Innovative agri-environmental approaches for mountains farming systems

Photo : A Vincent

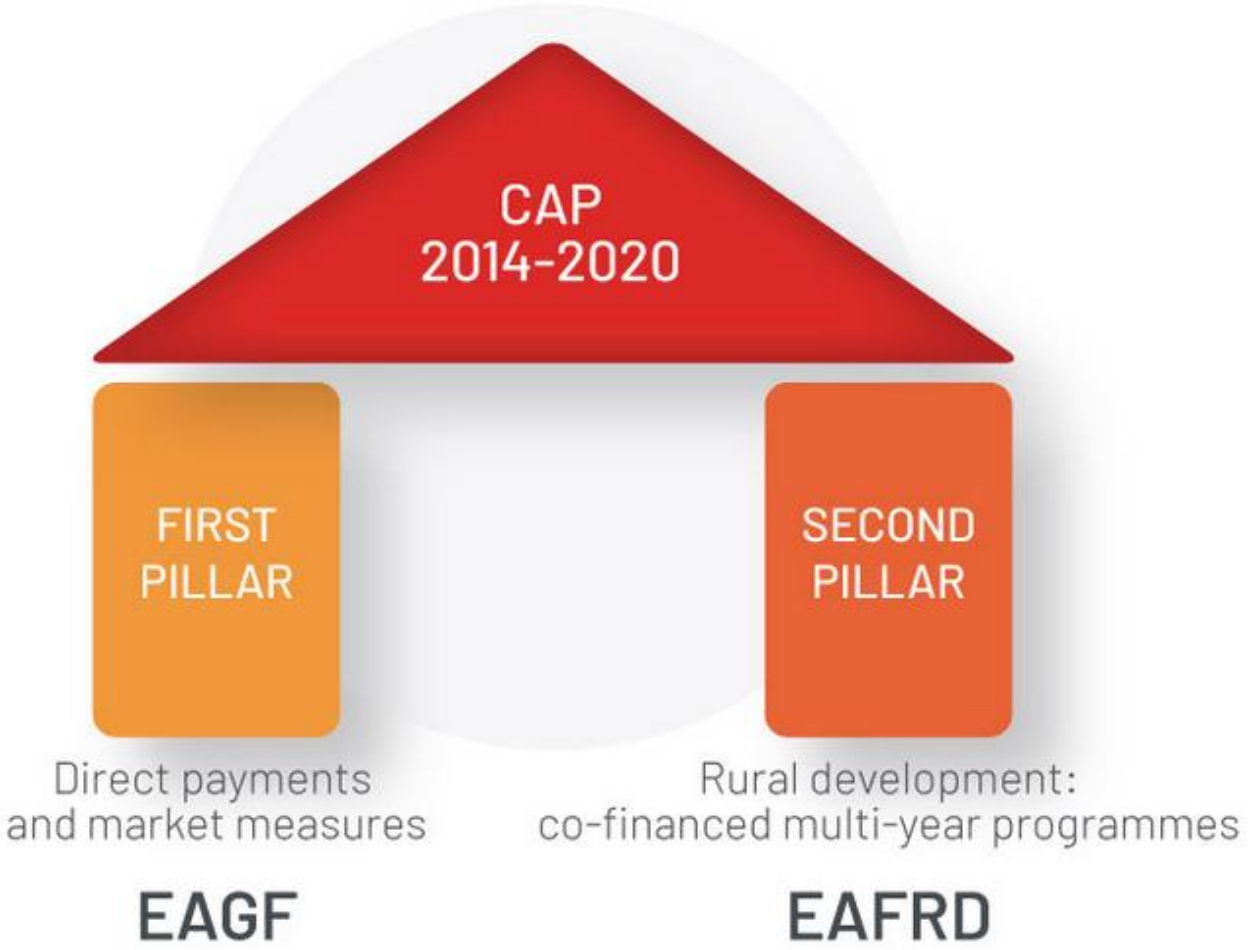
Audrey VINCENT
Associate Professor, ISARA, Laboratory of rural studies

Unimont, October 2022

Outline of the presentation

- Agri-environmental measures – general principals
- The flowering meadows measure in France
- Farmers' feedbacks
- The flowering meadows contest in France
- Discussion for future policies

The Common Agricultural Policy



Source : https://agriculture.ec.europa.eu

The 2nd pillar of the Common Agricultural Policy: the rural development policy

The Commission has established three overarching priorities for rural development policy:

1. Fostering agricultural competitiveness;
2. Ensuring sustainable management of natural resources and climate action;
3. Achieving balanced territorial development of rural economies and communities, including the creation and maintenance of employment.

Those main objectives translated into the following six EU priorities for rural development policy in the 2014–2020 period:

1. Fostering knowledge transfer in agriculture, forestry and rural areas;
2. Enhancing the competitiveness of all types of agriculture and enhancing farm viability;
3. Promoting food chain organisation and risk management in agriculture;
4. Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry;
5. Promoting resource efficiency and supporting the shift toward a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors;
6. Promoting social inclusion, poverty reduction and economic development in rural areas.

Source : https://www.europarl.europa.eu/factsheets/en/sheet/110/second-pillar-of-the-cap-rural-development-policy

Agri-environmental measures in CAP 2nd pillar

- Negative effects of farming on the environment widely reported and discussed (biodiversity loss, water quality degradation etc…)
- Impacts depending on the types of farming systems and practices
- Farmers encouraged to use agri-environemental measures to manage their land
- A tool from the 2nd pillar of the Common Agricultural policy (CAP)
  - Incentive for farmers to adopt more environmentally friendly practices
  - A 5 years contract
  - Financial incentive based on the principle of compensating for the extra-costs or income forgone

Two main types of agri-environmental measures

- Action-oriented (or means-oriented) measures
  - ➢ Targets specific « actions » or « means » (practices) that the farmers commits to respect/fulfill
  - ➢ For example :
    - Late mowing of meadows
    - Limited quantity of fertiliser used per year
- Result-oriented measures (or « outcome-oriented » or « performance-oriented » or « payment-by-results »)
  - ➢ Farmers committed to achieving a result
  - ➢ Flexibility in the means/actions that can be implemented to achieve that result
  - ➢For example :
    - For Biodiversity : having a certain level of biodiversity in a meadow
    - For Water quality : ensuring that the nitrate concentration in the sub-root water is below a certain threshold

Agri-environmental measures in Europe

- At the moment, most agri-enviromental measures are actions-oriented
- Only a limited number of results-oriented measures
- But many discussion on the limits of agri-environmental measures. Amongst others:
  - Inadapted to local context
  - Inadapted to farmers constraints…
- Results-oriented measures as a possible alternative to overcome some of these limitations

