

How the CAP could improve the environmental benefits of grassland?

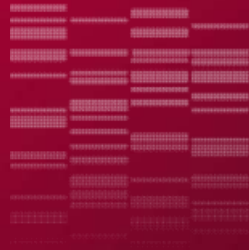
Hervé Guyomard, Luc Delaby & Jean-Louis Peyraud

INRA (France)

The CAP green architecture post-2020: Deeping into eco-schemes
Zafra, Spain, 30 & 31 May 2019

Structure of the presentation

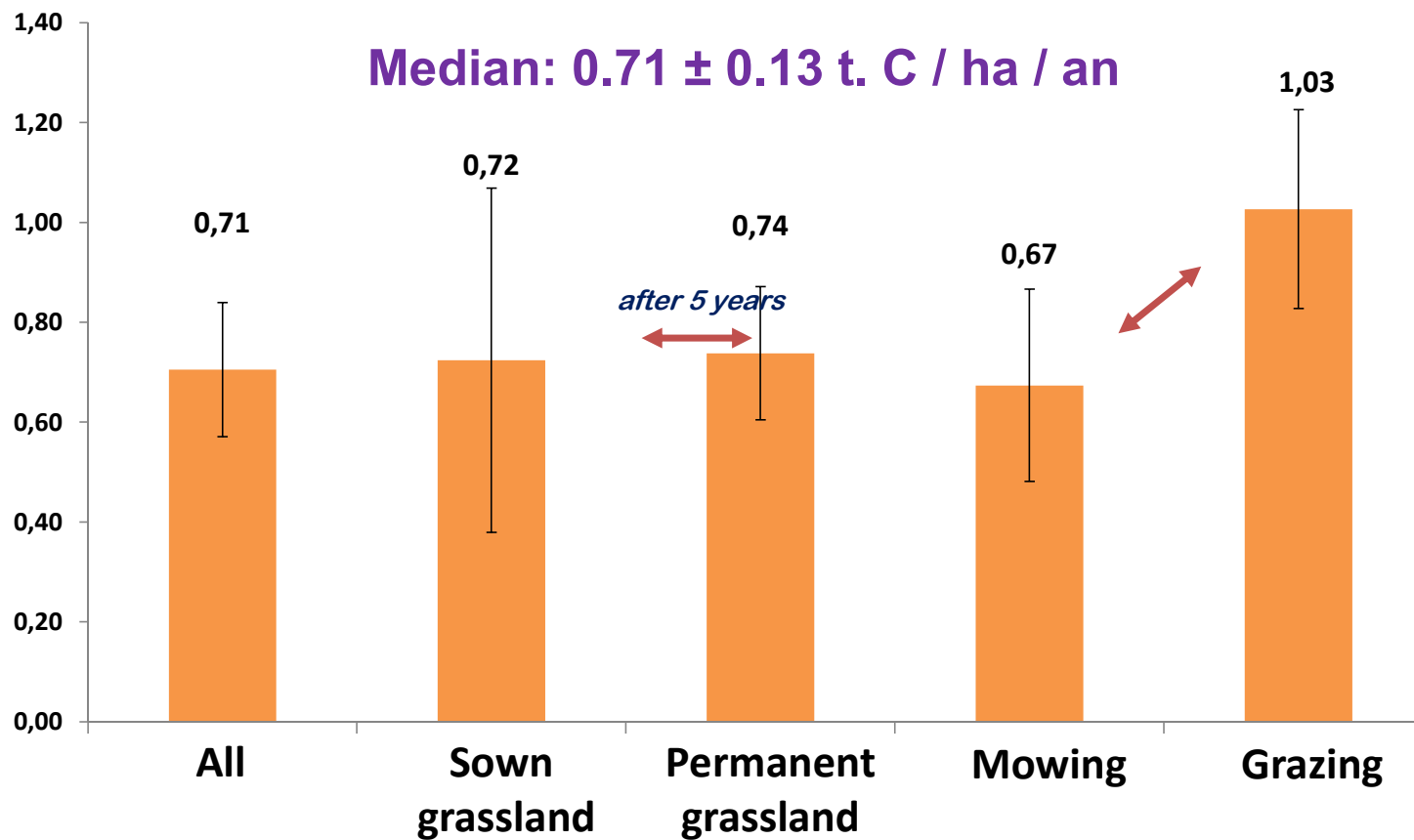
- **Environmental benefits of grassland**
- **Insufficient protection / support by the current CAP?**
- **How the CAP after 2020 could / should support grassland to maximize environmental benefits?**



