

Rearing two-breed-dairy-cattle : A way to improve farms' forage self-sufficiency in relation to climate change?

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Outlines

- Stakes and aims
- Case study
- Diversity's management
- Self-sufficiency
- Discussion and conclusion



Diversity use's stakes



- Many works present diversity as a source of flexibility at the farm level
- Diversity: the combination of variability and heterogeneity of the different resources in the farms
- The functional diversity is mainly considered in this way
- In the livestock farming systems the functional diversity could be distinguished as animal diversity and forage resource diversity
- After many years of intensification dairy farms have limited the use of the animal diversity

Our study's aims

How to improve the use of the animal diversity in the intensive farming systems?



Hypothesis: there are links between animal and forage resources diversities

These links ought to improve the flexibility of the farms...

- Our study's aims were to test if the breed diversity can increase farm's adaptive capacity faced with climate change
- Two points are focused in this communication:
 - breed diversity management to rear 2 dairy-breeds
 - forage self-sufficiency and animal diversity

Case study: Dairy farms with Two breeds in the same herd



- In France dairy production intensification has been conducted with specialization and mainly the Holstein breed use

- Rearing two breeds in the same dairy herd is an original way meets in different less-favored area...

- 16% of the dairy farms in Aveyron rears two breeds (*source OPTILAIT 2010*)



Case study: Dairy farms with Two breeds in the same herd



- In France dairy production intensification has been conducted with the Holstein breed
- Rearing two breeds in the same dairy herd is an original way in a different less-favored area...
- 16 dairy farms in Aveyron rears two breeds (source OPTILAIT 2010)

Transition or real original system ?



Data



- Research project (O2LA) :
Renewal and use the diversity of the located animal and forage resources
- To study the diversity management we need to know farmers' practices.
- This study is based on analysis of a 1500-farms-database collected in Aveyron by the French Dairy Herd Information
- 158 farms rearing two breeds
A 22-farms sample has been chosen: rearing two-breed during 10 years; analyze performances and features
- Farmer's interviews to understand their management of the animal diversity

Farms features...

- Large diversity of farm's size



	Milk production Kg per ha	Milk production kg per cow	AA	Cow	Stoking rate AU/ha	Quota
4 VExt farms	3382	6308	92	42	0.78	276 000
7 Ext farms	5408	6238	58	41	1.33	272 000
8 Int farms	7441	7147	58	51	1.56	364 000
3 Vint farms	10997	8167	59	53	1.66	470 000
ANOVA test	***	**	*		***	+

*signif ***0.001; ** 0.01; * 0.5; + 0.1*

- Holstein and an other breed
Montbéliardes (13); Simmental (3); Brune (3); Normande (3)

- What Future to the two-breed-rearing?

Low interest : specialization with Hn (4); Increase one breed (5);

Well interest: Increase the crossbreeding (2); status quo (11)

How farmers manage breed's diversity

Farmers can differently manage the herd by breed:

