



How conciliate services provided by grasslands in order to ensure the sustainability of farming systems at local and regional levels

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How conciliate services provided by grasslands in order to ensure the sustainability of farming systems at local and regional levels.

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Introduction

Grasslands and rangelands cover 50% of the arable lands in Europe (Eurostat 2009).

- They provide most of the energy and protein required for agricultural outputs
- They are major elements of most European landscapes, contributing to the regional identity.
- They host a tremendous diversity of plants, animals and microorganisms of functional and/or patrimonial interest



Grasslands are at the heart of the debates on multi-functionality (Carrère et al., 2012)

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- The program “grassland and PDO” is a project involving 14 research, extension and education partners.



- Area and Process of the study

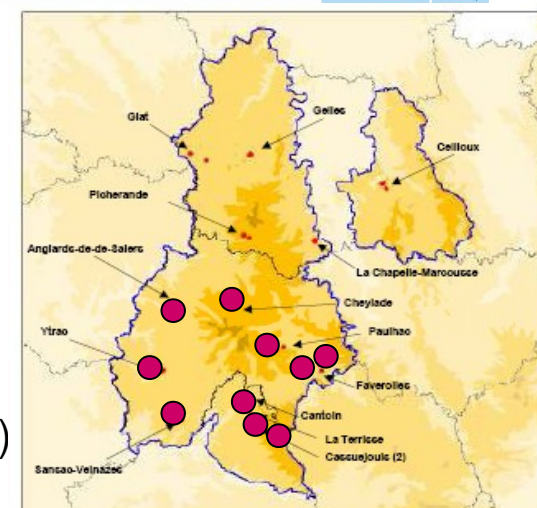
Massif Central – (upland area)

A network of 75 plots from 15 farms covering the range of environmental and management conditions of PDO areas in the Massif central



Survey identifying farmers' practises (cutting, grazing, fertilization)

Botanic composition to assess the vegetation diversity of the plots (phytosociology).

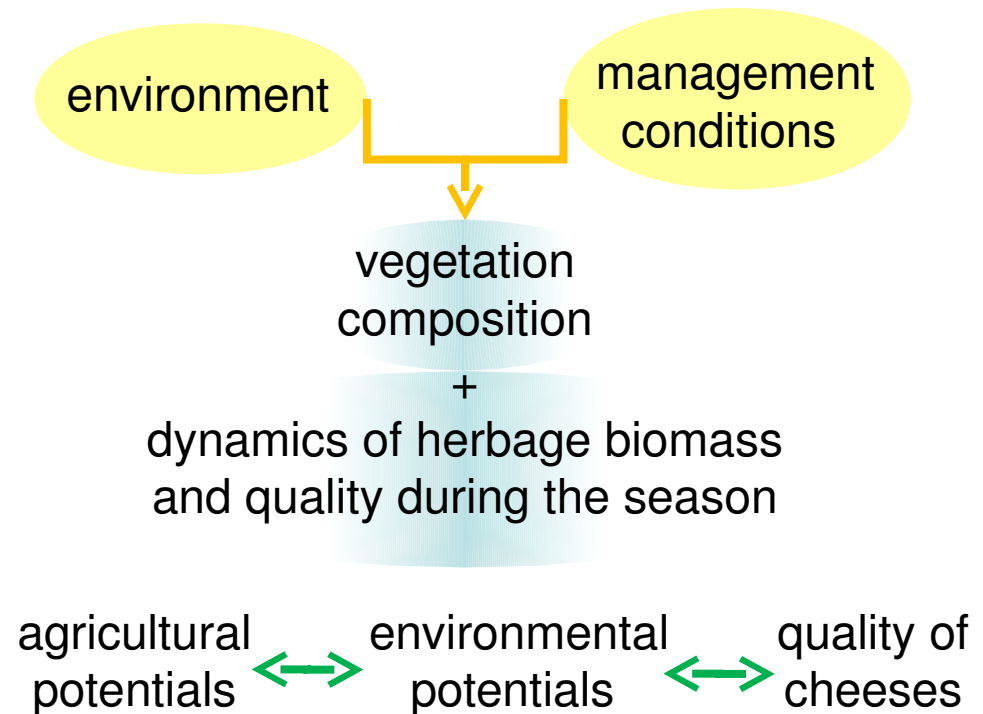


Agronomic measurements (production and nutritive values) at four times during grazing season



- 1) How to deal with the great diversity of grasslands in uplands dairy farms?
- 2) How to characterize grasslands, especially concerning the agronomic, environmental potentials and quality of cheeses?

