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Introduction

Italy is the world leader in the dairy sector with a turnover of about 14,8 billion of Euros. In Italy in 2010 about 1.75 million of cows, 0.245 million of buffalos, 7 million of ewes and 0.8 million of goats were counted. The production of milk by these animals has been estimated with 10.5 million tons of cow milk, 0.2 millions tons of buffalo milk, 0.4 millions tons of ewe milk and 0.2 millions tons of goat milk. About 2.9 millions tons of cow milk was used for direct consumption while the remaining milk was used to produce about 0.8 million tons of cow cheeses, 0.061 million tons of ewe cheeses, 0.009 million tons of goat cheeses, 0.05 million tons of buffalo cheeses, 0.08 million tons of mix cheeses and 0.4 million tons of different dairy products such as butter, yogurt, powder milk etc.

Among the 43 Italian cheeses registered as Protected Designation of Origin (PDO) and produced according to the European rules, the most important PDO cheeses are Parmigiano Reggiano, Grana Padano and Gorgonzola. Moreover data corresponding to the year 2012, registered Parmigiano Reggiano and Grana Padano as cheeses with the most export both in Europe and in the World at volumes of 38.791 and 61.902 tons, respectively (ISTAT, 2013).

Information about the characteristics of all Italian PDO cheeses, their cheesemaking and composition will be described in this chapter. For each cheese, references (from SCOPUS source) concerning the chemical composition studies carried out over the past 10 years, and the website of the consortium, when available, will also be reported.

ASIAGO

Characteristics (PDO, 12 June 1996 modified on 15 October 2007) – There are two different type of cheeses, pressed Asiago and fostered Asiago. The pressed Asiago has a cylindrical shape (diameter 30-40 cm, height 11-15 cm and weight 11-15 kg) with thin and elastic rind. The interior paste has marked and it is characterized by irregular eyes of white or slightly yellow colour. It has a delicate and pleasant flavor. According to PDO requirements, the chemical composition of pressed Asiago at 20 days of maturation must be as follows: moisture $39.5\pm 4.5\%$, protein $24.0\pm 3.5\%$, fat $30.0\pm 4.0\%$, sodium chloride $1.7\pm 1.0\%$, fat in the dry matter must be not less than 44%. The fostered Asiago has a cylindrical shape (diameter 30-36 cm, height 9-12 cm and weight 8-12 kg) with smooth and regular rind. The interior paste has small and medium eyes with straw or slightly yellowish colour. The taste is sweet in less ripened cheeses while fragrant in those having a long age. According to PDO requirements the chemical composition of fostered Asiago at 60 days of maturation must be as follows: moisture $34.5\pm 4.0\%$, protein $28.0\pm 4.0\%$, fat $31.0\pm 4.5\%$, sodium chloride $2.4\pm 1.0\%$, fat in the dry matter not less than 34%.

Production area – The geographical area of production is the whole territory of the provinces of Vicenza and Trento, in some municipalities of the province of Padova and in a defined area of the province of Treviso.

Cheesemaking – Asiago is a semi-cooked cheese made with cow's milk. Cows are fed on pasture, with limited concentrate supplementations during the grazing season, while during the indoor season the feeding is mainly based on conserved forages and notably higher amounts of concentrates. Feed based on fodder is not allowed in the case of the production of the cheese with the label "*product of mountain*". Production is divided into two different types of cheese, pressed Asiago and fostered Asiago. For the production of pressed Asiago cheese, raw or pasteurized (72°C , 15 seconds) milk (one or two milkings) can be used. The whole milk is added of selected starters or milk cultures, possibly little amounts of sodium chloride and coagulated with bovine rennet at $35\text{--}40^{\circ}\text{C}$. After 15-25 minutes, the curd is cut to produce fine granules with the size of a walnut or hazelnut. The curd is cooked at 44°C and pressed for up 12 hours. For the production of fostered Asiago raw or thermised ($57/68^{\circ}\text{C}$, 15 seconds) milk from one or two milkings is partially skimmed and added of selected starters (or milk cultures) and small amount of sodium chloride. Lysozyme can be added (2.5 g/100 kg milk) except for the cheese with the label "*product of mountain*". The milk is coagulated by the addition of bovine rennet at a temperature of $33\text{--}37^{\circ}\text{C}$ (15-30 minutes). The curd is cut to produce fine granules with the size of a hazelnut or less. The curd is semi-cooked at 47°C . After the draining, the curd is put in molds. Before salting, the cheeses are kept for a minimum period of 48 hours at $10/15^{\circ}\text{C}$ and 80-85% relative humidity (RH). The cheese may be dry salted or brine salted at 20°C , $\pm 2^{\circ}$ Be. The minimum ageing is 20 days for pressed Asiago, 60 days for fostered Asiago and 90 days, from the last day of production of fostered Asiago, and 30 days, from production of pressed Asiago, for the product with the label of "*product of mountain*". Ripening is carried out at $10\text{--}15^{\circ}\text{C}$ and 80-85% relative humidity. For the first 15 days after salting, fostered Asiago may be kept in storage at temperatures between 5 and 8°C . Asiago cheese, with the label "*product of mountain*" must be ripened in rooms located in mountain areas where temperature and humidity are determined by natural environmental conditions. The pressed Asiago cheese may also be labeled with the indication "fresh". Fostered Asiago may be labeled as "matured" or "aged" cheese if it has been ripened over 10 months while labeled "extra aged" if ripened more than 15 months. The Asiago cheese labeled as "*product of mountain*" cannot be treated on the surface with colorants and agents which avoid the developing of molds.

Figure 1. Asiago

(http://www2.regione.veneto.it/videoinf/rurale/precedenti/anno%202006/33/Asiago_formaggi.htm)

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Website

<http://www.asiagocheese.it/>

BITTO

Characteristics (PDO 12 June 1996 modified on 25 November 2009) – Bitto has a cylindrical shape (diameter 30-50 cm, height 8-12 cm and weight 8-25 kg) with concave and sharp edge. The rind is solid with a depth of 2-4 mm. The colour switches from yellowish to more intense yellow along the ripening. The interior paste is solid with rare eye-holes and its colour changes from white to yellow depending by the age. At the beginning of the ripening process, cheese taste is sweet and delicate. After the first year it develops a sharper and richer flavor, also due to the use of goat's milk. The product can be grated as condiment after one year of age. According to PDO requirements, fat in dry matter must be not less than 45% and moisture, at 70 days, must be 38%.

Production area – The geographical area of production is the whole territory of the province of Sondrio, some municipalities of the Alta Val Brembana in the Bergamo's province and some municipalities of the province of Lecco.

Cheesemaking – Bitto is a traditionally made, semi-cooked and semi-hard cheese produced at an altitude of at least 1.500 m only between June 1 and September 30. It is made with whole raw cow's milk of the Italian Brown breed, to which supplement of raw goat's milk up to a maximum of 10% is allowable. According to guidelines on production, besides grazing pastures, dairy cows' diet may be supplemented by feeds containing maize, barley, wheat, soybean and molasses (up to a maximum of 3 kg of dry matter per day). Milk must be processed within one hour from the end of the milking. Acidification is due to indigenous microflora, but the use of autochthonous starters made up from indigenous Bitto microflora is allowed. Milk is coagulated with bovine rennet. The curd is cooked at a temperature between 48 and 52 °C for about 30 min and then is cut to produce granules with the size of a grain of rice. Once the curd is extracted, it is placed in traditional wooden molds, achieving the typical concave shape. Cheese can be dry salted or brine salted. Cheese starts to ripen in the so called Alpine "casera", a rural small hut near the pasture, and finishes in the factories down in the valley at the natural climatic conditions of the production area. This process lasts for at least 70 days.

