

# AUTOGRASSMILK



## 2014: Results Experimental Farm– Pilot Farms



Aidan & Ann Power  
Robotite Farm  
SME Farm IE

SME Farm DK  
Thure and Susanne Worm

F.Lessire – I. Dufrasne



# Plan

- Grass: nutritional values and availability
- Comparison 2013 -2014 Exp. Farm
- Milk yield recorded in 2014
- Data of the Comité du Lait: effect of grazing on milk quality
- Dry matter intake: NIRS on faeces



**Autograssmilk**



# Grass

## Nutritional values

2013	2014
92	206
Samplings from end of April till 18 <sup>th</sup> October	Samplings from 11 <sup>th</sup> April till 18th November
4 pilot farms (1 organic farm) Exp. farm	4 pilot farms Exp. farm



# Autograssmilk

# Nutritional values of grass 2014 -2013

Values in g/kg MS

2014	DM	CP	NDF	ADF	lignin	WSC
Mean	19	205	452	240	28	141
Min.	10,5	116	377	188	15	34
Max.	29	323	574	300	47	262
<b>2013</b>						
Mean	20	195	446	239	33	155
Min.	10	84	362	188	21	84
Max.	35	263	569	312	47	219

WSC: water soluble carbohydrates; CP: crude protein; NDF – ADF: neutral and Acid detergent fiber



# Grass nutritional values 2014 – 2013

## Values (g/kg DM)

2014	Digest.	VEM	DVE	OEB	FOM
Mean	83	996	100	43	641
Min.	73	789	70	-44	502
Max.	91	1096	118	156	702
<b>2013</b>					
Mean	82	973	99	32	629
Min.	62	813	58	-38	539
Max.	90	1076	115	100	744

Digest: digestibility – FOM: fermentescible organic matter



# Grazing management

## Experimental Farm



	Grass height In (cm)	Grass height Out (cm)	Difference (cm)	Grass cover (kgDM/Ha)	Sward density kg/cm
April	14,4	5,7	8,6	2696	262
May	13,7	6,5	7,2	2363	222
June	13,7	6,7	7	1982	244
July	14,5	6,8	7,7	1853	238
August	13,9	6,5	7,4	2316	195
September	11,6	5,1	6,5	1884	216
October*	10,4	5,6	4,8	1396	170

<sup>1</sup> Evaluation with 5 cm height-cut

\* + Mayze silage: 5.8 kgDM



# Experimental Farm

## Grass = 90% cows diet

### Grass DM intake



	April	May	June	July	August	September
Nbr cows	53	51	48	49	49	51
Nbr Ha	1,4	1,64	1,68	1,51	1,67	1,73
Nb days	3	2,65	3	3,06	3,05	2,85
Ingested DM	16,2	17,1	15,6	15,6	16,3	15

<sup>1</sup> grass cover estimated at 5 cm cut height

# Grass nutritional values: comparison farm by farm: 2014-2013 BE1

Values in g/kg MS

2014	Digest.	CP	WSC	NDF	VEM
Mean	84	214	144	449	1018
Min.	78	144	66	386	938
Max.	89	281	262	517	1096
<b>2013</b>					
Mean	85	206	164	425	1018
Min.	76	131	120	354	936
Max.	92	279	272	477	1111





# Grass nutritional values: comparison farm by farm: 2014-2013 BE2

Values in g/kg DM

2014	Digest.	CP	WSC	NDF	VEM
Mean	84	208	145	446	1007
Min.	81	152	83	403	934
Max.	86	256	215	480	1044
<b>2013</b>					
Mean	83	181	180	450	997
Min.	78	139	119	370	929
Max.	90	229	230	510	1083



# Grass nutritional values: comparison farm by farm: 2014-2013

## BE3

Values in g/kg DM

2014	Digest.	CP	WSC	NDF	VEM
Mean	85	228	133	445	1006
Min.	82	187	36	420	941
Max.	90	296	198	462	1070
<b>2013</b>					
Mean	81	212	139	449	958
Min.	75	164	92	417	897
Max.	86	265	215	478	994



# Grass nutritional values: comparison farm by farm: 2014-2013

## BE4

Values in g/kg DM

2014	Digest.	CP	WSC	NDF	VEM
Mean	83	205	143	455	985
Min.	81	155	67	404	946
Max.	86	265	219	498	1023



# Grass Nutritional values 2014

## November

2014	Digest.	VEM	DVE	OEB	FOM
Mean (g/kgDM)	80	944	94	54	600

2014	CP	NDF	ADF	lignin	WSC
Mean (g/kgDM)	209	463	236	29	137



# Grazing management

Evaluation of DM intake–

NIRspectrum - Decruyenaere

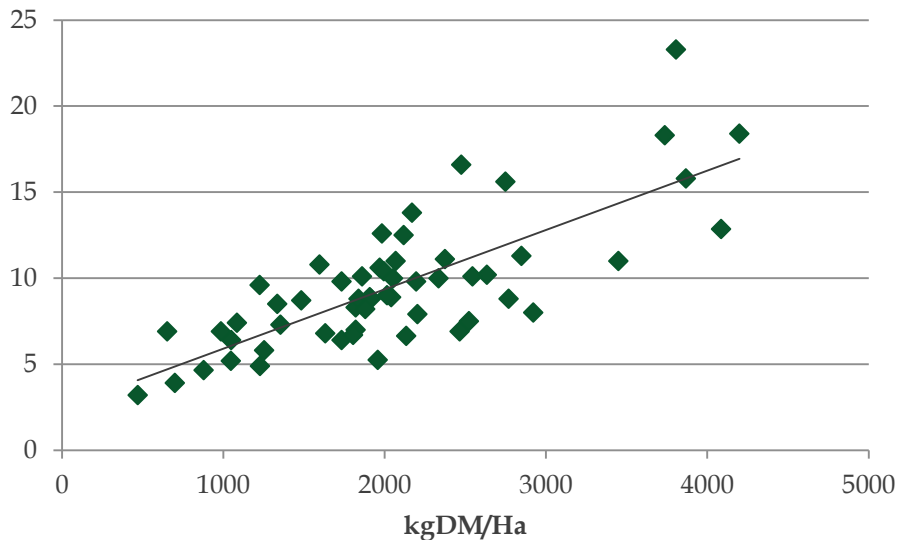


DM (kg)	April	May	June	July	August	September
High conc.		23,9	23,7	23,0	19,8	19,2
DM conc.		4,2	4,6	4,3	4,0	3,7
Low conc.		22,7	17,9	15,9	16,1	17,8
DM conc.		2,6	2,6	2,6	2,5	2,6
DM grass intake (Rise plate meter)	16,2	17,1	15,6	15,6	16,3	15,0

# Ingested DM evaluation: Experimental Farm

## DM/ha in relationship with height

Grass Height  
(cm)





# Experimental Farm

## Grass = 90% cows diet

### Ingested grass DM



	April	May	June	July	August	September
Nbr cows	53	51	48	49	49	51
Nbr Ha	1,4	1,64	1,68	1,51	1,67	1,73
Nb days	3	2,65	3	3,06	3,05	2,85
Ingested DM	16,2	17,1	15,6	15,6	16,3	15