Environmental benefits of grassland

Focus on carbon sequestration and biodiversity preservation

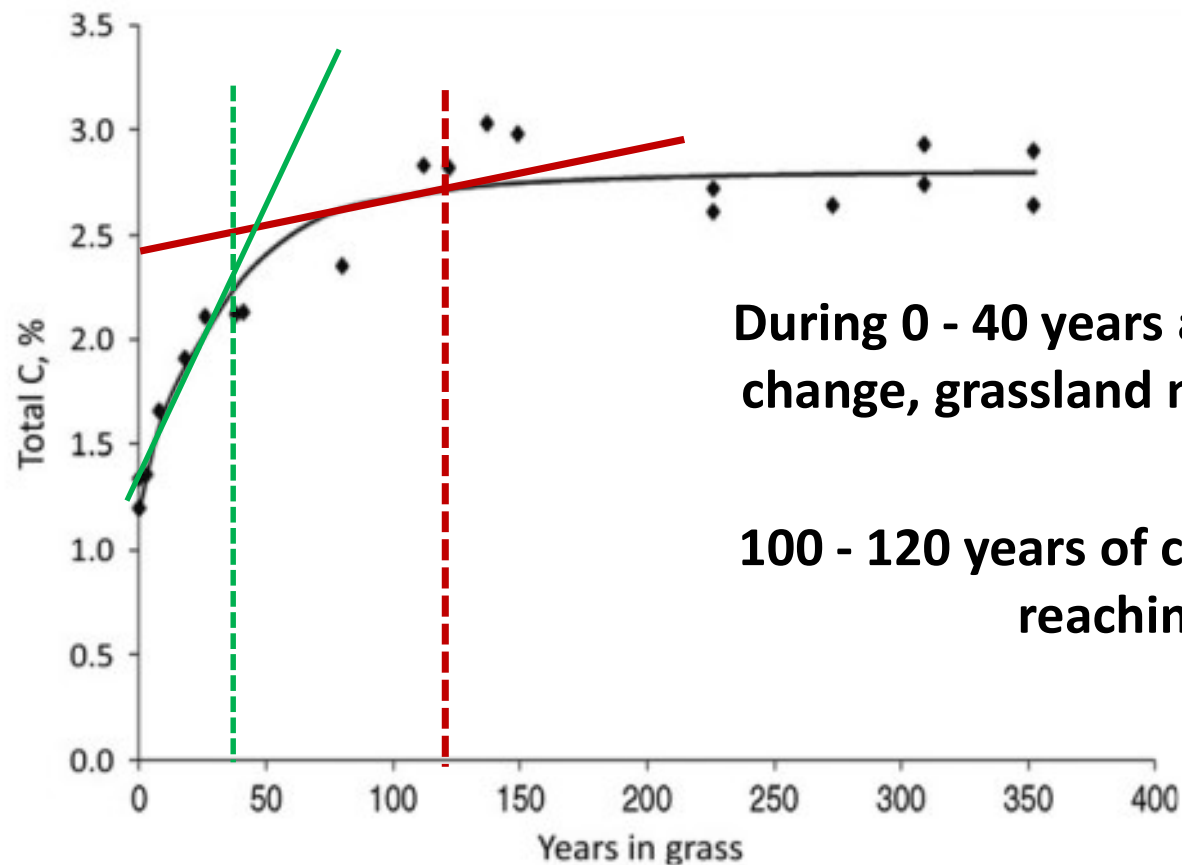
Carbon sequestration (1/2)