A typology to characterize grasslands in uplands dairy farms



Se

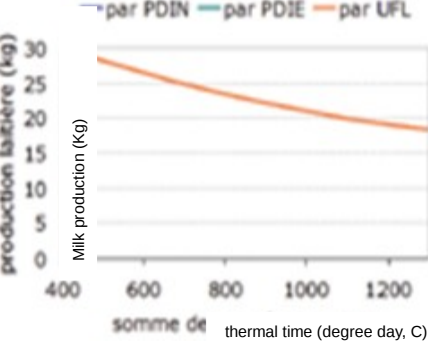
-

- À 400 °C 60% of grass are vegetative
At 800 °C 80% of grass culms above 10 cm so
À 800 °C, 80% des graminées ont atteint le stade
épi 10 cm.

-

-

- (milk production allowed at grazing, with a diet intake from 16-20 Kg MS/day for a standard dairy cow)



SALVEMINI

- ● ● ●

-

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Le fromage

- Couleur de _____ Color _____ Flavor _____

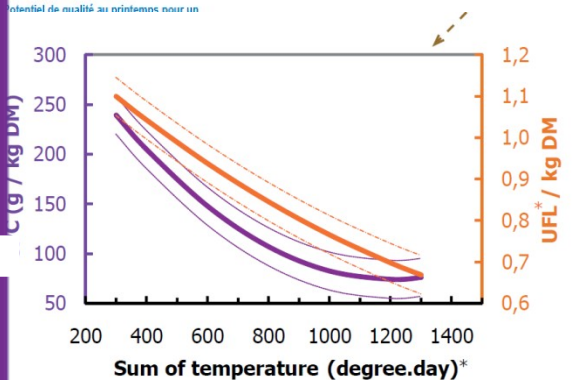
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- 3/4 3/4

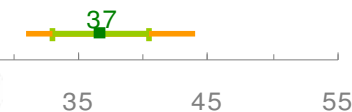
Renouée bistorte	Knautie d'Auvergne	Trisète jaunâtre	Crépis bisannuel
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Qualité nutritive



* CPC = Crude Protein Content

[illegible]

Rarity index



- The multifunctional diagnosis - DIAM



A tool

- Designed for farmers and agricultural advisors
- To decline compromise between production, environment and quality of cheese in the forage systems.

System description

Farm Plots

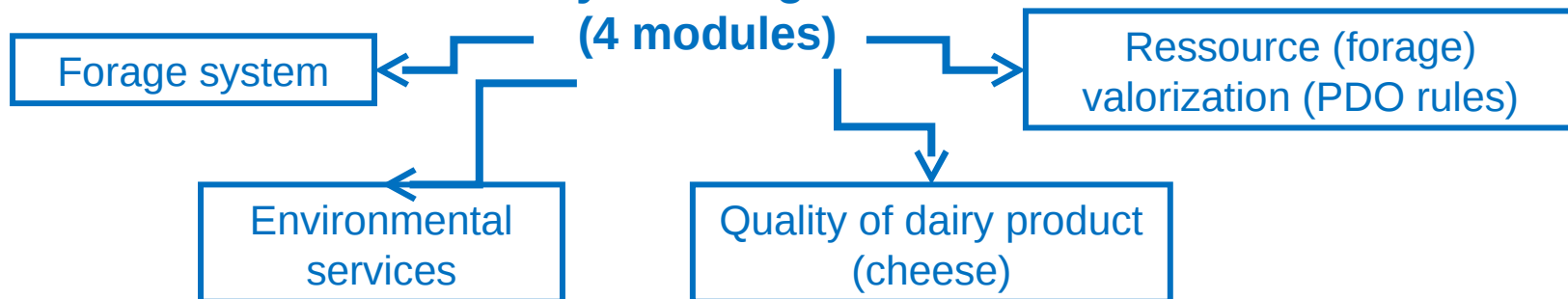
Diversity of vegetation types ;
practice ; stock.



