Biomarker-based advice in practice
What does it mean?

Stakeholdermeeting: The use of biomarkers in milk for dairy farming

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MILK@VICE

Mission

- We are committed to healthy cows. Fertile cows that produce healthy, high-quality milk. This is the basis for a financially healthy farm, ready for what the future will bring.

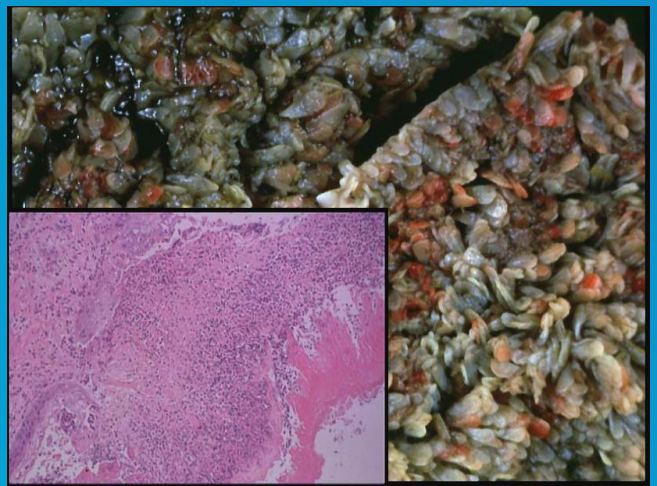
- We commit ourselves to stay informed of new findings in herd health and dairy management.

MONITORING

Cow	Environment	Reports
BCS	Bedding	Milk yield
Rumen score	Climate	Fat / Protein
Manure consistency	Milking technique	Analysis silages
Manure digestibility	Hygiene	Drinking water
Teat lesions	Grass	Sires
Lesions on the skin/udder	Grass silage	Soil analysis
Disease incidence	Corn silage	Inseminations
Examination reproductive tract	Floor	Disease + treatments
Ectoparasites	Ration	Economical reports
Claw score	Nutritional management	Slaughter house reports
Growth youngstock	Hygiene milking parlour	Lab results

EXAMPLE

SARA SUSPECTED HERD



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Healthy milk, healthy cows, healthy farmer

SARA HERD?

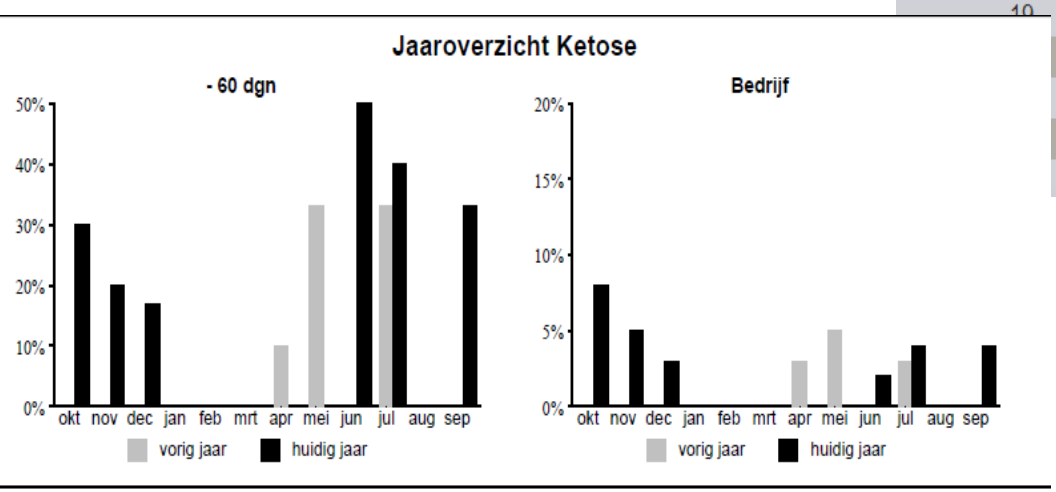
Diagnostic tools?

- Milk production data
- Examination of the individual cow
- Evaluation of health records
- Evaluation of the ration & feeding management

Diagnostic tools?

- Milk production data:
  - Low fat %

Datum Monster	Vet (g/l) BM_007	Eiwit (g/l) BM_007	Kiemgetal (x1000/ml) BM_001	Cel getal (x1000/ml) BM_002	Remstof BM_003	Vriespunt (-m°C) BM_004	Filtratie BM_005	Coligetal (per ml) BM_008	Ureum* (mg/l) BM_012
03	38,0	35,5			-	517			[316]
05	38,1	36,0			-	520			[302]
08	39,3	35,9	5	95	-	523		20	[319]
11	38,9	36,0			-	525	-		[278]
14	39,2	36,2		87	-	526			[294]
17	39,4	36,3			-	524			[338]
10	40,1	36,4		109	-	523			[331]
	40,1	35,6	4		-	520		10	[271]
	38,2	35,8		105	-	518			[280]
	39,8	35,9			-	520			[275]
	40,3	36,1			-	521			[244]