The flowering meadow measure in France

Source : A. Vincent

The « flowering meadows » measure

- Its full name « Maintaining floral species richness in natural meadows » (shortened to « flowering meadows »)
- Tested initially in 2007 in some pilots areas (Bauges, Jura, Vercors natural regional parks)
- Was then extended to other places
- Conceived as a result-oriented measure to preserve high floral diversity through a 5 year contract between the farmer and the State

The « flowering meadows » measure

- In practice, the farmer commits to ensuring that at least 4 plant species (out of a reference list of about 20) are present on their plot
- Species of the reference list are:
  - chosen as indicators of meadows' high ecological
  - easily identified plants with colorful flowers
- The list is established at local level and is the outcome of discussions between differents stakeholders and experts (in ecology, agronomy…)
- A limitation of fertilisation to 125Uof N/hectare/year (of which max 60U of mineral fertilisers)
- Chemical weeding and tillage not allowed

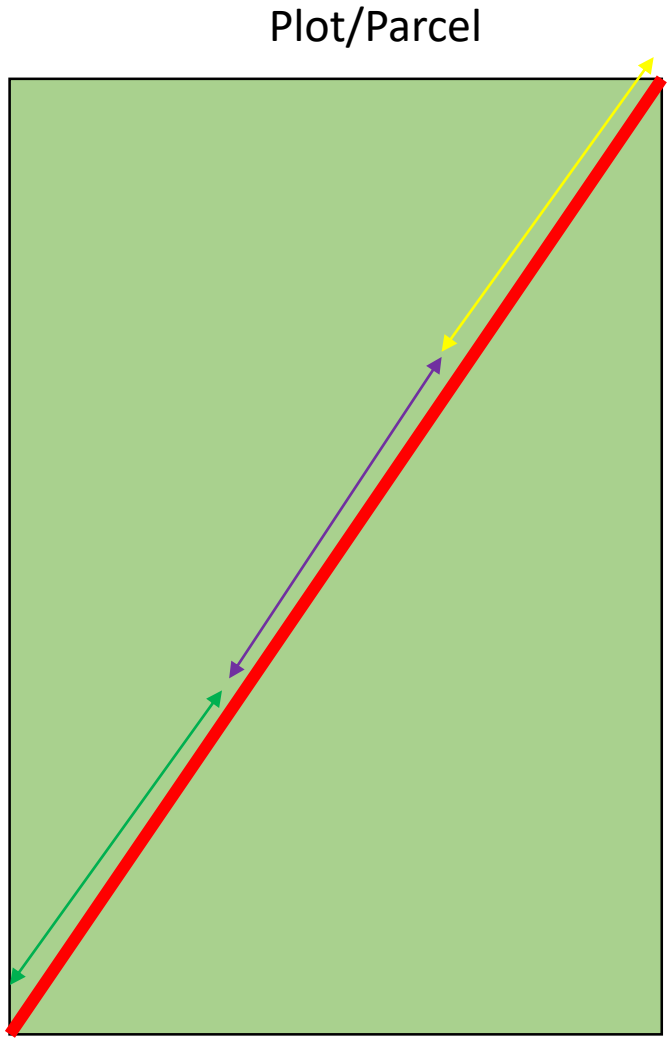
→ Combination of « result » and « action »

Reference list initially established in the Haut Jura

Source : Nettier et al., 2012

The « flowering meadows » measure

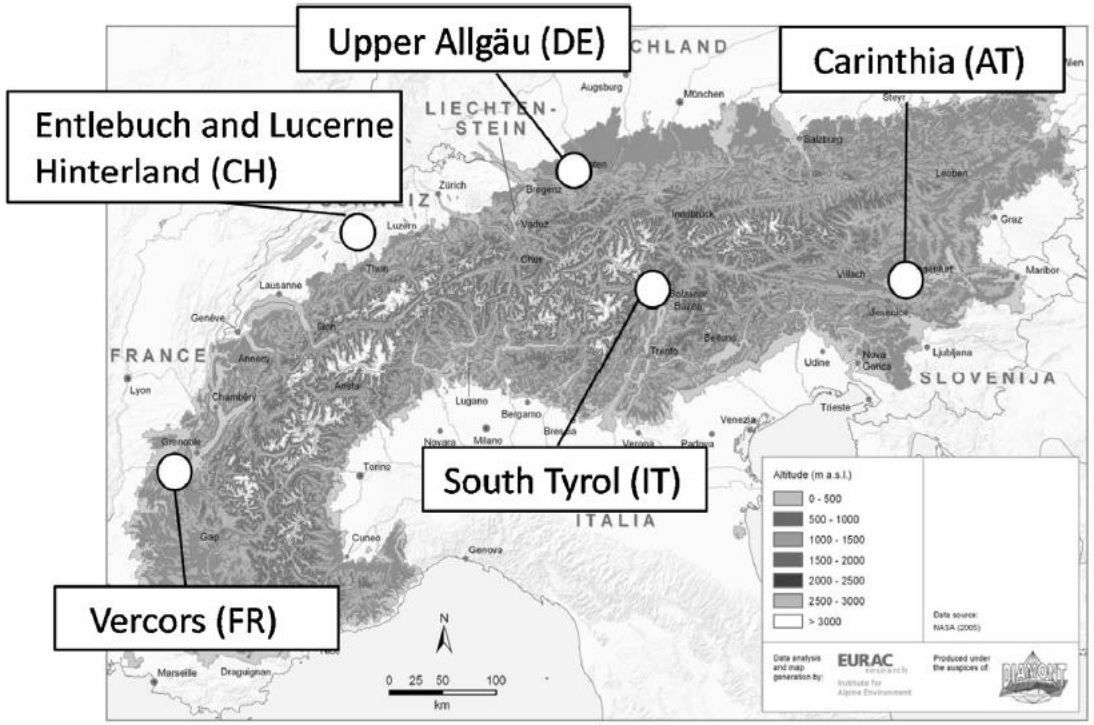
- In practice, in case of control, the inspector must find a least 4 plant species in each third of the plot diagonale (for each plot engaged in the measure/contract)
- In most places initiatilly, the farmers were not totally free to choose which plot to engage in the measure (zoning of the measure → only some plots were eligible)



Farmers’ perceptions of the measure

MERIT research project

- Project objectives were to understand
  - farmers' motivations to subcribe to such measures
  - farmers' perception of result oriented measures
- 5 regions of the Alps
- 79 farmers interviewed
- Result-oriented measure implementedd in the french and swiss case study areas only
- 37% of the interviewed farmers had subscribed to result-oriented measure