<sup>1</sup> grass cover estimated at 3 cm cut height

# Grazing management

## Evaluation of DM intake – Method Virginie Decruyenaere



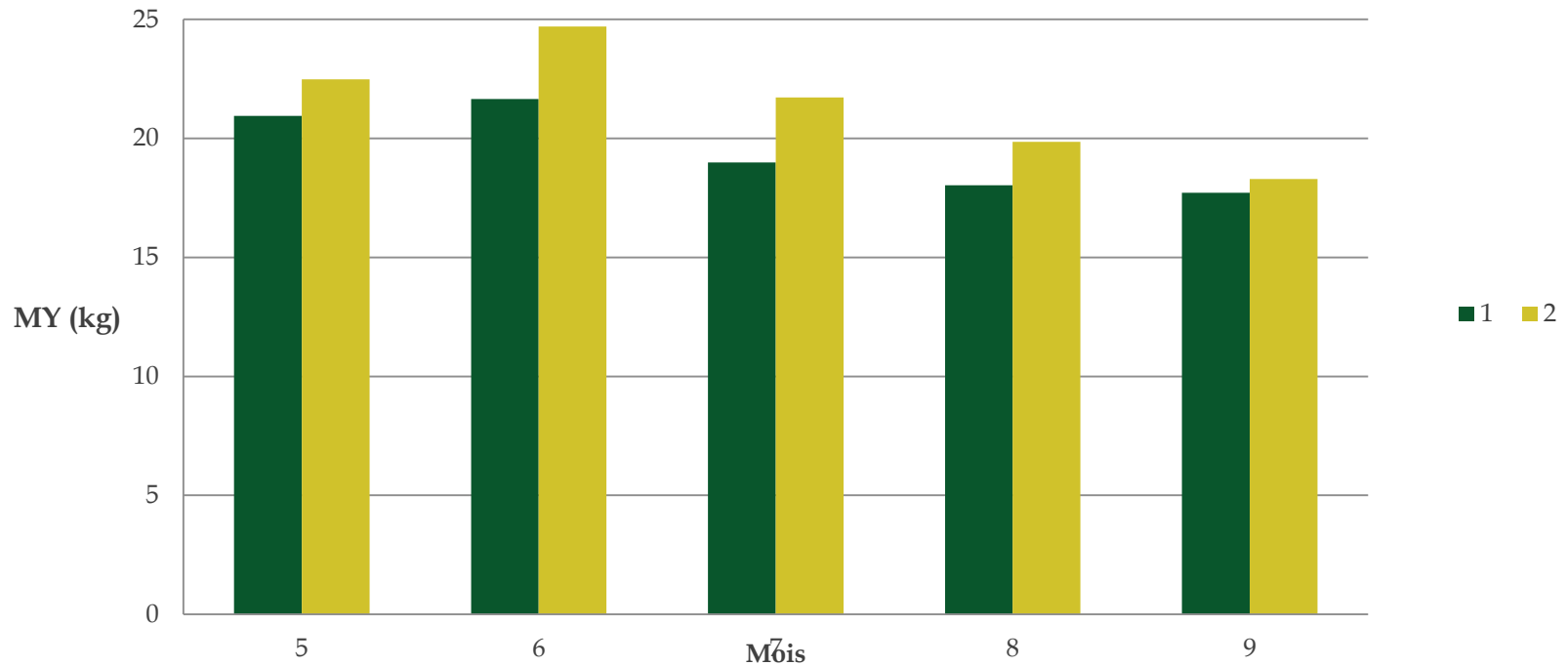
DM (kg)	April	May	June	July	August	September
High concentrate		23,9	23,7	23,0	19,8	19,2
DM concentrate		4,2	4,6	4,3	4,0	3,7
Low concentrate		22,7	17,9	15,9	16,1	17,8
DM concentrate		2,6	2,6	2,6	2,5	2,6
DM intake – est. height	16,2	17,1	15,6	15,6	16,3	15,0