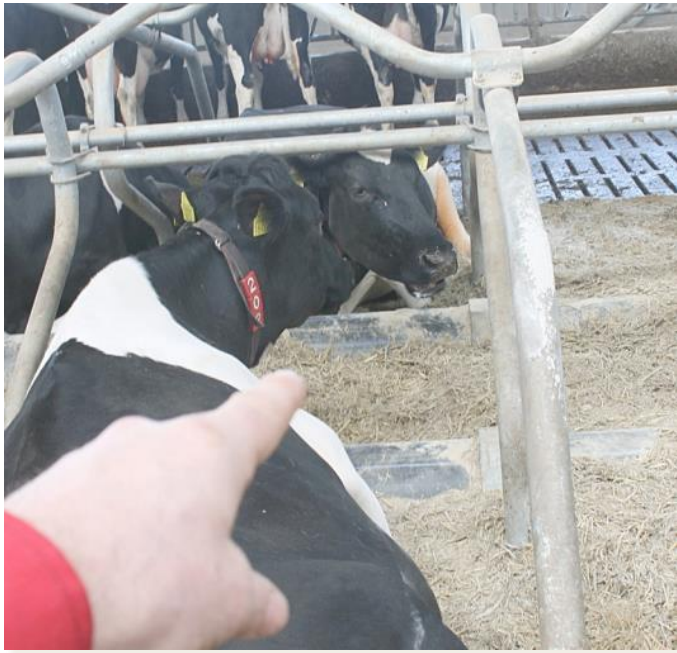


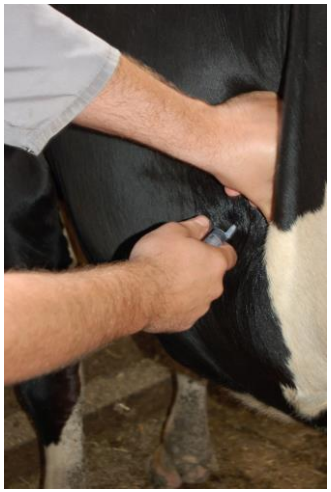
Attentie koeien

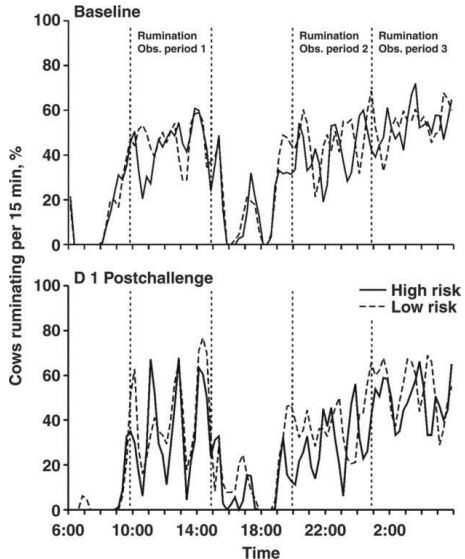
		rund			productie				attenties		
diernr	naam	In	dgn	vw	melk	% vet	% eiwit	lw	v-e	ketose	pensverz.
- 60 dgn											
29	Dina	3	10	36	40.9	4.92	3.23		x	x	
33	Dora	2	24	39	34.1	4.86	2.96	93	x	x	
61	BE 639543670	1	29	28	28.2	5.89	3.19	102	x		
59	BE 439543668	1	49	29	44.2+	2.94	3.05	118+			x

Diagnostic tools?

- Examination of the individual cow
  - Behaviour (rumination, sorting, dry matter intake)
  - Manure (fiber digestion)
  - Rumenocentesis & measuring pH



