Nutrition Management Module
with new detection method for subclinical ketosis via milk recording

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ICAR: Development of Off-farm recording & analysis
General facts CRV 2012

- Owners: CR Delta and VRV (co-operatives)
- 50,000 customers world-wide of which:
  - 24,000 members in the Netherlands (CR Delta)
  - 8,000 members in Belgium (VRV)
  - customer
- 1,300 full time employees
- 154 million euro turnover / year
CRV global companies 2012

- CRV USA
- CRV Spain
- CRV Lagoa, Brazil
- CRV Bela Vista
- CRV The Netherlands and Belgium
- CRV Germany
- CRV Meggle, Germany
- CRV CZ, Czech Republic
- CRV Luxemburg
- CRV Australia
- CRV Ambreed, New Zealand

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CRV XSeed
CRV Bela Vista
CRV

Looking after the interests of members and customers in the field of cattle improvement through:

- **Genetic material:**
  - breeding program and breeding products
  - sales of semen and embryos
  - offering genomic tested semen and sexed semen

- **Management support and services:**
  - Services (AI, Pregnancy diagnosis, **Milk recording**)
  - Central data storage and analysis (**Veemanager online** management program)
  - Herd management support
Milk recording in The Netherlands and Belgium

- milk recording samples 10.6 million in NL
- milk recording samples 1.3 million in Belgium
- 16000 farmers in NL, 93% of the market
- 2400 farmers in BE, 45% of the market

- **Veemanager:**
  - online management program, accessible everywhere
  - 9,500 users, around 50% of the market
  - modules for milk recording, animal health, fertility, registration, breeding, mineral management
Milk recording analysis in all samples

- fat percentage
- protein percentage
- cell count
- ureum
- lactose

- And had a wish to have a more accurate parameter then fat/protein ratio, to detect subclinical ketosis on herd level
What is ketosis?

- **Clinical Ketosis**
  - clear symptoms
  - decreased consumption of concentrate
  - animal is slow
  - neurological symptoms possible
  - treatment: medical treatment on individual level

- **Subclinical Ketosis**
  - metabolic disease (especially occurring in early lactation)
  - an increase of ketone bodies in blood (ketosis)
  - subclinical: few/no symptoms
  - acetone and β-hydroxybutyrate are ketone bodies
  - treatment: adjust diet and/or management on herd level
New method for detection of subclinical ketosis in milk

- A field trial was performed in collaboration with Utrecht University to develop a new method
- At this moment we detect ketosis in milk recording samples:

```
FTR “acetone”

< 0.15 mmol/L  > 0.15 mmol/L

-  Autoanalyser acetone

< 0.15 mmol/L  > 0.15 mmol/L

-  +
```
Results October-November 2011

% Ketosis per parity

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Results October-November 2011

% Ketosis per lactation group

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NEW: “Nutrition Management Module”

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**Milk recording results**

<table>
<thead>
<tr>
<th>Groep</th>
<th>Aantal</th>
<th>Dgn</th>
<th>Ketose aant (%)</th>
<th>Vet-eiwit aant (%)</th>
<th>Pensverz. aant (%)</th>
<th>Ureum</th>
<th>% behaalde tov vw melkprod.</th>
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</thead>
<tbody>
<tr>
<td>Vaarzen</td>
<td>28</td>
<td>202</td>
<td>1 (4%)</td>
<td></td>
<td></td>
<td>29</td>
<td>100%</td>
</tr>
<tr>
<td>2e kalfs</td>
<td>14</td>
<td>209</td>
<td>1 (7%)</td>
<td>1 (7%)</td>
<td></td>
<td>30</td>
<td>103%</td>
</tr>
<tr>
<td>Oudere</td>
<td>20</td>
<td>209</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
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<td>26</td>
<td>99%</td>
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<tr>
<td>&lt; 60 dgn</td>
<td>13</td>
<td>35</td>
<td>2 (15%)</td>
<td>3 (23%)</td>
<td></td>
<td>25</td>
<td>96%</td>
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<tr>
<td>- 120 dgn</td>
<td>6</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td>103%</td>
</tr>
<tr>
<td>- 200 dgn</td>
<td>9</td>
<td>157</td>
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<td></td>
<td></td>
<td>27</td>
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</tr>
<tr>
<td>- 305 dgn</td>
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<td></td>
<td></td>
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<td>105%</td>
</tr>
<tr>
<td>&gt; 305 dgn</td>
<td>14</td>
<td>366</td>
<td></td>
<td></td>
<td></td>
<td>28</td>
<td>101%</td>
</tr>
<tr>
<td>Bedrijf</td>
<td>62</td>
<td>206</td>
<td>3 (5%)</td>
<td>3 (5%)</td>
<td></td>
<td>28</td>
<td>101%</td>
</tr>
</tbody>
</table>

**Last milk recording results:**
- parity groups and lactation groups
- all nutrition related alerts combined
Milk recording results

Urea - protein overview
- lactation groups
Milk recording results

Overview of last 2 years urea
- cows < 60 days lactation
- herd level
Milk recording results

Overview of last 2 years ketose

- cows < 60 days lactation
- herd level
In an overview all animals with an alert for possible nutrition related problems
Benefits of “Nutrition Management Module” of CRV

Benefits for farmers:
• Overview of animals with nutrition related problems
  - decrease of economical loses by decreased milk production
  - increase of animal health

Benefits for advisors/veterinarians
• All milk recording information is available of all farmers performing milk recording
  - effect of changes in diet can be followed
  - link between farmer and nutrition advisor/veterinarian

Benefits for CRV:
• New information product on animal health
• In the future possible to develop a new breeding value “ketosis”
Future
- New method for detection of subclinical ketosis in milk

- A model is designed by using:
  * FTIR “acetone” and “BHBZ” and fat and protein concentration
  * cow characteristics; lactation days, parity
  * environment; season

- A paper subscribing this method is accepted to Journal of Dairy Science by van der Drift et al. (Utrecht University)