# Milk yield :

## Grazing season 2014

- 1: low concentrate– 2: high concentrate

Milk Yield (MY)/cow/d – month effect



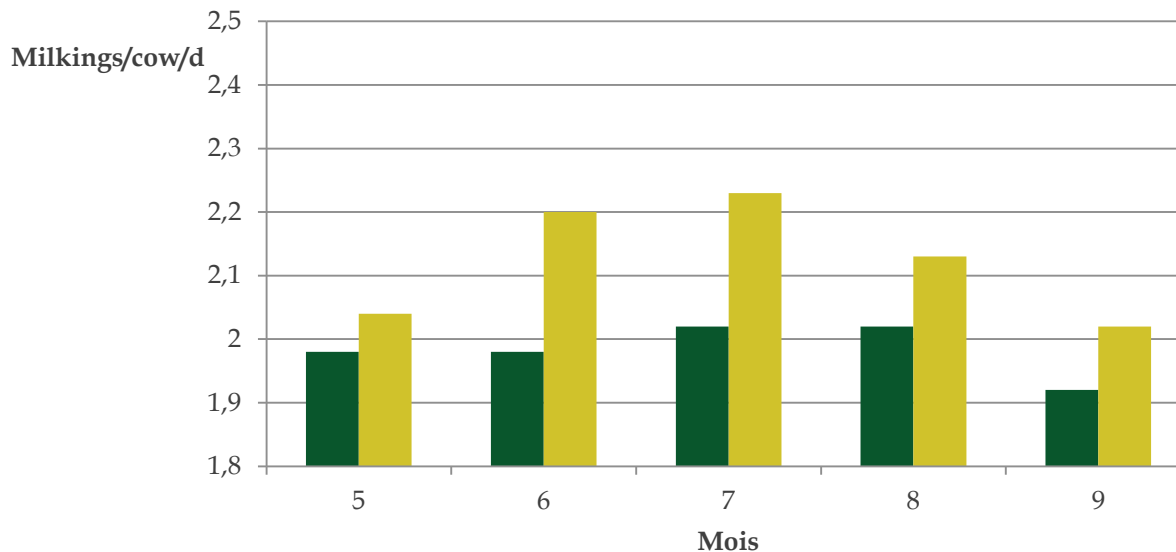
17

# Autograssmilk

# Milkings: effect of month and of concentrate level

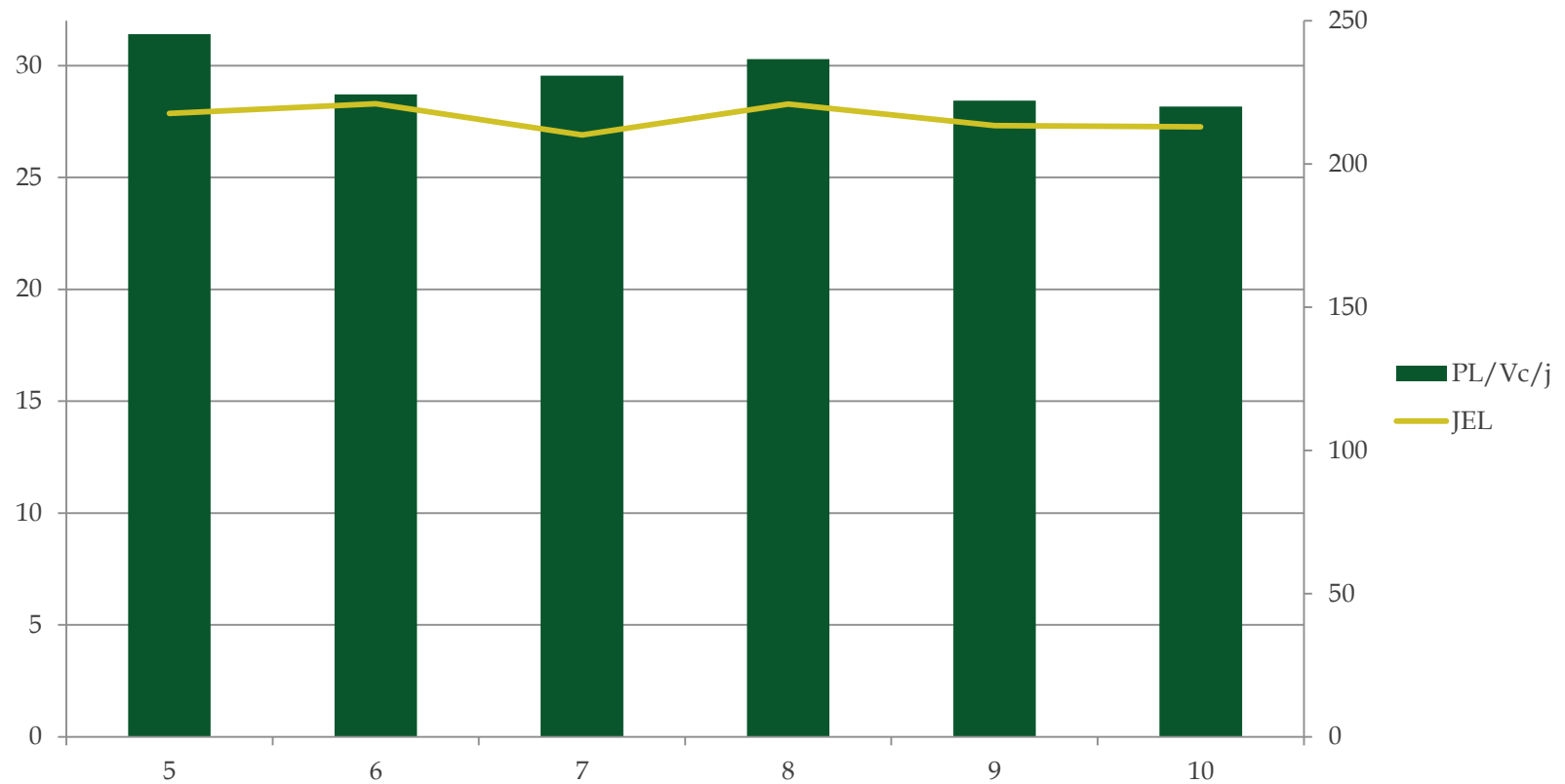
- 1: low concentrate group
- 2: high concentrate group

