

Use of Wood by European Cheesemakers is Authorized by the EU by Florence Boulenger
From *Profession Fromager*, no. 20 Fev. 2006.

Wood has made a return to grace thanks to recent scientific studies. Early in the 1990's sanitary regulations threatened to pressure cheesemakers into switching to the use of all stainless steel and all plastic in the production of cheese, . "In the report from 1995 by the Direction des Politiques Economiques et Internationales (DPEI), l'Interprofession Latiere, and the body of research by Arilait, there is without a doubt more wood used in the fromageries," said Pierre Bobin (Fromagerie de Brie). At the time, this report contributed to special dispensations from Brussels (EU) for nine countries, authorizing the affinage on wood for certain traditional cheeses.

Today, wood plays a major role in the affinage of numerous cheeses: Comtè, Beaufort, Abondance, Tome de Bauges, Munster, and Reblochon. Wood is an ally of the pressed and cooked curd cheeses, but is less commonly used with soft-ripened cheeses because of their sanitary fragility or susceptibility to contamination by pathogens. The principal argument from the detractors is that although wood is a living material that harbors *positive* microflora for the proper affinage of cheeses, it also supports the growth of pathogens. One intriguing study from 1997, by the Institute Techniques Francais de Fromage (ITFF) drew similar conclusions about authorizing the use of wood in milk processing and affinage, "We studied the microbiological biofilms present on the surfaces of wood boards used in affinage to evaluate their reaction to *Listeria*, The results of our work showed that these biofilms opposed their development." explained Jean-François Chamba (ITFF)

Vital Biofilms

"The purpose of our work is to begin to prove that the wood used in affinage has a bacteriostatic effect, and to find a bactericide for *Listeria monocytogenes*," confirmed Bruno Mathieu, of the Syndicat de Reblochon. "Tomorrow we will be able to further the implantation of positive biofilms by culturing the boards, thus putting the microbiological ecology in charge." continued Eric Notz (ITFF). Cheesemakers who age cheeses on wood do not have to adopt a specific washing technique to eliminate the biofilm. "On one affinage board we found 10 to 100 million total CFU (colony forming units) per square centimeter," specified Jean-François Chamba. "The microbes penetrate via the microfissures and are detectable down to two millimeters deep. We are studying *Listeria monocytogenes* on 99 samples of boards, used in aging Abondance, Beaufort, Mont-d'Or, Reblochon, Tomme, and Munster. We are not finding *Listeria monocytogenes* using a protocol that permits counting down to one *Listeria* per square centimeter. Then, we have voluntarily cultured the boards with *Listeria* and washed them according to the common practices of the fromagerie (brushing and cleaning the boards with hot water). The population of *Listeria monocytogenes* was divided by 10,000."

The Influence of Wood on Rind Formation

"Wood supports the development of biofilms, and is therefore irreplaceable," confirmed Bernard Mietton of l'Enil-bio de Poligny. "To preserve this biofilm, one should pay close attention to how the boards are cleaned. For pressed and cooked curd cheeses, it is sufficient to use water and a brushing, which will not destroy the biofilm; there is no need for detergent. However, for a fragile product like the Mont-d'Or (a soft-ripened, washed rind cheese), it is necessary to boil the boards, While this eliminates the good microflora as well as the pathogens, wood is still used for

its other beneficial advantages beyond its microbiological wealth.”

Wood also plays a decisive role in regulating the humidity, by absorbing water when the cave is too humid and releasing it when the cave is too dry. Wood is used regularly in this manner by certain operators of the Roquefort network of caves and affineurs. “There is significant variation in temperature during the course of the year, and wood is used in all of our caves to mitigate this,” explains an operator of the Cave Baragnaudes (one of nine members of the Societe des Caves using oak). While the wood is useful in helping to control the relative humidity, the operators of the caves nevertheless covered the oak shelving with plastic to prevent the tannin from browning the cheese.

