

What is the required Accuracy of a Test related to Genetic Improvement



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Report of ICAR/ INTERBULL working group

- Report to ICAR board, 1998
- Objectives:
 - ▶ Effect of test interval (with and without measurement error) on accuracy of lactation;
 - ▶ Effect of accuracy of lactation on genetic progress;
 - ▶ Recommendations to ICAR.



Conclusions

- Milk yield: decrease accuracy meter with 1 kg is equivalent with increase test interval with 1 week
- Till 8 weekly recording, genetic gain is hardly effected
- Tests in mid lactations are best
- Need for reliability measures in 305 day records
- Improve methods to calculate 305 day yields



Conclusions

- More animals in recording better than more tests per animal
- Invest in data quality check:
 - ▶ Use of integrated Recording Registration System
 - ▶ Most genetic loss by faulty data
 - ▶ develop statistics to access accuracy and report to farmers



Recommendations to ICAR

- Be flexible in Recording schemes: offer more options
- Frequency from all milkings to 4-5 tests per 305 days
- ICAR Accuracy of meters can be relaxed (till 7.5%?)
- A lactation record must be transparent (showing accuracy of record)



Effect of measurement error on heritability



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Study Galesloot, Ouweltjes, Wilmink (1998)

- Dataset of 4870 lactations with all milking records
- Simulation of the inaccuracy of meter



Heritability at different rates of Accuracy meter

Number of tests	Weekly interval	Hertability 305 day milk		
		0,05%	5%	10%
	daily	0,30	0,30	0,30
43	1	0,30	0,30	0,29
22	2	0,29	0,29	0,29
15	3	0,29	0,29	0,28
10	4	0,29	0,28	0,27
9	5	0,28	0,28	0,27
8	6	0,28	0,28	0,26
7	7	0,28	0,27	0,25
6	8	0,27	0,27	0,25
5	9	0,27	0,26	0,24



Discussion

- Accuracy of meters must be relaxed (till 10%)
- Meters must be unbiased
- Emphasis on reducing costs milk recording
- Invest in:
 - ▶ cheap unbiased meters so that data collection process can be more automated
 - ▶ reduction of costs for analysis of milk content (allow lower accuracy)