2014



**Autograssmilk**

# BE1: Milk yield: effect of days in milk (DIM)

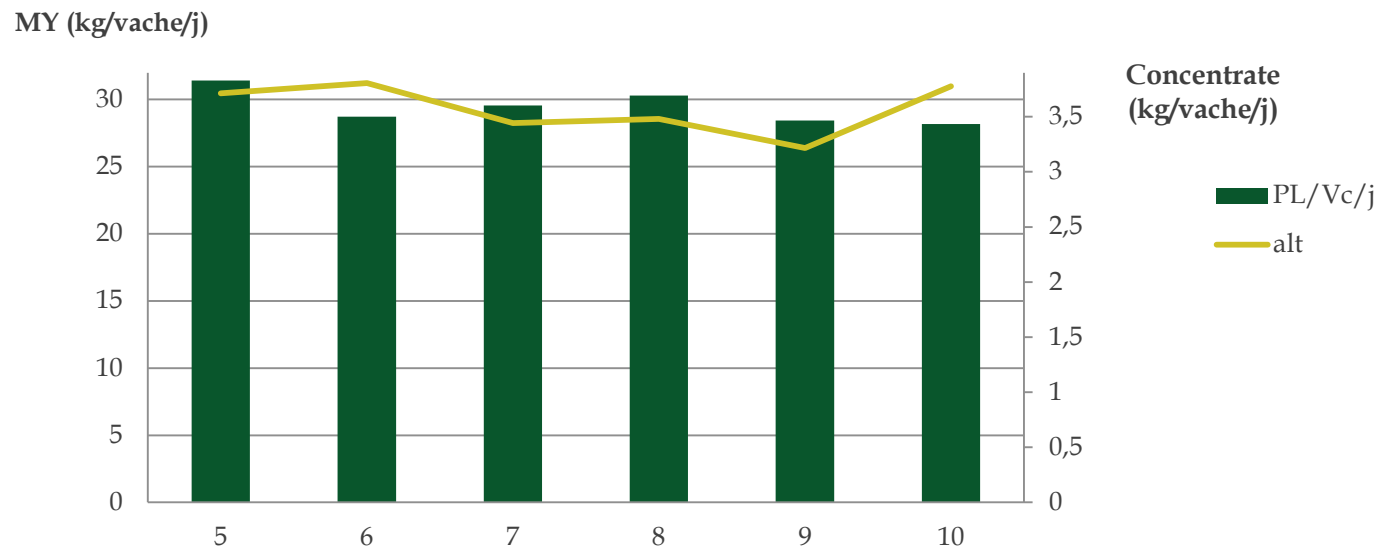


# Autograssmilk



# BE1 : MY in relationship with concentrates level

MY: effect of concentrates level



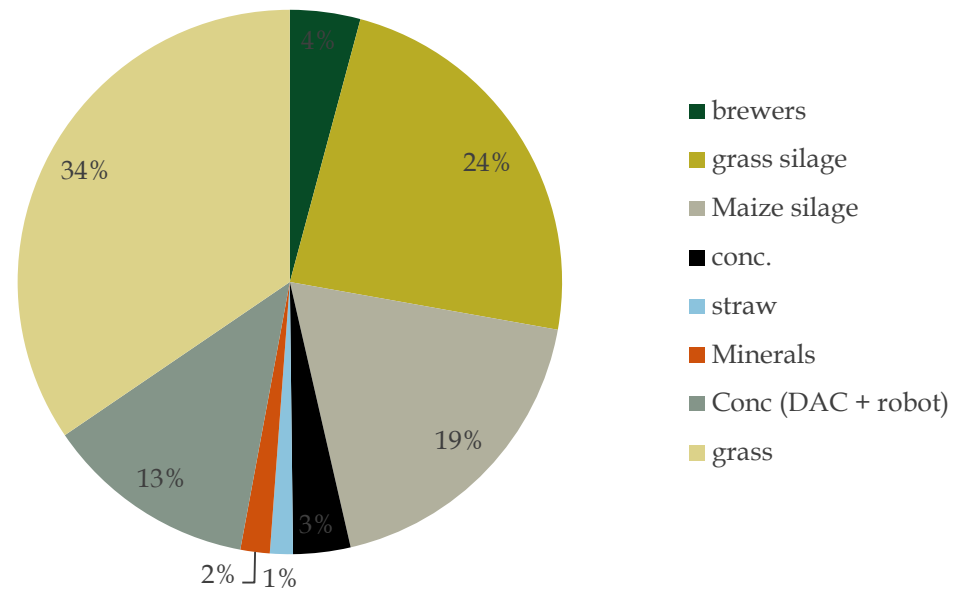
# Autograssmilk



# BE1: Milk yield and grass % in cows feed

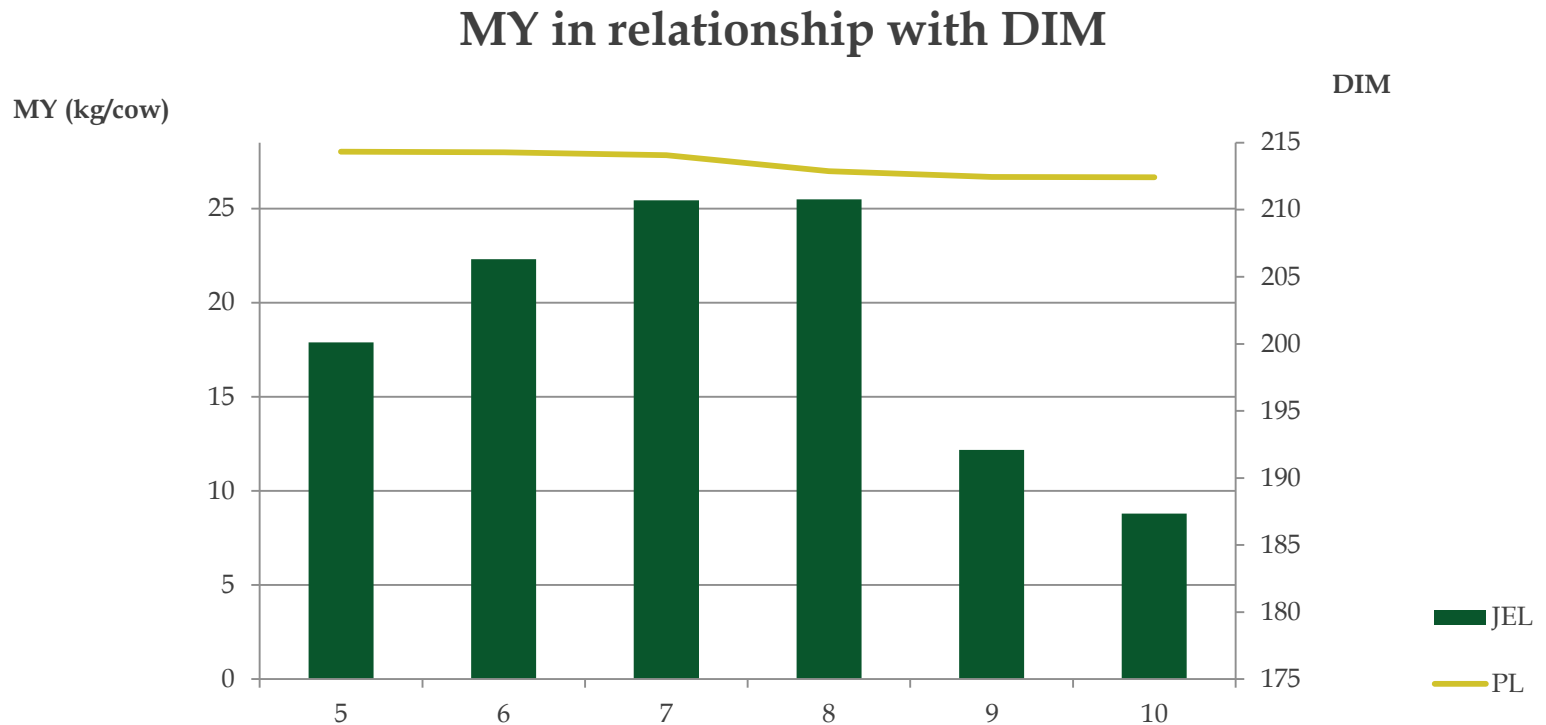
	kgDM
2/6	10
12/6	6,8
15/7	7,8
24/7	8,9
1/8	8,3
12/8	6,7
26/8	6,9