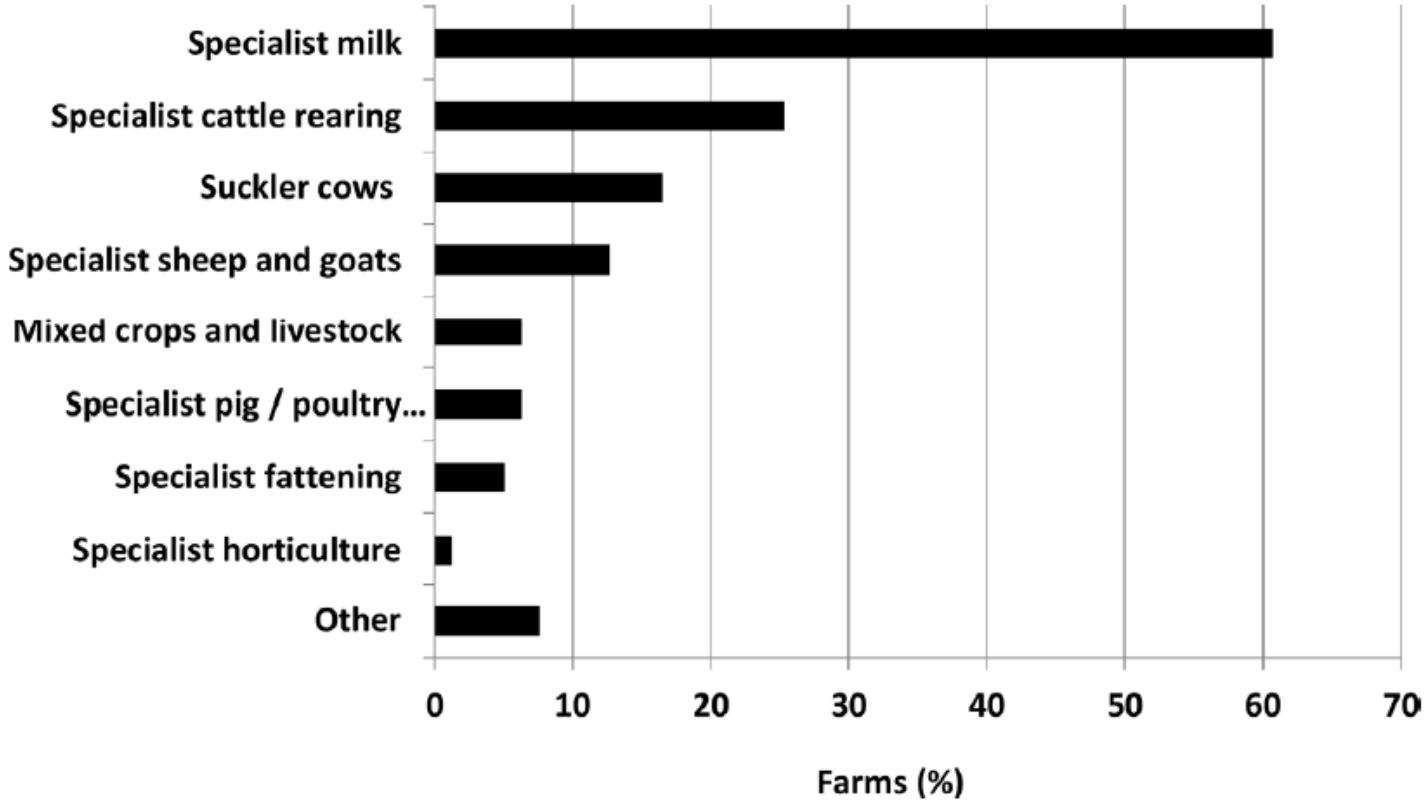


Localisation of the project study areas

Source : Wezel et al., 2018

MERIT research project

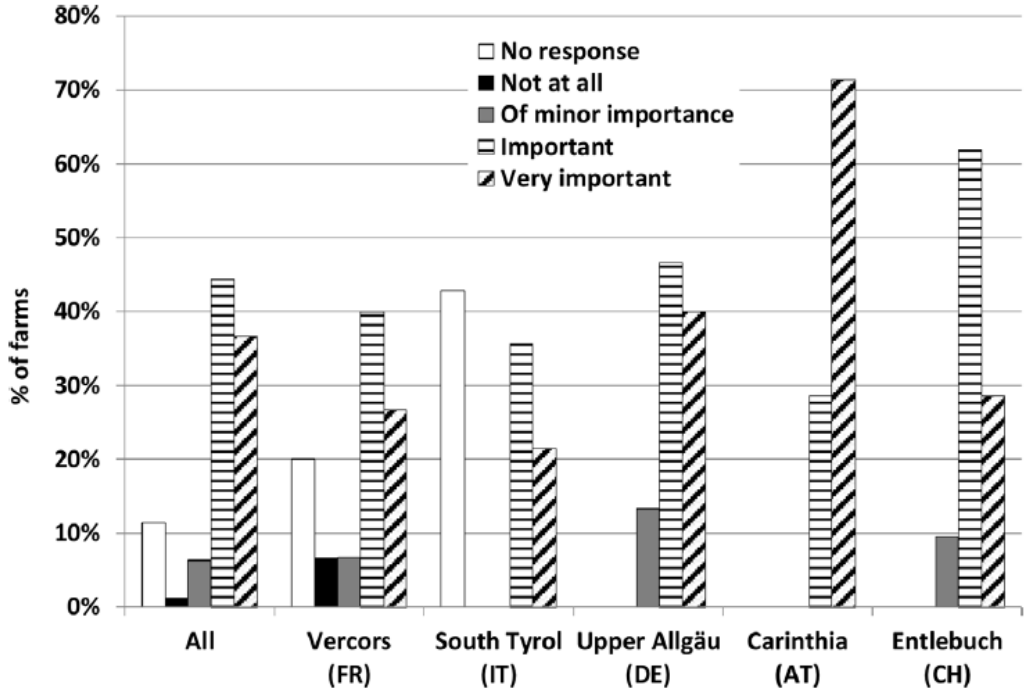
- Farms located between 520 and 1810m altitude
- Median size of the farm Utilised Agricultural Area was 46ha
- Most farms had mainly cow milk production as main activity