Figure 2. Bitto

(<http://www.visitfai.it/dimore/castelgrumello/la-tua-visita-132-Prodotti-tipici>)

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Website

<http://www.ctcb.it/>

BRA

Characteristics (PDO 1 July 1996) – Bra can be found in two forms, soft and hard. Both types have a cylindrical form (diameter 30-40 cm, convex edge 7-9 cm, weight 6-8 kg). The colour of the interior paste is white/ivory in the soft type and slightly yellow in the hard type, with very rare and small eyes. The structure is fairly solid and elastic in the soft type. The rind, not edible, is light grey, elastic, smooth and regular in the soft type while solid, hard and dark beige in the hard type. The soft type has a very soft and mainly sweet taste. The hard type is much more savory. The soft type is used as table cheese while the hard type usually grated. For both type of cheeses fat in dry matter must be 32% as minimum.

Production area – The geographical area of production is the whole territory of the province of Cuneo for both production and ripening, and the municipality of Villafranca Piemonte, in the province of Torino, for the ripening only. Soft and hard Bra cheese produced and ripened in the mountain municipalities listed in the PDO can be labelled “*di Alpeggio*”.

Cheesemaking – Bra is a pressed, semi-fat cheese, made with cow’s milk to which little amount of sheep and/or goat’s milk can be added. According to the procedural guidelines, the cattle must be fed with green forages or hay. Milk (from one or two milkings) is often partially skimmed. Coagulation is obtained by using liquid rennet at a temperature between 27 and 32 °C. The cheese must be produced with a typical technology involving a double curd cutting. The cheese is then appropriately pressed and put into apposite molds. Usually, the cheese is dry salted twice and in some cases brine salting is carried out as well. The ripening period must be at least 45 days for the soft type and 6 months for the hard type.

Figure 3. Bra

(<http://www.langood.it/public/shop/formaggi/formaggi-vaccini/formaggio-bra-tenero-giobrat.asp>)

Website

<http://www.assopiemonte.com/>

CACIOCAVALLO SILANO

Characteristics (PDO 1 July 1996 modified on 4 July 2003) – Caciocavallo Silano has oval or trunk-conical form with creases. Each cheese can weight from 1 to 2.5 kg. The rind is thin, smooth and straw yellow coloured. The interior paste is white or straw yellow, regular, firm and it presents very rare eyes. The taste is gentle and sweet in less aged cheeses becoming piquant in those aged. According to PDO requirements, the fat in dry matter must be not less than 38%.

Production area – The geographical area of production is within the territory of Calabria, Campania, Molise, Puglia and Basilicata as carefully specified in the procedural guidelines.

Cheesemaking – Caciocavallo Silano is a semi-hard, pasta filata (or spun paste) cheese made with cow's milk. Milk is coagulated at 36-38 °C by the addition of paste bovine or kid rennet. When the curd has reached the wanted firmness, its cutting is performed to produce granules with the size of a hazelnut. The ripening starts with a vigorous lactic fermentation which lasts from 4 to 10 hours or more, depending by the acidity of the milk used. Cheese ripening is completed when the cheese is ready to be kneaded (or “spun”). In order to check the maturation time, little amount of cheese is collected at very closed time intervals and put in boiling water to test if it can be extended in elastic, shiny, continuous and strong fibers. Then, the paste is manually modeled until the required form is obtained and each single piece of cheese obtained is closed at the apex and quickly dunked in boiling water. The final form, with head where required, is given manually. The cheeses are individually cooled in cold water and salted using brine solution (resting not less than 6 hours). After the brining, Caciocavallo cheeses are hung in a couple on horizontal pole to be ripened for a minimum of 15 days.

Figure 4. Caciocavallo Silano

(<http://www.parcosila.it/it/saperi-e-sapori/prodotti-dop/consorzio-caciocavallo-dop>)

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Website

<http://www.parcosila.it/it/saperi-e-sapori/prodotti-dop/consorzio-caciocavallo-dop>

CANESTRATO PUGLIESE

Characteristics (PDO 12 June 1996) – Canestrato Pugliese has a cylindrical shape (diameter 25-34 cm, edge 10-14 cm, weight 7-14 kg) with a brownish, hard, roughness and thick rind. Rind is treated with olive oil, possibly in mixture with wine vinegar. The interior paste is solid and very friable with a slight or more intense yellow according to the cheese age. The cheese has a characteristic piquant taste. According to PDO requirements fat in dry matter must at least 38%.

Production area – The geographical area of production includes the entire area of the province of Foggia and numerous municipalities in the province of Bari.

Cheesemaking – Canestrato Pugliese is a hard cheese made with sheep's milk. Herd must be fed with green and/or conserved forages or hay (only exceptionally with concentrate supplementation). Milk (from 1 or 2 milkings) is coagulated at 38-45 °C with the addition of lamb rennet within 15-25 min. The following steps of cheese-making must be completed within 30-60 days, depending on the size and weight of the form. Cheese is pressed into particular containers, "canestri" or baskets, which give the characteristic roughness to the rind. Two-4 days after the production, cheese is still maintained in the baskets where it can be salted in dry conditions or using brine solution. Ripening lasts from 2 to 10 months and takes place in fresh and ventilated rooms. Cheese, aged for at least six months, can be consumed as table cheese or grated cheese.

Figure 5. Canestrato Pugliese

(http://www.arssa.abruzzo.it/atlanteprodotti/home.php?module=view_prodotto&id=34&idtipo=4)

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CASATELLA TREVIGIANA

Characteristics (PDO 2 June 2008) –Casatella Trevigiana has a cylindrical shape (big form: diameter 18-22 cm, edge 5-8 cm, weight 1.8-2.2 kg; small form: diameter 18-12 cm, edge 4-6 cm, weight 0.25-0.70 kg). The interior paste is soft, shiny and a little bit creamy with a colour ranging from milky-white to creamy-white. Little eyes can be present. The rind is almost absent. The cheese has fresh milky aroma and a sweet and a slightly acidic taste. According to PDO requirements the chemical characteristics must be as follows: moisture 53-60%, fat 18-25% and protein higher than 12%.

Production area – The geographical area of production is in the province of Treviso.

Cheesemaking – Casatella Trevigiana is a soft cheese made with cow's milk of the Italian Frisona, Pezzata Rossa and Bruna breeds. Cows must be fed with forages and territorial concentrates and the total fat content of the milk must be higher than 3.2%. Production starts within 48 hours from the milking. Milk can be pasteurized (70-75 °C, 15-25 sec) and left to cool down at 34-40 °C. Acidification is achieved by addition of indigenous milk starters composed by *Streptococcus thermophilus* and thermophilic lactobacilli with a prevalence of *Lactobacillus delbrueckii* subsp. *lactis*. Milk is coagulated at 34-40 °C by addition of liquid or powder bovine rennet within 15-40 min. The curd is cut crosswise and left to stand between 45 and 55 min, in order to obtain a more drained and firm curd. A second cut is carried out to produce granules with the size of a walnut. Curd is then extracted and put in molds in a local at 25-40°C for a maximum of 3.5 hours (for bigger forms). During the draining, the forms are turned from 2 to 4 times. Cheeses can be salted in brine solution (16-22 °Be, 4-12 °C) for 40-50 min for smaller forms and 80-120 min for bigger forms. Instead of using brine solution, dry salting can also be done. Ripening is carried out in molds at 2-8 °C for 4-8 days, by turning the forms every two days. Casatella Trevigiana must be packed in the territory of production before commercialization.

Figure 6. Casatella Trevigiana

(<http://www.veneto.to/veneto-qualita-dettaglio?uuid=144c7976-6ef4-4785-8b89-d8986ecb97e9&lang=it>)

Website

<http://www.casatella.it/il-consorzio-di-tutela/>

CASCIOTTA D'URBINO

Characteristics (PDO 12 June 1996) – Casciotta d'Urbino has a cylindrical shape (diameter 12-16 cm, edge 5-7 cm, weight 0.8-1.2 kg). The thin rind (1 mm thickness) has a straw yellow colour in matured cheeses. The interior paste is soft with characteristic small holes. The colour is white-straw yellow. The characteristic taste, due to the particular cheesemaking process, is sweet and pleasantly acidic. It is consumed as table cheese. According to PDO requirements, fat in dry matter must be not less than 45%.