Grass % in cows diet



# BE2: Milk yield over the grazing season

## Effect of DIM



# Autograssmilk

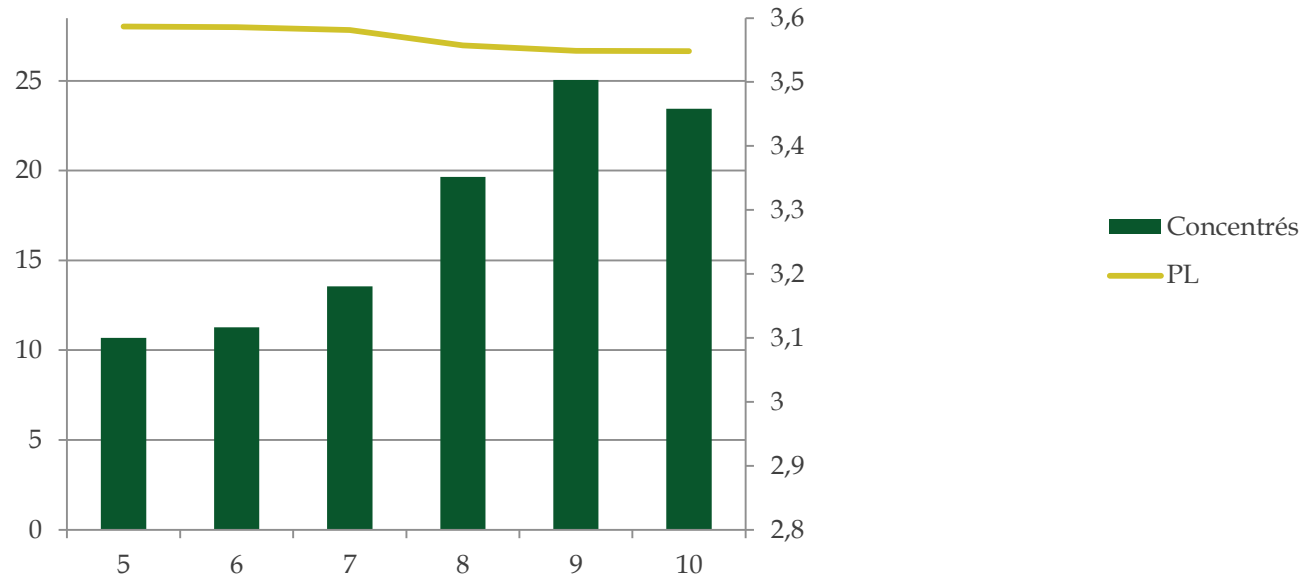


# BE2: Milk yield in relationship with the concentrates

## MY in relationship with concentrates

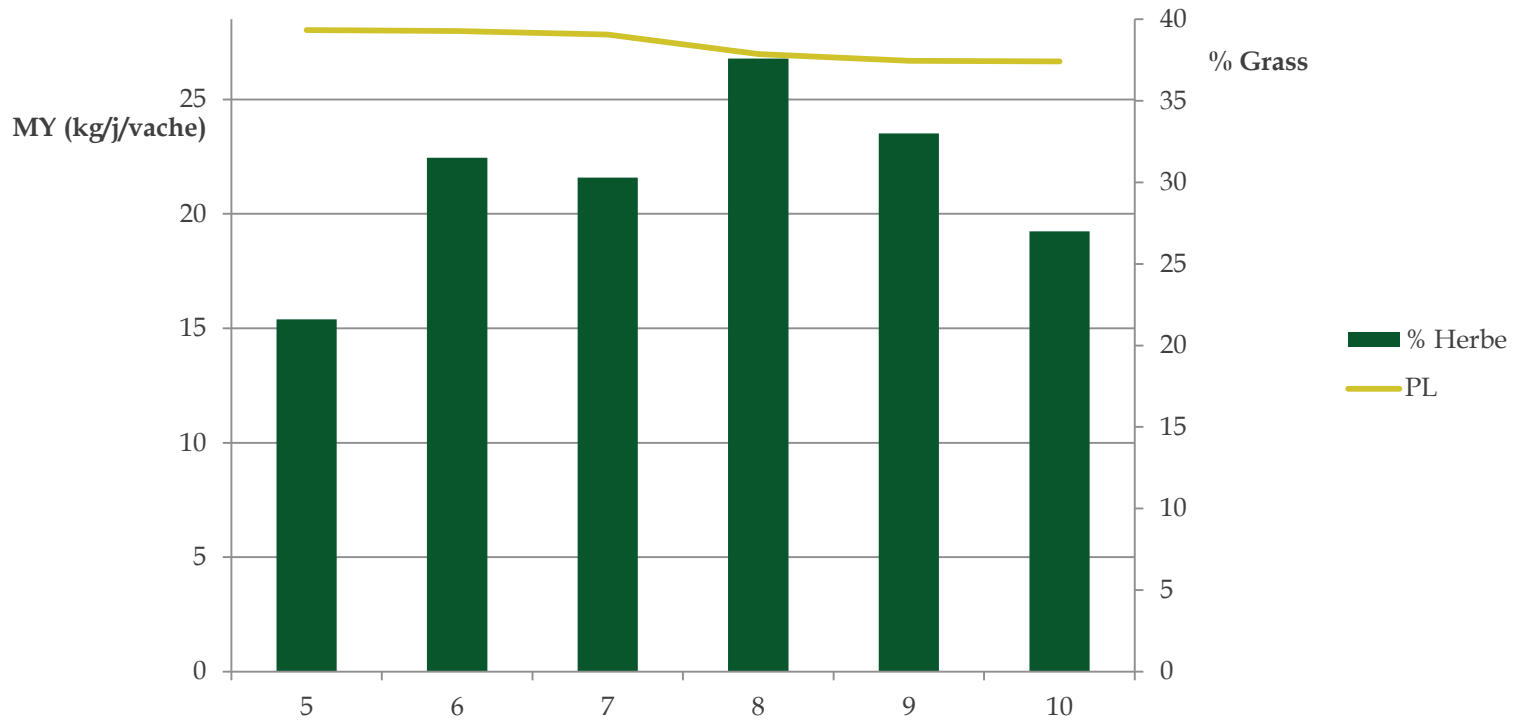
MY (kg/d)

Concentrates (kg/cow)

