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Patrick Veysset, Sophie Prache, Karine Vazeille, Pascal Dhour

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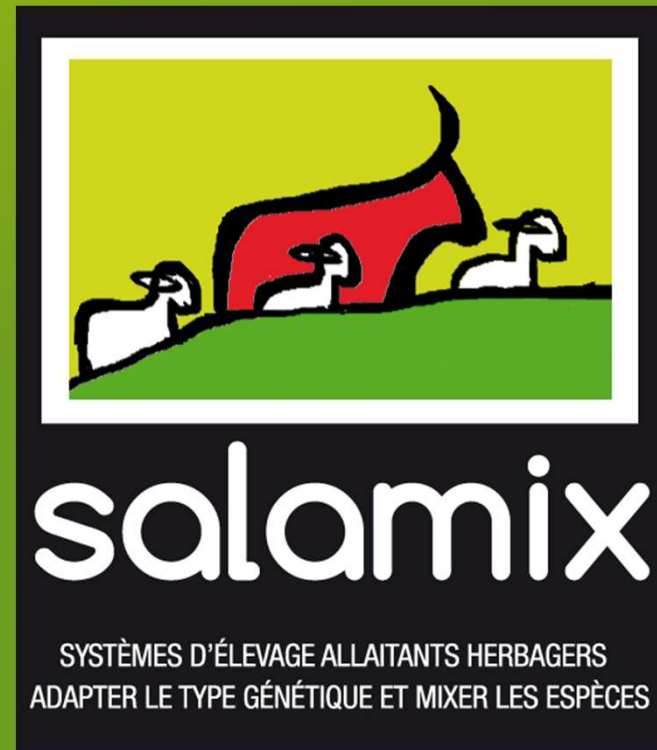
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Grassland production systems: combining animal species and crossbreeding

Salamix: an inter-disciplinary experiment et the system level

Veysset P.¹, Prache S.¹, Vazeille K.², Dhour P.²



¹ INRA Auvergne-Rhône-Alpes, UMRH, 63122 St Genès-Champanelle

² INRA Auvergne-Rhône-Alpes, Herbipôle, 63820 Laqueuille

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 1st 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 1st 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 1st 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**

