

#### Factors influencing land-use changes: analysis at territorial scale.

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## : Context

French public policies and private schemes implemented for:

- **Development of farming systems** that are less dependent on chemical inputs
- **Environment** and **biodiversity** preservation

analyzing land use

monitoring environmental constraints

**Crop rotation** [1]

evaluating crop performance

good indicators of changes in cropping and livestock systems [2,3]. **BUT** have rarely been studied at the **territorial scale**.

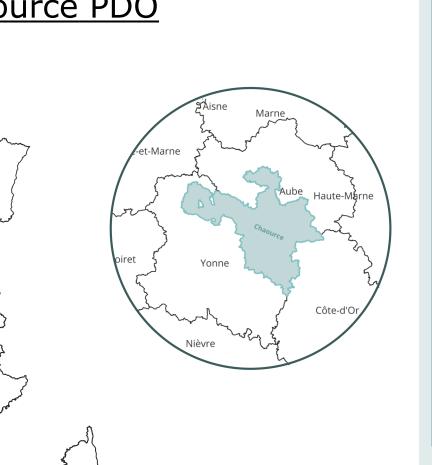
# Objective

Analyse the shifts in land use and the factors driving these changes. Emphasize two key aspects:

- Preserving meadows
  - Diversifying crop sequences

# Materials and methods

Map depicting geographical region the Chaource PDO



# Key facts

2 departments: Yonne (89), Aube (10) **Surface**: 327 869ha

In the two departments: 8524 farms

10% of farmland in organic agriculture Between 2010 and 2020:

-10% in the number of farms

+13% average UAA per farm

National decline in the number of farms specializing in livestock farming [3]

2021

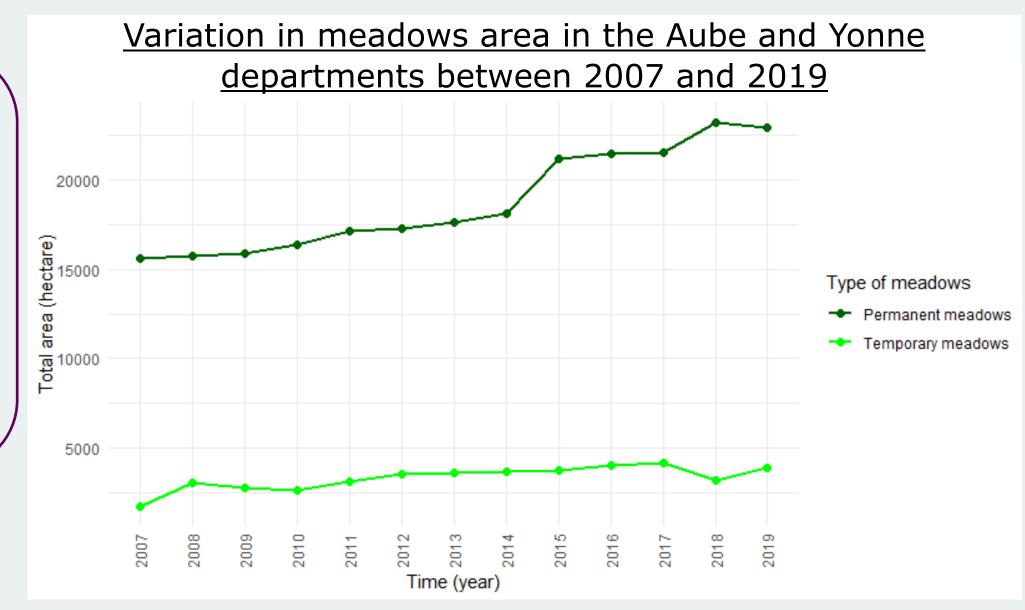
2007 Land Parcel Identification System (LPIS) data

Identify changes in cropping and livestock systems by observing shifts in land use

15 semi-directive interviews coded for analysis with local stakeholders (PDOs and IGs, agricultural advisors, agroindustry, Regional Natural Parc, cooperative, water syndicate and policymakers)

# Meadows maintenance supported by several economic measures

"It's closely related to the type of soil. Regions that were able to abandon livestock in favor of crop have nearly all made the switch."