Important variation linked to climate, land management modalities and vegetation types

Soussana & Klumpp (2005)

Carbon sequestration (2/2)



During 0 - 40 years after management (land use) change, grassland may store large amounts of C

100 - 120 years of constant management before reaching an equilibrium

Smith et al. (2014)

Biodiversity (1/5)

Diversity of forage species and cultivars

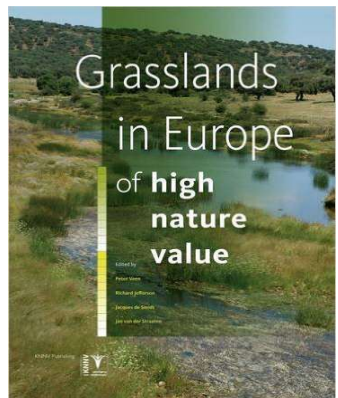


Diversity of grassland types

HAY



GRAZING



Grassland: around 35% of European agriculture area

About 50% of the endemic plant species of Europe depend on the grassland biotope

Eckhard et al., 2014

Biodiversity (2/5)

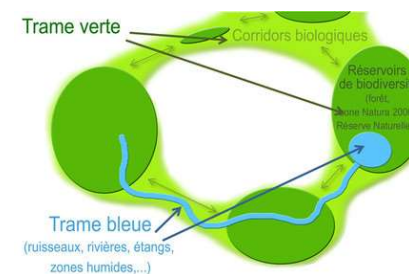
Diversification of soil uses in landscapes



Maintenance of diversified and open habitats (w.r.t. forests in mountain area)



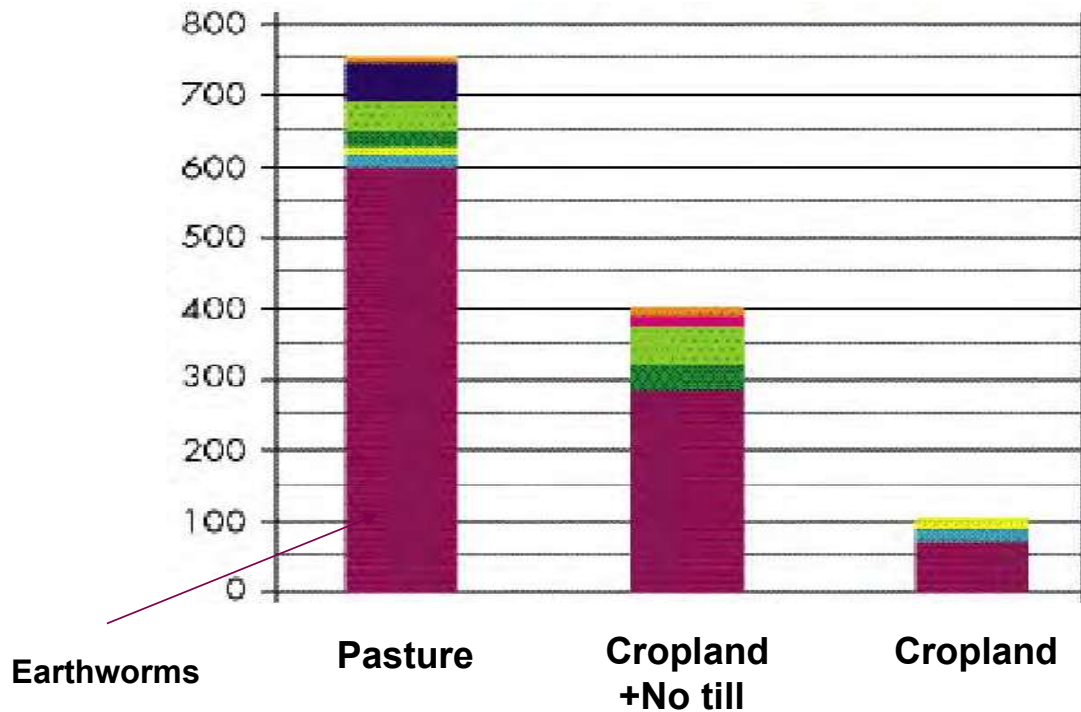
Ecological corridors



Biodiversity (3/5)

