Several pathways of agroecological transition for agropastoral systems

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Session 72. *Agroecological approaches in livestock farming systems*

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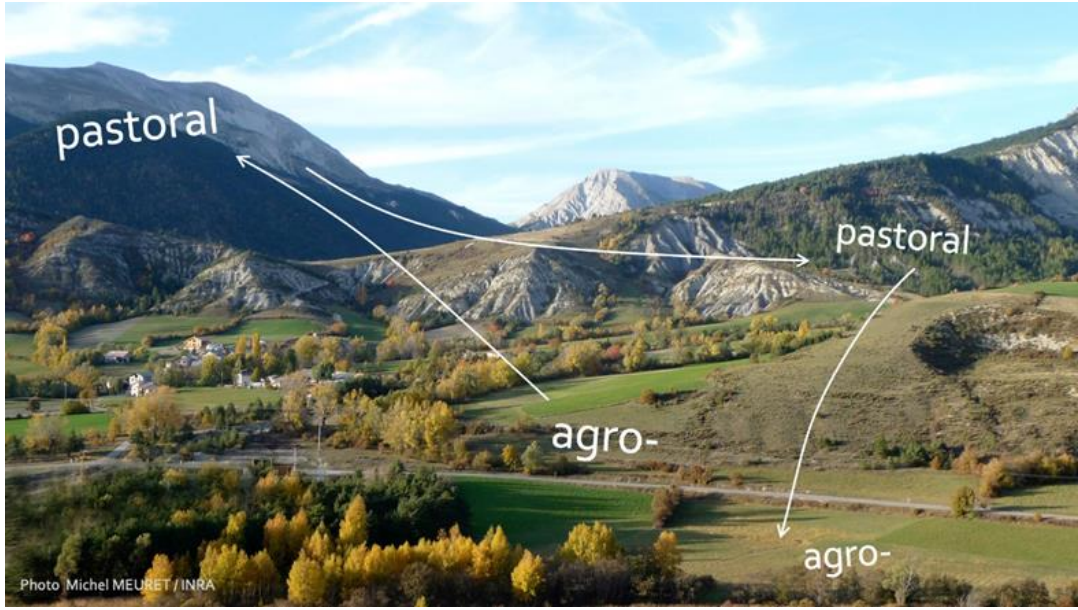
Introduction

Agropastoral system ?

- livestock are accounting for a large part of the household income
- with production of herbivorous livestock using pasture through mobility of animals in pastoral territories

Pasture ?

- spontaneous vegetation (natural grasslands, rangelands…),
- resources from cultivated lands, with crop residues (straws), or cultivated grasslands.



Introduction

Agropastoral systems rely partly on agroecological principles

- Using a diversity of resources from semi-natural ecosystems, reducing the use of inputs
- With ecological knowledge about grazing animals and vegetation behaviors
- Recycling biomass in cultivated area and fertility transfer through animal mobility between rangelands and crop lands (crop-livestock integration)
- …

Introduction

Various dynamics of agropastoral systems

from the 1970’ decade to 2010’

In semi-arid Africa (Maghreb steppic areas, Sudan savanna):

- decreasing of the rangelands areas (demographic increase and extension of crops), whilst maintaining or increasing of livestock numbers,
- Issues of the degradation of the remaining rangelands,
- Increasing use of cultivated resources to feed livestock.

In European Mediterranean,

- disappearance of livestock farms (lack of generational succession and high opportunity cost of labor),
- increasing of the size of the herds with less family workers (need to increase the work productivity), leading to a decrease of the use of rangelands

Introduction

Those long-term dynamics raise issues considering an agroecological perspective

Could some of the dynamics of livestock farming systems in pastoral territories be considered as agroecological transition ?

At what level of organization ? Farm level, Territory level ?

Lessons from researches in two situations:

- French Mediterranean
- Cotton areas of West Africa.