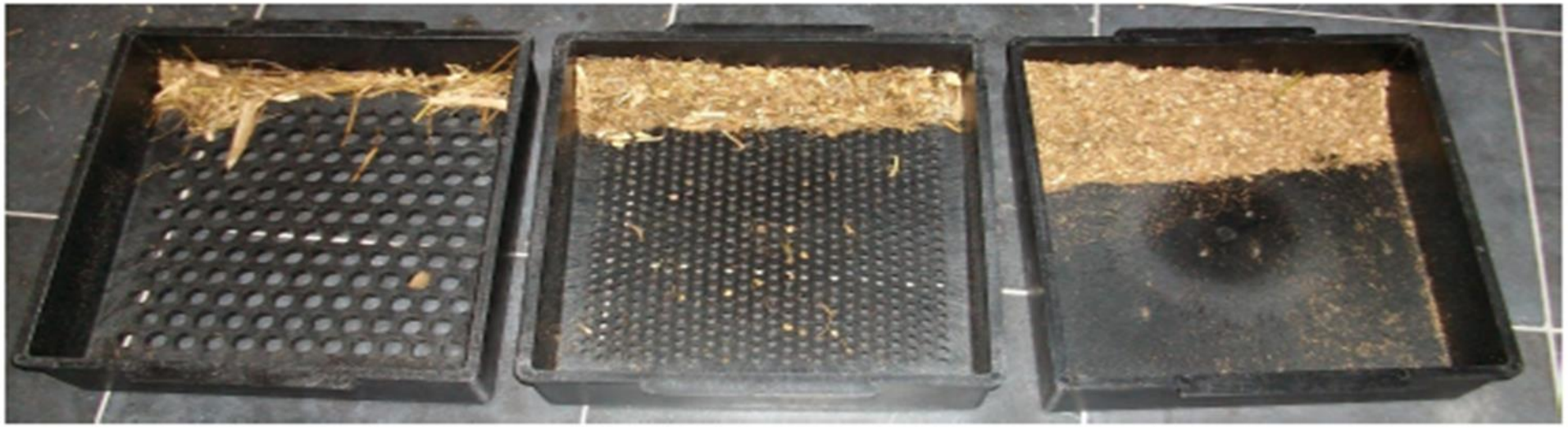




Diagnostic tools?

- Evaluation of health records (lameness, laminitis, loss of BCS, mastitis,. . .)

Diagnostic tools?



- Evaluation of the ration & feeding management:
  - Low feed efficiency
  - NDF, sugars, starch,…

Use of fatty acids in milk?

	Koenummers			
g /100 g FA	1245	1382	1392	7894
C4:0	3.27	2.83	2.93	3.44
C6:0	2.20	1.64	1.75	2.47
C8:0	1.36	1.00	1.07	1.57
C10:0	3.31	2.23	2.39	3.46
C11:0	0.06	0.03	0.05	0.05
C12:0	4.12	3.01	3.39	4.17
C14:0	11.58	11.02	11.02	11.57
C15:0	1.02	1.02	1.10	0.79
C16:0	34.56	24.29	26.85	32.73
C17:0	0.48	0.51	0.48	0.37
C18:0	8.63	9.34	6.57	9.15
C20:0	0.09	0.12	0.10	0.11
SFA	*70.66*	*57.03*	*57.69*	*69.90*
C14:1	1.03	1.51	1.86	1.22
c9C16:1	1.40	1.47	1.94	1.66
c9C17:1	0.16	0.23	0.30	0.15
t9C18:1	0.17	0.25	0.33	0.18
t10C18:1	0.26	0.91	1.85	0.56
t11C18:1	1.23	1.20	0.63	0.51
t13/14+c918:1	15.43	24.01	21.71	16.30
c11+t15C18:1	0.60	0.85	1.14	0.70
c12C18:1	0.16	0.19	0.22	0.19
c13C18:1	0.06	0.09	0.13	0.08
c14+t1618:1	0.22	0.37	0.40	0.24
c15C18:1	0.09	0.30	0.24	0.09
c9C20:1	0.04	0.05	0.05	0.04
MUFA	*20.87*	*31.42*	*30.80*	*21.93*
isoC14:0	0.114	0.098	0.187	0.125
isoC15:0	0.225	0.251	0.245	0.204
anteisoC15:0	0.409	0.545	0.491	0.377
isoC16:0	0.248	0.217	0.155	0.263
isoC17:0	0.484	0.695	0.674	0.517
anteisoC17:0	0.390	0.512	0.472	0.381
n-6C18:2	1.069	1.623	1.880	1.306
n-6C18:3	0.018	0.030	0.043	0.022
n-6C20:3	0.039	0.089	0.088	0.038
n-6C20:4	0.136	0.135	0.148	0.116
n-6C22:4	0.040	0.033	0.030	0.018
n-6C22:5	0.012	0.014	0.029	0.015
n-6 PUFA	*1.314*	*1.923*	*2.218*	*1.515*
n-3C18:3	0.242	0.329	0.406	0.245
n-3C20:3	0.012	0.012	0.017	0.011
n-3C20:5	0.026	0.024	0.038	0.028
n-3C22:5	0.087	0.098	0.089	0.053
n-3C22:6	0.021	0.032	0.022	0.019
n-3PUFA	*0.388*	*0.496*	*0.571*	*0.355*
t11c15C18:2	0.091	0.092	0.108	0.031
CLAc9t11C18:2	0.589	0.721	0.500	0.244
CLAt10c1218:2	0.016	0.020	0.028	0.012

Milk fat depression

No rumen acidosis

Linolenic acid in fresh grass?

Use of fatty acids in milk

- Promising tool
- How 'good' is the monitoring data?
  - Sensitivity?
  - Specificity?
  - Time period
  - Variation
  - Correlation/Causality
- How 'easy' is it to collect the data?
- Cost/benefit?

THANK YOU

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