Grassland soils are hot spots of biodiversity

Number of invertebrates par m²



Permanent grassland soil contains, on average, 260 million individual microorganisms par square meter, that is a biomass of 1.5 t / ha distributed between several thousand species

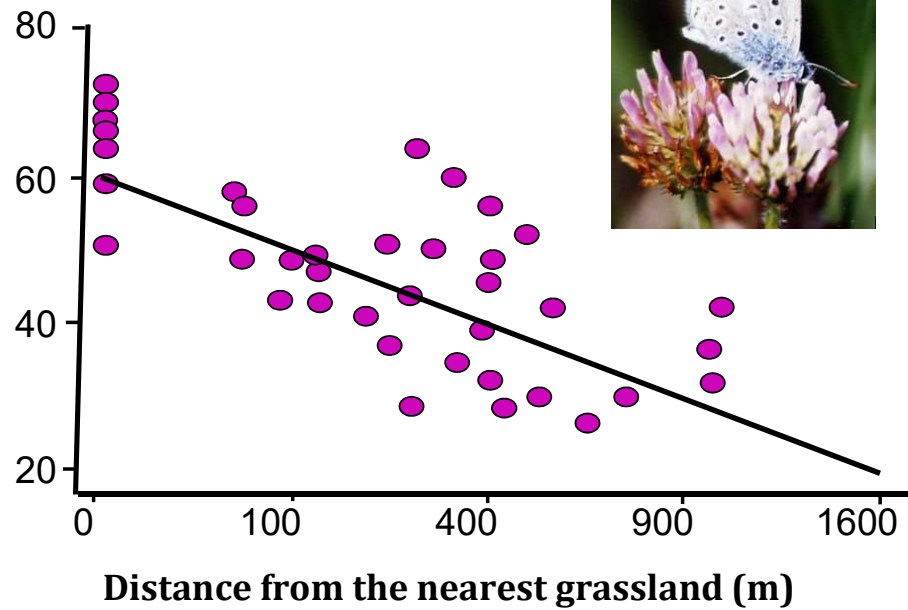
Variability in function of age, composition and management

Gobat et al., 2003

Biodiversity (4/5)

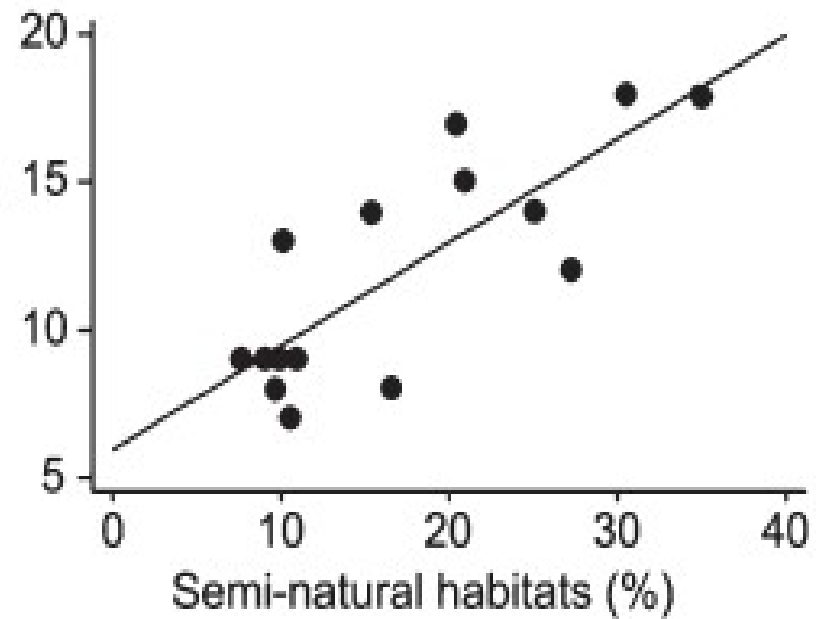
Grassland preserves functional diversity

