

# Concept of a mobile AMS and first results at grazing

## University of Liège

J. Dufrasne, E. Knapp, V. Robaye, L. Istasse  
Nutrition Unit  
Animal Production Department  
Faculty of Veterinary Medicine  
Chemin de la ferme, 6 B39  
4000 Liège  
Belgium



# 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**  
**usefull** 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
- 10 th 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





Esneux 18/03/10

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



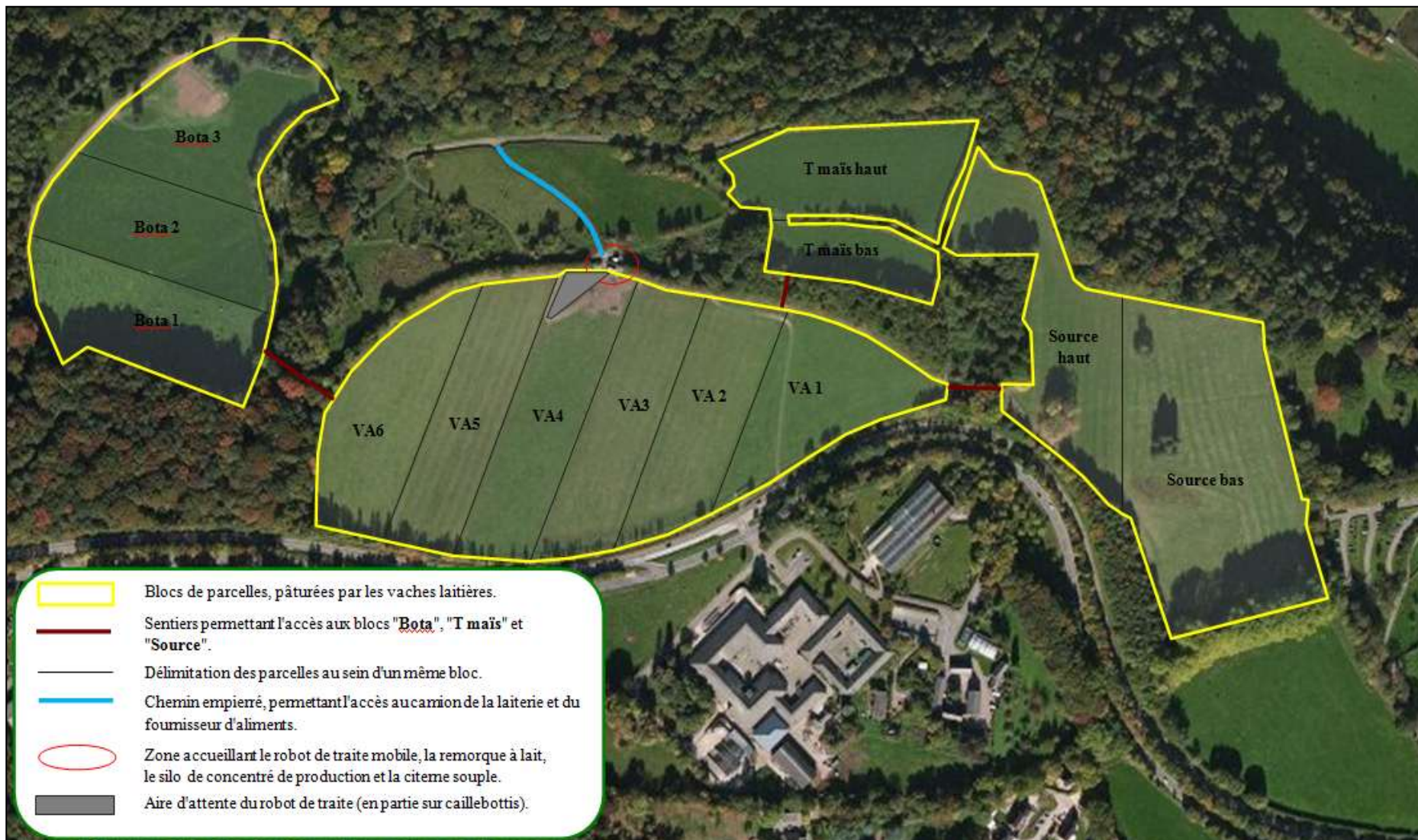


Flexible tank - milk tank trailer designed as as conventional trailer





