

Typical French cheeses linked to the terroir: from raw milk to rural development issue

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Typical French cheeses linked to the terroir: from raw milk to rural development issue

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Traditional French cheeses : a huge variety !

- France is known for being the country with the largest variety of cheeses, from 350 to 400 different types of cheeses.
  Actually, this number is difficult to establish.

- Such variety led a famous politician, the former President Charles de Gaulle, to say:
  “How to govern such a country with more than 300 types of cheese?”

A fraction is protected as PDO

- Obviously, most of these types are just local specialty products without large commercial ambition.

- But, in 2018, the main French cheeses are often recognized at European level,
  - 45 as Protected Designation of Origin (PDO)
  - and 7 as Protected Geographical Indication (PGI).
- Second country in EU after Italy (50 registered) out of the 189 cheeses (see DOOR).
- From **Roquefort** (a ewe cheese) in 1925 (very first protected cheese in the world) up to the last one (till now), a goat cheese named **Charolais** (registered in 2014)

The French PDO cheese platter



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PDO cheeses in France : Value production

- This production of PDO cheeses represents yearly more than 200 Ktons so almost **10%** of the total amount of cheeses produced in France.

- But the total of estimations of domestic consumption and export reaches **28.5 %** of the total turnover (for cheeses) of the firms concerned.

- Source : *Chiffres-clés 2016 – Des produits sous signe de la qualité et de l'origine – Produits laitiers AOP et IGP*
  INAO – CNAOL (2017)

The GI landscape of French milk products

- GI includes also the PGI / Milk products includes also butter and creams : Add 3 butters and 2 creams PDO + 7 PGI (6 cheeses and 1 cream).

- In 2016, all GI milk products gathered 255 424 tons and 13,5% of the turn-over.
  19 343 milk producers, 1 281 on-farm processors and 423 cheese-makers

- When comparing 2016 with 2006, the total volume is quite stable : + 2.7 %

A great proportion of dairy farms involved

- The dairy farms involved in this activity gather in the country :
- 10% of cow milk for 24% of dairy cattle farms (and 28 PDO cheeses),
- 13.5% of goat milk for 34% of dairy goat farms (and 14 PDO cheeses),
- up to 41% of ewe milk for 88% of dairy ewe farms (and 3 PDO cheeses).

Source : Joint report INAO – CNAOL (2017)

Different types of cheese

- Cooked hard cheeses : **32%** / **Comté**, **Beaufort** / + 22 %
- Uncooked hard cheeses : **30,7%** / **Reblochon**, **St Nectaire**, **Cantal**, **Ossau-Iraty** / -2,2%
- Soft cheeses : **19,1 %** / **Brie de Meaux**, **Munster**, **Camembert**, **Maroilles** / -18,2%
- Blue cheeses : **14,7 %** / **Roquefort**, **Fourme d'Ambert**, **Bleu d'Auvergne** / -13 %
- Lactic cheeses (goat cheeses) : **3,5 %** / **Rocamadour**, **Ste Maure-de-Touraine**, **Chavignol** / + 9,6%

Some information on prices and markets

- Prices in supermarkets :

Mean all cheeses :	9,45 €/Kg	
Mean PDO cheeses :	14,34 €/Kg	**+ 66%**
Mean non PDO cheeses :	8,61 €/Kg	

- Type of circuit :

Supermarket	65,8 %
Hard discount	13,8 %
Proximity market	5,8 %
Internet	2,7 %
Specialized seller	**11,7 %**

French consumers of PDO cheeses

- French cheese consumption : 2^{d} in the world (after Greece) with 26 Kg / y, 96% of people (47% every day).

- French PDO cheese consumption : some specificities

  Income criterion : High and medium income (but light effect)

  Age : higher for seniors

  Family composition : higher for couples and for families with children (increasing with the age of the children)

Connecting food to place : The concept of « terroir »

- In the French tradition, to be recognized as origin product implies a strong link to the local ecosystem referred to the concept of “terroir”.
- Impossible to translate (Barham, 2003)
- This concept shapes the content of the specifications making mandatory the use of certain resources and know-how.

Definition of « Terroir »

- A terroir is
  (1) a delimited geographical area
  (2) where a human community
  (3) over the course of history generates and accumulates a collective body of production knowledge
  (4) based on a system of interactions between biophysical and human factors.
  (5) The sequence of socio-technical steps involved
  (6) reveals originality, (7) confers typicity (8) and earns a reputation
  (9) on a good originating in the geographical area in question.