Production area – The geographical area of production involves the provinces of Pesaro and Urbino (Umbria region).

Cheesemaking – Casciotta d'Urbino is a semi-cooked cheese made from sheep (70-80%) and cow's milk (20-30%). Milk (from 2 milkings) is coagulated at 35 °C with liquid and/or powder rennet. Cheese is manually pressed in special molds by using a typical procedure. Cheese is dry or brine salted. Cheese ripening lasts from 20 to 30 days at 10-14 °C and 80-90% relative humidity, depending on the size of the forms.

Figure 7. Casciotta d'Urbino

(<http://www.guidaenogastronomia.com/casciotta-d-urbino.html>)

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Website

<http://www.casciottadiurbino.it/consorzio>

CASTELMAGNO

Characteristics (PDO 1 July 1996 modified on 14 December 2012) – Castelmagno has a cylindrical shape (diameter 15–25 cm; edge: 12–20 cm; weight: 2–7 kg). These characteristics are referred to the minimum ripening period (60 days). Fresher forms have a not-edible, thin rind with a reddish yellow colour, while the more matured forms have an aged aspect and a more dark colour. The structure is very crumbly in cheeses at the beginning of the ripening and becomes more firm in more aged cheeses. The interior paste is white/ivory coloured, tending towards ochre-yellow with streaks of greenish-blue colour in the more matured forms. The presence of streaks is due to the development of natural molds, belonging to the *Penicillium* species. Its delicate taste gets stronger and sharper as the ripening season goes on. According to PDO requirements fat in dry matter must be at minimum 34%.

Production area – The geographical area of production is limited to three municipalities (Castelmagno, Pradleves and Monterosso Grana) in the Province of Cuneo (Piemonte region).

Cheesemaking – Castelmagno PDO cheese is a semi-hard cheese produced with raw cow's milk and small amount of sheep and/or goat's milk (from 5 to 20%). Cattle must be fed on green forages or hay. Milk which can be obtained from a maximum of four consecutive milkings and can be skimmed, has to be heated to 30-38 °C and coagulated by the addition of liquid calf rennet (with at least 70% of chymosin). Pasteurization, thermisation and use of starter cultures are not allowed. Once the curd reaches an adequate firmness, it is turned and then cut under the whey, traditionally called “la laità”. The following cutting is carried out to reduce gradually the size of granules to that of a hazelnut (10-15 min under continuous stirring). The curd is left to separate from the whey and then is transferred on a dry and clean cloth (called “risola”) where it rests for 18 h. After the draining, the curd is put in suitable food containers, including wood containers, under the whey obtained from previous cheesemaking and left at 10°C for 2–4 days. The curd is then milled, salted, enveloped in a cloth and put in molds for at least one day, where it is manually or mechanically pressed. The cheese forms can further be dry salted to give colour and consistency to the rind. Finally, the cheese is placed in natural caves where ripening takes place for at least 60 days at 5–15°C and 70–98% relative humidity, in order to allow the develop of the natural moulds.

Figure 8. Castelmagno

(http://www.castelmagno-oc.com/pres_cast/tesi_form_cast.htm)

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Website

<http://www.assopiemonte.com/>

FIORE SARDO

Characteristics - (PDO 01 July 1996) – Fiore Sardo cheese has cylindrical shape, 12-18 cm high and 18-20 in diameter and weight 1.5-4 kg. The rind ranges from yellow to brown colour at the end of ripening and the interior has a white-yellow colour and a Grana-like texture. During the ripening the cheese becomes piquant due to large lipolysis induced by the rennet enzymes. It could be sell as “grated” cheese if the ripening is more than 6 months. According to PDO requirements fat in dry matter must be higher than 40%.

Production area – The geographical area of production is the whole territory of Sardegna Region.

Cheesemaking – Fiore Sardo is produced from whole raw ewe’s milk. Sheep must be of Sardinia breed and must pasture in an environment rich in aromatic herbaceous (*Lolium rigidum*, *Trifolium subterraneum* and *Medicago arabica*) and shrubby (*Arbustis unedo*, *Pistacia lentiscus*, *Myrtus communis* and *Thymus*) species. The milk used coming from one (from June to September) or two (from October to May) daily milkings and it can be thermized and added of natural starter cultures. Fresh milk must have a pH of 6.6, a fat content of 6.2-7.5% and a protein content of 5.5-6.3%. Coagulation takes place into copper vat using lamb or kid rennet paste traditionally produced at the farm by shepherd themselves and it is carried out in 12-28 minutes at 34 °C during spring and summer season while at 36 °C during the winter. After coagulation the coagulum is cut into millet-grain size and left to rest under the whey for at least 5 min. The curd is then transferred into stainless steel molds with a cut-down cone shape that confers to the cheese the typical “mule’s back” form. After the molding the cheese is turned upside down to promote the whey removal. At the end, cheeses are washed with hot water or whey to promote the formation of a smooth and resistant rind. The ripening is divided into three steps: the first step lasts 15 days during which cheeses are smoked 2 hours every day at 18-20 °C using local wood or brush. The second step lasts 3 months at a temperature of 10-15 °C during which cheeses are turned upside down. The last step takes place into ripening room at a temperature lower than 15 °C with a relative humidity of 80-85%. During this period cheeses are turned upside down and the surface can be rubbed with an olive oil-vinegar and salt emulsion.

Figure 9: Fiore Sardo

(http://www.sardissimo.it/public/photogallery/fiore_sardo_dop.jpg)

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FONTINA

Characteristics - (PDO 12 June 1996 modified on 03 February 2011) – Fontina cheese has a cylindrical shape, 7-10 cm high and 35-45 in diameter and weight 7.5-12 kg. The rind has a brown colour at the end of ripening and the interior has a colour ranging from ivory to pale yellow with an elastic texture. According to PDO requirements fat in dry matter must be higher than 45%.

Production area – The geographical area of production is the whole territory of Valle d’Aosta Region.

Cheesemaking – Fontina is produced from whole raw cow’s milk exclusively obtained from native breeds (red pied, black pied and chestnut), fed with hay and green grass grown in the same Region. The milk used coming from one milking and it can be added with autochthonous starters that are preserved by the Consortium “Produttori e Tutela della DOP Fontina”. Coagulation takes place into copper or steel vat at 34-36 °C in 40-60 min using calf rennet. After coagulation the coagulum is cut into maize-grain size and, stirring continuously, the curd is heated up to 46-48 °C to promote the whey draining. Once the curd becomes sufficiently cleared it has left to settle under the whey for 10 min. The curd is then transferred into cloth bags that are put inside typical concave-sides molds on which a small casein plate is applied with the cheese's progressive number and pressed. The pressing stage lasts 12 hours during which the cheese is turned upside down to promote the whey removal. Before the final turning the small number plate is applied with the producer's identification number which, together with the casein plate, guarantees the clear tracing of the product. Cheeses are brine-salted for no longer than 12 hours. Cheeses are ripened in caves dug out the rock or into ripening room for at least 3 month at 5-12 °C with a relative humidity higher than 90% during which the cheese is periodically brushed and dry-salted on the surface. During the first month of ripening, cheeses are daily turned, salted one day and wash with a brine solution the day after to promote the formation of the typical red rind due to the growth of the microbial ecosystem of the surface.

Figure 10: Fontina

(http://vetrina.fontina-valledaosta.it/uploads/633/800_3.jpg)

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Website

www.consorzioproduttorifontina.it

FORMAGGELLA DEL LUINESE

Characteristics - (PDO 11 April 2011) – Formaggella del Luinese cheese has cylindrical shape with fat sides, 4-6 cm high and 13-15 in diameter and weight 0.7-0.9 kg. On the white rind can be present moulds with different colour and has a white colour with a lot of eyes and an elastic texture. The cheese has a medium-mild, delicate, pleasant flavour that becomes stronger during the ripening. According to PDO requirements water content must be less than 55% and fat in dry matter must be higher than 41%.