Herd

Animal needs ; milk production ;
calving ; concentrate.

Analysis / Diagnosis (4 modules)



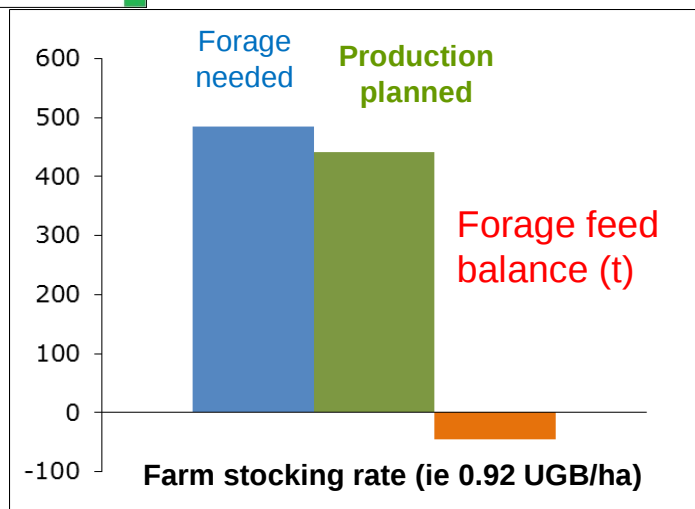
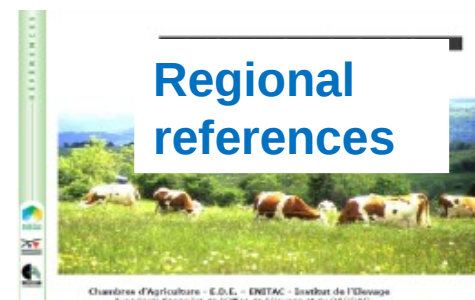
Farm Plots description

N°	Nom parcelle	Utilisation (1)	Utilisation (2)	Surface (ha)	Type AOP	Surfaces (ha)	PMPY	Eva hydrique	profondeur sol	résistance au sol	N°	Fond de la parcelle	commentaires sur la parcelle	commentaires sur la parcelle
2.1	couche 1	POG	POG	2,00	1.5	0	0,00	pp	forte	mojeune				
2.2	couche 2	F	POG	3,00	1.5	3	0,00	pp	forte	mojeune				
2.3	couche 3	F	POG	1,24	1.5	1,24	0,00	pp	forte	mojeune				



Forage system *
stocking rate *
Vegetation type

Analysis of
system
consistency



Consistency index

Forage production (t MS/UGB)

Area grazed in spring/UGB

% first cut / grassland area

N mineral

...

kg concentrate/dairy cow

Farm

Réf.

2.9

3.0

45

36

54

55

28

54

...