Biodiversity : the use of local breeds

- Several PDO cheese specifications includes local breeds as mandatory
  Northern Alps (**Beaufort** and **Tome des Beauges**) with *Tarentaise* and *Abondance* breeds
  Comté with *Montbéliarde* and *Simmental* breeds

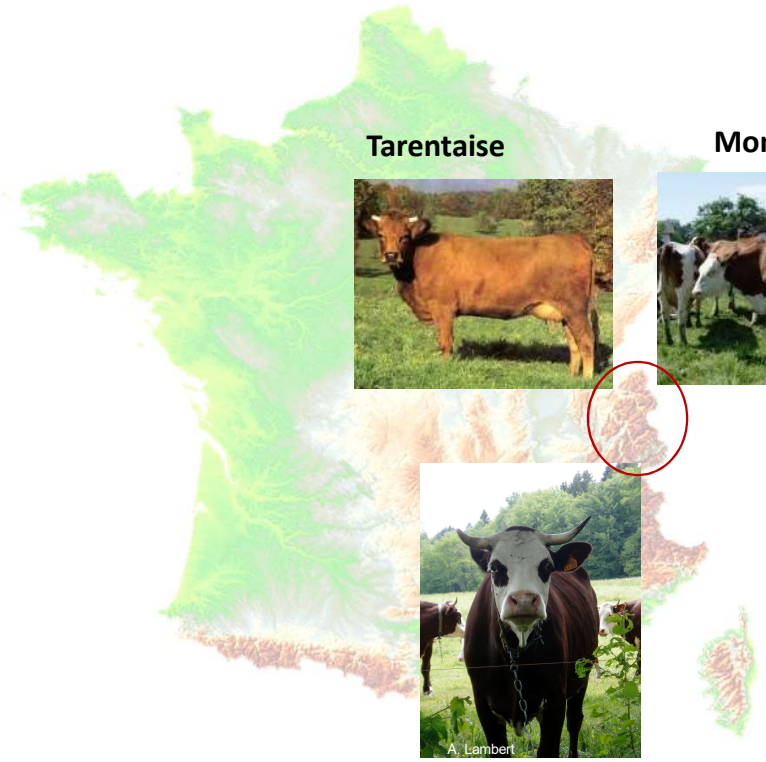
- Local breed with increasing proportion in specification revision
  Camembert de Normandie with *Normande* breed
  Abondance with *Abondance* breed

- Mention of the breed if 100% of the herd
  Munster with Vosgienne breed
  Salers and **Cantal** with Salers breed (mention « Tradition Salers »)

Milking a herd of Salers cows in mountain



An example in Savoie PDO cheeses



4 PDO

2 PDO with a limited productivity

Beaufort



Mean of the herd = 5000 kg /cow/year



Mean of the herd = 5500 kg / cow / year

Tome des Bauges

Genetic resources : Between collective management and individual choices

Abondance Breed:

Genetic choice and rearing practices

PDO no limit		PDO with limit
P (+20%)	>	**P**
G	>	G
HYE	>	HYE

Non PDO		PDO with limit
P (-6%)	<	**P**
G	**NS**	G
HYE	**NS**	HYE

Tarentaise breed:

Homogeneous strategies of the breeders

Montbéliarde breed:

Genetic choice

PDO no limit		PDO with limit
P (+5%)	>	**P**
G	>	G
HYE	**NS**	HYE

Mandatory use of a local breed in PDO specification

Impact on the collective management and the individual uses

(Lambert-Derkimba et al, 2010 Animal)

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Feeding methods as source of specificity

- Great diversity in the PDO specifications.
  According to the local resources.

- Grass and hay are dominant.
  Studies on the effects of types of pasture and hays (See Martin B.)