Production area – The geographical area of production is Agra, Arcisate, Azzio, Barasso, Bardello, Bedero Valcuvia, Besano, Besozzo, Biandronno, Bisuschio, Brebbia, Bregano, Brenta, Brezzo di Bedero, Brinzio, Brissago Valtravaglia, Brusimpiano, Cadegliano Viconago, Cantello, Casalzuigno, Cassano Valcuvia, Castello Cabiaglio, Caravate, Casciago, Castelveccana, Cittiglio, Clivio, Cocquio Trevisago, Comerio, Cremenaga, Cuasso al Monte, Cugliate Fabiasco, Cunardo, Curiglia con Monteviasco, Cuveglio, Cuvio, Dumenza, Duno, Ferrera di Varese, Gavirate, Gemonio, Germignaga, Grantola, Induno Olona, Lavena Ponte Tresa, Laveno Mombello, Leggiuno, Luino, Luvinate, Maccagno, Marchirolo, Marzio, Masciago Primo, Malgesso, Mesenzana, Montegrino Valtravaglia, Monvalle, Orino, Pino sulla Sponda del Lago Maggiore, Porto Ceresio, Porto Valtravaglia, Rancio Valcuvia, Saltrio, Sangiano, Travedona-Monate, Tronzano Lago Maggiore, Valganna, Varese, Veddasca, Viggìù Municipalities of Varese Province of Lombardia Region.

Cheesemaking – Formaggella del Luinese cheese is made from whole, raw goat's milk coming from the Camosciata delle Alpi, Nera di Verzasca and Saanen breeds (and their crosses), which are typical of the Alpine area. In addition to grazing, the diet of the herds, which remain at pasture for 7/8 months, is based on the use of hay fodder from local mixed meadows supplemented with concentrates. During the grazing season, alongside the use of wild plants such as heather, spring pruning's from hazel, ash and chestnut trees and wild herbs, the diet is supplemented with concentrates and, in some cases, hay fodder. During the period in stalls, hay fodder and concentrates are primarily used. The hay fodder is mainly obtained from areas on the valley floor where mixed meadows with species such as *Dactylis glomerata*, *Poa pratensis*, *Poa trivialis*, *Avenula pubescens*, *Trifolium repens* and *Trifolium pratense* predominate. The use of grass silage is not permitted. The milk used coming from maximum three milkings and it is added with autochthonous starters or selected starters made of *Streptococcus* and *Lactobacillus* thermophilic strains and a little percentage of *Lactococcus* mesophilic strains. Coagulation is made at 32-34 °C in 30-40 min using natural calf rennet. After coagulation the coagulum is cut into maize-grain size and, stirring continuously, the curd is heated up to 38 °C to promote the whey removal. Once the curd becomes sufficiently cleared is left to rest under the whey for 15 min. The curd is then transferred in 14 cm diameter molds and left on tables for 48 hours to promote the whey removal. During this period it is necessary to upside down the cheese at least 2-5 times. Cheeses are dry or brine-salted (solution at 18-20% NaCl at 14-20 °C for 7 hours per kg of cheese). Cheeses are ripened in room for at least 20 days at a temperature under 15°C with a relative humidity of 85-95%.

Figure 11: Formaggella del Luinese
(http://www.crsoresina.it/ricette/images/formagella_del_Luinese.jpg)

FORMAGGIO DI FOSSA DI SOGLIANO

Characteristics - (PDO 30 November 2009) – Formaggio di Fossa di Sogliano cheese has an irregular shape with typical bumps and depressions due to the pressure inside the pit and the surface is primarily wet and greasy and in some cases may be covered by butterfat and molds which can be easily scraped off. Small cracks and possible yellow ochre stains of varying intensity on the surface are also typical of the product. There is no or minimal rind and the cheese weighs 0.5-1.9 kg. The interior has an ivory white to a slightly yellowish colour and a semi-hard texture. The flavour changes, depending on the composition of the aged cheese, in accordance with the following characteristics: the ewes' milk cheese has an aromatic aftertaste and a fragrant, full and pleasant flavour, slightly tangy to a greater or lesser extent; the cows' milk cheese is subtle and delicate, with a moderately salty and slightly acidic taste with a hint of bitterness; the mixed cheese has a pleasant flavour between salty and sweet, with a slightly bitter taste. According to PDO requirements water content must be less than 55% and fat in dry matter must be higher than 32%.

Production area – The geographical area of production is the whole territory of the Forlì-Cesena, Rimini, Ravenna, Pesaro-Urbino, Ancona, Macerata and Ascoli Piceno Provinces and in Borgo Tossignano, Casalfiumanese, Castel San Pietro Terme, Castel del Rio, Dozza, Fontanelice, Imola, Loiano, Monghidoro, Monterenzio and Pianoro Municipalities of Bologna Province.

Cheesemaking – Formaggio di Fossa di Sogliano is produced from 100% whole cow's milk or 100% whole ewe's milk or a mix of both milks with a ratio 80:20 respectively. The bovine species used to produce the milk are Italian Friesian, Alpine Brown, Italian Red Pied and cross-breeds; the ovine species are Sarda, Comisana, Massese, Vissana, Cornella White, Fabrianese of Langhe and Pinzirita and cross-breeds. The animals may be housed or grazed. The basic feed for housed animals consists of fodder comprising grasses and legumes collected from monophyte, oligophyte and polyphite meadows. The milk used coming from two daily milkings and must have the following properties: cow's milk (fat % by volume > 3.4; protein % by volume > 3.0; bacterial count UF/ml <100000; somatic cell/ml <350000; anaerobic sporigens/litre absent; inhibitors absent and cryoscopic point °C < 0.520); ewe's milk (fat % by volume > 6.0; protein % by volume > 5.4; bacterial count UF/ml < 1400000; somatic cells/ml < 1400000 and inhibitors absent). The milk can be used raw or pasteurized. Coagulation takes place at 30-38 °C in 7-20 min using natural rennet. After coagulation the coagulum is cut into maize or kernel size and left to rest under the whey for 15 min. The curd is then transferred into molds (12-20 cm in diameter and 6-10 cm in high) and manually or mechanically pressed. Cheese can be subjected to a stewing process. Cheeses are dry or brine-salted. Cheeses are ripened for a minimum period of 2 months to a maximum period of 8 months. For the ripening it is possible to use cells at 6-14 °C with a relative humidity of 75-92%. Traditionally cheeses are ripened in pit dug into tuffaceous rock (*fossa*). Before the cheeses closed into cloth bag are placed in the pits, the latter are suitably prepared according the traditional method: when not in use the pits are kept closed by means of wooden covers with the addition of sand or rocks. When they are to be used, they are opened, aired and then sanitized by fire and smoke by burning small quantities of wheat-straw. When the fire is out, the pits are cleaned to ensure that no ash is remained. A raised platform made of untreated wooden planks is placed at the bottom of each pit. This allows the fatty liquid produced during the fermentation of the cheese as it ages to drain away. The walls of the pit are lined with a layer of at least 10 cm of wheat-straw supported by vertical reed fencing. The pit is filled to the top with bags of cheese. After a period to allow settling, never more than ten days, more bags can be added to fill the pit. When the pit is full, the top is covered by uncolored cloths suitable for use with foodstuffs, and/or straw, to prevent transpiration. The pit is then closed by means of a wooden cover which is sealed using plaster or lime sandstone mortar. Further covering using rocks, sandstone powder, sand and/or planks is permitted. This is when the aging starts. The pits may not be opened during the aging process. The cheeses remain in the pits from at least 80 to at most 100 days. Inside, the temperature remains

constant between 17 and 25 °C throughout the entire 80-100 days of ageing while the relative humidity increases from 80% to 95% in the first 24 hours and then remains stable for the entire ripening period.