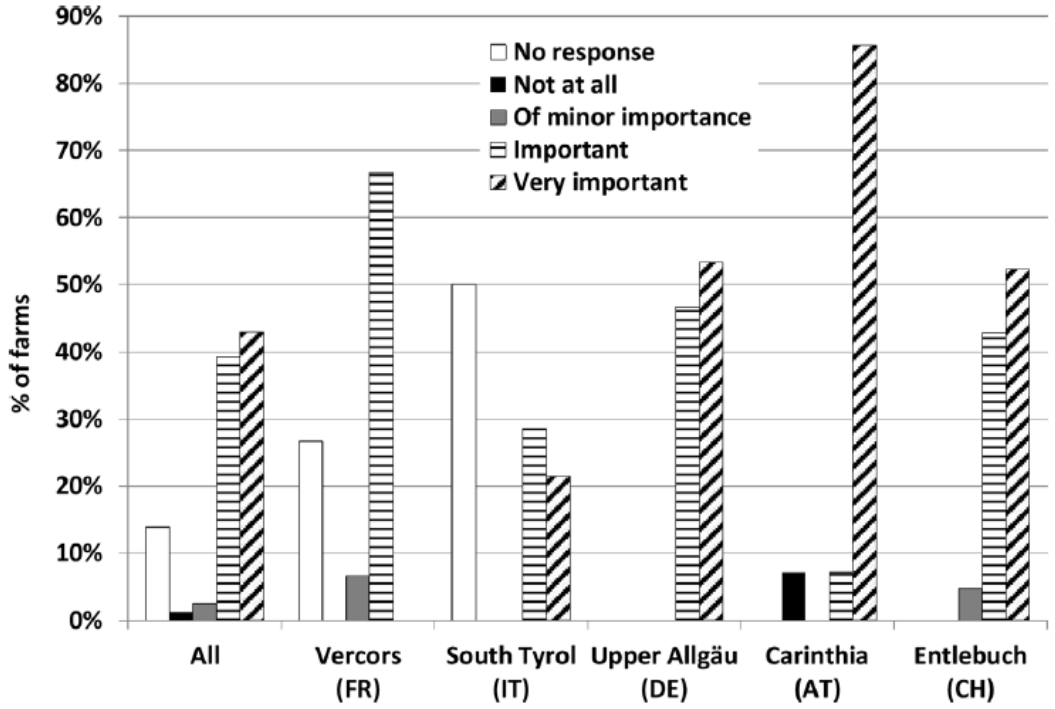
Main type of productions in the investigated farms

Source : Wezel et al., 2018

Farmers' motivations to subscribe to Agri-Environmental Measures (AEM)



Importance of economic interest for farmers to subcribe to AEM



Importance of preservation of natural environment and natural heritage for farmers to subcribe to AEM

Source : Wezel et al., 2018

- 81% of farmers stated that economic interest of an important/very important motivation
- 82% stated that environmental preservation was an important/very important motivation
- 70% stated that the recognition of the importance of mountain agriculture was a motivation

Farmers' preferences for result-oriented versus action-oriented measures

- A tiny majority of farmers declared prefering result-oriented measures
- France : very mix situation.
- Switzerland : all farmers had subscribed result oriented measures. 81% of farmers declared to be in favor of result-orientd measure

	In favour of result-oriented (%)	In favour of action-oriented (%)	Equal preference (%)	No answer (%)
All	58	27	6	9
Vercors, France	40	27	20	13
South Tyrol, Italy	57	21	7	14
Upper Allgäu, Germany	53	33	0	13
Carinthia, Austria	57	29	7	7
Entlebuch, Switzerland	81	19	0	0

Interviewed farmers' preference for result- or action-oriented measures

Source : Wezel et al., 2018

Farmers' views on the (possible) difficulties in the implementation of result-oriented measures

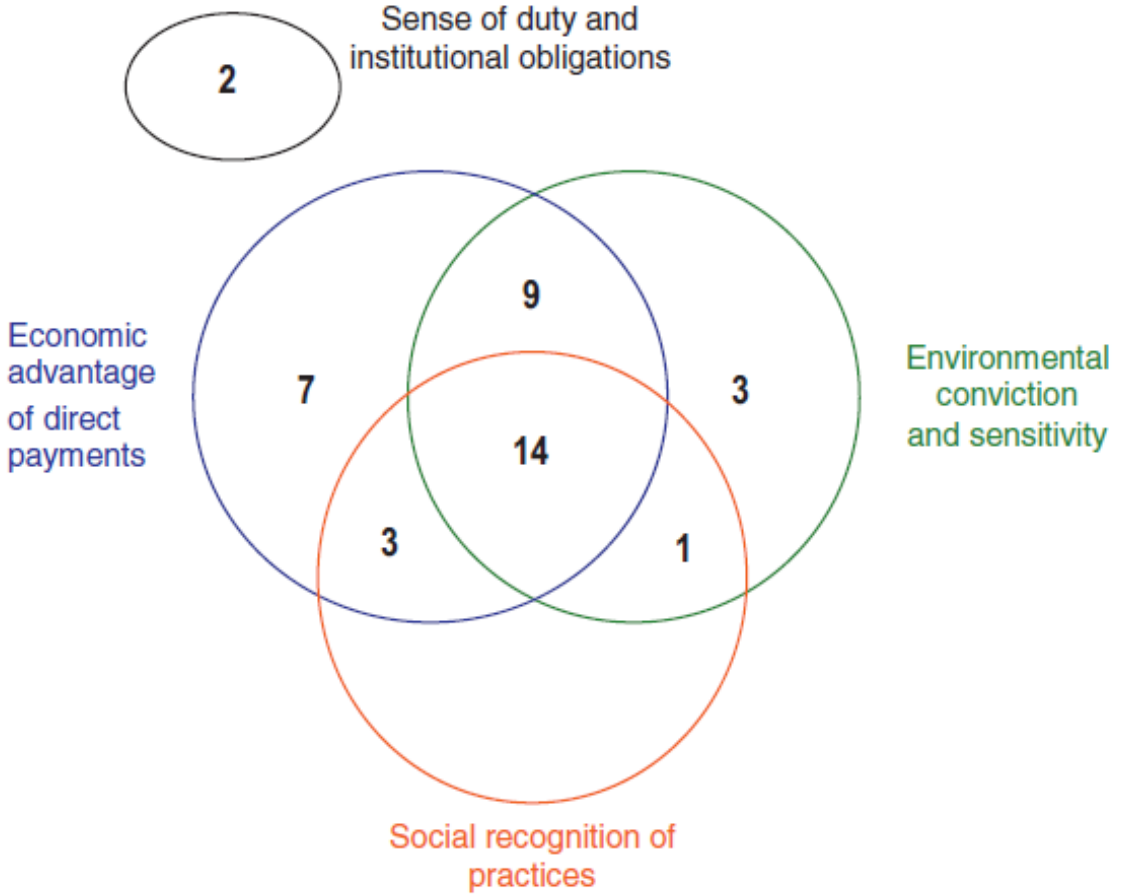
- No garantuee that the farmers will reach the results
- Higher responsability given to farmers in their farming practices
- Working on reaching the results might compete with « production »
- Results would be unpredictable if farmers try new management practices
- Difficult controlability of the measure
- Farmers would need specialized training on biodiversity and on how to reach results on their farms
- From a financial perspective, the time span between beginning management practice and seing results is too long to wait to receive subsidies on achieved results only