- Silage are increasingly prohibited.
  With transition periods.
- GMO are frequently prohibited

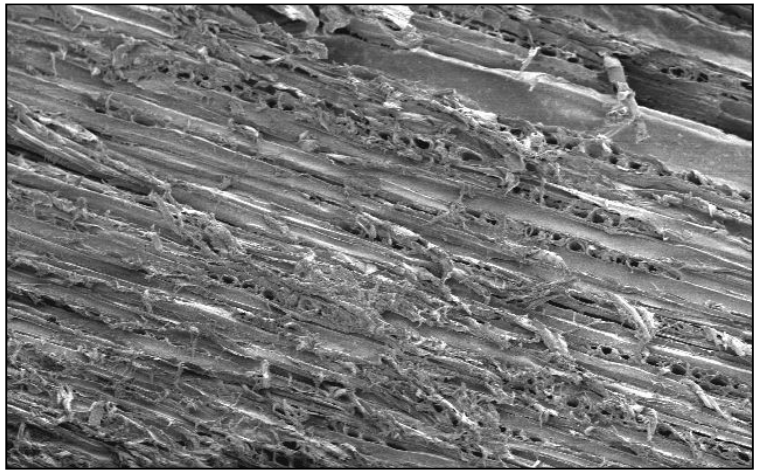
A major issue : the raw milk

- Only 10% of the total cheeses in France but 75% of the French PDO cheeses.

- This increasing proportion is however facing a lot of sanitary problems and induces researches for a better management of the whole raw milk chain.
  / Example of present difficulties : **Chavignol** with STEC outbreaks.

Salers PDO cheese : Mandatory use of « gerle »

Before preparation

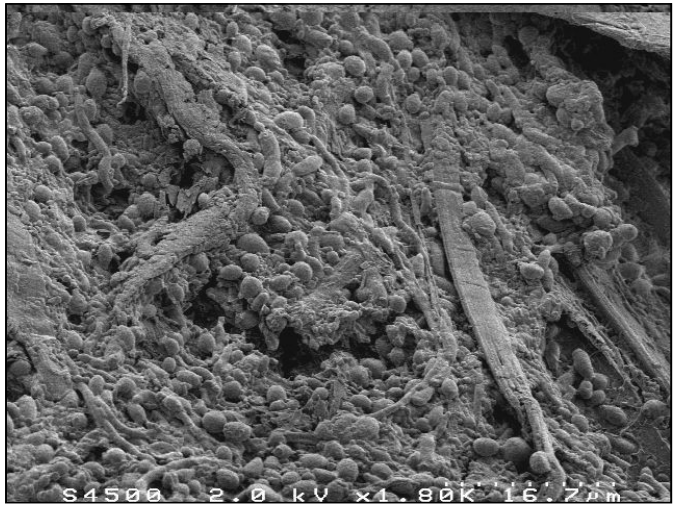


Process raw milk in wooden vat ?
Hygienists rules and local practices

Role of biofilm as barrier flora
Practices of maintenance

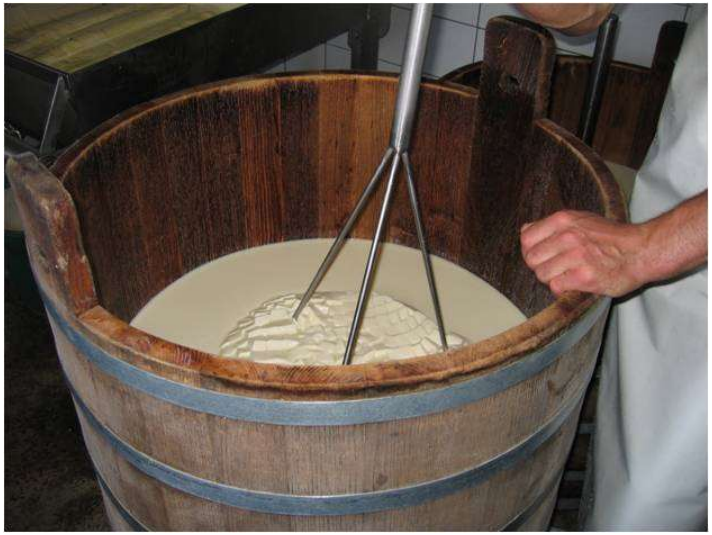
Management of Microbia eco-systems

After preparation



Works of S. LORTAL (INRA Rennes)
and
M.C. MONTEL (INRA Aurillac)

How to « clean » the wooden vat ???





No detergent, but boiling or just hot water ?

Camembert [of / made in] Normandy ?

- The raw milk inside a major crisis in the French PDO cheese world.