French Mediterranean

Regional specialization of agrarian systems

(*Occitanie* part of French Mediterranean)

Hinterlands

Forest

Livestock specialization

Livestock farms are expected to:

- fulfill environmental functions (mosaic landscapes, biodiversity, forests' fires prevention…)
- contribute to economic local development

Coastal Plains

Crop specialization

New livestock farms are expected to:

- use abandoned interstitial rangelands or wastelands
- contribute to local urban agrifood system

Agropastoral farms dynamics

Decrease of the number of livestock farms

from 2000 to 2010 : - 46 % of all farms
- 12 % of cattle farms
- 22 % of sheep farms

But **dynamics of setting up livestock farms**

- Majority of **creation of new farms**, or **outside of the family context**
- 34 % of livestock farms set up in the last 10 years
- 40 % of the new farmers are women
- 40 % of the new farmers are over 40 years

French Mediterranean

Diversity of agropastoral farms

- productive orientation,
- weight of the rangelands in the feeding systems.

Dairy systems (goats, sheep):

- going out of the pastoral logic possible (through high value added cheeses, with quality demarcation)

Meat systems (cattle, sheep):

- Very close to organic system for the breeding females (cows, ewes)
- Issues for fattening youngs animal (selling calves for fattening ; fattening of lambs in shed, with purchased concentrates)

No innovative production systems at farm scale

French Mediterranean

Organisational innovations at territory scale

1. In order to maintain territorial insertion of livestock farms and their capacities to graze pastoral resources

Altitude meadows

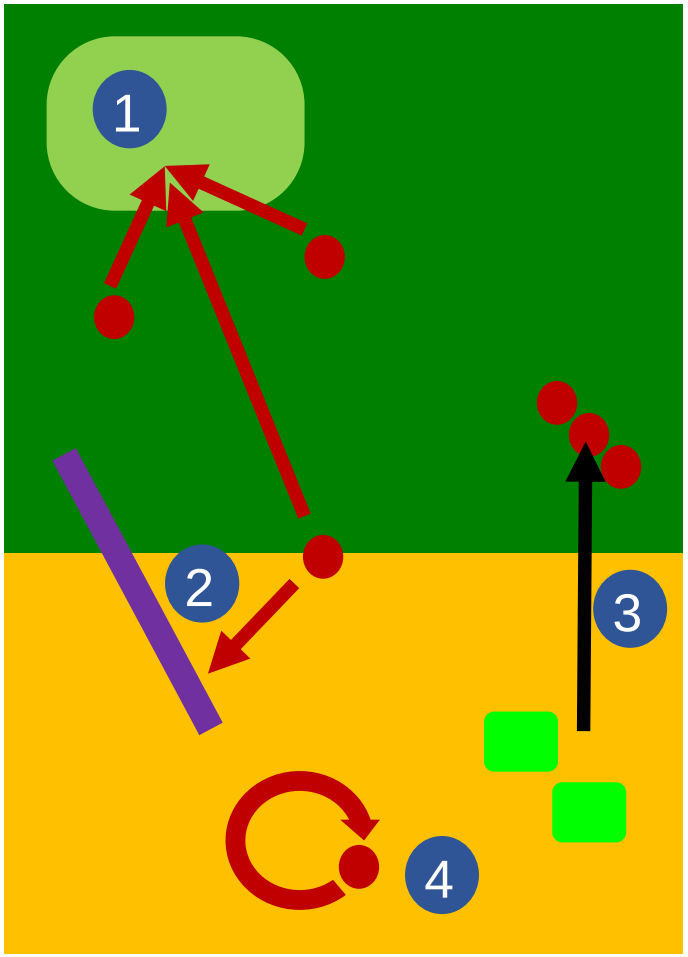
Wastelands from uprooting vines

Firebreaks

Livestock farm

Flock

Forage



1. Pastoral law, 1972
Collective pastoralism (land association, pastoral group…)

2. Firebreaks grazing for prevention of forest fires

Innovation supported by pastoral advisory services (80' – 90')

