Monitoring Animal Welfare at Dutch dairy farms

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A brief history....
**Farm monitoring system, risk analysis**

**Cow Compass®**

- Risk analysis at the farm:
  1. Risks focused at the quality of milk
  2. Risks focused at the quality of the way milk is produced

- Certified Veterinarian
- Integrated Cow Management (ICM)
- Prospective approach.
Components Cow Compass®

Information for:
- Stakeholders
- Farmer

7 CSF’s
Critical Success Factors

± 40 PI’s
Performance Indicators

> 100 MCP’s
Management Control Points
# Feeding and water (CSF)

<table>
<thead>
<tr>
<th>PI</th>
<th>Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCP</td>
<td>Management Control</td>
</tr>
</tbody>
</table>

## Silage process
- **Mould, conservation**
  - **PI score**: 1

## Feed milk cows
- **Quantity, quality, ration for milking cows**
  - **PI score**: 3

## Feed dry cows
- **Quantity, quality, ration for dry cows**
  - **PI score**: 4

## Water milking cows
- **Quantity, clarity, sediment, smell**
  - **PI score**: 3

## Water dry cows
- **Quantity, clarity, sediment, smell**
  - **PI score**: 5

## Feed management
- **Concentrates, silage analyses, hygiene feed place**
  - **PI score**: 5

**PI score x weighing factor ==> score feed and water**: **3,6**
Cow Compass®

- Holistic view and predictive at the farm
- Integral approach by the vet: basis is cow’s physiology
- Good for the cow = good for the farmer
Cows Compass®

• 354 trained (ICM) veterinarians are doing this job

• 2 audits per year (2 x 3 hours per 120 cow farm)

• 2730 participating dairy farms (16%)

• Part of delivery terms of Dutch dairy industry

2017:

Cows Compass®-Welfare Monitor
The aim of developing a Welfare Monitor

- A practical system to show animal welfare on dairy farms

- Basis is Welfare Quality ("gold standard"), but time spending, not enough distinction between farms

- That’s why the sector, in coöperation with the government and the Dutch welfare protecting organisation, initiated a Welfare Monitor
12 criteria from WQ form the basis for the calculation of four main principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Criteria (WQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good feeding</td>
<td>1. Absence of prolonged hunger</td>
</tr>
<tr>
<td></td>
<td>2. Absence of prolonged thirst</td>
</tr>
<tr>
<td>Good housing</td>
<td>3. Lying comfort</td>
</tr>
<tr>
<td></td>
<td>4. Temperature (not measured)</td>
</tr>
<tr>
<td></td>
<td>5. Freedom of movement</td>
</tr>
<tr>
<td>Good health</td>
<td>6. Injuries</td>
</tr>
<tr>
<td></td>
<td>7. Diseases</td>
</tr>
<tr>
<td></td>
<td>8. Pain by interventions</td>
</tr>
<tr>
<td>Normal behaviour</td>
<td>9. Normal social behaviour</td>
</tr>
<tr>
<td></td>
<td>10. Normal species behaviour</td>
</tr>
<tr>
<td></td>
<td>11. Good men-animal relation</td>
</tr>
<tr>
<td></td>
<td>12. Positive emotional state</td>
</tr>
</tbody>
</table>
## From Cow Compass® to Welfare Monitor

<table>
<thead>
<tr>
<th>Good feeding</th>
<th>Good housing</th>
<th>Good health</th>
<th>Normal behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation and ensiling</td>
<td>Feed bunk and space</td>
<td>Locomotion score</td>
<td>Behaviour of the herd, avoidance test</td>
</tr>
<tr>
<td>Feeding lactating cows</td>
<td>Housing condition (climate)</td>
<td>Hock swelling</td>
<td>Number of not active cows</td>
</tr>
<tr>
<td>Feeding dry cows</td>
<td>Walking space, pasture path</td>
<td>Bald spots, swellings and skin lesions</td>
<td>In the pasture</td>
</tr>
<tr>
<td>Water lactating cows</td>
<td>Lying comfort</td>
<td>Cell count</td>
<td></td>
</tr>
<tr>
<td>Water dry cows</td>
<td>Hygiene score</td>
<td>Disease incidence</td>
<td></td>
</tr>
<tr>
<td>Feeding management</td>
<td>Excessive stocking</td>
<td>% forced culling</td>
<td></td>
</tr>
<tr>
<td>% of animals BCS&lt;2</td>
<td></td>
<td>Animal Day Dosage</td>
<td></td>
</tr>
<tr>
<td>% of animals BCS&gt;4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deviant cows</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Welzijn wordt beoordeeld vanuit de volgende Principes: Goede voeding, Goede huisvesting, Goede gezondheid en Normaal gedrag. Vanuit de KoeKompas waarnemingen vormen onderstaande indicatoren de basis van de WelzijnsMonitor.