- A great firm decided to quit the PDO **Camembert de Normandie** for sanitary reasons (officially).
  But using the sourcing denomination « ***fabriqué en Normandie*** ».
- Conflict between both types of cheeses on the use of the protected name.
  PDO with raw milk, with more pasture and increasing porportion of Normande breed.
- Presently, a new negociation for solving the conflict…

Traditional and artisan cheese-makers

- The size of the cheese processing units is also an important issue as artisan, small scale and on-farm processors are part of a lot of PDO systems.

- A particular pattern : the **« fruitières »** in Alps, Jura and Franche-Comté (influence of Swiss tradition)
  Traditionnally, every breeder has few cows and for making a cheese, needs to mix his milk with the neighbors.
  The group creates a Fruitière and hire a cheese-maker.
  Ancient setting remaining till now.

On-farm processors : « fromage fermier »

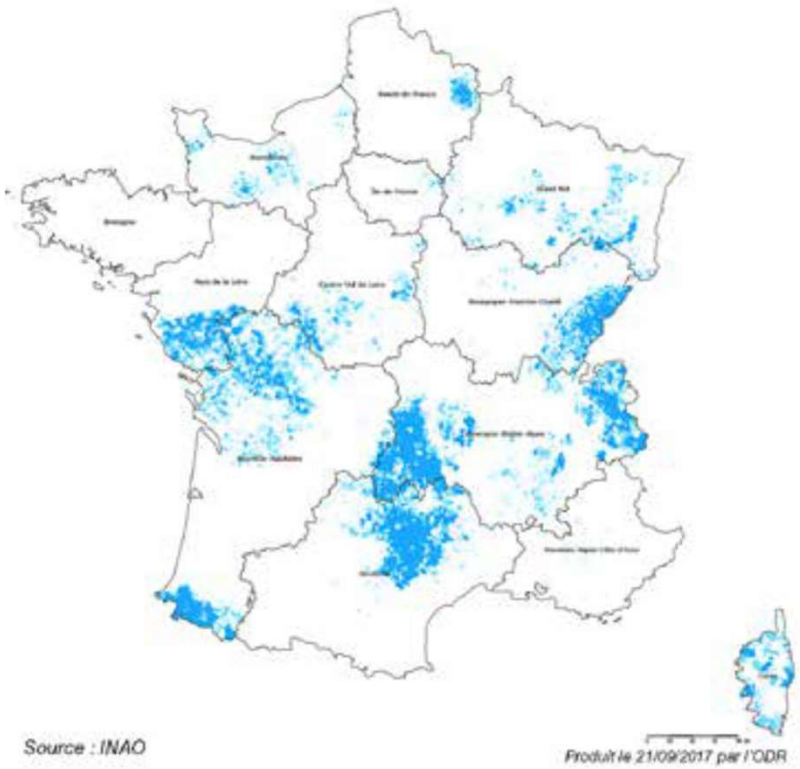
- More than **20%** of the French on-farm processors are producing PDO cheeses.
- Even if people in [short chains + direct selling] have no real utility for PDO / they manage their reputation through inter-personal relationships (« domestic city »).
- On-farm PDO cheeses represent **8,25 %** of the total PDO cheeses.
  This proportion is increasing every year.
  The most frequent units are in **Saint-Nectaire**, **Reblochon**, **Salers** (mandatory), **Abondance** and **Munster**.
- For **Saint-Nectaire** and **Reblochon**, they benefit of a distinction (green casein pastilla) within the surface of the cheese.

Rooting the processing activity

- The spatial distribution of the 400 units and 1250 on-farm processors within all the rural areas concerned confers to this production a major role in terms of sustainable development.
- A unique case in the French PDO cheeses :
  The « fruitières » of **Comté**.
- Limit of transportation of the milk for making the **Comté** PDO cheese, up to **25 km** from the processing unit.

  Avoids the concentration in huge units, enhances the effects of location (the « crus »), protects the employment in the rural areas.