3. Forage production on wastelands to provide hay for new farms in hinterlands

4. Setting up of a new farm in plains with municipality support

Multi-actors innovations

French Mediterranean

Organisational innovations at territory scale

2. In order to support new marketing channels and to provide local agrifood systems, en particular in urban areas

Collective actions in meat sector

- to maintain slaughterhouses at proximity
- to develop butchering of carcass

Lessons from French Mediterranean case

No agroecological transition of the agropastoral systems at farm scale

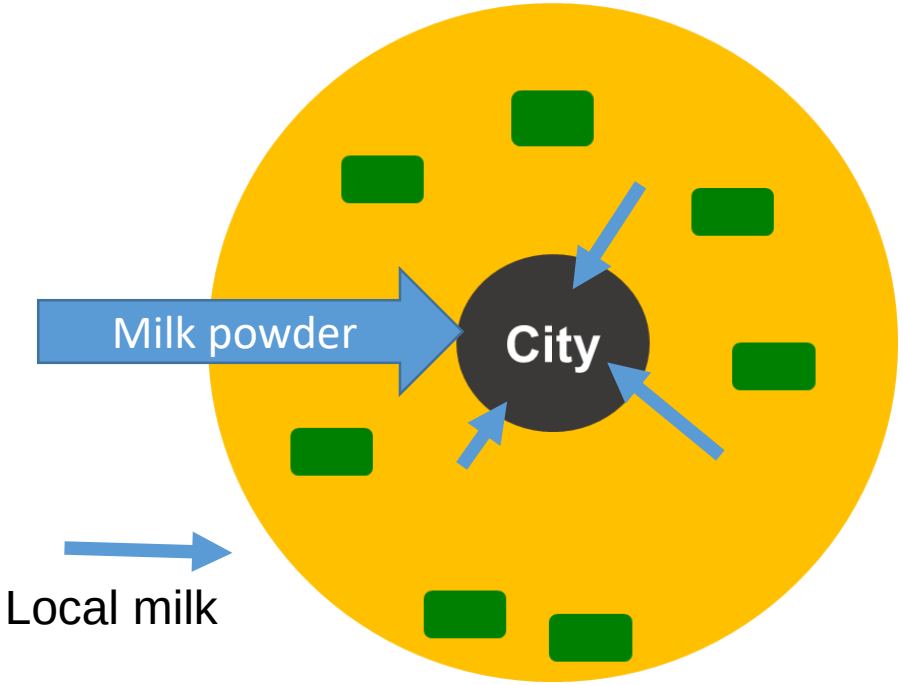
But, innovative dynamics at territory scale, that enable:

- the maintain of the pastoral strategy of livestock farms and of their capacities to use rangelands
- the connection to local agrifood system

Those territorial dynamics are in line with an agroecological perspective

West African cotton areas

Demand for local milk to provide urban markets



Rangelands

Crops: Cotton - Maïze - Sorghum

Collect of some milk from pastoral systems in rainy season

Seasons	**Dry season**	**Rainy season**
Feed resources to graze	Crop residus	Rangelands
Milk (litre / cow / day)	**0,5 – 0,8**	**1,5**

West African cotton areas

Several pathways for dairy intensification

Creation of new activity (urban investors), with conventional intensification	**Evolution of practices** in rural families, from an extensive grazing model
Crossbreeding with exotic breeds	Local breeds
Zero-grazing / barn	Grazing Batch of lactating cows
Purchased fodder and concentrates Feeding input : 150 to 200 % of the animal needs	• Storage of crop residus • Shed to protect stored forage • Use of feed to support milk production in dry season • Forage crops
1,000 to 4,000 litres / lactation	100 to 600 litres / lactation Higher production in dry season

West African cotton areas

Dairy dynamics in regard of agroecology

At farm scale

- More efficient crop-livestock integration
- Diversification of feed resources, enabling to cope with the decrease of rangeland areas
- Increasing use of concentrates
- Diversification of rural families livelihoods

At territory scale

- Increasing the part of local milk to cover urban consumption (food security and food sovereignty)
- From feed resources, not competing with food production (place of forage production in the crop rotation ?)
- Local valorization of local agri food by-products (bran, cotton seed cake)

Conclusion

It is relevant to have a multiscalar approach of the agroecological transition:

- Considering the dynamics at territory scale
- Crosscutting qualification of processes

Agroecological transition is not only the ecologization of intensive systems, but also:

- an intensification of the production, maintaining the agroecological functioning of farming
- the processes that enhance the capacities of livestock farms to stay in a pastoral strategy

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Thank you for your attention

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