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Influences of local policies and opportunities on farmers strategies and grassland management

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► To cite this version:

Gilles Martel, Felix Herzog, Olivier Huguenin-Elie. Influences of local policies and opportunities on farmers strategies and grassland management. 64. Annual meeting of the EAAP, Aug 2013, Nantes, France. Wageningen Academic Publishers, Annual Meeting of the European Association for Animal Production, pp.660, 2013, Book of abstracts of the 64 rd Annual Meeting of the European Federation of Animal Science. hal-02744838

HAL Id: hal-02744838

<https://hal.inrae.fr/hal-02744838v1>

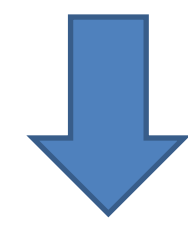
Submitted on 3 Jun 2020

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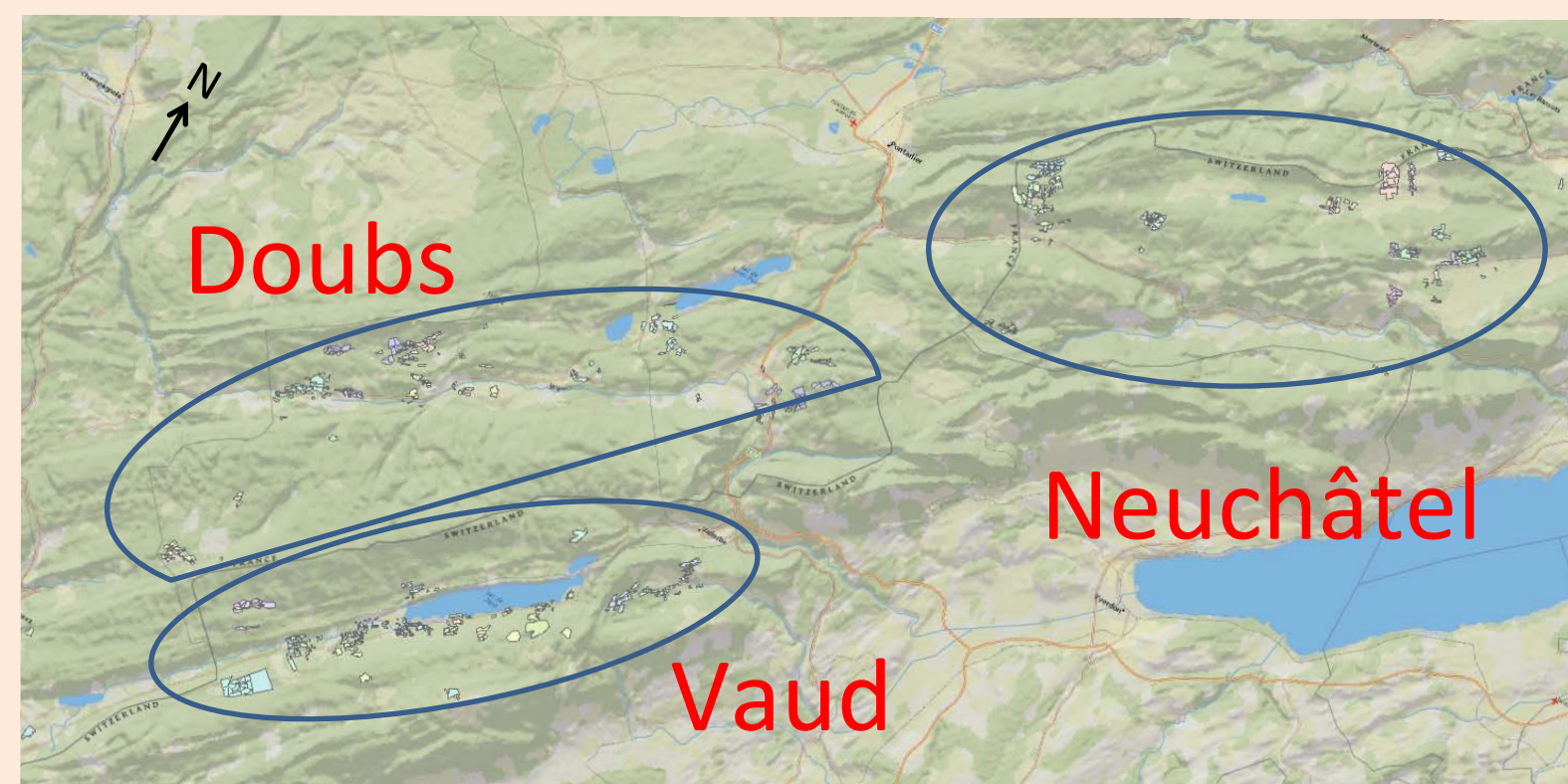
- Landscape complexity in mountains is enhanced by the diversity of grassland management
- Natural factors (slope, soil...) do not explain all the diversity of management



What is the role of local policies on farm strategy and of these strategies on grassland management ?