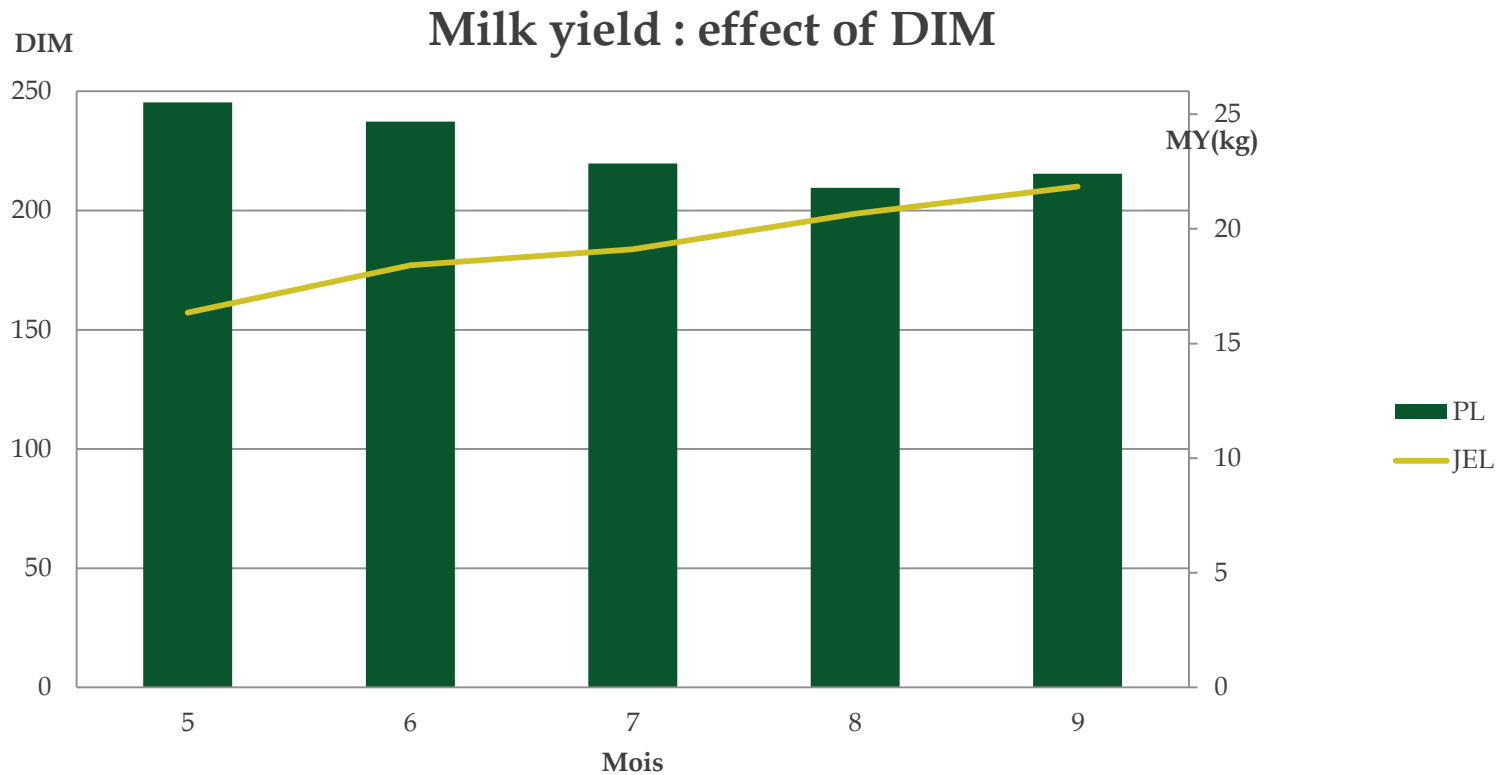


# BE2: % grass in cows diet

## Milk yield in relationship with grass % in the diet

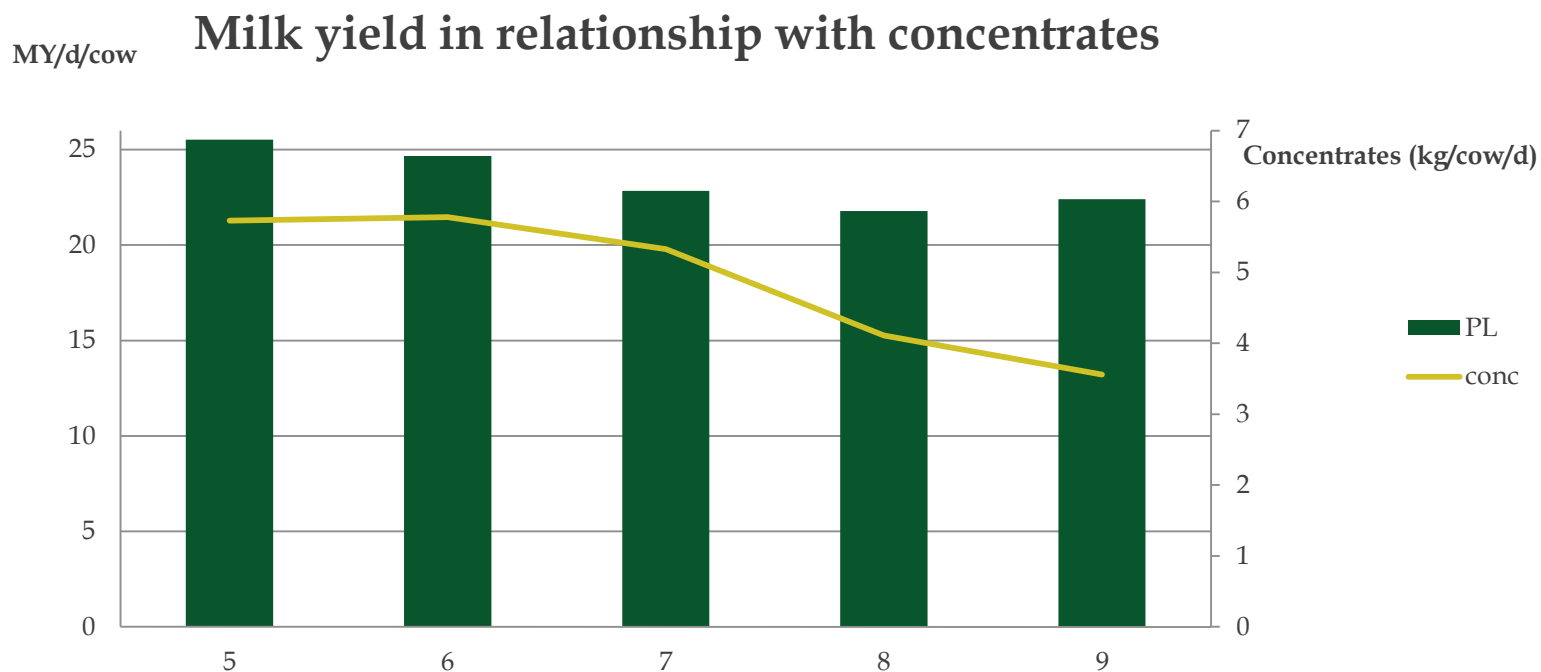


# BE3 – Milk yield



# BE 3:

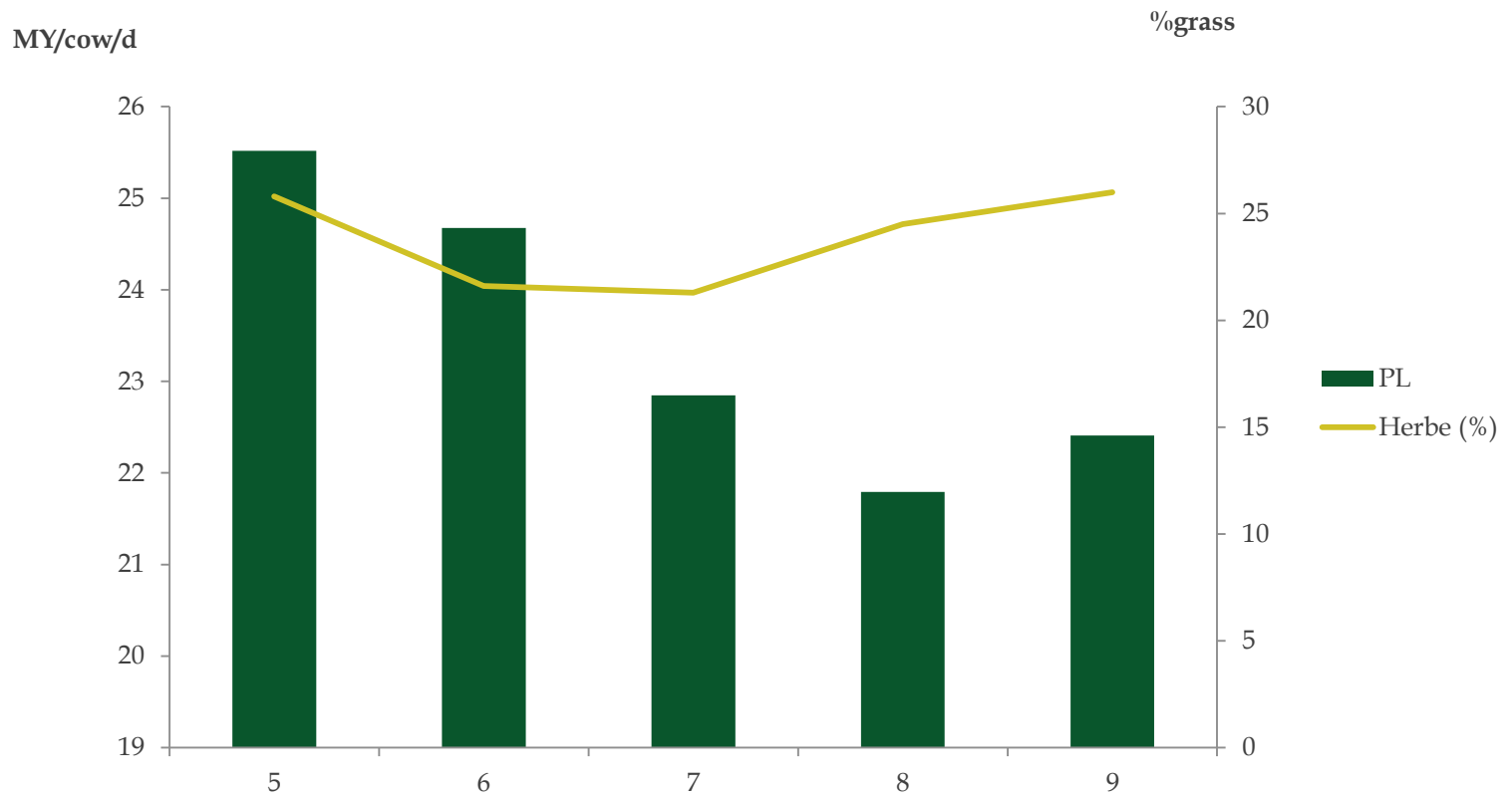
## Milk yield and concentrates' level



**Autograssmilk**



# BE3: Milk yield and grass % in cows diet



# Autograssmilk



# BE4: Milk yield and DIM

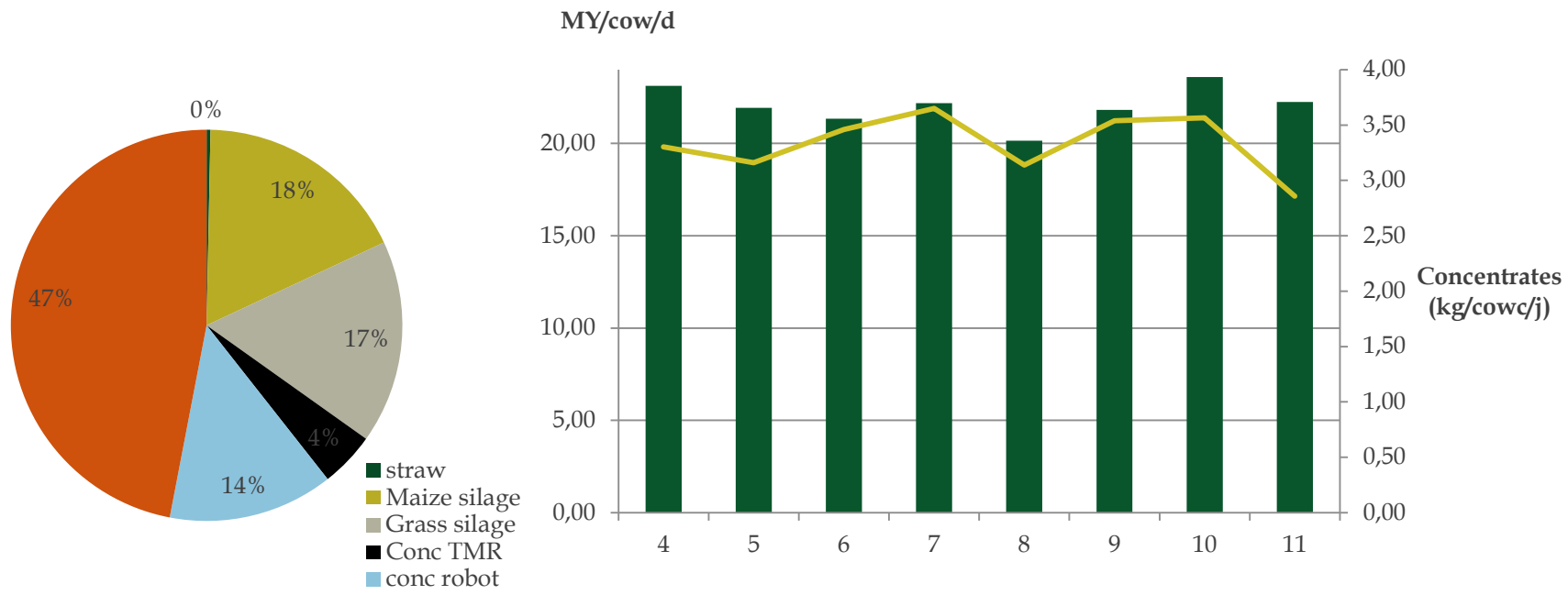
- MY in relationship with DIM



# Autograssmilk

# BE4: Milk yield and concentrates

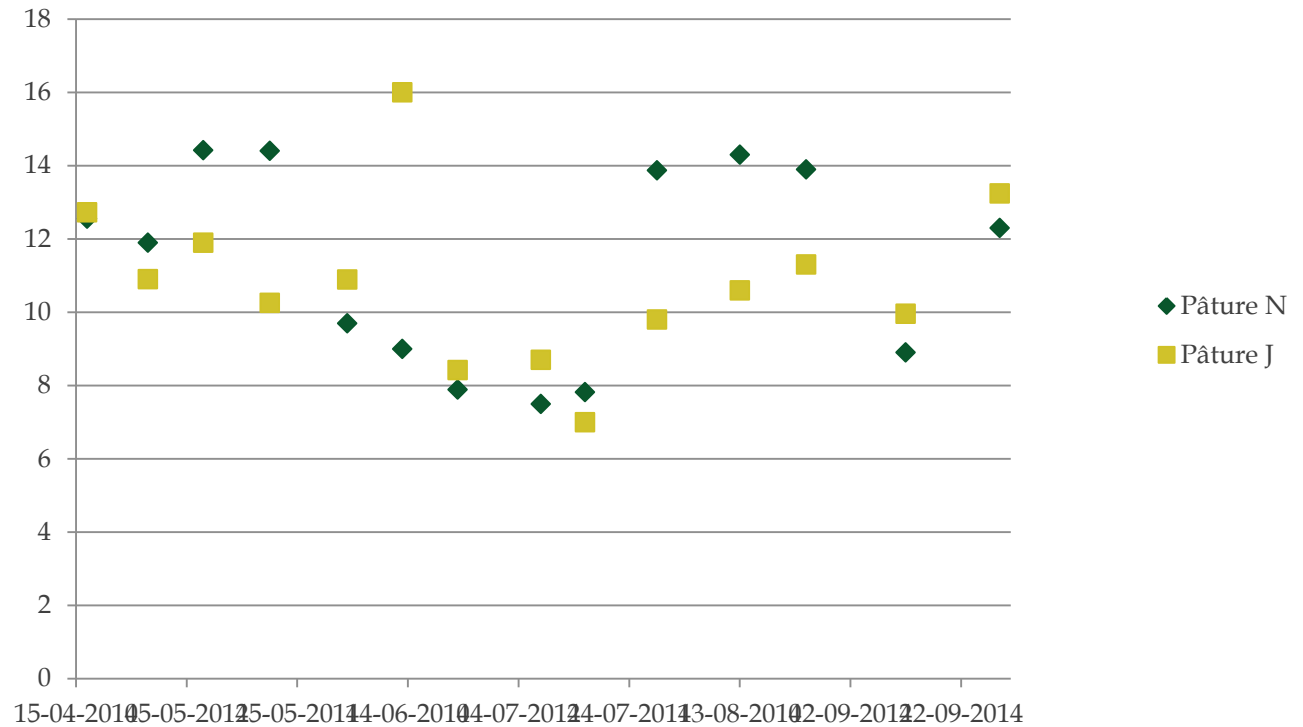
## MY in relationship with concentrates



# BE4– Height records

## Measurements in day and night plots

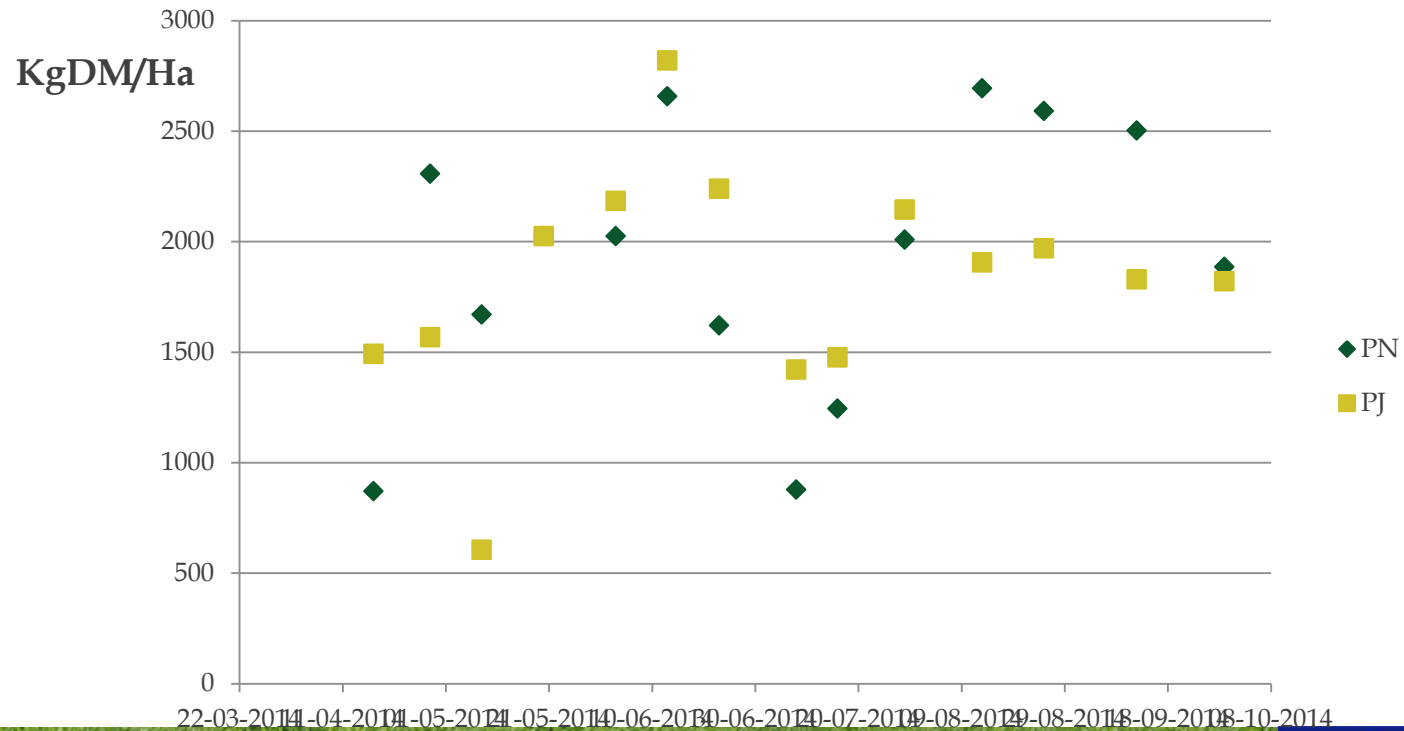
Cm grass height



# BE4

## Grass cover following day and night plot

- Grass cover



# Autograssmilk



# Results from Comité du Lait– BE1

## F% – P%: effect of grazing

Season	Month	MY(kg/cow/ d)	Fat (%)	Protein(%)	Solids(kg/cow/ d)
Winter	January	30,9	4,03	3,41	2,30
	February	30,3	4,06	3,42	2,26
	March	30,8	4,04	3,37	2,28
	December	29,3	4,08	3,43	2,20
<b>Mean</b>		<b>30,3</b>	<b>4,05</b>	<b>3,41</b>	<b>2,26</b>
Summer	May	31,4	3,91	3,27	2,26
	June	28,7	3,80	3,24	2,02
	July	29,6	3,86	3,25	2,10
	August	30,3	3,94	3,71	2,21
