

# Grassland production systems: combining animal species and crossbreeding

Salamix: an inter-disciplinary experiment et the system level

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# Context

## ❖ French suckler farming systems: alarming observations!

- ✓ Decrease of the factors' productivity (land, intermediate consumptions, capital)
- ✓ Decrease of the use of the animals and plants resources
- ✓ Very few (or none) animals are fattened with a 100% grass diet
- ✓ Fattening diets (lambs and cattle) → grain (like monogastrics!)
- ✓ No wealth created by suckler farms

## ❖ But:

- ✓ French organic beef and lamb sector: positive dynamic needing animals
- ✓ Due to the concentrates' prices, 70% of the bovine males from organic certified suckler cattle farms are sold as store animals on the conventional market!
- ✓ Lambs in mountain areas are fattened indoor with grain
- ✓ Grass-based systems have a positive image and real environmental and social advantages

# Livestock farming project



## ❖ Objectives

- ✓ **Lamb and beef production with grass in a low-input , self-sufficient and sustainable production systems**
- ✓ Grass-based systems with a maximization of the use of grassland, and a minimum inputs' use → **added-value creation**
- ✓ Set up sustainable production systems in the **agro-ecological** framework

## ❖ Questions

- ✓ **Combining animal species** (sheep and cattle) → agro-ecological advantages?
- ✓ **Cross-breeding** → better use of resources?

## ❖ System experiment (Herbipôle, Laqueuille, Massif Central)

- ✓ **Mountain** area, 1100 to 1400m asl., **100% permanent grassland**
- ✓ **Organic Farming** systems
- ✓ **3 systems**: sheep, beef, sheep+beef. Same UAA (40ha), LSU (30) and average annual stocking rate (0.75 LSU/ha) per system



# Combining animal species: hypothesis

## Bibliography review

### ❖ Better use of forages?

- ✓ diversity of species and categories → animals' complementarity
- ✓ Positive interaction on forage intake and use: better use of the nutritive value of forages, reduction of wastages

### ❖ Better individual performances and per surface unit?

- ✓ Better system efficiency (less inputs per unit produced)

### ❖ Better parasites control?

- ✓ Natural biological regulations: dilution, perturbations of cycles

### ❖ Better environmental performances?

- ✓ Lower consumption of chemical inputs → lower fossil energy consumption and GHG emissions, biodiversity preservation

### ❖ Work load?

- ✓ More complexity to manage

# Crossbreeding

## ❖ Hardy, prolific breed dam x early-maturing breed sire

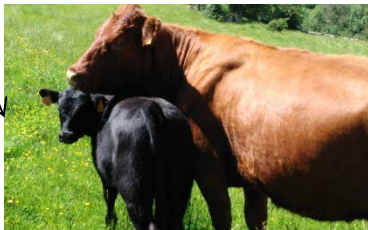
- ✓ Herd productivity
- ✓ Conformation of progeny
- ✓ Castration of all males (lamb and calves)
- ✓ Sale at slaughter of younger animals (beef)
- ✓ Better use off grass

Cows  
Salers



X

Bull  
Angus



Ewes  
Limousine



X

Ram  
Suffolk



# 3 livestock farming systems



## ❖ Specialized sheep farming system (30 LSU, 40ha)

- ✓ 164 ewes Limousines + 4 rams Suffolk + 2 rams Limousin
  - 20% replacement, 33 ewe lambs Limousine per year
- ✓ 1 lambing period per year: 15 March → 20 April
  - Lambs over 1 month old at turnout to grass
- ✓ Weaning from mid July
- ✓ Sale of 1<sup>st</sup> lambs at weaning, finishing lambs on grass regrowth

## ❖ Specialized beef farming system (30 LSU, 40 ha)

- ✓ 22 cows Salers + 1 bull Angus
  - 10% replacement, 2 heifers Salers (2 years old) purchased per year
- ✓ Cow-calf-fattener system. 100% animals sold to slaughter
  - Males castrated at 3-4 weeks
- ✓ Calving period: 15 January → 15 March
- ✓ Weaning on October
- ✓ Sale of young males and females (12 to 18 months old, 250-300 kg carcass), finishing with grass, hay and concentrates only if necessary

## ❖ Mixed sheep-beef farming system (30 LSU, 40 ha)

- ✓ 66 ewes Limousines + 2 rams Suffolk + 1 ram Limousin → 12 LSU (40%)
- ✓ 13 cows Salers + 1 bull Angus → 18 LSU (60%)
- ✓ Same herd management than for specialized systems

# Measures and evaluations

- ❖ Animal performances: weighing, body condition scoring
- ❖ Grass monitoring: available grass, forages harvest
  - ✓ Sward height (before and after grazing)
  - ✓ Weighing of harvest, hay analyses
- ❖ Parasitism, animal health
  - ✓ Infestation monitoring: faecal examination, post-mortem
  - ✓ Targeted treatments
- ❖ Biodiversity: indicators and dynamic
  - ✓ Botanic compositions, insects
  - ✓ Mapping of agro-ecological components
- ❖ Carcass and meat quality
  - ✓ Experimental slaughterhouse and specific analysis
- ❖ Techno-economic performances at the system level
  - ✓ Comparison with commercial farms results
- ❖ Carbon footprint and fossil energy consumption
- ❖ Labour organization and labour conditions

# Experiment setting up and 1<sup>st</sup> observations

- ❖ Winter and spring 2015
  - ✓ Herds, animals batching (ages, index, ...)
  - ✓ Allocation of the land parcels (hay, grazed, altitude, agronomic value, ...)
  - ✓ Fences
- ❖ 2015: system experiment setting up, first year
  - ✓ Turnout to grass late (21 May)
  - ✓ Cows serviced by Salers bulls, Angus bulls purchased in summer
  - ✓ 0 concentrates during the grazing period
  - ✓ Good animal performances (average daily gain, weaning weight)
  - ✓ Suckling animals growth (lambs and calves): mixed > specialized
  - ✓ Lambs from the mixed system: 100% grass finished, 0 concentrates
  - ✓ Lambs from the specialized system: 11% finished indoor with concentrates
  - ✓ Salers baby beef fattening: hay + concentrates → ADG 1200g, sold at 300 kg carcass
  - ✓ Techno-economic performances: financial period 1<sup>st</sup> May → 30 April, in progress
- ❖ 2016: first year of the conversion to organic farming
  - ✓ Good numerical productivity (sheep and cattle)
  - ✓ Angus bulls serviced all the cows (echography in fall)
  - ✓ Early turnout to grass (13 to 25 April),
  - ✓ Rotational grazing well conducted → good grass quality → good animal performances



# Comments and perspectives

- ❖ **3 systems breaking with the local practices**
- ❖ **A inter-disciplinary platform**
  - ✓ Researchers from different disciplines working together on the same subject
- ❖ **A steering group involving stakeholders**
  - ✓ Researchers from several disciplines and higher education
  - ✓ Technical institutes (livestock institute, organic farming institute)
  - ✓ Local extension and development structures
  - ✓ Veterinary
  - ✓ Marketing co-operative of organic animals and meat
- ❖ **A long term experiment**