## 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)

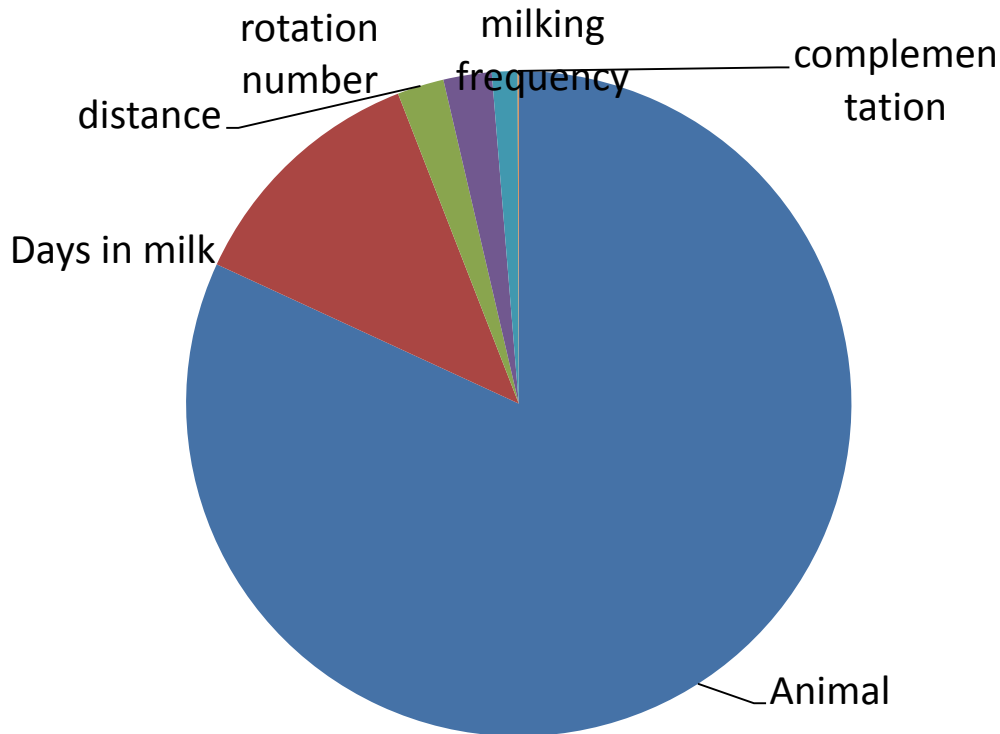


# Material et methods - 2010

- 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

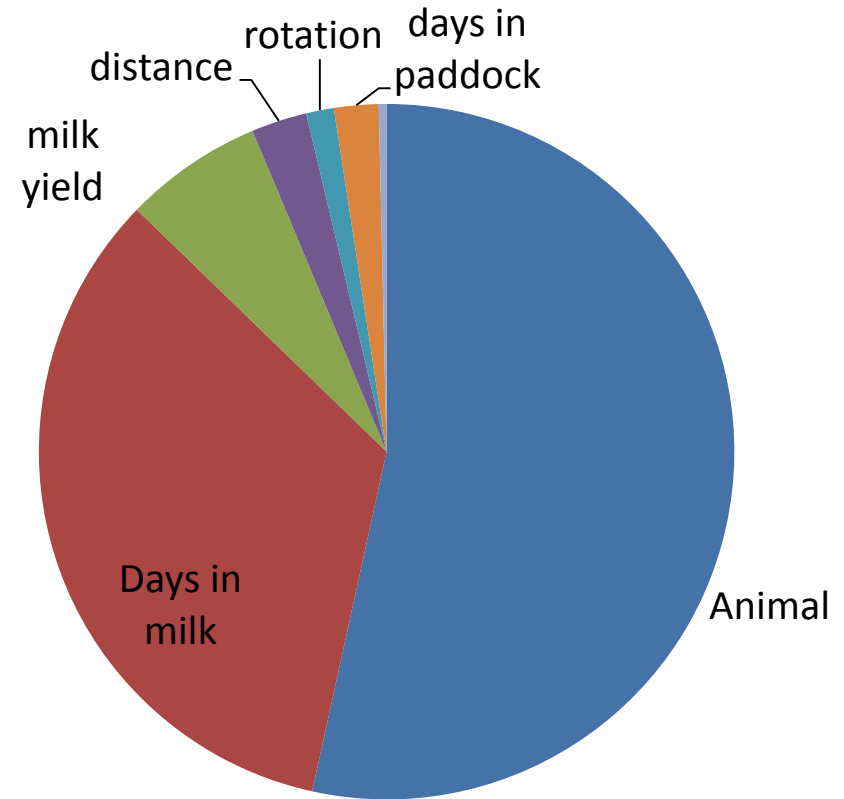
**Milk yield : 76%**



Animal effect 77%

Days in milk 12%

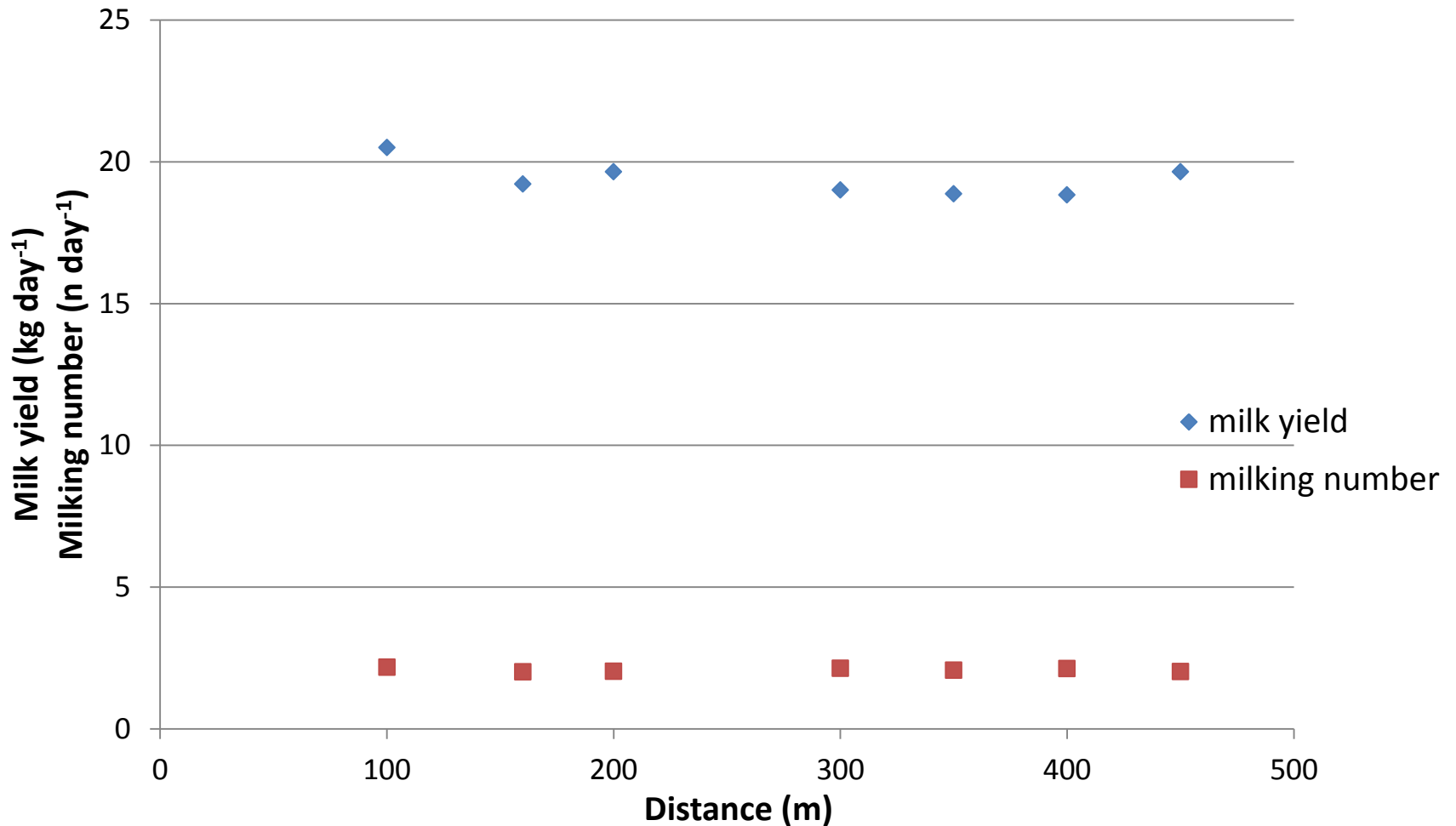
**Milking frequency : 28%**



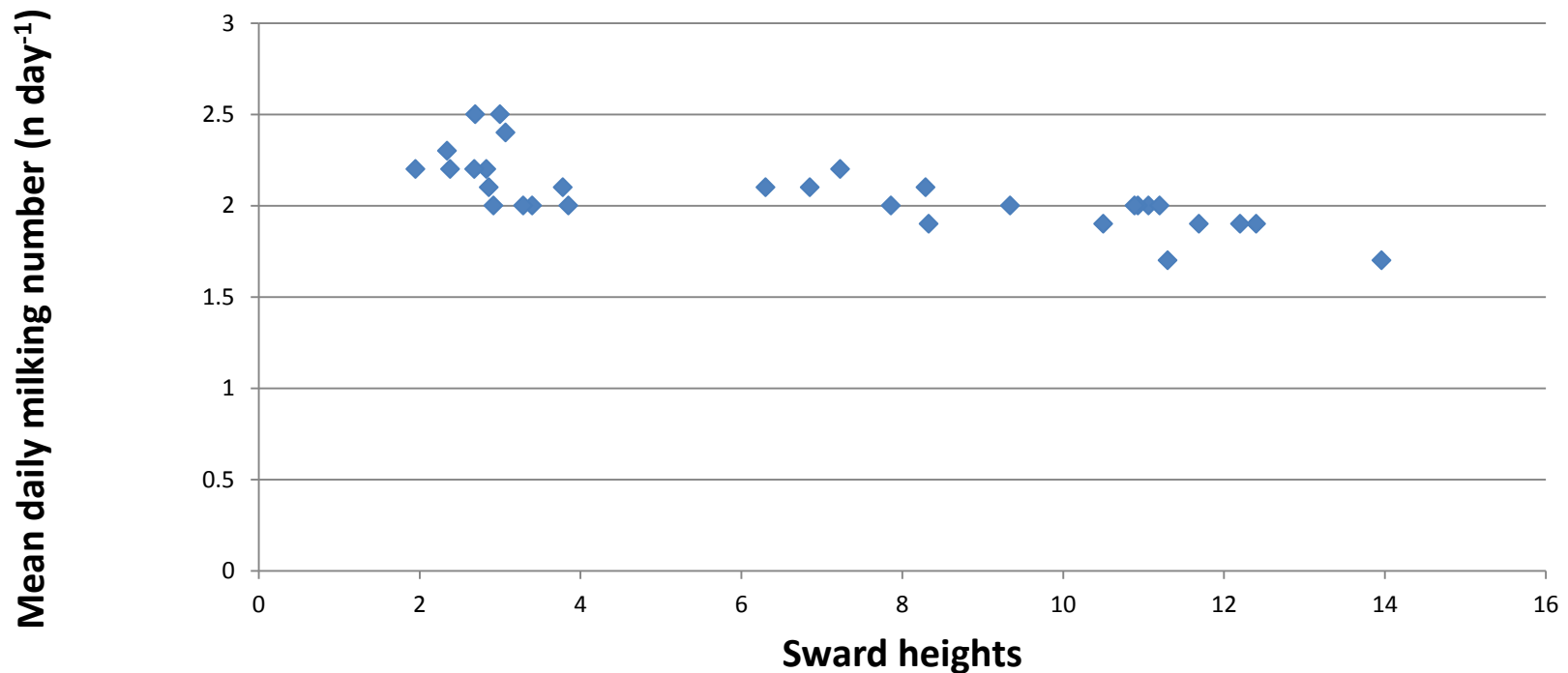
53%

31%

# 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);  $p < 0.001$ ,  $r^2 = 0.53$



# Problems during the first season

- Roads and waiting place muddy



18 / 08 / 2010

March 2011





# May 2011



Ground shrub

Make the waiting place more comfortable : 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

