | 1 179 | 14 988 | 21 760 |
| Mecklenburg-Vorp. | 25 | 2 508 | 118 | 20 | 98 | 6 954 | 337 |
| Brandenburg | 21 | 1 835 | 22 | 32 | 6 | 7 484 | 394 |
| Sachsen-Anhalt | 20 | 1 569 | 40 | 32 | 38 | 5 723 | 362 |
| Thüringen | 30 | 1 527 | 168 | 20 | 42 | 5 791 | 330 |
| Sachsen | 65 | 2 175 | 198 | 86 | 108 | 8 395 | 435 |
| <i>Total 1999</i> | <i>7 305</i> | <i>47 840</i> | <i>685</i> | <i>355</i> | <i>17 111</i> | <i>64 305</i> | <i>25 424</i> |
| <i>Total 1998</i> | <i>8 110</i> | <i>50 698</i> | <i>643</i> | <i>412</i> | <i>16 431</i> | <i>53 804</i> | <i>4 487</i> |

8 000 of nearly 15 000 electronical milk meters in Bayern are Lacto Corder, they are mobile meters and are used for milk recording, more and more for testing milkability and also for advising the dairy farmers in milk production.

Recently the ADR made a survey of the extent of automatic milking in Germany. We found that at the moment 118 dairy farmers use robotic milking systems of 6 producers, most of these farms are located in North-western Germany, (Niedersachsen 20 farms and Bayern 22 farms).

Main fields of activities of the German milk recording organisations

- Official Milk recording of cows, sheep and goats;
- Analyzing milk samples both for milk recording and milk quality for payment;
- Cattle marking with ear tags according to EU-rules;
- Tasks in Quality Dairy Production and advising the farmers.

References

Arbeitsgemeinschaft Deutscher Rinderzüchter (ADR), Bonn, Germany, "Rinderproduktion in der Bundesrepublik Deutschland 2000" (Ausgabe 2001)

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