Concept of a mobile AMS and first results at grazing University of Liège

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AMS in Belgium and grazing

• Better social life
• Beginning of 2011:
  
  230 AMS
  
  – 170 in Flemish region
  – 60 in Walloon region

• Projection in 10 years
  
  500 – 700 AMS
  
  10-15 % cows milked with AMS

• Release of grazing

• Grazing:
  • Natural practice, animal health, period of recovery, reduced feeding costs
  • appreciated by the consumers
Project story

- Project = AMS in a trailer allowing the use of the same AMS to milk the cows in the barn during the winter and in pasture during the grazing season useful when the farm land is fragmented and a significant distance from the barn

- replacement of the old milking parlour (25 years)
- 2007: ask for financement to Agriculture Ministry - Walloon Région
- 2008-2009: agreement by the Walloon Region and agreement of barn modifications and localisation in pasture by the University
Project story

- Winter 2009- 2010 :
  - AMS financed by Wallon Region
  - Trailers construction financed by Nutrition Unit
  - modifications in the barn and fixings in pasture financed by the University
- 10th March 2010: cows moved from the ancien barn (free with straw) to the new barn (slatted floor and cubicles)
- 20th April 2010: first milking with AMS
- **22nd June** – 20th October 2010: Pasture
- March 2011: supplementary fixings in pasture
- 20th 2011 April – 23 October: Pasture
- 19th April 2012 : Pasture
Trailer

Constructed by a private company
Trailer allowed to the traffic road
trailer can easily be moved by a tractor and put at the ground level
AMS and equipments – compressor, milk separator, computer
Barn: one week after the first milking with AMS
Cow side
Soil:
Clay - Lowest situation in the pastures
Drainage and slatted floor
Vault
Flexible tank - milk tank trailer designed as conventional trailer
access for milk collection by lorry
Grazing season in 2010

- weather conditions:
  - cold and dry Spring
  - June and July: very hot and dry
  - August, September, October: very wet

Maize silage
- during transition and after until beginning of Augustus -- long stays in the paddocks (7 days)
- At the end of grazing (10 days)
Material et methods - 2010

- 47 cows: December and January calving
- 18 ha
- AMS in a paddock 1.33 ha – free access
- Rotation system - 11 paddocks
- 2 milkings: 6 am et 16 pm
- AMS lighted during the night
- Water in each paddock and near the AMS in the waiting place and in the paddock where the AMS is located
- Grazing heights at entry and exit in each paddock during August, September and October
Variations explained by the model

Milk yield: 76%
- Days in milk: 12%
- Animal effect: 77%

Milking frequency: 28%
- Days in milk: 31%
- Distance: 31%
- Rotation: 14%
- Number: 5%
- Milking frequency: 5%
- Animal: 53%
Effect of distance on milk yield and milking frequency
Relationship between sward heights and milking frequency

milking number = 2.38 - 0.035 sward heights (cm); p<0.001, r²= 0.53
Problems during the first season

• Roads and waiting place muddy
March 2011
Ground shrub
Make the waiting place more confortable : salt and brush cow inside
Aims of research in 2011

• AMS = less labour
• Problem : fetch the cows
  Avoid bottleneck and long waiting

Solutions ?
• Number of fetching : once a day in one paddock, twice a day in the following paddock,
• water availability
• (one day grazing paddock)

Effects on milk yield, milking frequency, voluntary returns
Material et methods

- 45 – 50 cows
- Grazing days and night: 20th April – 23 October
- Transition: maize silage during 10 days
- Weather: dry and hot from February to June - cold in July – rainy in August – good in September and October
- Cut in 13th May on 8 ha
- 6th rotation cycles
- Complementation: 2.5 kg/d 16% CP
1 or 2 fetchings

• in May, June and July
1 X- 2X repeated 4 times
• 17 days
2 fetchings: 2 milkings at 6 am and 16 pm – 1 fetching: milking at 6 am
+ free acces
• Days in milk: 155 at the end of May
Voluntary returns = milkings + refused milkings + milking failures – fetching

Milk yield
\[ R^2 = 83\% \]

Voluntary returns
\[ R^2 = 51\% \]

Animal: 80%
Days in milk: 18%
Fetching: 5%

Animal: 46%
milk yield: 13%
days in milk: 39%
**Voluntary returns** = milkings + refused milking + milking failures – number of fetching

<table>
<thead>
<tr>
<th></th>
<th>2 fetchnigs</th>
<th>1 fetching</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk production (kg/d)</td>
<td>24.2</td>
<td>20.8</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Milking frequency (n/c)</td>
<td>2.21</td>
<td>1.81</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Voluntary returns (n/c)</td>
<td>0.52</td>
<td>1.13</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Milking time (%)</td>
<td>44</td>
<td>36</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Concentrate (kg/c)</td>
<td>2.86</td>
<td>2.32</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>
With or without water

- Water available or not in the pasture
- Water always available near the AMS
- During August and September 2011
- Days in milk: 211 at the end of August
- 15 days
- Similar distance from pasture to AMS: 150 m
  and temperature: 17°C
Thank you for your attention.

What have we to do?

To graze or to be milked?

Both!