



**HAL**  
open science

## Assessing ecosystem services provided by livestock farms in upland areas in the French Massif Central

Anne A. Farruggia, Jean Zapata, Clémentine Lacour, Stéphane Violleau,  
Géraldine Dupic, Bibiane Baumont, Pascal P. Carrère, Sophie Hulin

### ► To cite this version:

Anne A. Farruggia, Jean Zapata, Clémentine Lacour, Stéphane Violleau, Géraldine Dupic, et al..  
Assessing ecosystem services provided by livestock farms in upland areas in the French Massif Central.  
1. Joint Meeting of FAO-CIHEAM Mountain Pastures and Mediterranean Forages Resources Networks  
and Mountain Cheese Network, Jun 2014, Lempdes, France. 9 p. hal-02739388

**HAL Id: hal-02739388**

**<https://hal.inrae.fr/hal-02739388>**

Submitted on 2 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Assessing ecosystem services provided by livestock farms in the Massif Central

Zapata J. , Lacour C. , Violleau S. , Dupic G. , Faure P. , Baumont B. , Carrere P. , Hulin S. , **Farruggia A.**



## What were our objectives with DIAM?

- Underline the importance of the **GRASS RESOURCE** and grasslands diversity within farm
- Give a **NEW VISION** of livestock breeding shared with farmer and all the partners



# How DIAM works?

## Agricultural services

### ❖ Yield



### ❖ Production seasonality

At 400 °C 60% of grass are vegetative  
At 800 °C 80% of grass culms above 10 cm soil level

### ❖ Forage nutritive value at 500°C

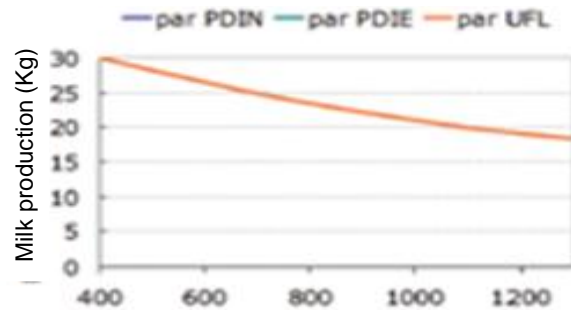


### ❖ Management flexibility



### ❖ Allowed milk production

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



thermal time (degree day, C)