# Results

# The influence of local stakeholders and climate change on production

**Crop rotation context in** the area

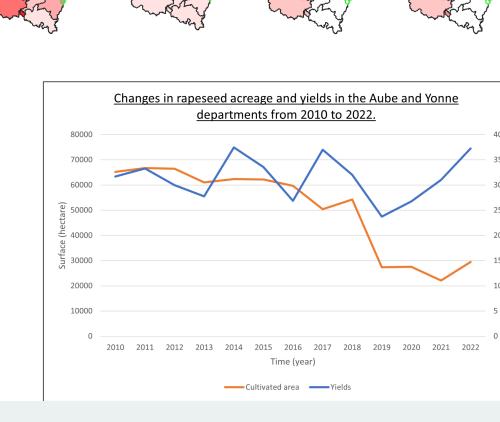
Decline in rapeseed yields Increase in resistant pests Worsen drought conditions

Rapeseed-wheat-barley rotation ineffective

Disappointing profitability from crops new diversification attempts

Change in the proportion of UAA cultivated with rapeseed within the total UAA by EPCI in the Aube and Yonnes departments from 2015 to 2020.

3 - 6



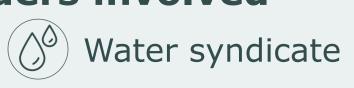
#### Response element

- Terms of reference PDOs/IGs: Higher milk price than conventional Minimum livestock units per hectare
- Soils unsuitable for other crops Regional quotas for meadows conversion
- CAP subsidies (Agri-Environmental and Climate Measure)
- Partnerships and economic players (Subsidy for Environmental Services\*)

#### Key stakeholders involved

Local economic Food industry

PDO syndicates







Regional and departmental authorities Chamber of agriculture

"Since they have opened a SES\* and

then blocked it on their territory, we

can't open any MAEC there."

# Factors hindering diversification in crop rotation

- Increased occurrence of climatic hazards combined with a lack of knowledge on alternative crops
- Public policies (eg. Water restriction, pesticides reglementation)
- Fluctuating prices and market opportunities

"Some wanted to stop producing carrots and celery because it was much more lucrative to produce wheat, which was at 400 euros per ton."

## Factors limiting the preservation of meadows

- More profitable production
- Climate Change

players

- Lack of territorial coordination, a limited number of collaborative projects
- Financing and other difficulties (manual labor, farm transmission)
- Difficulties in identifying a use for meadows in the absence of livestock

#### Sectoralization of production due to

Significant soil heterogeneity

Influence of agri-food industries, cooperatives, and origin appellations:

Contractualization and development of market/ opportunities for specific productions in the collection area.

Insufficient communication between sectors

Map of various crop rotations reported to CAP in 2022

in the Aube and Yonne departments.

"Insufficient communication among the various players is hindering progress. There's still a need for more collaboration and networking."

# Conclusion and perspectives

Major elements influence agricultural production at the territorial scale

Restricted communication, influenced by an industry-focused perspective and emerging opportunities

Risks of oversimplification and economic difficulties exacerbated by climate change and technical barriers

Hyperspecialization of territories, with a growing emphasis on industrial crops

Evolution of land-use involves numerous stakeholders:

- Collective regional action is crucial for global resilience
- Cooperation and shared responsibility are essential to achieving sustainable and effective territorial development

**Need for:** synergy between different agrosystems, which may involve land use [4].

- [1] Barbieri P., Pellerin S., Nesme T., 2017. Comparing crop rotations between organic and conventional farming. DOI:10.1038/s41598-017-14271-6
- [2] Mignolet C., Schott C., Benoît M., 2004. Spatial dynamics of agricultural practices on a basin territory: a retrospective study to implement models simulating nitrate flow. The case of the Seine basin. Agronomie, EDP Sciences, 2004, 24 (4), pp.219-236. <10.1051/agro:2004015>. <hal-00886024>
- [3] Chambres d'agriculture, 2023. Regards d'avenir sur l'élevage en France. Available at: https://chambres-agriculture.fr/fileadmin/user\_upload/National/FAL\_commun/publications/National/rapport-elevage1-web.pdf
- Legend Aube and Yonne departmental boundaries Geographical limit of the PDO Chaource Crops cultivated on plots reported for CAP 2022 Fiber plants (Hemp) Permanent and temporary meadows Other industrial crops (Beetroots) Vegetables flower Aube : Potatoes - Yonne : Onion, potatoes & others