

# SIEOL : implementing a global information system for genetic and techno-economic support in dairy sheep in France

Jean-Michel Astruc<sup>1</sup>,  
Gilles Lagriffoul, Emmanuel Morin,  
Francis Barillet, Bernard Bonaïti, Erik Rehben

<sup>1</sup>Institut de l'Elevage

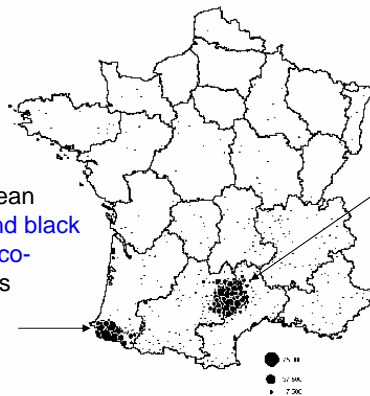


36th ICAR Session, Niagara Falls, (USA), 16-20 June 2008

## Sheep dairying in France



Western Pyrenean  
Manech (red and black  
faced) and Basco-  
Béarnais breeds  
480,000 ewes



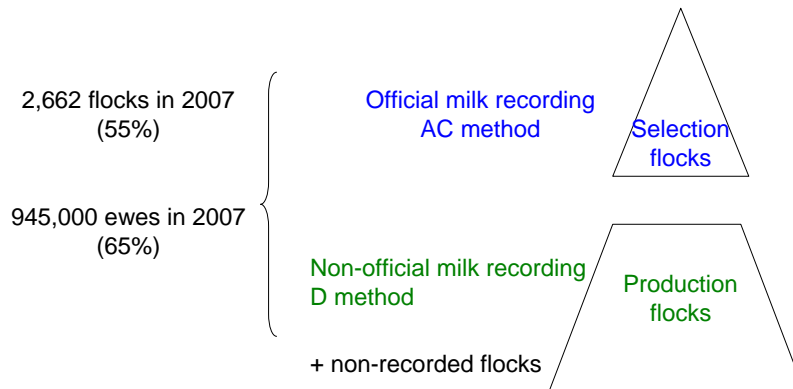
Roquefort area  
Lacaune breed  
870,000 ewes

Corsica island  
Corse breed  
90,000 ewes



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

## Impact of milk recording in dairy sheep in France



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

## Background

- High costs of genetic (especially milk recording) in sheep compared to cattle
- Necessity of a global approach for the services to breeders
- Common organizations, same field technician
  - Milk recording
  - Techno-economic assessment
  - AI



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

## Background

- French Breeding Law (1966, 2005) : frame for
  - Estimation of breeding value
  - Genetic information system
- Field organizations : genetic and techno-economic support for breeders, sanitary data

**SIEOL**  
(dairy sheep  
information  
system for  
breeders)

SIEOL information system : conception & development between 2002 and 2005



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

## Data managed by SIEOL

Genetic data : inventory / movements, pedigrees, lambings, matings, milk recording, udder appraisal, EBVs, qualification of the reproducers, molecular data (PrP)

Techno-economic data : description of the farm, the flock and its management, production & reproduction data, payment of the milk, feeding and cost of feeding, assessments

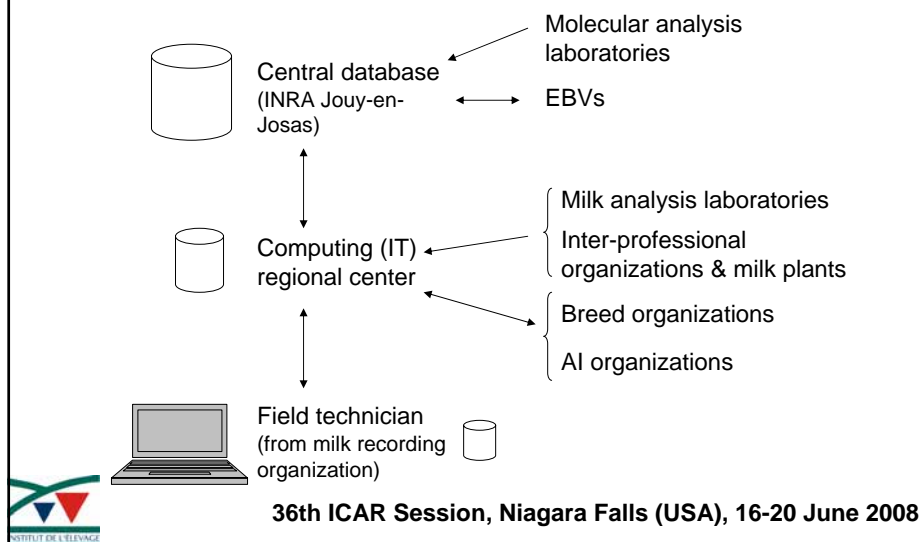
Official milk recording & non-official milk recording

Data from diverse organizations (recording, breed, AI, economic, analysis, evaluation)



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

## Organization of SIEOL



## Organization of SIEOL

- **Same data model** whatever the site
- Database updated only through **portable national software** (collection of functions)
- **Exchanges**