Proportion of flowers that have been pollinated



Arrouays et al., 2009

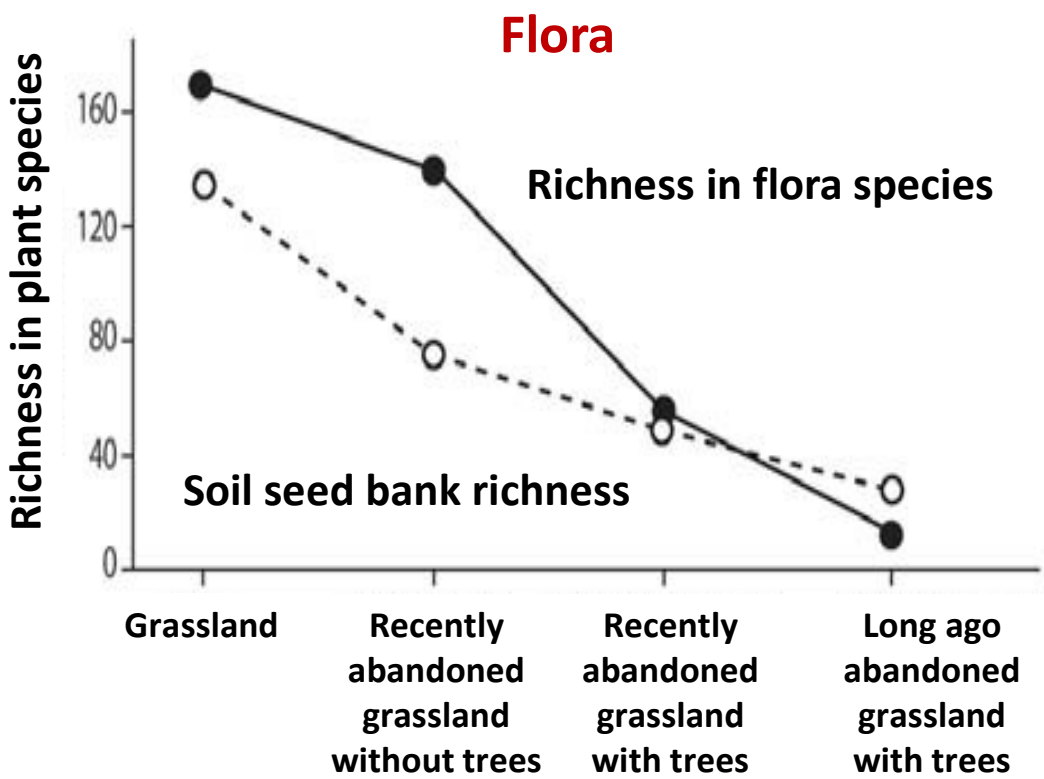
Species involved in pollination



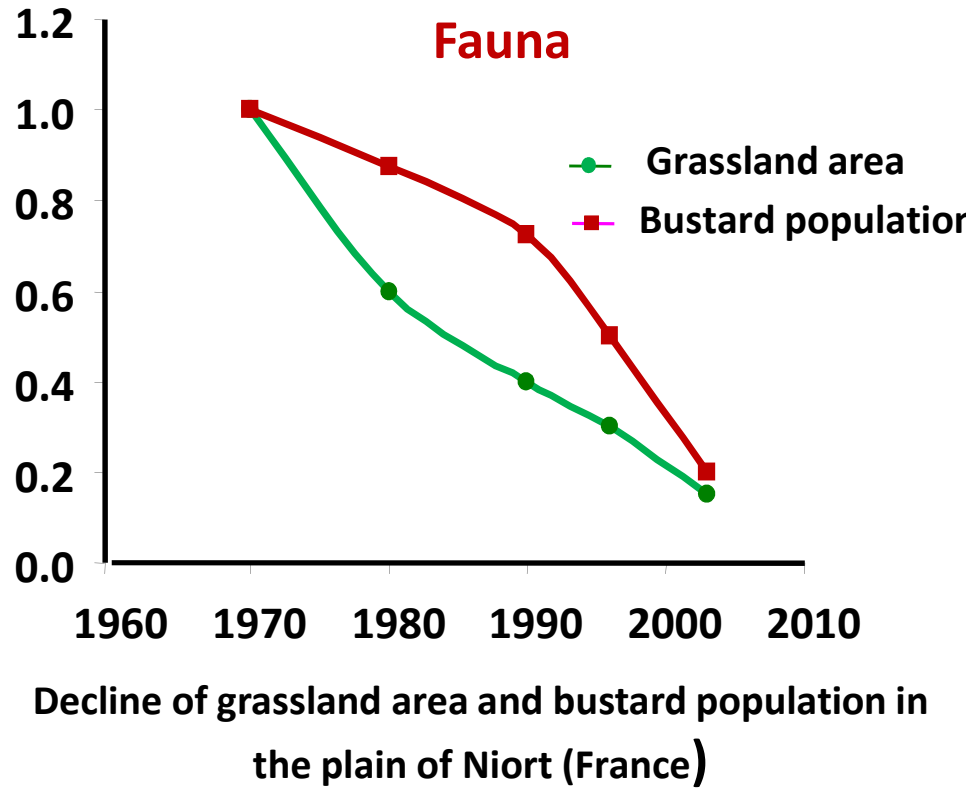
Billeter et al., 2008

Biodiversity (5/5)