Spatial distribution of PDO cheese operators



Number of certified operators by municipality

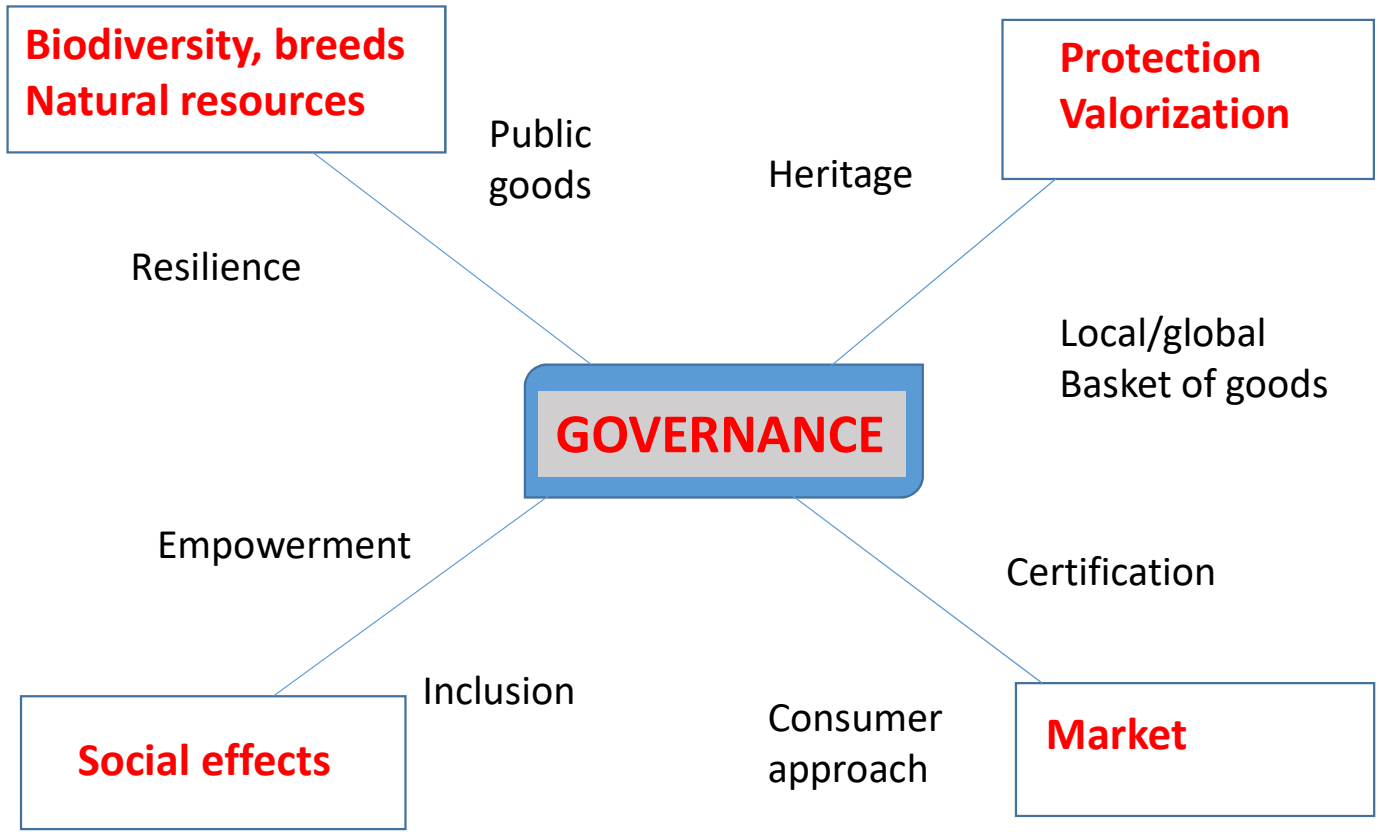
Number of municipalities

<= 1	**2364**
1 – 2	**1084**
2 – 4	**1001**
> 4	**1188**

Main stakes for knowledge production strategy

- New tools for traceability of milk and cheese / location and production methods
- Interactions genotypes x environment (including practices) / specification evolvments
- Native flora of raw milks, local starters/ sources and roles in the process / providing microbiota for humans
- Links with cheese aromas and flavours / learning processes with young people
- Relevant markets and access conditions / Distribution of value added within the chain
- Governance of the PDO system (local democracy) / Relationships with the territory Sustainability, agro-ecology, heritage management, « basket of goods » at territorial level.
- *RMT Fromages de terroir / GIS Filières fromagères sous indication géographique*

A conceptual framework toward more sustainable PDO cheeses



Thank you
for your attention