According to Bernard Mietton, “The wood radiates the heat and absorbs the water, and vice versa; it is a natural physical phenomenon. In a cave that is very dry because it is too warm, the water evaporates from the wood, causing cooling. The wood has an 80% moisture content at the time it is cut, which decreases to 12-15% for wood used in construction (framing) and to 7-8% for use in cabinetry. For affinage one looks instead for a moisture content of 25 to 40%. The drier the affinage board, the faster the rind forms on the cheese. It will be easier to manage the humidity in a cave with wood than in a cave without, and using wood is also lower in capital investment and operating costs. The major problem will be to manage the moisture content of the boards themselves. This kind of control can be provided by the cave operators (perhaps with specialized facilities for board washing and storage), but it is much less common. Humidifiers and dehumidifiers are available in hardware stores for 120 to 200 dollars. Particularly after cleaning, these appliances will facilitate proper management of the moisture content of the boards during drying and storage.”

Wood is more functional than plastic or stainless steel. “There is less risk of degradation during rind formation: because the wood breathes, the cheese sticks less, and therefore requires fewer turnings,” indicates Jean-Francois Chamba. “Wood also prevents 1-2% of weight loss.” In addition, the wood permits the exchange of carbon dioxide and ammonia gases. “There are no research papers on the subject, but the phenomenon of solubilization of gases in the water of the wood deserves consideration,” concludes Bernard Mietton.

Polemic

Why the Auvergnats Continue to Use the Gerle

(In the Cantal, an alpine region in the Auvergne, cows milk is collected in wooden buckets called ferats, with a capacity of about 30 liters. It is then transferred into a gerle, a wooden bucket with two handles that contains between 90 and 180 liters of milk depending on the region and the size of the dairy. When the cows have been milked, one connects the two handles of the gerle with a rope to form a loop that will be suspended on a long wooden pole that two men carry on their shoulders. To avoid spilling milk if the gerle swings, the two carriers are careful to start one from the right foot, the other from the left foot. – *Peter Dixon*)

Salers is a breed of cows and a large, hard, cow milk cheese made in the Auvergne. “In view of the debates initiated by members of the Salers Network since 2002, it is useful to recall the *reasons* for the traditional use of wood,” remarks Marie-Christine Montel, director of INRA d’Aurillac. A 1987 article by Jean-Jacques Devoyod demonstrated the role of the gerle as the origin of much of the richness and balance of the microflora in the milk. Since then we have shown how the diversity of microorganisms in milk harvested into the gerle will generate the richness and diversity in the flavor and texture of the cheese.

From May to October, cheesemaking is coordinated with grazing in the mountains of the Auvergne. Before each cheesemaking season the preparation of the gerle is fundamental; the biofilm may harbor good or bad microflora, because the wood preserves whatever the milk provides. First, the gerle is immersed in whey for three weeks to eliminate the tannins and culture the wood; whey is continually added to keep the gerle saturated. It is necessary to colonize the wood with microorganisms, where the goal is to suppress the growth of undesirable microflora in the whey. A stable microbial biofilm installs itself on the wood, which provides a *fermentation factory*, nourishing the gerle and providing microflora to the milk for each cheesemaking. The biofilm can also act as effective protection against pathogens. Because of the movement of the microflora from the whey into the gerle into the milk and ultimately to the cheese, it is vital to start a daily cleaning of the gerle using water or whey of good microbiological quality that maintains this equilibrium. Detergents are forbidden. These practices are used by the cheesemakers of the AOC (Appellation d'Origine Controlle) Massif Central. A gerle that is well-prepared and maintained, without the use of *aggressive* cleaners, is essential for determining the composition of the biofilms at the beginning of the cheesemaking season.”

Since January 1, 2003, use of the gerle has been called into question by regulators. Dispensations for continuing its use have been given accordingly, with six dispensations given to 81 producers. In 2005, thanks to a campaign led by the Salers Network to improve sanitary conditions, the number of dispensations was increased to thirty.