Material and Methods

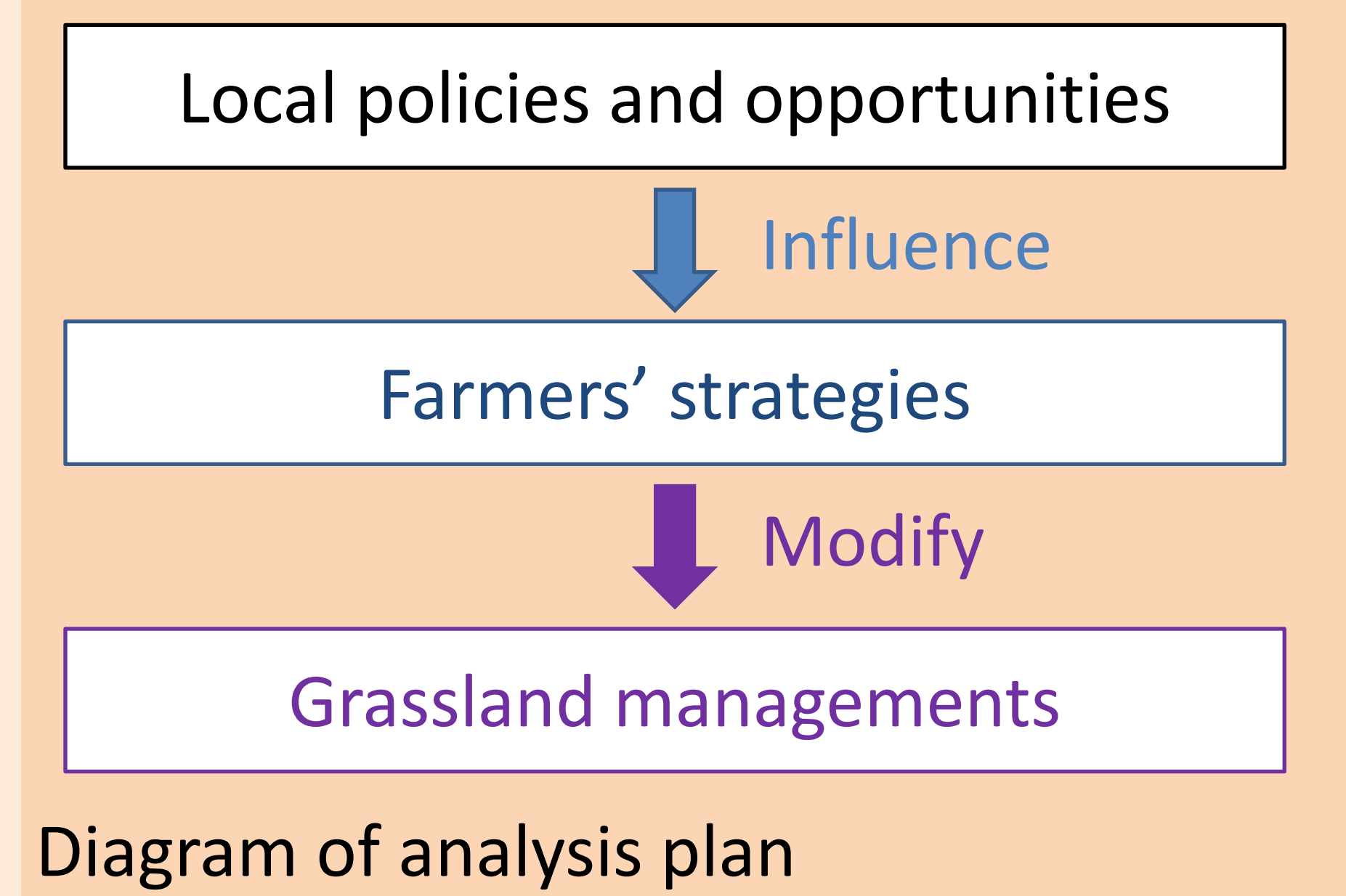
- 3 areas in the same pedoclimatic context of the folder Jura: Doubs (F), Vaud (CH), Neuchâtel (CH)
- Differences in local policies and opportunities:
 - Protected Designation of Origin (PDO) cheeses
 - Specific policies on mountain pasture (fertilization, stocking rate)
 - Ecological policies