## Environnemental services

### ❖ Carbon storage



### ❖ Patrimonial interest (botany)



### ❖ Floewing color diversity



### ❖ Pollinisation impact



### ❖ Fauna interest



## Cheese quality services

### ❖ Organoleptic potential

Color

4/4

Flavor

1/4

### ❖ Nutritional potential

Antioxydes

3/4

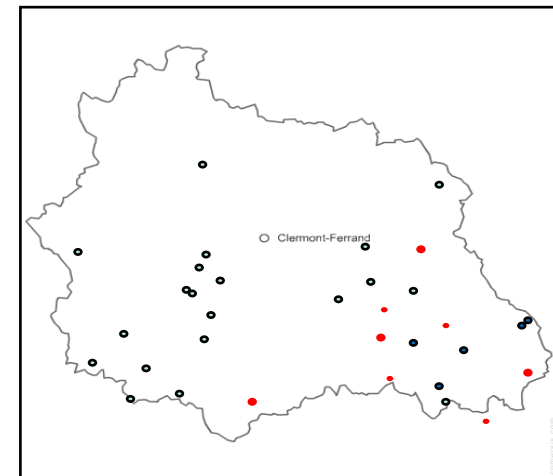
insaturated fatty acids

3/4



# DIAM has been tested on a group of 36 farmers

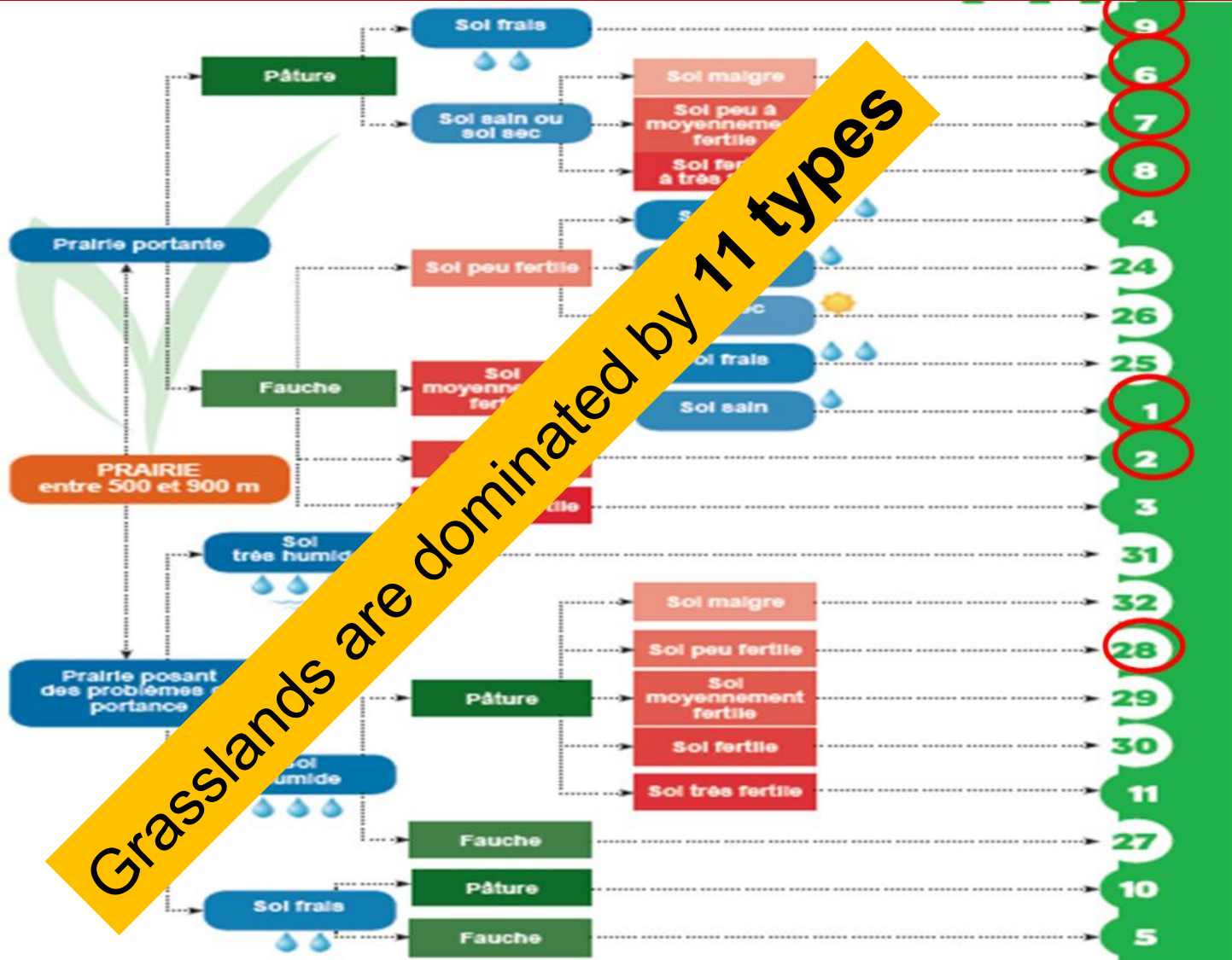
- Half are engaged in **local food supply chains**
- A quarter are **organic farmers**
- Two third of the farms are **oriented towards dairy cows**
- All are **grass-based** systems



# KEY 1 - Grasslands between 500 and 900 m

A

S



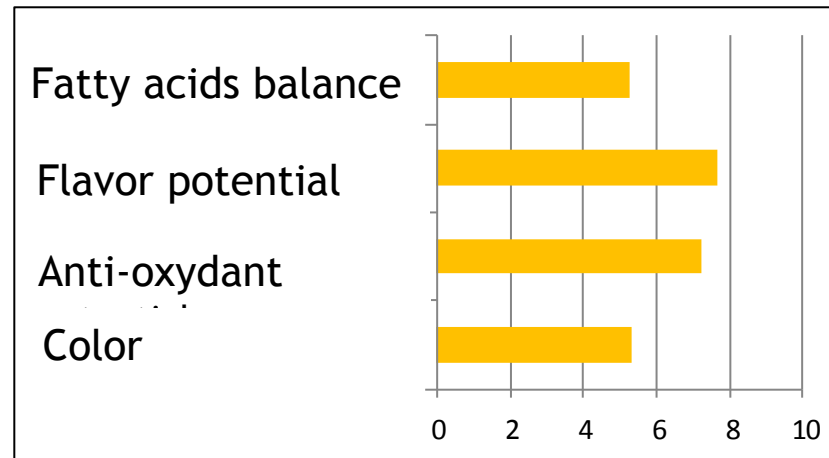
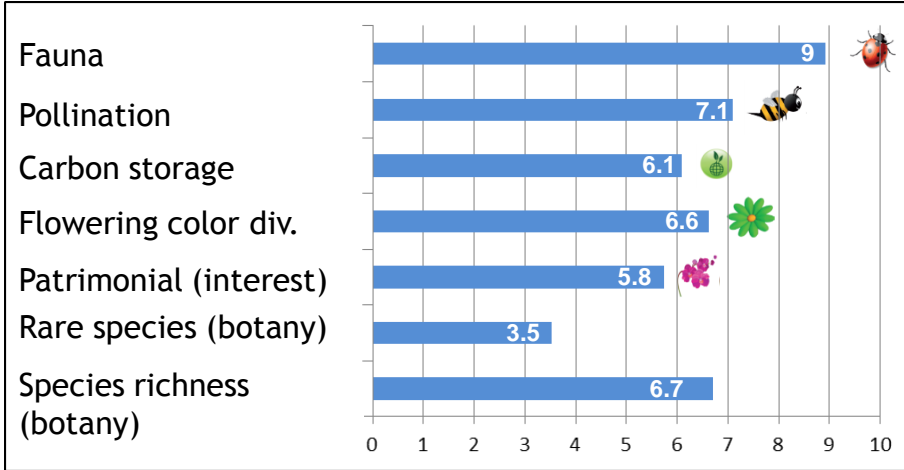
# Grasslands diversity characterizes the forage systems