Figure 12: Formaggio di Fossa di Sogliano

(<http://www.comune.sogliano.fc.it/ilpaese/produzioni/formaggiodifossa/Img/Formaggio01.jpg>)

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Website

www.ilformaggiodifossa.com

FORMAI DE MUT DELL'ALTA VALLE BREMBANA

Characteristics (PDO 12 June 1996) – Formai De Mut Dell'Alta Valle Brembana cheese has cylindrical shape, 8-10 cm high and 30-40 in diameter and weight 8-12 kg \pm 10%. The colour of the thin rind ranging from yellow to grey at the end of ripening and the interior has white ivory colour with partridge eyes and an elastic texture.

Production area – The geographical area of production is the whole territory of Averana, Branzi, Camerata Cornello, Carona, Cassiglio, Cusio, Foppolo, Isola di Fronda, Lenna, Mezzoldo, Moio de Calvi, Olmo al Brembo, Ornica, Piazza Brembana, Piazzolo, Roncobello, Santa Brigida, Valleve, Valnegrà and Valtorta Municipalities of Alta Val Brembana in Bergamo Province.

Cheesemaking – Formai De Mut dell'Alta Val Brembana is produced from whole cow's milk obtained from Alpine Brown breed. The animals pastured during the summer period and in winter are housed and fed with hay fodder mainly obtained from areas on the valley floor. The milk used coming from one or two consecutive milkings and it is characterized by a natural low acidity. Coagulation takes place at 35-37 °C in 30 min using rennet. After coagulation the coagulum is cut into rice-grain size and heated up to 45-47 °C. When the temperature is reached, the curd is stirred for 30 min out from the heat source and left to rest under the whey for 20 min. The curd is then transferred into molds and manually or mechanically pressed for 48 hours to promote the whey removal. Cheeses are dry or brine-salted at alternate days for a period of 8-12 days. Cheeses are ripened for at least 45 days to 6 month at 8-13 °C at a constant relative humidity.

Figure 13: Formai de Mut dell'Alte Valle Brembana
(http://www.originalitaly.it/blog/wp-content/uploads/2012/04/31100_19.jpg)

Website

www.formaidemut.info

GORGONZOLA

Characteristics - (PDO 12 June 1996 modified on 03 February 2009) – Gorgonzola cheese has cylindrical shape, 13 cm high and 20-32 in diameter. Concerning the weight it is possible to sell three different type of cheeses: large wheel, mild type: 10-13 kg, with a mild or slightly tangy taste, minimum maturation period 50 days; medium wheel, tangy type: 9-12 kg, with a pronounced tangy taste, minimum maturation period 80 days; small wheel, tangy type: 6-8 kg, with a pronounced tangy taste, minimum maturation period 60 days. The thin rind is grey due to the microbiota present and it has a white or pale yellow colour with molds (marbling) producing characteristic blue-green veins and a creamy to firm texture. According to PDO requirements fat in dry matter must be higher than 48%.

Production area – The geographical area of production is the whole territory of Bergamo, Biella, Brescia, Como, Cremona, Cuneo, Lecco, Lodi, Milano, Monza, Novara, Pavia, Varese, Verbano-Cusio-Ossola and Vercelli Provinces and in the Municipalities of Casale Monferrato, Villanova Monferrato, Balzola, Morano Po, Coniolo, Pontestura, Serralunga di Crea, Cereseto, Treville, Ozzano Monferrato, San Giorgio Monferrato, Sala Monferrato, Cellamonte, Rosignano Monferrato, Terruggia, Ottiglio, Frassinello Monferrato, Olivola, Vignale, Camagna, Conzano, Occimiano, Mirabello Monferrato, Giarole, Valenza, Pomaro Monferrato, Bozzole, Valmacca, Ticineto, Borgo San Martino e Frassineto Po.

Cheesemaking – Gorgonzola is produced from whole pasteurized cow's milk obtained from Italian Friesian breed. Milk is inoculated with natural milk cultures constituted by *Streptococcus thermophilus* and *Lactobacillus delbrueckii* spp. *bulgaricus* species and a suspension of *Penicillium* spores and selected yeasts which characterized Gorgonzola as a blue cheese. Coagulation takes place at 28-36 °C in 30 min using calf rennet. After coagulation the coagulum is cut and left to rest under the whey. The curd is then transferred into molds and origin mark with the identification number of the dairy farm is placed on both flat ends and left 12-15 hours to promote the whey removal. Cheeses are dry-salted for several days at a temperature of 18-24 °C. Cheeses are ripened for at least 50 days at 2-7 °C with a relative humidity of 85-99%. During ripening cheeses are pierced two time: the first time after 15 days of ripening on one side and after 25 days on the other side so that the air can enter into the cheese leading to the growth of the molds .

Figure 14: Gorgonzola

(<http://cdn.blogosfere.it/saporiericette/images/gorgonzola-dolce.jpg>)

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Website

www.gorgonzola.com

GRANA PADANO

Characteristics - (PDO 12 June 1996 modified on 17 June 2011) – Grana Padano cheese has cylindrical shape with circumference rind slightly convex, 18-25 cm high and 35-45 in diameter and weight 24-40 kg. Cheese has a hard and smooth rind with a thickness of 4-8 mm and golden yellow colour. The interior has a white or straw-colour, a hard, with a finely grained texture, flaky from the middle out and with barely visible eyes. Cheese can be sold as a “grated” product obtained exclusively from whole cheese which has already been certified. Grated cheese need to have a moisture not lower than 25% and not higher than 35% the appearance need to be not powdery, even, particles with a diameter of less than 0.5 mm and not more than 25%.

The Grana Padano cheese produced in Trento and Bolzano Provinces is named Trentingrana but the production disciplinary differs for the type of milk used that must come from Alpine Brown cow breed; in the fodder the use of silage is forbidden as well as the use of lysozyme. According to PDO requirements fat on dry matter must be higher than 32%.

Production area – The geographical area of production is Alessandria, Asti, Biella, Cuneo, Novara, Torino, Verbania, Vercelli, Bergamo, Brescia, Como, Cremona, Lecco, Lodi, Mantova a sinistra del Po, Milano, Monza, Pavia, Sondrio, Varese, Trento, Padova, Rovigo, Treviso, Venezia, Verona, Vicenza, Bologna on the right of Reno river, Ferrara, Forlì Cesena, Piacenza, Ravenna and Rimini Provinces and in the Municipalities of Anterivo, Lauregno, Proves, Senale-S. Felice e Trodena.

Cheesemaking – Grana Padano is produced from raw milk obtained from cows of Italian Friesian breed fed primarily with feed produced on the home farm or in the Grana Padano production area. No less than 50 % of the dry matter of the daily feed should be made up of feed with a ratio of fodder to feed of no less than 1, by reference to the dry matter and at least 75 % of the dry matter of the fodder in the daily ration should come from feed produced in the production area of the milk. The fodder could be fresh fodder, hay, straw, silage and it can be added with cereals and their derivatives, oil seeds and their derivatives, tubers and root vegetables and products derived from them, dehydrated fodder, derivatives of the sugar industry, legume seeds, fats, minerals, additives. The milk obtained by two daily milkings is partially skimmed by a natural rising of the cream made in very large tanks for 12 hours at 12-15 °C. After the creaming process the milk is put into copper vat with an inverted cone shape and it could be added with lysozyme (2.5 g/100 Kg of milk). After the addition of natural whey starter cultures, coagulation takes place into the vat using calf rennet. After coagulation the coagulum is cut and cooked at a temperature under 56 °C. When the coagulum pieces reach an elastic texture are then left to rest under the whey for maximum 70 minutes. The curd is then transferred into molds and left 48 hours to promote the whey removal. Cheeses are brine-salted for 14-30 days. Cheeses are ripened for at least 9 months at 15-22 °C with a relative humidity of 80-85%.

Figure 15: Grana Padano

(<http://www.langhe.net/wp-content/uploads/2011/04/Grana-Padano.jpg>)

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Website

www.granapadano.com

MONTASIO

Characteristics - (PDO 12 June 1996 modified on 08 April 2011) – Montasio cheese has a cylindrical shape, 8 cm high and 30-35 in diameter and weight 6-8 kg. The rind is smooth, regular and elastic with a yellow color and the interior has a slightly straw-yellow colour with some eyes. The cheese has a piquant and pleasant taste. According to PDO requirements water content must be higher than 36.72% and fat in dry matter must be higher than 40%.