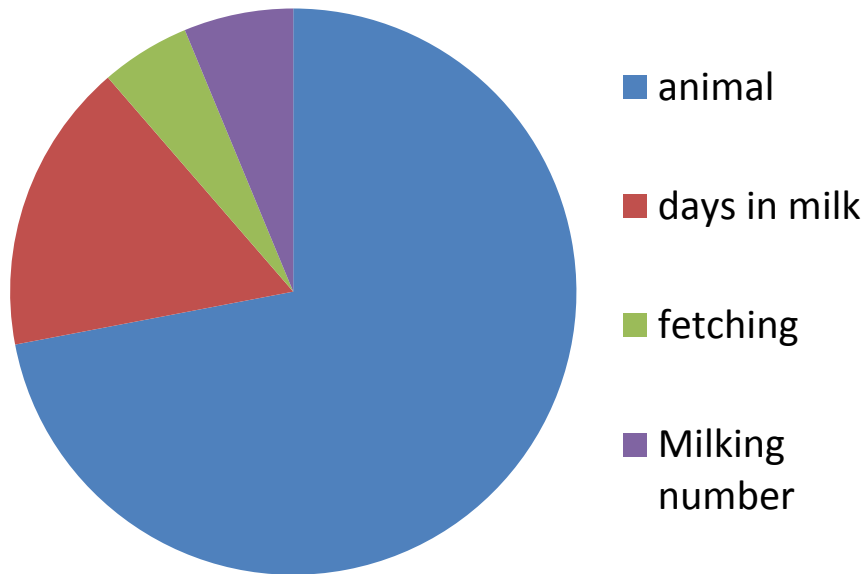
2 fetchings: 2 milkings at 6 am and 16 pm – 1  
fetching : milking at 6 am

+ free acces

- Days in milk : 155 at the end of May

## Milk yield

$R^2 = 83\%$

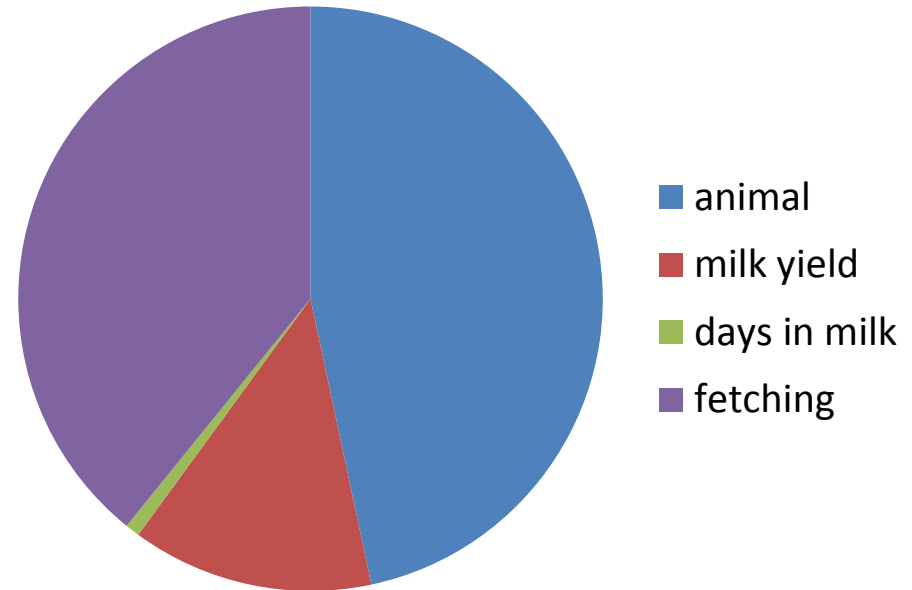


Animal	80%
Days in milk	18%
Fetching	5%

## Voluntary returns

$R^2 = 51\%$

**Voluntary returns** = milkings + refused milkings + milking failures – fetching



Animal	46%
Milk yield	13%
Days in milk	2%
Fetching	39%

**Voluntary returns** = milkings + refused milking + milking failures  
– number of fetching


	2 fetchnigs	1 fetching	Significance level
Milk production (kg/d)	24.2	20.8	P<0.001
Milking frequency (n/c)	2.21	1.81	P<0.001
Voluntary returns (n/c)	0.52	1.13	P<0.001
Milking time (%)	44	36	P<0,001
Concentrate (kg/c)	2.86	2.32	P<0.001



# 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






What have  
we to do?



Both !



To graze  
or to be  
milked ?

Thank you  
for your attention