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ISAGE

Characterization of dairy sheep and goats production systems in France: First step for a GxE study

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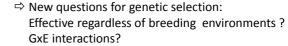
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Introduction

Breeding dairy small ruminants in France:

- ⇒ News practices:
 - ¬ herd feed resources → → feed autonomy
 - + concerned by environment and societal demands
- ⇒ Diversity of pedoclimatic conditions



Objective: first step for a GxE study Categorization of environment

Using a multiple-trait herd cluster analysis based on a large panel of descriptors (from the animal to the system)

Materials and methods



Characteristics of animals Number of females Breed(s) Average phenotypic levels (milk, fat and protein contents, SCC)

EBVs & herd-year effects Milk yield, Fat and protein contents, SCC

Herd-year identification Geolocation Herd in nucleus or in production Area of production Available data

Farming system

Feeding system
Cheese maker/supplier to industry
Reproductive season
Amount of forages and concentrates
distributed (Lacaune)
Indoor and pasture periods

Meteorological data

THI Grass growth indicator

Herd-year management

% females in 1st lactation
Age at 1st lambing/kidding
Average age of the herd
Evolution of flock size
Lambing/kidding periods
Milking only/suckling period

Al Fertility
% of long lactations
Interval between kidding

- Selection of the most discriminating variables (within breed in sheep):
 Principal component analysis (PCA), Multiple correspondence analysis (MCA)
- Cluster analysis:

Based on the MCA components for each herd

Test of the significant differences between clusters for the selected variables

(SAS® software)

Dairy Sheep 1001 flocks \$\Display\$ 637 Western Pyrenean Blond faced Manech Basco-Béarnais Corsica island Corsica breed

Results

1135 31135				
Breeds (number of herds)	Lacaune (300)	Basco-béarnais (84) Blond-faced Manech (218)	Corsica (35)	Goats – Alpine & Saanen (514)
Number of clusters	4	4/7	3	4
Discriminating variables	 Geographical location Precocity of grass growth (altitude) Amount of distributed concentrate and forages (Lacaune) 	 Location-altitude Rate of 1st lactation at 2 years Flock size 	 Location-altitude Milk yield level Artificial insemination rate 	 Geographical location (West→East) Breeding goal (milk yield/composition) System of sales (cheese maker/deliverer) Herd size Reproduction organization (out of season or not)

Conclusion

Main discriminating factors of environments:

- Geographical location (Lacaune, goats), altitude (precocity of grass growth)
- Herd breeding goal: milk yield/composition
- Herd management: size, rate of 1st lactations at 2 years-old
- · System of sales and of feeding (Goats)
- Amount of concentrate and forages (Lacaune)

Next step:

Are these contrasted breeding practices and conditions a source of GxE interactions?







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Toulouse research center www.toulouse.inra.fr

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