Production area – The geographical area of production is the whole territory of Friuli-Venezia Giulia Region, in the whole territory of Belluno and Treviso Provinces and along the boundary of the province of Padova from where it intersects with that of the province of Treviso to the Serenissima motorway, continuing to the motorway bridge over the Brenta river and then along the river to its mouth.

Cheesemaking – Montasio is produced from raw cow's milk. The cow breed used are Alpine Brown, Italian Red Pied and Black Pied breed fed with cereals (in particular maize and barley), green and dried fodder (polyphites and alfalfa) and silage (mainly from maize). These products make up about 80-85% of the total diet and come mainly from the production area. The concentrates and nucleus proteins are supplied by feed manufactures generally located in the production area who uses mainly local cereals, buys protein meal (e.g. soya and alfalfa, also produced on site) and mineral and vitamin supplements. The milk comes from a maximum of four milkings. The milk is then placed in copper vats heated at 32-36 °C and added with natural milk starter cultures. Coagulation takes place using calf rennet into 20-25 min. After coagulation the coagulum is cut into rice-grain size and cooked at 42-48 °C. When the temperature is reached the curd is stirred for 20-30 min out of heat source. The curd is then transferred into molds and pressed to promote the whey removal. Cheeses are dry or brine-salted. Cheeses are ripened for at least 60 days at a temperature higher than 8 °C.

Figure 16: Montasio

(http://www.winecountry.it/assets/besideWine/cheese/montasio_young.jpg)

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Website

www.formaggiomontasio.net

MONTE VERONESE

Characteristics - (PDO 1 July 1996) - Denomination of Origin 'Monte Veronese' is reserved to the cheeses having specific characteristics and moreover depending by the type of the milk used. In particular, the cheese made in the same production area besides the same making rules, may be produced starting from whole milk or semi-skimmed milk and called "Monte Veronese" or "Monte Veronese d'allevato", respectively.

Production area - The geographical area of production is the North part located in the province of Verona where the following districts are also included: S.Bonifacio (parte), Soave (parte), Colognola ai Colli (parte), Mezzane di Sotto, Monteforte d'Alpone, Illasi, Cazzano di Tramigna, Caldiero (parte), Montecchia di Crosara, Roncà, Lavagno (parte), San Martino Buon Albergo (parte), Verona (parte), Bussolengo (parte), Pescantina, San Pietro in Cariano, Sona (parte), Castelnuovo (parte), Pastrengo, Peschiera del Garda (parte), Lazise, Bardolino, Garda, Cavaion Veronese, Affi, San Giovanni Ilarione, Tregnago, Badia Calavena, Vestenanuova, Selva di Progno, Velo Veronese; San Mauro di Saline, Grezzana, Cerro Veronese, Roveré Veronese, Bosco Chiesanuova, Erbezzo, S. Anna d'Alfaedo, Marano di Valpolicella, Negrar, Fumane, S. Ambrogio di Valpolicella, Dolce, Rivoli Veronese, Costermano, Caprino Veronese, Ferrara di Monte Baldo, Brentino-Belluno, Malcesine, Brenzone, San Zeno di Montagna, Torri del Benaco.

Delineated area starting from the state highway n.11 (Padana Superiore) to enter in the district of San Bonifacio which is crossed, it passes through Villanova to reach San Martino Buon Albergo e San Michele center and Verona along the bypass and it continues up to km 297 of the Croce bianca until Caselle and finishing in the district of Peschiera bordering on provinces of Verona and Brescia.

A) "Monte Veronese" PDO

Cheese has the following characteristics:

- a) cylindrical shape
- b) weight between 7 and 10 kg
- c) size: heel height 6-10 cm, diameter 25-35 cm

The variations both of the weight and dimensions of the cheese depend by the manufacturing production as well as ripening period

- d) Thin and elastic rind, more or less intense straw yellow color
- e) The paste is white lightly straw yellow with small holes equally distributed
- f) The taste is mild and palatable

Ripening is carried out for a minimum of 90 days for the table cheese type and a minimum of six months for the grated cheese

- g) fat in dry matter must be not less than 44%

B) "Monte Veronese "d'allevato" PDO

Cheese has the following characteristics:

- a) cylindrical shape with a flat or slightly bowed sides
- b) weight between 6 to 9 kg
- c) size: heel height 7-11 cm, diameter 25-35 cm

The variations both of the weight and dimensions of the cheese depend by the manufacturing production as well as ripening period.

- d) thin and elastic rind, more or less intense straw yellow color
- e) The paste is white lightly straw yellow with small holes equally distributed and usually with size from 2 to 3 mm bigger than cheese made from whole milk
- f) The cheese has a perfumed taste typical for the ripened cheese which becomes more piquancy when the ripening is longer
- g) fat in dry matter must be not less than 30%

Cheesemaking - A) “Monte Veronese” from whole milk is a hard cheese exclusively made from raw whole cow’s milk, coming from one or two consecutive milkings having a final acidity value ranging from 3.6 to 3.8 SH/50 ml. Milk acidity can be obtained naturally or by addition of milk ferments derived from dairy factory involved in cheese production or from other previous productions made from factories indicated in art. 2 of the Regulation.

The milk is coagulated for 15-20 min by the addition of calf rennet and the breaking of the curd is carried out for few seconds up to obtain the clot with dimension as grain of rice.

Curd is heated to reach the final temperature of 43-45 °C for 10 min and left to cook for 25-30 min. Salting is carried out in dry condition or in brine solution after the draining off of the curd of about 24 hours. Ripening finishes within 30 days with a minimum of 25 days.

B) “Monte Veronese d’allevato” is either table or grated cheese type made from semi-cooked pasta exclusively by using partially skimmed cow’s milk obtained from one or two consecutive milkings. Final acidity value of the milk ranging from 3.8 to 4 SH/50 ml may be obtained naturally or by addition of milk ferments derived from dairy factory involved in cheese production or from other previous productions made from factories indicated in art. 2 of the Regulation.

Curd is obtained using rennet made from calves' stomachs for 25-30 min and breaking is carried out for few seconds up to obtain the clot with dimension as grain of rice.

The curd is heated to reach the final temperature of 46-48 °C and left to cook for 15 minutes.

Curd is then allowed to stand in warm condition for about 25-30 min.

Salting is carried out in dry condition or in brine solution after the draining off of the curd of about 24 hours. Ripening finishes at a minimum of 90 days for the cheese used as table cheese type while for a minimum of six months for the grated cheese.

Figure 17: Monte Veronese PDO
(<http://www.venlat.it/prodotti.html>)

Website

<http://www.monteveronese.it/>

MOZZARELLA DI BUFALA CAMPANA

Characteristics - (PDO 12 June 1996, modified on 4 February 2008) - Mozzarella di Bufala Campana is a steamed cheese exclusively produced with buffalo's milk and marketed inside its preserving liquid or "accompanying" liquid. Mozzarella di Bufala Campana must have a characteristic and delicate taste with fat (on dry matter) of minimum 52% and maximum moisture content of 65%.

Production area - The geographical area of production is the provinces of Caserta and Salerno and provincial districts of Napoli, Benevento, Frosinone, Latina, Roma to which has been also added the provincial districts of Foggia and Isernia (MiPAF's decree of 18th September 2003, in GU n.258 of 6th November 2003).

Cheesemaking - Mozzarella di Bufala Campana is a cheese made from milk of Mediterranean Buffalo breed signed on a specific registry. In the past, pasta filata cheeses were obtained from raw milk. Nowadays, to avoid sanitary problems linked to the animal, for example the possible presence of *Brucella* spp., the sanitary regulation required the pasteurization of the milk before its transformation.