- Multifactorial analysis followed by hierarchical clustering:
 - For strategy analysis we used data of 33 farms on:
 - number and kind of animals bred and sold;
 - area managed;
 - periods of production;
 - multiple variables on intensity of animal production (age at first calving, animal production expectations, quantity of concentrate...)

Conclusions

- In an area: both **ubiquitous and specific strategies**, due to:
 - Local dynamics of agriculture
 - Specifications of PDO cheeses
- Diversity of grassland management :
 - Inside each strategy despite preferred/avoided uses
 - Enhanced by a combination of strategies



- For grassland management we used data of 634 plots on:
 - Date of first and last utilization
 - Uses: number (0 to 4), type (grazing/mowing/depending on grass growth) and season (spring/summer/autumn)
 - Fertilization: type (liquid manure/manure/mineral or their combinations) and number (0 to 4)

Results

(green : more used ; red : less used than expected by chi-square statistics)

- 9 strategies identified:

Strategies (Number of farms) description	Area		
	D.	Vd.	Ne.
1. Extensive on animals (4) older cows at 1st calving, low milk per cow	1	1	2
2. Beef cattle (4) don't produce milk (* not surveyed)	1*	2	2
3. Grass managers (5) change size of pasture each day	2	2	1
4. Part-time (1) don't have animals during winter	0	1	0
5. Mountain cheese makers (4) calving of heifers in fall, rotational pasture of mountainous plots	0	4	0
6. Grazing Milk (3) produce milk mainly in spring and summer	3	0	0
7. Intensive (3) high levels of complementation and milk per cow, several products	0	0	3
8. Minimizing unproductive times (5) only 15% replacement rate and want high fertility for cows	0	2	3
9. Big farms in area and animals number (4) lot of animals (53 cows) and area (125ha), breed beef, quite intensive	3	0	1

- Strategies 1,2 & 3: found in the three areas
- Strategies 4 & 5 in Vaud: related to mountain pasture
- Grazing milk strategy in Doubs: PDO cheeses specifications
- Intensive strategy in Neuchâtel: subsidies and local dynamics
- Minimizing unproductive times in Switzerland: market for heifers
- Big farms overrepresentation in Doubs: agricultural dynamics

- 16 grassland usages and their different use between strategies:

Management type	Grassland usage (nb of plots)	Strategies								
		1	2	3	4	5	6	7	8	9
No Fertilization	Abandonment (10)				/					
	Grazing (23)		■		/				■	
Grazing and inorganic fertilization	Grazing and inorganic fertilization (11)				/					
	Pastures		■		/	■			■	■
Manure Fertilization	With manure only (44)		■		/		■			■
	With several organic fertilization (41)		■	■	/	■				
	Pasture at each season (94)				/			■	■	
No Fall use	Only use in summer for mowing (22)				/					
	Mowing in summer and grazing lately (30)		■		/	■	■			
Organic fertilization with mowing and pasture	Early use (50)	■		■	/	■	■			■
	Late first use (42)	■	■	■	/			■		
Frequent uses with organic and inorganic fertilization	First use in Spring (87)		■		/			■		
	Frequent mowing (46)				/	■	■	■		
Use depending on grass growth	Topping (44)		■	■	/	■	■		■	■
	Organic fertilization (25)	■	■		/	■				■
Liquid manure fertilization	Organic and inorganic fertilization (37)	■	■	■	/	■		■		
	Liquid manure fertilization (28)				/	■			■	

- Each strategy has under & overrepresented grassland management i.e.:
 - Grazing milk farms (n°6) need plots for grazing early and avoid fertilization with liquid manure. They don't need to stock grass (few mowing)

Outlook

- Search for type of grassland management at the farm level
- Evaluate floristic diversity in plots of each management
- Test the strategies effect on floristic biodiversity at farm level
- Discuss with the local stakeholders of the results