Negative consequences of grassland disappearance and/or abandonment



INRA, 2013

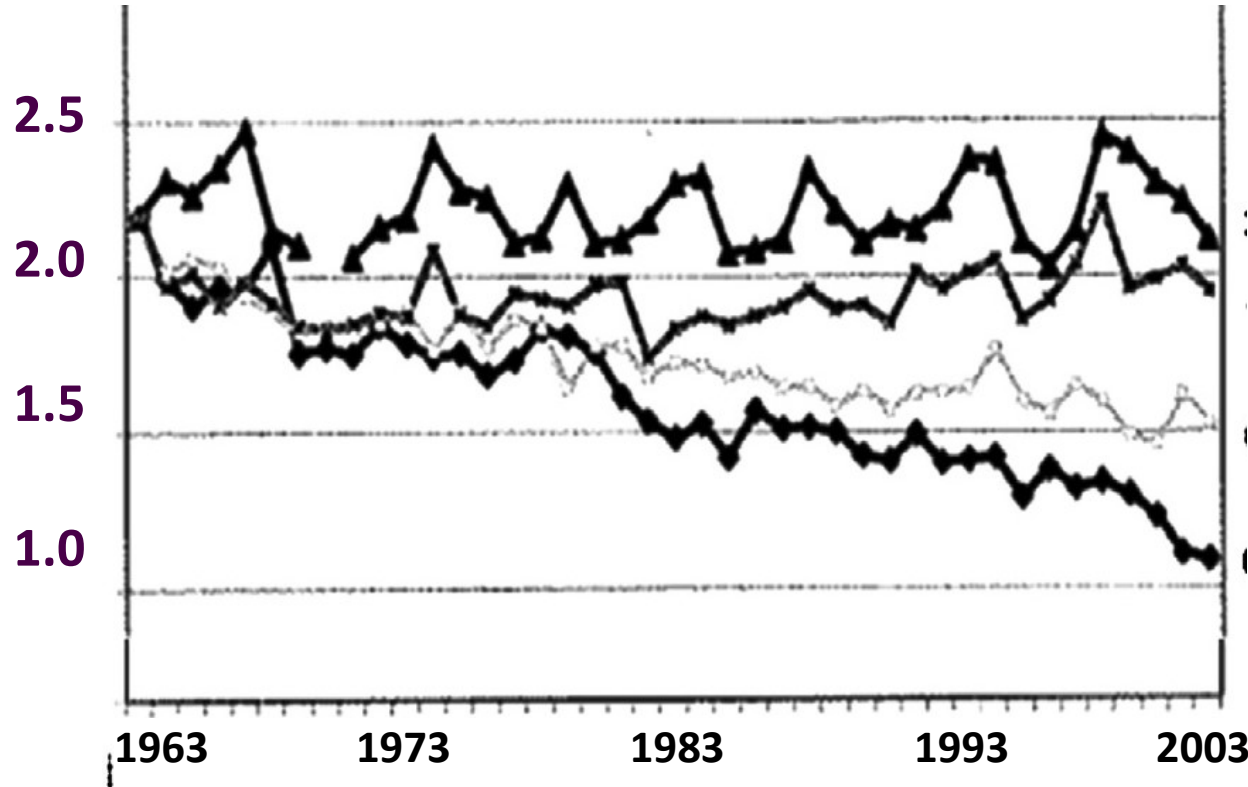


Bretagnolle, 2004

The role of grazing /grassland for preserving soil organic matter and preventing soil erosion

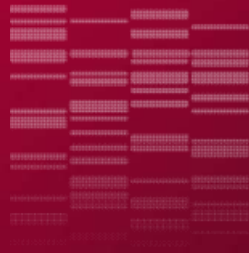


SOM content (%)



- 3 y pasture + 3 y crops
- 1 y pasture + 3 y crops
- Crop rotation + mineral N
- Annual crop rotation

Diaz-Rossello et al. (2006)