Source : Wezel et al., 2018

Flowering meadow measure impacts

DIVA project on Flowering meadows implementation in France (39 farmers interviewed)

- Social recognition is an important
- Enabling changes in values



Motivations to subscribe to the flowering meadows measure

Source : Fleury et al., 2015

Flowering meadow measure impacts

- A measure mainly supporting « pre-existing » practices (only 4 of the 39 surveyed farmers implemented changes of their practices when subscribing to the measures)
- But can discourage internsification of pratices
- A changed way of seeing flowers and biodiversity
  - Farmers reported to have been interested in biodiversity and meadows flora (thanks to dialogue with technicians when contracting the measure)

Source : Fleury et al., 2015

The flowering meadows related actions

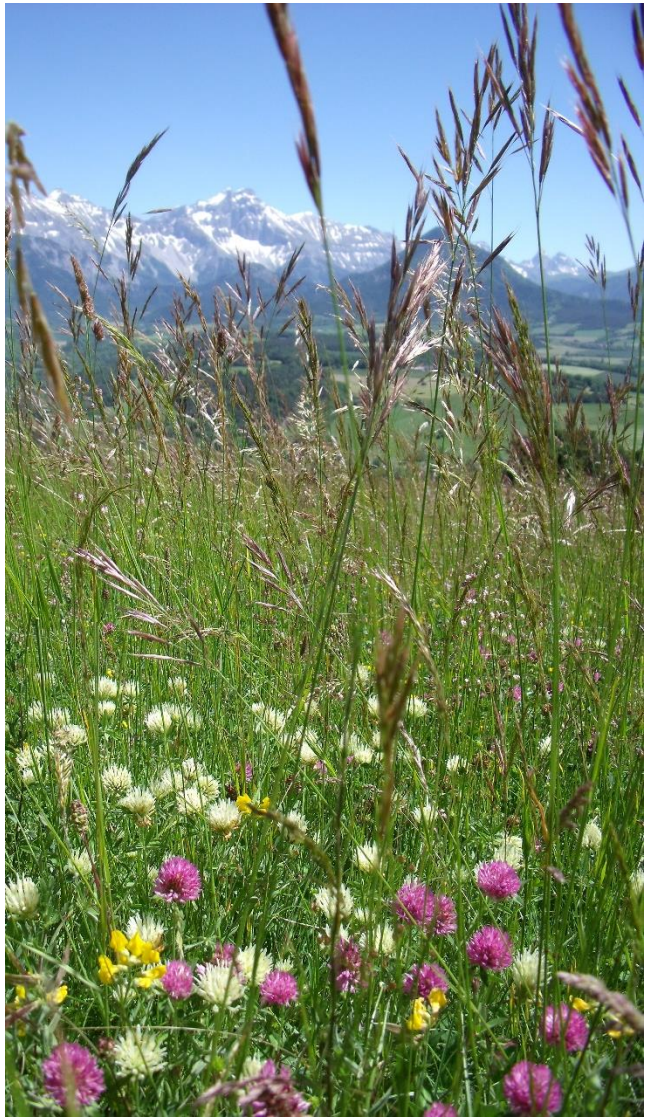
Source : A. Vincent

The « flowering meadow contest » (Concours prairies fleuries)

- An initiative coming from Germany originally
- Purpose : to analyse the possibility to couple both the forage production and the biodiversity of a plot
- First pilot session in 2007 in the Bauges natural regional park
- Initiative taken up in 2010 by the national federation of the natural regional parks and natural national parks, in partnership with INRA, Scopela (private advisors) and the national federation of chambers of agriculture
- Nowadays, some cross-borders versions
- In 2014, creation of the « concours général agricole » des prairies fleuries (nowadays called concours des pratiques agro-écologiques – prairies et parcours)

The « flowering meadow contest » (Concours prairies fleuries)

- Open to all farmers doing livestock keeping in the areas where the contest is organised
- Proposed parcels must be part of the farm Utilized Agricultural Area and contribute to farms forage production system
- Participation on voluntary basis
- Up to the farmer to decide which plot to present at the contest
- All competing plots are visited by a local jury
- Presentation of the plot by the farmer



Source : A. Vincent

The local Jury

- Composed of a diversity of stakeholders

- Agronomists

- Environmentalist (ex: Bird life representative…)

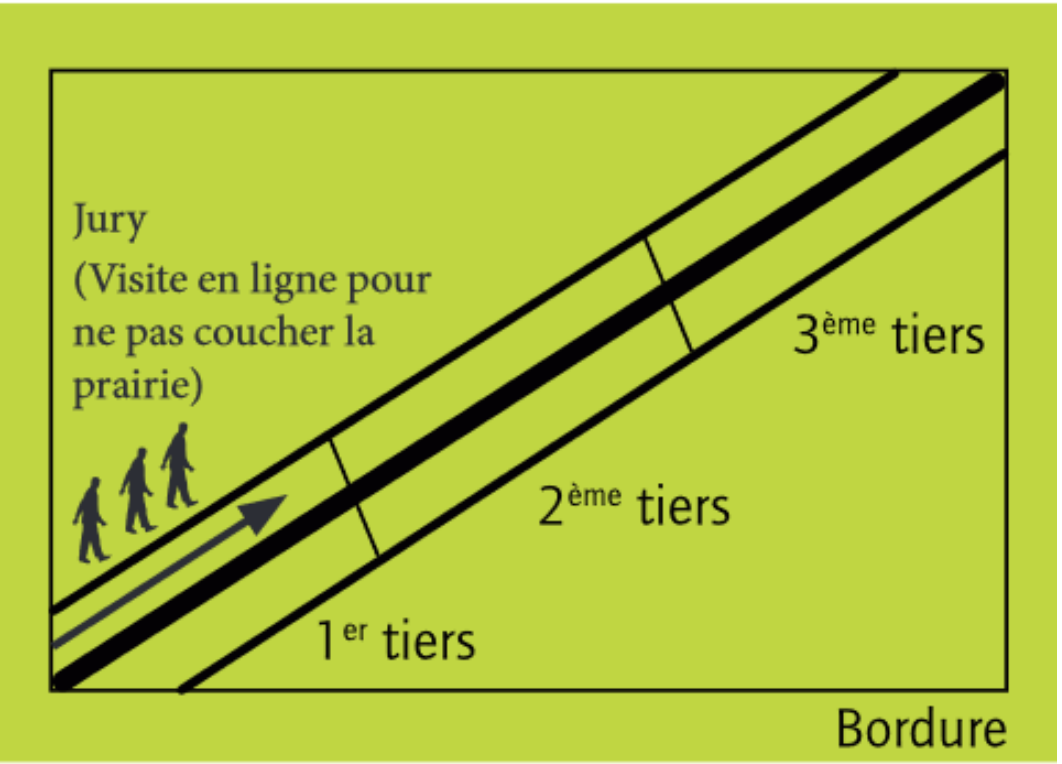
- Bee keeper

- A farmer

- Discussing and confronting the different points of view
- Broadening his/her own perspective thanks to the others' points of view

Source : A. Vincent

The plot « evaluation »



Source : A. Vincent

The plot « evaluation »

- Assessing the « agri-ecological » potential of the plot

Source : https://www.grand-est.developpement-durable.gouv.fr/IMG/pdf/fiches_de_notations_concours_prairies_fleuries.pdf

The plot « evaluation »

PRODUCTIVITE
Capacité de la prairie à produire de la biomasse.