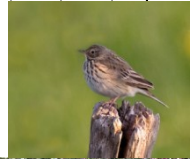
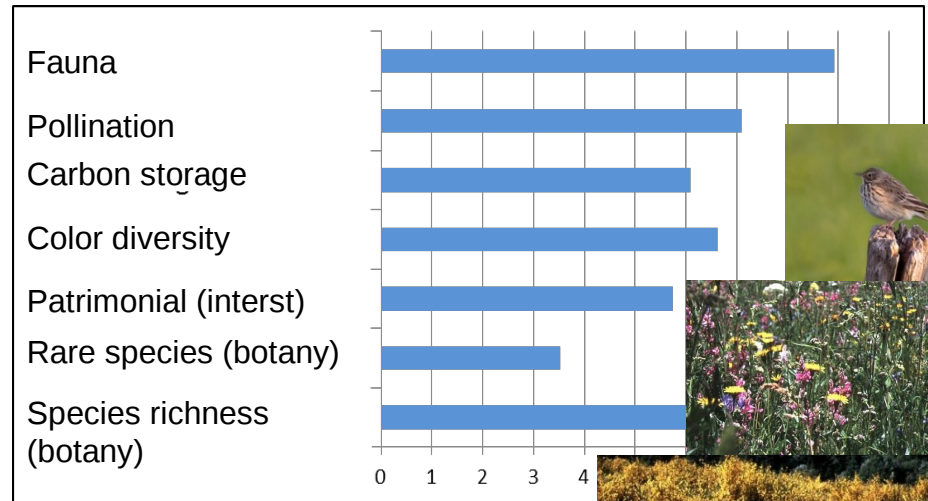
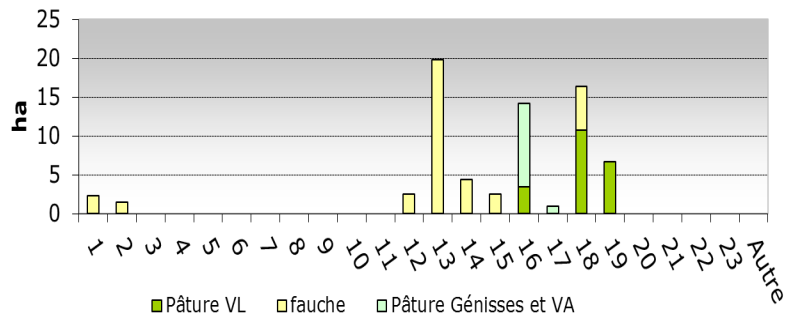
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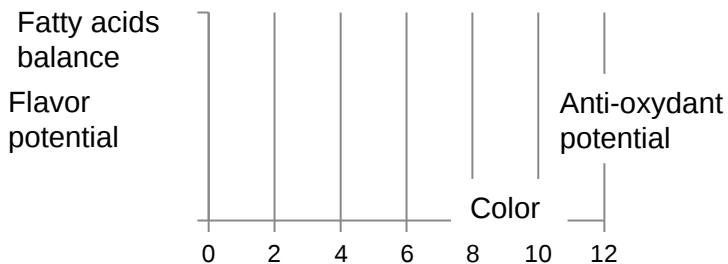
High