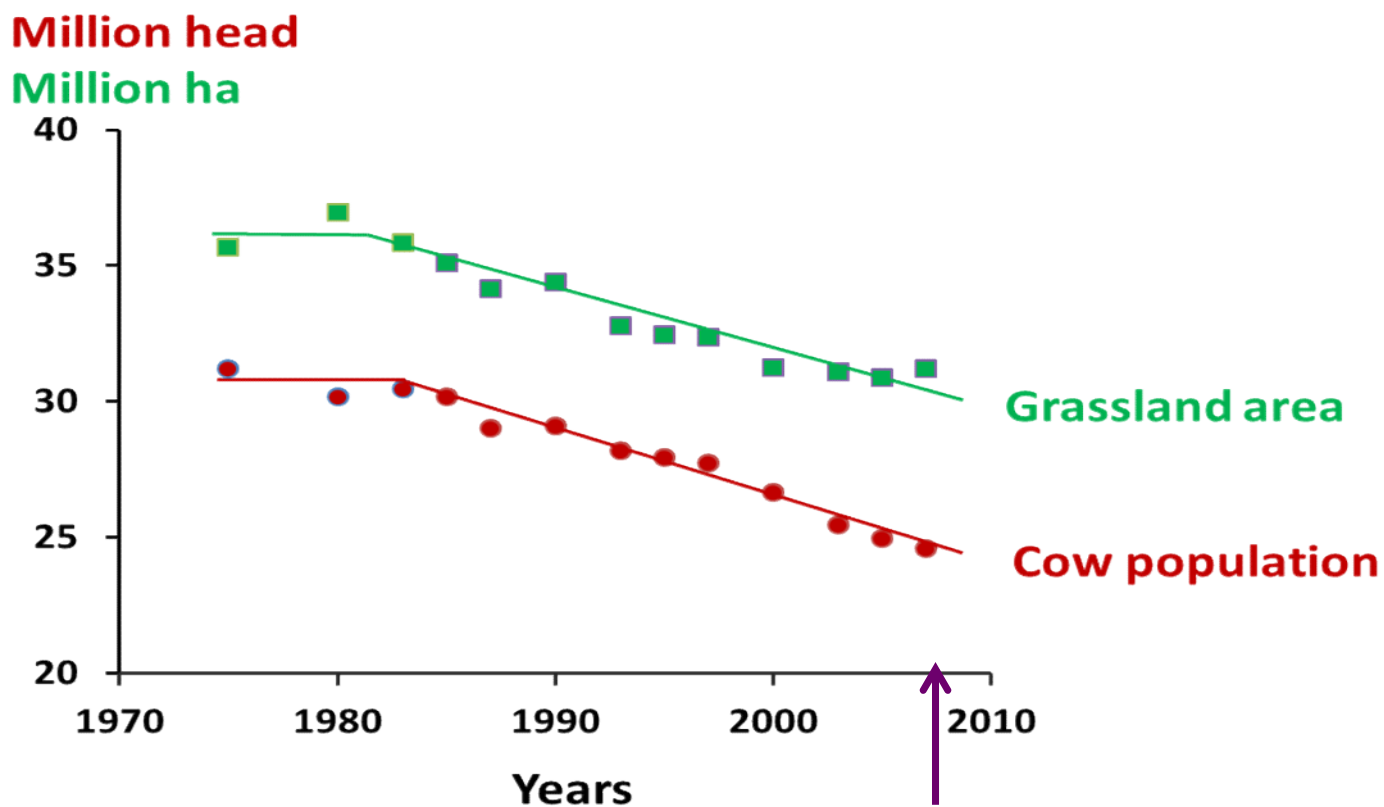


Insufficient protection / support by the current CAP?

Grassland indirectly and directly supported through various CAP measures

- First-pillar direct aids (eligible areas include temporary and permanent grassland) and first-pillar coupled aids to ruminant livestock
- These aids do not target grassland *per se* and do not constrain to maintain / increase grassland area, permanent area grassland, etc.
- But conditionality and one of the three greening measures (permanent grassland)
- But agri-environment and climate measures (AECMs), for example AECMs targeted on crop-herbivorous livestock systems, on grassland and pastoral systems
- **Sufficient?**
 - **Reduction of grassland area and of permanent grassland area during several decades**

The decrease of grassland area (and positive associated environmental services) and bovine population are positively correlated



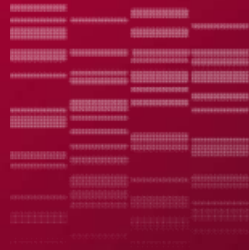
- 7.6 M dairy cows and + 2.8 M suckling cows

Grassland indirectly and directly supported through various CAP measures

- *First-pillar direct aids (eligible areas include temporary and permanent grassland) and first-pillar coupled aids to ruminant livestock*
- *These aids do not target grassland per se and do not constrain to maintain / increase grassland area, permanent area grassland, etc.*
- *But conditionality and one of the three greening measures (permanent grassland)*
- *But agri-environment and climate measures (AECMs), for example AECMs targeted on crop-herbivorous livestock systems, on grassland and pastoral systems*
- **Sufficient?**