- **10 types** of grassland per farm (**5-16 types**)
- Grasslands that offers assets in terms of **productivity co-exists** with grasslands offering greater management **flexibility**
- But **grazed herbage** is not the main feed



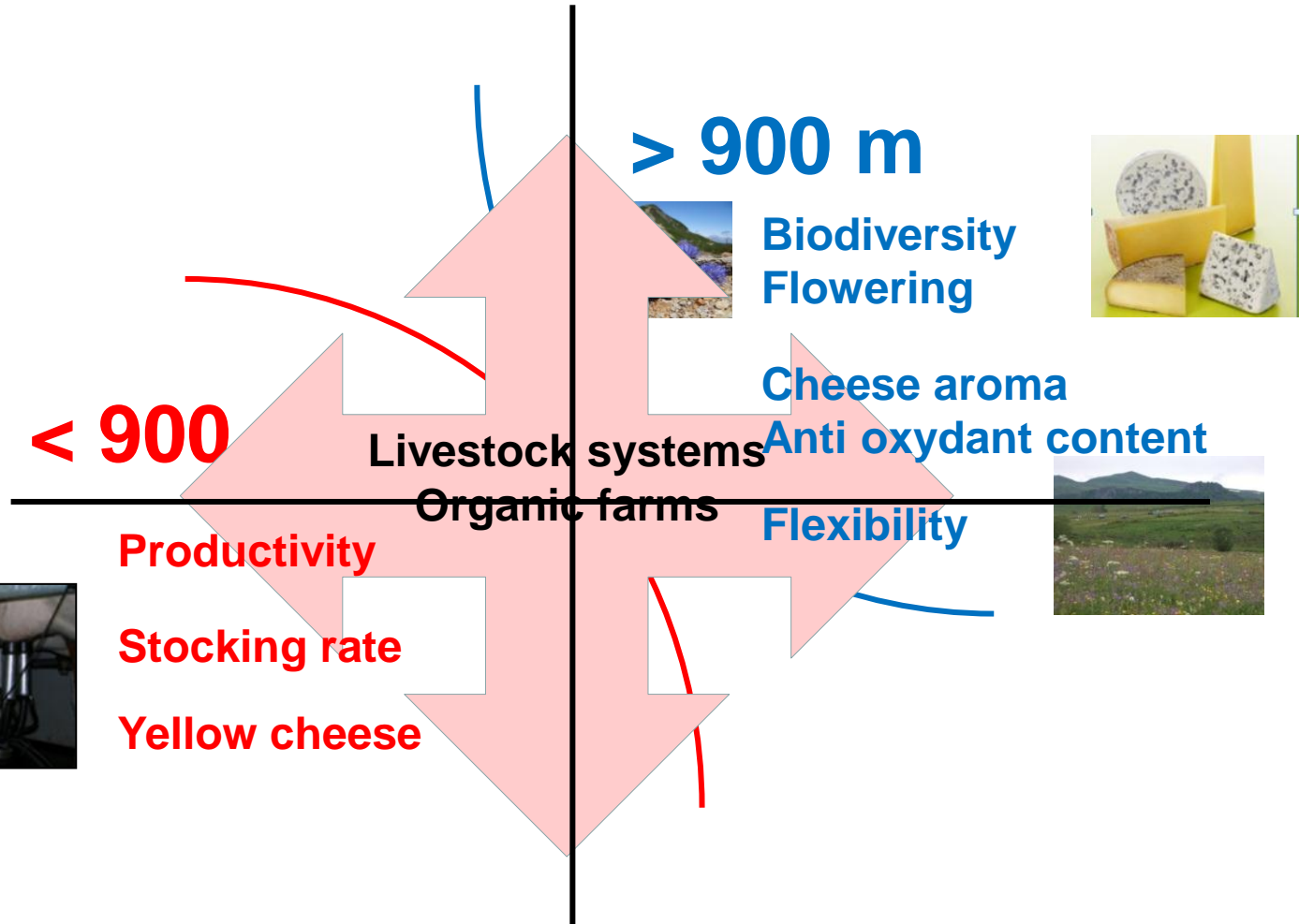


# Environmental and « cheese » services provided by a farm





# A PCA to study the relationships between services and farms



# Learnings ...

- ☹️ The tool needs an **EXPERTISE** to correctly allocate type to plot
- ☹️ Many of the indicators are still **ABSTRACT** for individual farmer, and advisors are still **UNCOMFORTABLE** with the process of reporting the results
- 😊 A **GLOBAL** vision and a **NEW PERCEPTION** on the environment previously experienced as a source of constraints
- 😊 A tool of **DIALOGUE** and exchange with other stakeholders
- 😊 Brings a new **AWARENESS** that there is not just one 'grassland' but a **MOSAIC** of many different grasslands which is a way into **SUSTAINABILITY** in mountain areas