	☻		😐		☹	
Bonne implantation et densité, graminées feuilles larges, bon mélange *Bonne densité et hauteur de la végétation.* *Abondance de graminées à feuille large (qui indique la précocité de la végétation, son aptitude à la croissance et le niveau de fertilité des sols).* *Présence des légumineuses et des diverses (qui interagissent positivement avec les graminées : apport d'azote, maintien de condition fraîche, vie des sols, strates de végétation, etc.).*	Oui		Moyen		Non	
Le rendement par rapport au type de milieu est bon *Bonne implantation, plantes bien développées pour une prairie, une pelouse, un marais, une lande, etc.*	Oui		Moyen		Non	
	6	5	4	3	2	1

VALEUR ALIMENTAIRE
Décrit les atouts du fourrage et de sa diversité pour le bétail.

	☻		😐		☹	
Le fourrage est appétant et nutritif (avant le stade de maturité) *Constitué essentiellement de feuilles, d'organes verts et de légumineuses.* *Des plantes herbacées ou ligneuses peu abondantes diversifient les formats de bouchées (stimule l'appétit).*	Oui		Moyen		Non, peu nutritif Non, peu appétent	
Le fourrage est diététique *Le mélange feuilles/tiges est équilibré à tous les stades de développement de la végétation.* *Des plantes herbacées ou ligneuses peu abondantes rééquilibrent le mélange feuilles/tige.*	Oui		Moyen		Non, déséquilibré (en fibre ou en azote)	
Les plantes riches en composés aromatiques ou en tanins contribuent de façon équilibrée au fourrage *Elles améliorent l'équilibre sanitaire des animaux (minéraux, effet antiparasitaire) et influencent le goût des produits (viande, lait, fromage).*	Oui		Moyen		Non	
	6	5	4	3	2	1

FONCTIONNALITÉ ECOLOGIQUE
Décrit la capacité de la parcelle à garantir un bon fonctionnement écologique et à maintenir la diversité biologique (végétale, animale).

		☻		😐		☹	
Diversité spécifique	**On observe au moins 4 plantes indicatrices par tiers** *Liste nationale (fiche 2) ou liste locale.*	Oui Non					
	Le nombre d'espèces est élevé *Y compris les espèces peu abondantes et dans les bordures.* > 70 > 50 > 30 > 20 > 10	Oui Cortège remarquable		Moyen Cortège attendu		Non Cortège appauvri ou lacunaire	
La qualité du milieu pour la faune est remarquable *Diversité des formes végétales et minérales, abris, zone de reproduction potentielle, de nourrissage, diversité des éléments fixes du paysage, etc.*		Oui		Moyen		Non	
La parcelle a d'autres fonctions écologiques importantes dans son environnement *Protection du sol, de l'eau, développement des auxiliaires de cultures, corridors écologiques, etc.*		Oui		Moyen		Non Pollutions	
		6	5	4	3	2	1

VALEUR APICOLE
Capacité d'accueil du milieu (nectars, pollens) pour les abeilles domestiques à diverses périodes de l'année.

		☻		😐		☹	
Potentiel mellifère *Diversité et abondance des floraisons des plantes mellifères.*	**Lié à la végétation de la parcelle** *Herbacées ou buissons.*	Oui		Moyen		Non	
	Lié aux éléments fixes du paysage ou à l'environnement proche *Haies, landes arbres, bois, zone humide, cultures, etc.*	Oui		Moyen		Non	
Le contexte environnemental de la parcelle est favorable pour les abeilles domestiques *Ressource en eau, conditions climatiques, absence de pollutions locales, etc.*		Oui		Oui, rude		Non	
Saisons favorables aux ressources mellifères *Au regard de la végétation et de l'environnement.*		Printemps Eté Automne Hiver Aucune					
		6	5	4	3	2	1

Source : https://www.grand-est.developpement-durable.gouv.fr/IMG/pdf/fiches_de_notations_concours_prairies_fleuries.pdf

The plot « evaluation »

- The local winning plot run for the national contest
- National contest: same evaluation grid
- Winning plots and farmers presented at Paris in the yearly Agriculture International Fair (Salon International de l'Agriculture)

Délibération du JURY LOCAL

RAPPEL DE LA CATÉGORIE DE LA PARCELLE selon l'utilisation principale	SECTION
❒ **Pâturage exclusif** ❒ **Pâturage** (et secondairement fauche) ❒ **Fauche** (et secondairement pâturage) ❒ **Fauche exclusive**	❒ Plaine ou piémont ❒ Montagne ❒ Haute montagne ❒ Sec ❒ Moyen ❒ Humide

TABLEAU DES NOTES

PROPRIÉTÉS AGRO-ÉCOLOGIQUES	COHÉRENCE DE L'USAGE AGRICOLE	TOTAL Equilibre agri-écologique		OPTION : VALEUR PAYSAGERE OU PATRIMONIALE
Note ..... / 42	Note ..... / 24	Note ..... / 66		Note ..... / 6 ou 12

PRIX D'EXCELLENCE AGRI-ECOLOGIQUE

attribué localement dans sa catégorie ou section dans le cadre du concours général agricole des prairies fleuries :

❒ 1er prix ❒ 2ème prix ❒ 3ème prix

Source : https://www.grand-est.developpement-durable.gouv.fr/IMG/pdf/fiches_de_notations_concours_prairies_fleuries.pdf

The flowering meadow related actions

- The dynamic created with the implementation of the flowring meadows measure fostered farmers' interest in this form of biodiversity but the interest of many other stakeholders as well
- Contributed to transform biodiversity from « an obligatory restriction to an asset »
- Creating new connexions between farmers and other stakeholders
- An innovative example of «applying the concept « ecosystem services »