 - **Reduction of grassland area and of permanent grassland area during several decades**
 - **Stabilisation in the more recent years, very likely thanks to the CAP: ex. of France**

Million ha	2006-2007	2009-2010	2015-2016
Permanent grassland > 6 years	7.43	6.85	6.88
Low productivity permanent grassland	2.51	2.44	2.42
Temporary grassland	2.76	2.98	2.90

- **Sufficient given the challenges EU agriculture is facing: CC, biodiversity, etc.?**
- **Not only a question of efficacy, but also of efficiency and legitimacy**
- **Support more closely linked to environmental benefits**



How the CAP after 2020 could / should support grassland?

A proposal for the eco-scheme

Grassland provide numerous environmental services:

- C sequestration
- Functional, floristic and faunistic biodiversity
- And also: water quality, erosion preservation, etc.

These services depend on i) the number of animals par hectare, ii) grassland management practices and iii) the age of grassland

The current definition of temporary and permanent grassland does not reflect environmental services (benefits) provided:

- Permanent grassland: > 5 years
 - A large variety of grassland ecosystems depending on age and use practices
 - Environmental services rather weak before 10 years
- Temporary grassland: < 5 years
 - Positive impacts of temporary grassland of N and C fluxes increase

A proposal for the next CAP reflecting

- **A better translation of environmental services + simplicity**

Grassland in the future CAP

A new typology based on age and composition that would allow to better differentiate support according to environmental benefits provided