Procedural guideline has been modified to permit the production of Mozzarella di Bufala Campana either with raw milk or thermal treated milk or pasteurized milk (GU n.258 of 6th November 2003).

Milk used must have a fats and proteins content not less than 7.2% and 4.2%, respectively. It is exclusively supplied by the production area obtained by one or two milkings and sent for the transformation within sixteen hours from the first milking. The milk is coagulated after addition of natural whey starters because the regulation does not allow the use of commercial starters.

Milk is coagulated at the temperature range of about 33-39 °C by using calf rennet (about 30% of pepsin) for 20-30 minutes and left to stand for about five hours. Curd obtained is then cut in slices therefore grinded and heated by addition of hot water at 95 °C. Curd is then carried out to 'filatura' therefore 'mozzata' or shaped in particular size and form. After the shaping, the Mozzarella is rapidly cooled at the temperature of about 28-25 °C and kept in its acidulous, eventually salted, preserving liquid. Mozzarella di Bufala Campana PDO may be smoked only using natural and traditional processes and in this case the designation of origin must be followed by the term "smoked".

Figure 18: Mozzarella di Bufala Campana
(<http://www.taccuinistorici.it>)

References

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Website

<http://www.mozzarelladop.it/>

MURAZZANO

Characteristics - (PDO 12 June 1996) - Murazzano is a fresh cheese produced exclusively with milk from ewes of Langhe's breed (for a minimum of 60%) or eventually added with cows' milk for no more than 40%. Animals must be fed with fresh and/or stored pasture coming from the production area. Murazzano PDO cheese has a cylindrical shape with flat sides and diameter of 10-15 cm, heel height of 3-4 cm and a weight of 300-400 g. The ripening time is long from 4 to 10 days. Cheese has no rind but only a yellowish film in matured cheese. The paste is white or ivory-white with few small holes. The texture is soft. The odour is fine and delicate. The taste is mainly sweet and fine but becomes more savoury and intense in aged products. Murazzano PDO cheese has a minimum fat content (on dry matter) of 44% but if it is produced with 100% of ewe's milk (minimum fat content on dry matter of 47%) may report on the label "pure ewe". Cheese must have cylindrical shape.

Production area - The geographical area of production are 43 towns belonging to the 'Comunità Montana Alta Langa' and in the towns of Bastia Mondovì, Ceva, Castelnuovo Ceva, Clavesana, Montezemolo, Priero e Sale San Giovanni also in the province of Cuneo.

Cheesemaking - Murazzano is produced with raw or pasteurised milk. The milk from two daily milkings is coagulated by the addition of bovine liquid rennet at a temperature of 37 °C (with a tolerance of +/- 3 °C) for 30 minutes. Commercial starter cultures containing thermophilic and mesophilic lactic bacteria are used. Generally, no starters cultures are used but producers may use selected starter to characterize their production. The curd is cut twice: the first produces grain of large size of an orange while the second produces granules with the size of a hazelnut. The curd is collected and drained in molds during the first 24 hours. The cheese is dry-salted. Ripening may be 4-10 days long or otherwise reach the maximum of 2 months.

Figure 19: Murazzano
(<http://www.cooperativalapoiana.it>)

References

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Website

<http://formaggiomurazzanodop.com/consorzio-tutela.php>

NOSTRANO DI VALTROMPIA

Characteristics - (PDO 6 July 2012) - Nostrano di Valtrompia is a hard cheese made from partially skimmed raw cow's milk from cows of Bruna Alpine breed and addition of saffron in a quantity between 0.05 and 0.2 g/100 kg of milk. Cheese has a cylindrical shape with flat sides, diameter of 35-45 cm, heel height of 10-15 cm and a weight of 8-18 Kg. Cheese rind ranges in colour from yellow-brown to reddish colour. The paste is firm, straw yellow sometimes deep with small holes equally distributed. Taste is intense sometimes spicy. Fat content of the cheese ranging from 18 to 28% while fat content in dry matter from 27.5 to 42%. Moisture of the cheese is 36%.

Production area - The geographical area of production is the province of Brescia located in Trompia Valley.

Cheesemaking - The milk from two daily milkings, sometimes four during the periods of lacking lactation, is coagulated by the addition of bovine liquid rennet (chymosin minimum at 70%) at a range of temperature from 35 °C to 40 °C for 60 min. No starters cultures addition are used but commercial starter cultures containing thermophilic lactic bacteria may be employed. The curd is cut in a range time of 10-30 min and produces granules with the size of rice grain. The curd is collected and added of saffron. Hence, the curd is cooked at the temperature of 47-52 °C and it is left to stand in the whey for 15-60 min and carried out for draining off for the first 24 hours. After 24 hours, not subjected to the pressing process, is turned for 4-5 times at room temperature. Brining is carried out in dry condition for 5-20 days depending by the cheese size, room temperature, ability of the cheese to absorb the salt, moisture and pH of the cheese. Ripening finishes for a minimum from 8 months to 24 months at the temperature of 5-18 °C and humidity at 60-90%. During the ripening the cheese rind is frequently oiled to prevent the presence of acarus and mold contamination with the possible result in pitting of the rind.

Figure 20:Nostrano di Valtrompia
(<http://www.bresciaoggi.it>)

Website

<http://www.ruralpini.it/Info regioni09.09.11-Nostrano-Valtrompia.htm>

PARMIGIANO REGGIANO

Characteristics - (PDO 12 June 1996 modified on 5 September 2003 and 8 August 2011) - Parmigiano Reggiano is a hard semi-fat cheese made from raw cow's milk partially skimmed by natural surface skimming. Cow's milk, exclusively derived from animals fed with forages originated from the area of origin, must be used as raw milk and it is not subjected to any thermal treatments. It is forbidden the use of additives.

Cheese has a cylindrical shape with flat sides, heel more or less slightly convex with flat sides, diameter of 35-45 cm, heel height of 20-26 cm and a minimum weight of 30 Kg. Colour of the rind is natural straw yellow with a thickness of about 6 mm, the paste has a structure with grained and flaky texture. Cheese has a fragrant aroma and delicate taste, flavoursome without being too much pungent. Fat in dry matter must not be less than 32% .

Production area - The geographical area of production is the territory of the provinces of Parma, Reggio Emilia, Modena, Bologna (on the left side of Po river), Mantova (on the right of Po river).

Cheesemaking - The milk from two daily milkings, evening and morning, is delivered to the cheese dairy within two hours from each milking. Each milking must be conducted within four daily hours and the milk immediately refrigerated and stored at a temperature not less than 18 °C.

Milk is partially skimmed by natural surface skimming in steel tanks in open ambient. Milk from the morning milking, immediately after its delivery to the cheese dairy, is added with the partially skim milk of the previous evening milking. It is possible to stock a portion of milk no more than 15% for the cheese making of the day after. In this case the milk must be collected in appropriate refrigerated tanks equipped with suitable agitators at the temperature not less than 10 °C and collected inside the tanks of natural surface skimming the same evening. Starter inoculum for the milk is constituted by natural starter whey obtained from the spontaneous acidification of the whey left from the cheese making of the day before. Coagulation of the milk is carried out in copper truncated cone vat and it is obtained using calf rennet. Once the milk is coagulated, the curd is broken and cooked at 55-56 °C, left to settle at the bottom of the vat up to obtain a compact mass. Afterwards, the curd is transferred in specific molds for the shaping and after some days it is immersed into the salt solution for the brining.

Ripening is carried out for at least 12 months and during the summer period the temperature of the ripening room must not be less than 16 °C.

Figure 21: Parmigiano Reggiano
(<http://www.idealcheese.com>)

References

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Website

<http://www.parmigiano-reggiano.it/>

PECORINO DI FILIANO

Characteristics - (PDO 14 December 2007) - Pecorino di Filiano is a hard cheese made with whole milk exclusively obtained by sheep of Gentile di Puglia and Lucania, Leccese, Comisana, Sarda and their crossbreed coming from area indicated by procedural guidelines. Milk used for the cheesemaking comes from one or two milkings (generally evening milkings and that of the morning after).