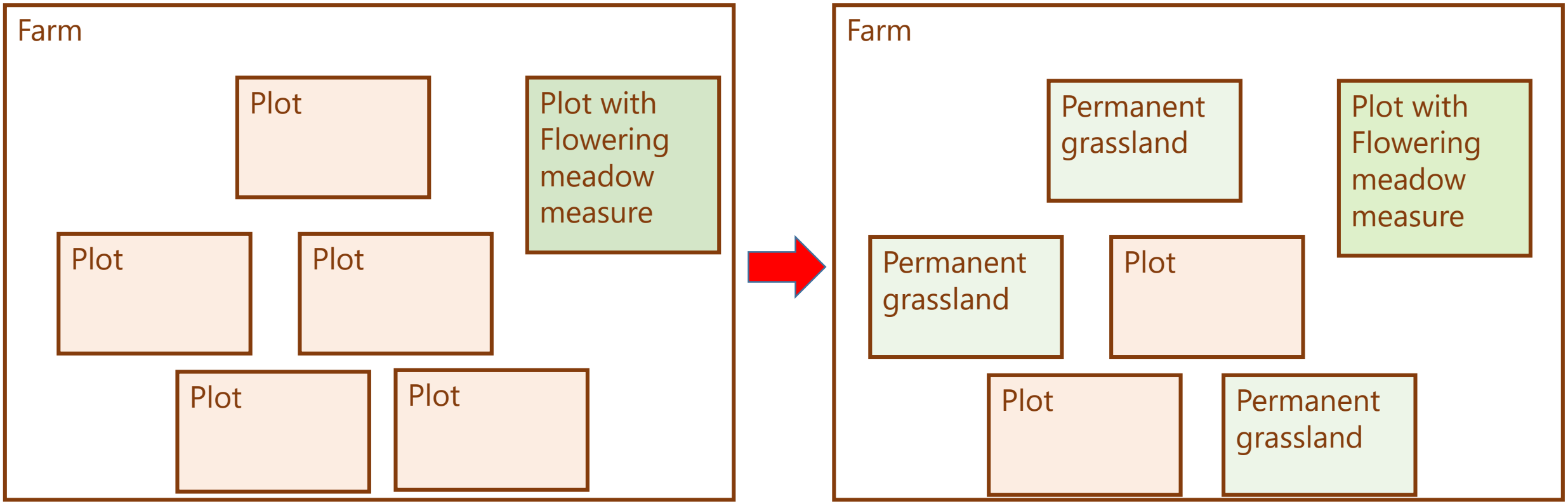
Source : A. Vincent

The flowering meadow measure 2.0 in the programing period 2014-2020 : from a plot level approach to a farm level approach

The agri-environmental and climatic measure « systèmes herbagers et pastoraux »

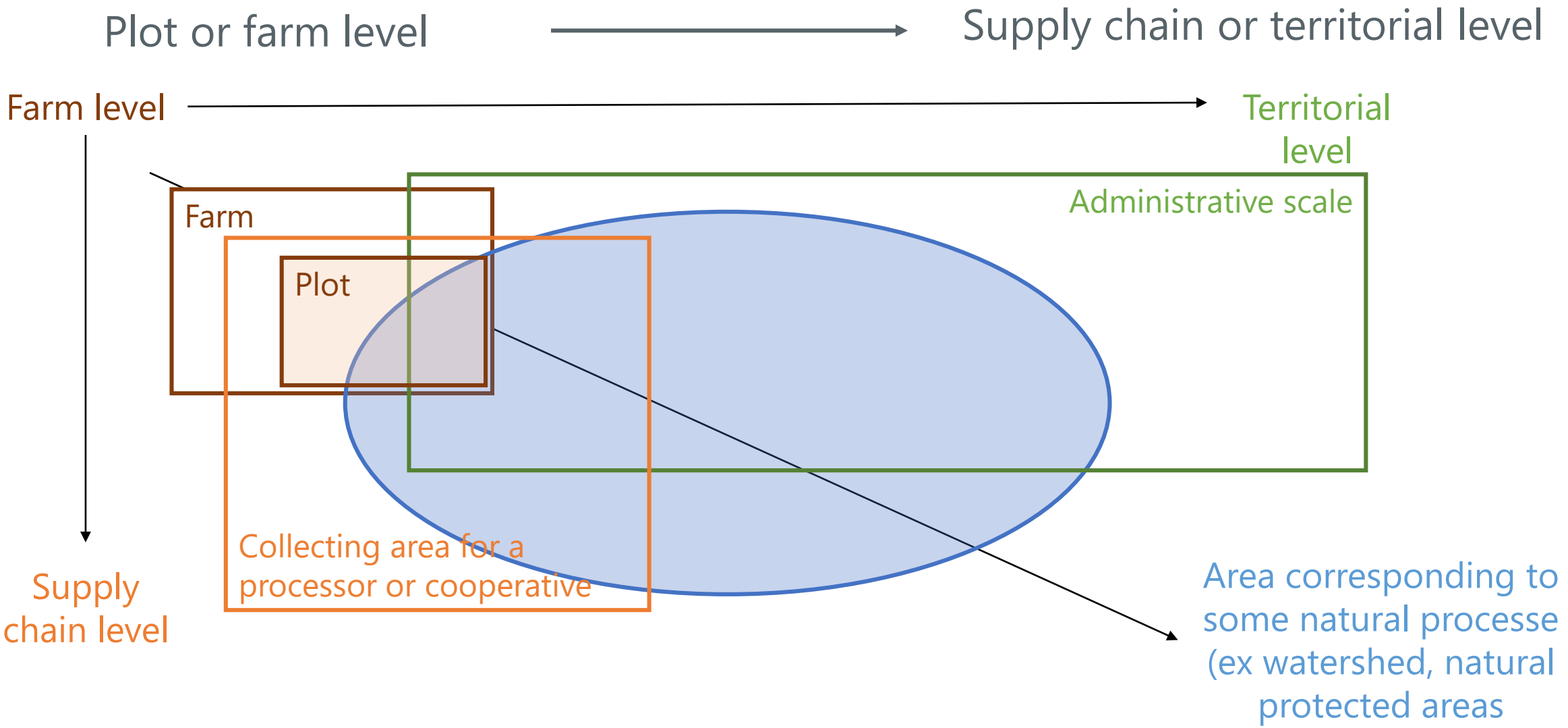
- Having a « system » approach : « une mesure système »
- An engagement at farm level
  - A maximum stocking rate of 1,4 LU/ha
  - No ploughing of permanent pastures
  - No pesticide use on permament pastures
  - Forbidden to destroy any « ecological focussed areas » present on the farm
  - Engagement of certain « target - plot » in the results-oriented measure (presence of certain species of the reference list)
- Eligibility criteria
  - A minimum number of herbivorous animal on the farm (minimum livestock limit set at regional level)
  - A minimum of 70% of grassland on the farm