Evaluation of ecosystem services

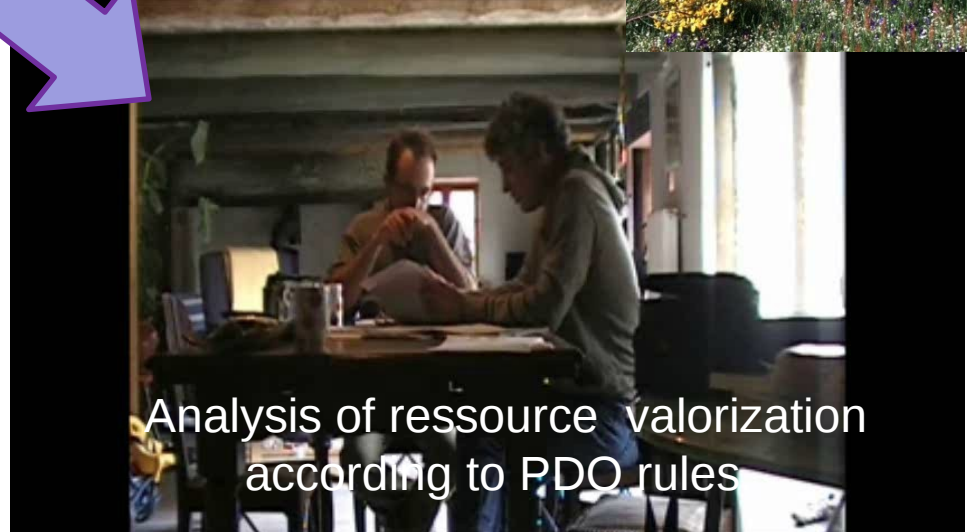
Distribution of vegetation type



Evaluation of products quality



Analysis of ressource valorization according to PDO rules



- DIAM allows to compare farming systems

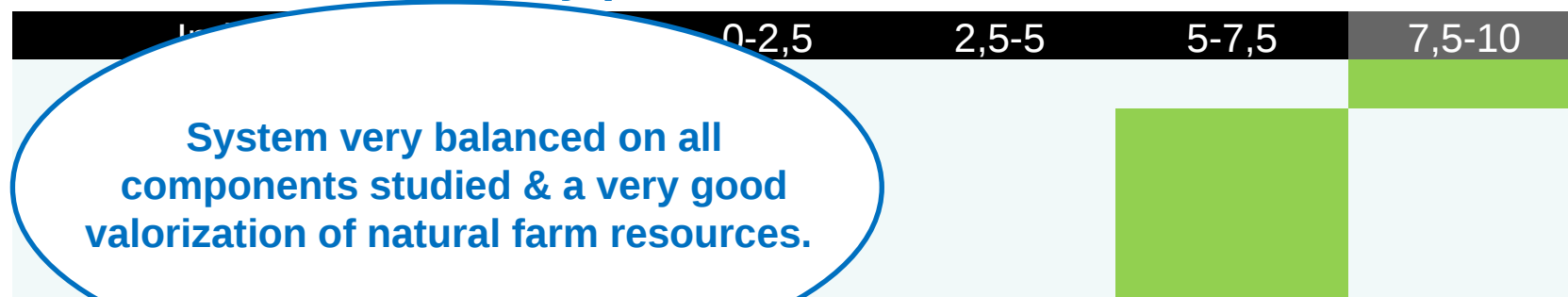
Farm type	Surface Ha	Stocking rate (average dairy cow/ha)	Milk / dairy cow	% temporary grassland	Kg N/ha	Number of VT in the farm
PROD-A	57	0.92	6300	0%	20	6
PROD+- nA	71	1.02	9000	0%	28	10
EFF-A	59	0.77	7500	40%	30	10

PROD-A => A moderately productive farm for the area in term of Kg milk/cow but autonomous for its forage ;

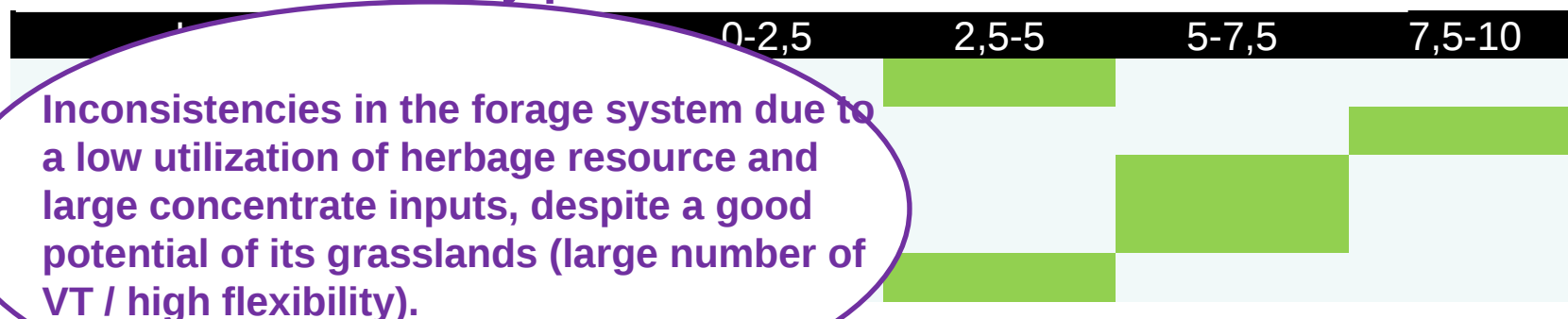
PROD+-nA => a very productive – non autonomous farm ;

EFF-A => an efficient farm (productive, autonomous, farm with a low stocking rate).

PROD-A => moderately productive autonomous farm



PROD +/- NA => moderately productive – non autonomous farm



EFF



- Conclusions

- DIAM is a multifunctional approach of the farm feeding system.
- DIAM brings to the farmer thoughts on the balance between the production, environment and the product quality
- DIAM could discriminate forage systems.
- DIAM is well suited for the diagnosis of specialized dairy systems but is a little trickier to apply to mixed systems.
- DIAM question the balances and tradeoffs within a farm and between farms within a territory. (ie PDO cheese areas).





Thank you for your attention



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