<b>Mean</b>		<b>30,0</b>	<b>3,80</b>	<b>3,29</b>	<b>2,15</b>





# Results from Comité du Lait– BE2

F% – P%: effect of grazing

Season	Month	MY (kg/cow/d)	F(%)	P(%)	Solids (kg/cow/d)
Winter	January	26,7	4,29	3,50	2,28
	February	27,6	4,25	3,48	2,35
	March	27,3	4,27	3,46	2,28
	December	25,8	4,35	3,61	2,15
<b>Mean</b>		<b>26,8</b>	<b>4,29</b>	<b>3,51</b>	<b>2,26</b>
Summer	May	28,0	4,00	3,38	2,23
	June	28,0	3,95	3,41	2,22
	July	27,8	3,98	3,44	2,25
	August	27,0	4,10	3,47	2,24
<b>Mean</b>		<b>27,7</b>	<b>4,01</b>	<b>3,43</b>	<b>2,23</b>

**AutoGrassMilk**



# Results from Comité du Lait– BE3

## F% – P%: effect of grazing

Season	Month	MY(kg/cow/d)	F(%)	P(%)	Solids (kg/cow/d)
Winter	January	25,3	4,21	3,34	1,91
	February	25,6	4,21	3,38	1,94
	March	24,4	4,29	3,39	1,87
<b>Mean</b>		<b>25,1</b>	<b>4,23</b>	<b>3,37</b>	<b>1,90</b>
Summer	May	25,5	4,10	3,34	1,90
	June	24,7	3,96	3,36	1,81
	July	22,9	3,93	3,31	1,65
	August	21,8	3,96	3,43	1,61
<b>Mean</b>		<b>23,7</b>	<b>3,99</b>	<b>3,36</b>	<b>1,74</b>



# Results from Comité du Lait– BE1

## F% – P%: effect of grazing

Season	Mois	PL(kg/v/j)	MG(%)	MP(%)	MU(kg/v/j)
Winter	March	22,0	4,19	3,44	1,68
	November	22,2	4,29	3,54	1,74
	December	23,3	4,19	3,45	1,78