From a plot to a farm level approach



Policy implications

Considering agri-environmental policies at different levels



Source : adapted from A. Berthet, 2022

Conclusion

- Result oriented measures : An innovation policy approach
  - More stimulation for farmers
  - Giving more flexibility and more responsability (managing nature)
- Value-change and modification of farmers' views on meadows and biodiversity
- Rather contribute to maintaining existing practices than fostering changes in farming practices

Source : A. Vincent

Conclusion

- Success of the measure to be considered not only at farm level but also including the exchanges (and changes) created at local and collective levels
- A concrete place/case for exchanges between agricultural and environmental stakeholders

Thank you for your attention

Photo : A Vincent

avincent@isara.fr

Teaching about mountains at ISARA

- The module « Mountains As Challenging Areas »
  - ➢ A 3 weeks module fully dedicated to Mountains
  - ➢ In the 4th year of the study program (equivalent to master 1)
  - ➢ Rationale : Mountains can not only be seen as “less favored areas” or “areas with natural handicaps”. They are challenging areas and centers for innovations

Photo: ISARA

Module « Mountains as challenging areas »

Its objectives:

- Understand the physical, ecological, social and economic specificities of mountains
- Analyse the strategies of local stakeholders
- Know the main policies which can be implemented in mountains
- Develop a prospective vision of futures challenges and means of action for mountain areas

Photos: A. Vincent, Queyras, France

Key elements of the module

Photo : A Vincent

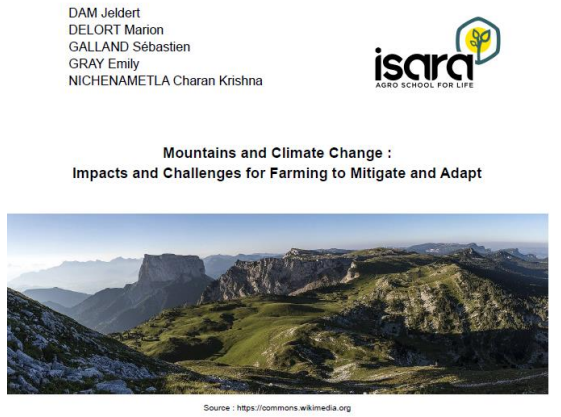
- Lectures :
  - Professors from different EU countries
  - Stakeholders working in/on mountains

- A study trip as case study

  - Interviews with various stakeholders (farmers, farmers' cooperatives, environmental organisations, natural regional park, municipalities…)

  - A landscape analysis

  - Group work:
    - Analysis of local challenges
    - Strategies and actions set up by local stakeholders
    - Proposing recommandations for future actions



Source : example of strudents report

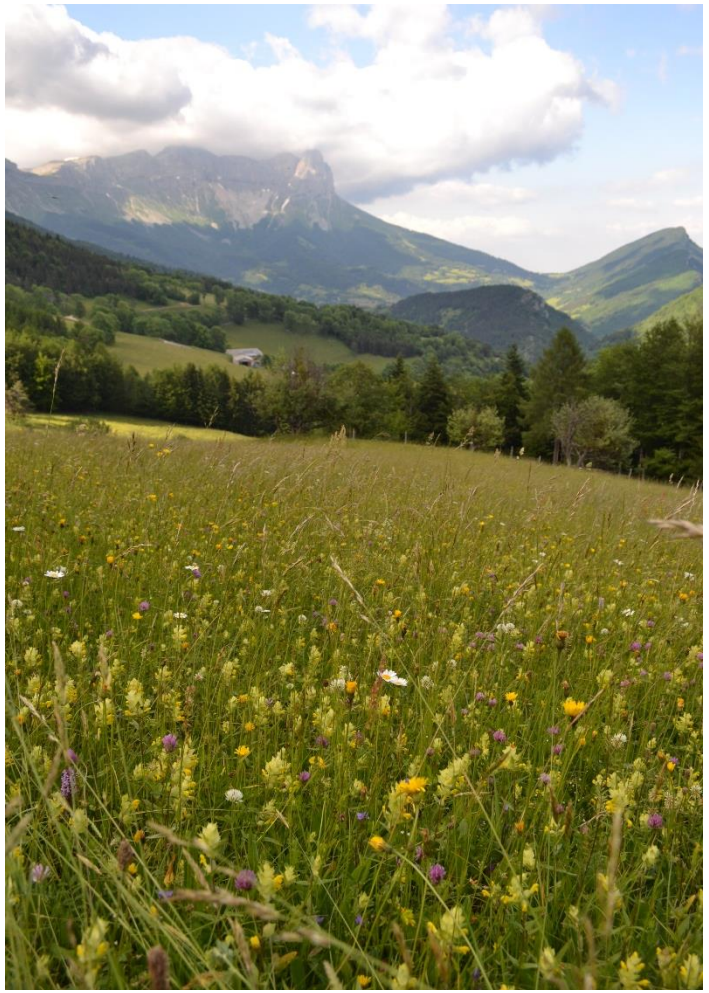
Landscape, agriculture and tourism

Photo: P. Fleury, Landscape closing in Tarentaise valley, France

Photo: J. Dam, Impact of Ski trails in Lans en Vercors, France

→ Discussing how agriculture and tourism impact landscape

Co-existence between pastoralism, wild fauna and tourism



Photos: A. Vincent, Vercors and Diois, France

→ Discussing how to maintain pastoralism when wolves are present

Getting added value for mountains quality products

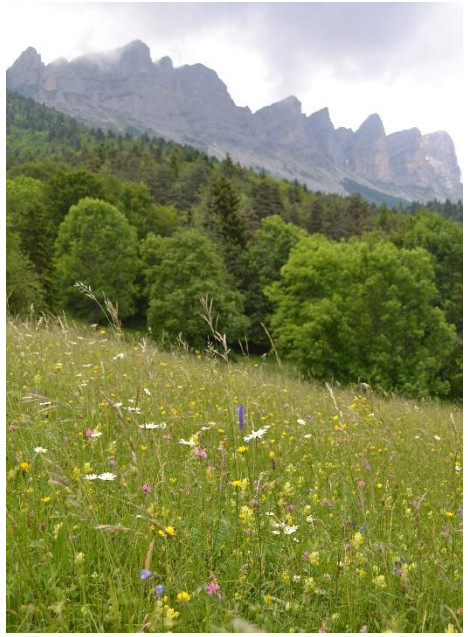


Photo: A Vincent, PDO Bleu du Vercors Sassenage and promotion tools, France

→Which strategy is set up by local stakeholders to get added value for mountain products?

→Discussing the use of quality schemes : PDO, PGI, mountains product quality term?

Don’t hesitate to contact us in you are interested !

Photo : A Vincent