A-Calving period

B-Age of the heifer at the first calving

C-Dairy Crossbreeding

D-Meat Crossbreeding

E-Cow Reform criteria

F-Selection criteria

G-Forage distribution

H-Concentrate distribution

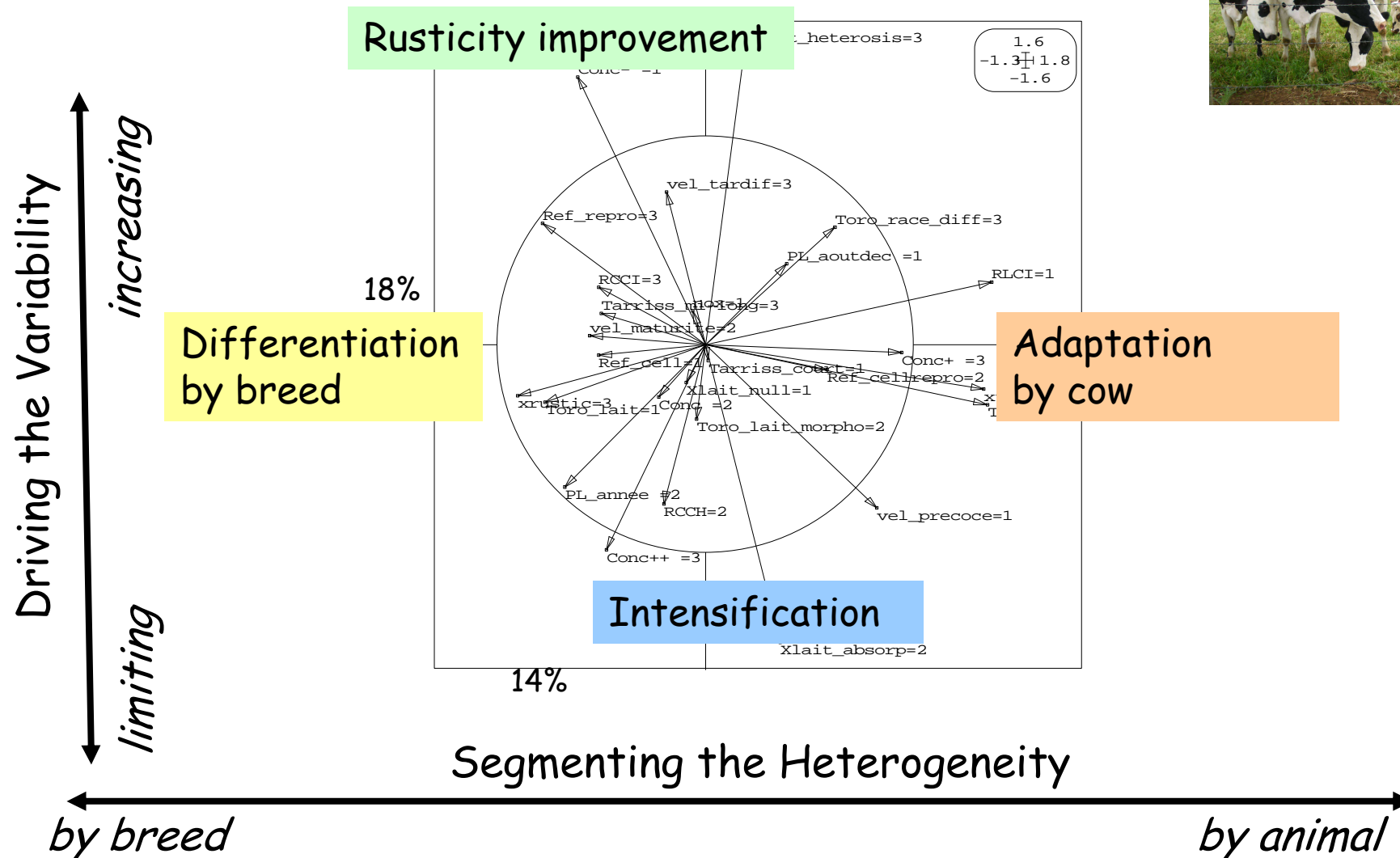
I-Dry-period Practices



How farmers manage breed's diversity

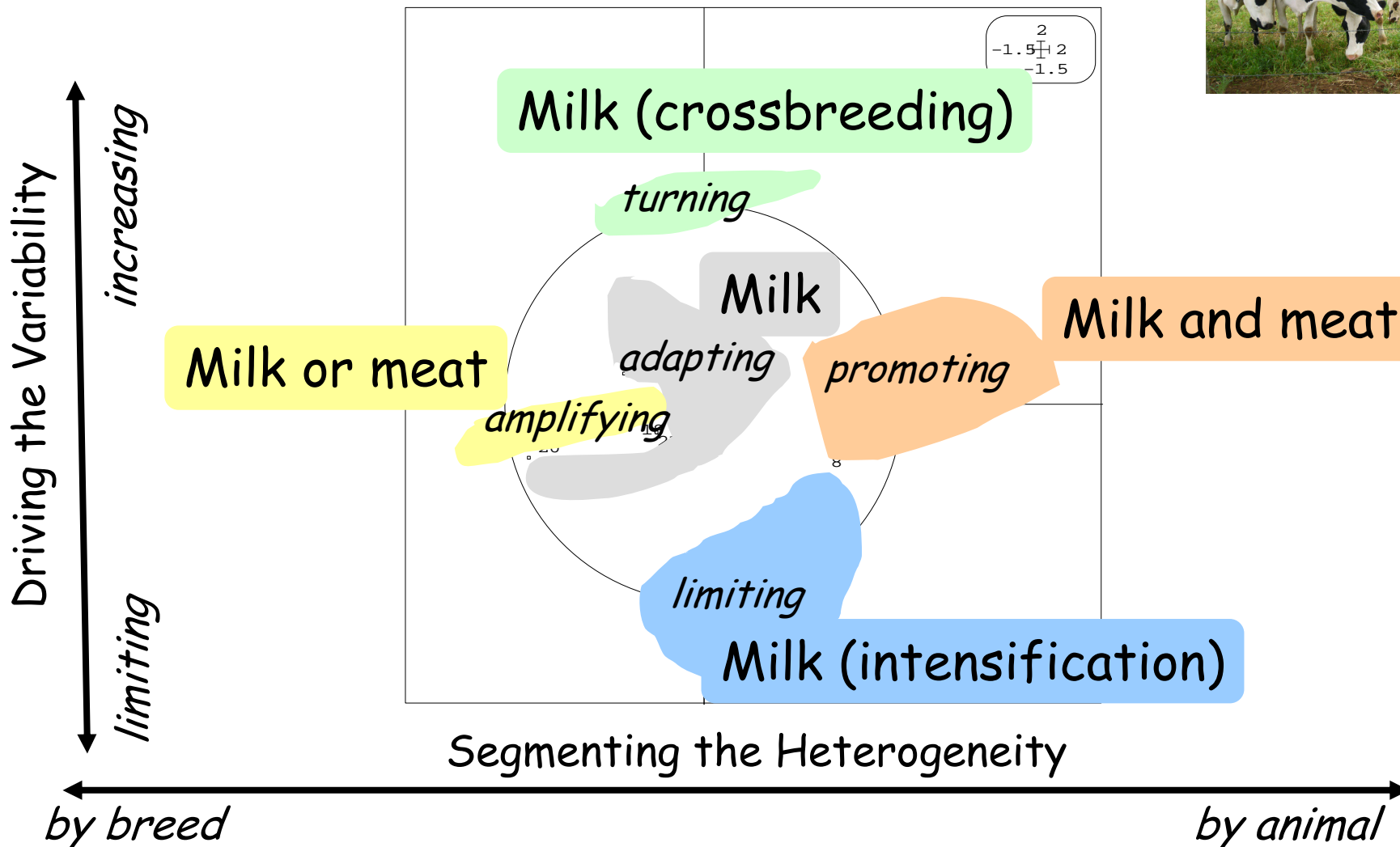


Representation of practices with MCA



How farmers manage breed's diversity

Clustering of the farms



Forage Self-Sufficiency

How define Forage self-sufficiency (Fss)



1- Fss has been estimated by year and by farm :

$$Fss = \text{forage production} / \text{forage consumption}$$

2- Each year the Fss at farm level is compared to the All-farms Average Fss of the year

3- 3 types of climatic year are define dry-normal-wet

4- Farms have been classified in four groups defining their self-sufficiency status and qualified by the main forage orientation Grazing - Grass/Maize - Maize

Forage Self-Sufficiency

Fss: what farm-status?