<b>Mean</b>		<b>22,5</b>	<b>4,22</b>	<b>3,48</b>	<b>1,73</b>
Summer	May	21,9	4,08	3,34	1,66
	June	21,3	3,97	3,36	1,57
	July	22,2	3,96	3,31	1,63
	August	20,2	4,02	3,43	1,51
<b>Mean</b>		<b>21,4</b>	<b>4,00</b>	<b>3,43</b>	<b>1,59</b>



# Comparison values Comité du Lait BE1 Winter-Summer

Herd 1	2013		2014	
	Winter	Summer	Winter	Summer
%F	4.07 ± 0.05***	3.89 ± 0.15	4.05 ± 0.07***	3.92 ± 0.10
%P	3.41 ± 0.04***	3.36 ± 0.14	3.40 ± 0.04***	3.33 ± 0.09
Urea (mg.dl <sup>-1</sup> )	197 ± 47	197 ± 40	252 ± 28***	238 ± 39
SCC (1000.ml <sup>-1</sup> )	223 ± 50***	322 ± 70	208 ± 38 ***	224 ± 45



# Autograssmilk



# Comparison milk quality

## Pilot Farm 2: Winter-Summer

Herd 2	2013		2014	
	Winter	Summer	Winter	Summer
%F	4.30 ± 0.07***	4.12 ± 0.17	4.29 ± 0.06***	4.08 ± 0.14
%P	3.43 ± 0.09	3.45 ± 0.14	3.51 ± 0.06***	3.46 ± 0.06
Urea (mg.dl <sup>-1</sup> )	220 ± 28*	234 ± 35	245 ± 36***	225 ± 44
SCC (1000.ml <sup>-1</sup> )	190 ± 43***	241 ± 64	154 ± 137***	220 ± 98



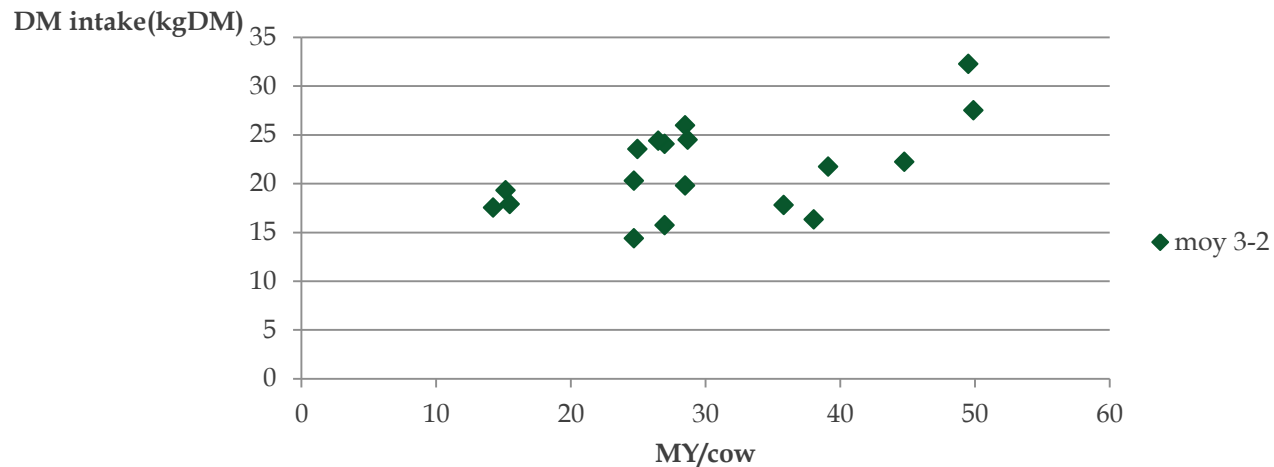
# Autograssmilk



# Evaluation of the DM intake on basis of NIRS analysis of faeces

- BE1

### DM intake in relationship with MY



**Autograssmilk**

# Evaluation of the DM intake on basis of NIRS analysis of faeces

- Influence of several factors