1. **Goede voeding**
   - Conditiescore
     - Water: kwaliteit, kwantiteit, bereikbaarheid

2. **Goede huisvesting**
   - Boxafmetingen
     - Hygiëne, damslapers
   - Zachtheid ligbox
   - Stalomgeving: licht, ventilatie, roterende borstel

3. **Goede gezondheid**
   - Locomotiescore: kreupelheid
   - Klinische inspectie: wonden, zwellingen, kale plekken
   - Ziekten en aandoeningen
   - Pijnstilling bij onthoornen

4. **Normaal Gedrag**
   - Ontwijktest
   - Weidegang
Species specific behaviour....
Marten Knol
Melkveehouderij 't Eyland
from Kampen (The Netherlands)
The farm

• 200 dairy cows production 8000 kg milk with 4.3 % fat and 3.5 % protein.

• 80 hectares of gras and 20 hectares of corn silages.

• Goal: Produce a lot of milk from our homegrown grass and corn silage.

• Grazing: during the summer our cows graze in the pasture. Brings us 2 eurocent per liter extra, paid by our milk buyer.

• CowCompas: More then 10 years.
First result:
• Cleaning the water tanks each week

✓ More water intake, better quality

Another result:
• Cows have to ly down as much as possible.

• Cubicles in our new barn. Filled with chalk-straw-water mix.

✓ Cows ly longer and stay healthier.
Storage of grass and corn silages

• We had old and small places to store our feed. This was a big risk in Cow Compass®.

• Our new place for storing feed is far better.

• We produce 16000 kg milk / hectare.

✓ Our additive feed costs went from 12 cent to 7 cent per kilogram milk.
Free space for calving cows

- In our new barn we have a lot of room for calving cows. In our old situation this was a big risk.

- Outcome: less culling of cows.

✓ Last year the average age of culled cows was 6 years and 4 months and they gave 32000 kg of milk.

- Dutch average 2016: 5 years and 10 months/31000 kg.
Calf rearing:

- Our computerized calf drinking system gave a lot of risks for the calves.
- We have gone back to give the calves milk by bucket + more individual boxes
- Better results and less risks:
  - 2015 20% calf mortality > 24 h.
  - 2017 7% calf mortality > 24 h.
Overview
Cows Compass®/Welfare monitor: PDCA approach

- Ideal zero measurement

- Starting point of choosing and implementation of improvement-management

- Co-operation with other farm advisors

- Good evaluation and actualisation of risk factors

- Critical success factor: follow up
Time management of the cow

Lying and ruminating:
✓ 13 hours

Feed intake:
✓ 6 hours

Drinking (20 liters per minute):
✓ 5 - 10 min

Milking and socializing:
✓ 5 - 6 hours
When do you take action?

<table>
<thead>
<tr>
<th>Locomotion Score</th>
<th>Description</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normaal</td>
<td>Slaat en loopt normaal. Alle klauwen doelbewust neergezet.</td>
</tr>
<tr>
<td>2</td>
<td>Licht kreupel</td>
<td>Slaat met rechte rug, maar kromt de rug in beweging, gang is licht afwijkend.</td>
</tr>
<tr>
<td>4</td>
<td>Kreupel</td>
<td>Kromme rug in stilstand en beweging. Een of meerdere klauwen worden onlast.</td>
</tr>
<tr>
<td>5</td>
<td>Ernstig kreupel</td>
<td>Kromme rug. Weigert op een klauw te staan of hinkt. Blijft liggen of heeft grote moeite op te staan.</td>
</tr>
</tbody>
</table>
Red dots: no bald spots, injuries or swellings!
Conclusions

- Certified vets carry out *Cow Compass*®

- Takes 1.5 hours/120 cow farm plus 1.5 hours for filling in a software program and to write report, totally 3 hours

- Welfare Monitor calculated from the *Cow Compass*® score

- Results are aggregated and used by the Dutch Dairy Chain to show animal welfare of dairy farms to stakeholders

- In favour for the farmer: it can be used as a screening tool to detect welfare problems and lead to improvement/optimalisation
Come and see!

Foto: Josef Berchthold