3 farms : No self-sufficiency → Pasture

6 farms : Low self-sufficiency → Pasture and Pasture/Maize

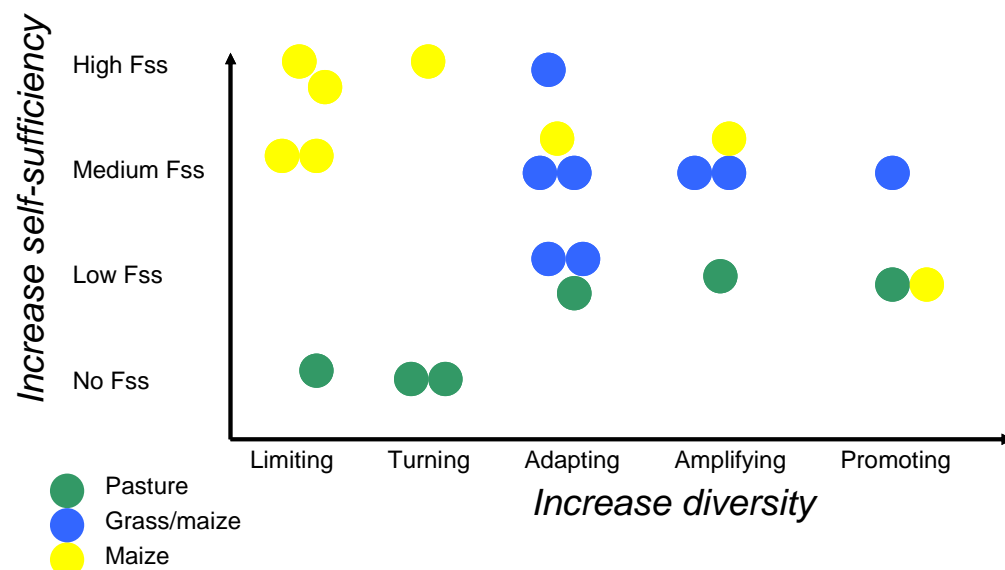
10 farms : Medium self-sufficiency → Grass/Maize and Maize

3 farms : High self-sufficiency → Maize

*Interest of the maize silage to adapt face to the dryness
(that it's confirm in the farmers interviews)*

Discussion

Forage self-sufficiency & Diversity management



No evident links...

But ...

- Pasture system farms have better Fss with amplifying and promoting diversity
- Maize system farms have better Fss with limiting diversity

Conclusion

*Despite a small sample
and a farms' diversity ...*



- Some types of animal diversity management
- The forage self-sufficiency is very linked with the forage system
- Also Diversity management & Forage self-sufficiency links are complex...

... this study should be proceed to improve farm's adaptive capacity faced with climate change...



***Thank You
for your
attention !!!***