Field technician – regional center : intranet solution

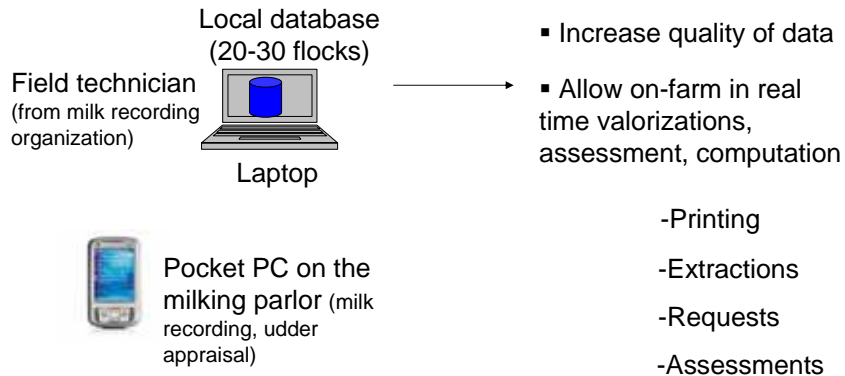
Regional center – central database : replication

Field organizations – regional center : interfaces



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# On-farm valorization



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# On-farm valorization

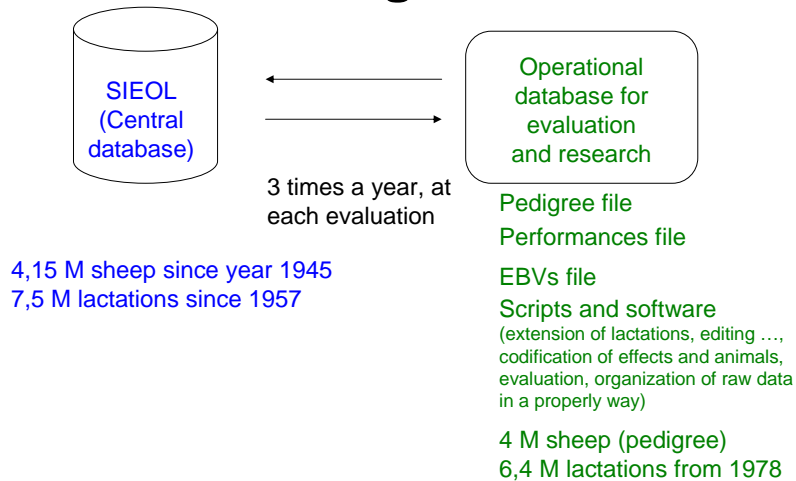
Example of valorization :  
Sorting the ewes by milk or SCC at the test-day (advise for culling or replacement)

Animal	Date	Lait	Grande	Etendue	Evolution	Lit de contrôle
040176	14/05/2008	1940	49	88		
040178	14/05/2008	1620	140	105		
040179	14/05/2008	1630	128	91		
040180	14/05/2008	1740	124	110		
040175	14/05/2008	1330	207	107		
040181	14/05/2008	1290	30	124		
040182	14/05/2008	1290	204	78		
040183	14/05/2008	1290	404	72		
040184	14/05/2008	1290	130	108		
040185	14/05/2008	1230	240	87		
040186	14/05/2008	1270	400	80		
040187	14/05/2008	1270	300	109		
040188	14/05/2008	1290	437	100		
040189	14/05/2008	1190	112	81		
040190	14/05/2008	1190	200	70		
040191	14/05/2008	1290	440	80		
040192	14/05/2008	1190	100	108		
040193	14/05/2008	1190	12	80		
040194	14/05/2008	1190	80	80		
040195	14/05/2008	1190	300	84		
040196	14/05/2008	1190	410	80		
040197	14/05/2008	1190	80	70		
040198	14/05/2008	1170	140	108		
040199	14/05/2008	1170	140	110		



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# SIEOL information system and genetic evaluation



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

## Techno-economic

- **Technical** assessments (production, reproduction, inventory)
- **Techno-economic** assessments : margin on feeding cost and gross margin
- **Milk quality** assessments
- Benefits of **gathering genetic and techno-economic data** in the same database :
  - Facilitating the job of the technician
  - Allowing consistency between all statements produced to the breeder
  - Confronting data to rationalize breeding objectives with an economic background



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# Techno-economic

Techno-economic assessments produced by SIEOL in 2007 in the Roquefort area

Total number of breeders	Technical assessments	Techno-economic assessments		Chemical and hygienic assessments
		Margin on feeding cost	Gross margin	
2,244	1,860 (all flocks in milk recording)	1,683	329	1,687



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# Sanitary data

- **Growing concern of sanitary data in sheep** (scrapie, blue tongue ...)

## Getting causes of culling

-Providing advise to the breeder and overlooking sanitary situation of the flock

-Establishing large-scale observatory of culling causes of sheep

- Based upon the knowledge of the breeders

- 3 levels of precision
 

Generic cause	Ex. mastitis
Sub-group	Ex. sub-clinical mastitis ; clear symptoms
Precise cause	Ex. Somatic cell count ; S. aureus



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# Sanitary data

## Scrapie resistance : PrP information

Molecular laboratories



Genotypes +  
computation  
of genotype  
predictions on  
relatives

N° Océal	Traitement	Nombre lactations	Lat. au DCS	Indice	CS	Indice	CS
871410000	0002	7	80	95	207	95	

Qualification: Date-recensement: 07/07/2007 Code: 0000000 Cause de décès: 1 Tauxage: Tauxage PrP: 0000000

Genotypings or  
predictions are available  
for the field technician to  
help the breeder



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008

# Conclusion

- Joint management of all collective technical data related to the dairy sheep breeder, **gathering genetic and techno-economic data**. Unique in France.
- **SIEOL** information system has been running **for 3 years**.
- Over its lifetime, **SIEOL must evolve** (new raw data, new selection criteria, new needs, new technologies).
- Organizing the **link with other systems**, such as the future tracing system (to be implemented in 2008).



36th ICAR Session, Niagara Falls (USA), 16-20 June 2008