Cheese has a cylindrical shape with flat sides, flat or slightly convex heel, diameter from 15 to 30 cm and heel height from 8 to 18 cm.

The rind has a typical colour left by the cane cheese-sieves called '*fuscella*'. In the most ripened cheeses colour ranges from yellow golden to dark brown due to the treatment with extra virgin oil and vinegar produced in Basilicata. Cheese are manually rubbed on the side.

Cheese texture is compact presenting very little holes not equally distributed and a color ranging from white to straw yellow in the aged cheese.

Flavour is initially sweet and mild and it becomes lightly spicy taste during the maturation.

Fat in dry matter must not be less than 30%.

Production area - The geographical area of production is the province of Potenza.

Cheesemaking - Pecorino di Filiano is made from milk derived by one or two milkings (evening and morning milkings) within 24 hours. Raw milk opportunely filtered by using sieves is heated up to the maximum temperature of 40 °C and added with kid or lamb rennet derived from animals artisanally bred in that production area.

Once the milk is coagulated, the curd is broken by using a wooden spoon called '*scuopolo*' or '*ruotolo*' to obtain the clot with dimension as grain of rice. After the rest of the curd under the whey for few minutes, it is put inside the molds to obtain the typical shape of the cane cheese-sieves *fuscella*. Hence, the curd is pressed by the hands for the draining of the whey and heated at 90 °C for a maximum of 15 minutes. Salting is carried out either in dry and repeated many times every day depending by the shape of the cheeses or in saturated brine solution where the cheese is directly immersed and left for 10-12 hours for kg of cheese. Ripening takes place in natural tuff caves or in specific maturing rooms at the temperature of 12-14 °C and relative humidity of 70-85% for at least 180 days. Starting from the day 20 of ripening, the rind of the cheese may be treated with extra virgin oil produced in Basilicata and vinegar. Pecorino di Filiano cheese is produced all the year round.

Figure 22: Pecorino di Filiano
(<http://www.basilicatanet.com>)

Website

www.pecorinodifiliano.it

PECORINO ROMANO

Characteristics - (PDO 12 June 1996 modified on 29 October 2009) - Pecorino Romano is a hard, cooked cheese produced exclusively from fresh full-fat sheep's milk obtained from sheep breed in the area indicated in the procedural guideline. Cheese has a cylindrical shape with flat side, diameter between 25 to 35 cm and heel high from 25 and 40 cm. Cheese weight ranging from 20 to 35 Kg according to the size of the cheese wheel. Rind is thin, ivory colour or natural straw yellow. Cheese texture is compact or presenting little holes; colour ranges from white to straw yellow more or less intense. Flavour is aromatic and lightly spicy for the table cheese; very spicy, intense and pleasant taste. Fat in dry matter must not be less than 36%.

Production area - The geographical area of production is the whole territory of Sardegna, Lazio and province of Grosseto.

Cheesemaking - Pecorino Romano is a hard cheese made with whole milk exclusively obtained by sheep of Sarda breed coming from area indicated by procedural guidelines. Milk used for the cheesemaking comes from one or two daily milkings.

Milk may be heat-treated and eventually inoculated with autochthonous lactic cultures sometimes integrated with cultures which come from the area of production. Milk is heated at 38-40 °C therefore added of lamb paste rennet coming from the animals bred in that specific area. Cooking of the curd must take place at variable temperatures from 45 to 48 °C. Salting is carried out in dry condition or in brine solution and it may be long 120 days. Ripening is long at least five months for the table cheese while eight months for the grated cheese. Cheese may be enveloped with neutral or coloured plastic bags. Cheese is produced during the period from October to July.

Figure 23: Pecorino Romano
(<http://www.cheesemaking.com/Romano.html>)

References

- Mangia, NP; Murgia, MA; Garau, G; Deiana, P. Microbiological and physiochemical properties of Pecorino Romano cheese produced using a selected starter culture. Journal of Agricultural Science and Technology 2011 13 (4) , 585-600

Website

<http://www.pecorinoromano.com/>

PECORINO SARDO

Characteristics - (PDO 1 July 1996 modified on 1 May 2011) - Pecorino Sardo is a cooked cheese exclusively made from whole sheep's milk, eventually heat-treated or pasteurized, separated in two different categories:

'sweet' of short maturation (20-60 days) and 'mature' ripened not less than 2 months. Cheese has a cylindrical shape with flat sides and flat or slightly convex heel.

Pecorino Sardo "sweet" type has a cylindrical shape with flat side, diameter between 15 to 18 cm and heel high from 8 and 10 cm. Cheese weight ranging from 1 to 2.3 kg. Rind is smooth, thin, white colour or lightly straw yellow. Cheese texture is compact, soft and elastic, firm or presenting little holes. Flavour is sweet and aromatic or lightly acid. Fat in dry matter must not be less than 40%.

Possible variations of the cheese sizes and weight may depend both by the technical conditions of production and by the ripening period.

Pecorino Sardo "mature" type has a cylindrical shape with flat side, diameter between 15 to 22 cm and heel high from 10 and 13 cm. Cheese weight ranging from 1.7 to 4.0 kg. Rind is smooth, thin, lightly straw yellow colour in early shape while hard and fine grained in the more ripened cheese tending to straw yellow during the ripening, firm or with eyes irregularly distributed.

Flavour is lightly spicy. Fat in dry matter must not be less than 35%.

Production area - The geographical area of production is the whole territory of Sardegna.

Cheesemaking - Whole sheep's milk inoculated with lactic starter cultures coming from the origin area and indicated as "*Streptococcus thermophilus*" is coagulated at the temperature between 35-39 °C of calf rennet at a quantity to ensure the complete coagulation after 35-40 minutes.

Once the milk is coagulated, the curd is broken up to reach the dimension of hazelnut for "sweet" type while dimension of a corn grain for the "mature" type. Curd is then semi-cooked at a temperature not higher than 43 °C. Cheese is subjected to steaming and pressing at conditions of temperature to guarantee the optimal acidification and draining of the cheese.

Once the draining is completed, brining of the cheese is made in wet or dry condition for a short time using salt at concentration no more than 2 % of cheese.

Ripening is carried out in appropriate room at the temperature between 6 to 12 °C and humidity between 80-95%.

Figure 24: Pecorino Sardo
(<http://www.italos.it>)

References

- Mandrau, MA; Mangia, NP; Murgia, MA; Sanna, MG; Garau, G; Leccis, L; Caredda, M; Deiana, P. Employment of autochthonous microflora in Pecorino Sardo cheese manufacturing and evolution of physiochemical parameters during ripening International Dairy Journal, 2006, 16 (8), 876-885.

Website

<http://www.pecorinosardo.it/>

PECORINO SICILIANO

Characteristics - (PDO 12 June 1996) - Pecorino Siciliano is a hard cheese exclusively made from fresh whole raw sheep's milk without addition of any starter cultures and coagulated using lamb rennet.

Cheese has a cylindrical shape with flat side, diameter between 14 to 38 cm and heel high from 10 and 18 cm. Cheese weight ranges from 4 to 12 kg. Rind is smooth, thin, white colour or lightly straw yellow. Cheese texture is compact, soft and elastic, firm or presenting little holes. Flavour is sweet and aromatic or lightly spicy. Fat in dry matter must not be less than 40%.

Production area - The geographical area of production is the whole territory of Sicilia.

Cheesemaking - Raw whole sheep's milk is coagulated by using rennet at the temperature between 37-40 °C for about 40 minutes.

Once the milk is coagulated, the curd is broken up to reach the dimension of rice grain. Cheese is subjected to steaming using hot water at the temperature of 40-45 °C and the curd left to rest for 10-20 minutes. Curd is then transferred in the cane cheese-sieves called "*fascedde*", which confer to the cheese the typical shape, and lightly pressed to guarantee the optimal draining of the whey. Once the whey is recovered, a part of it is employed for making the Ricotta cheese while other part heated at 85 °C used for the heating of the curd (blanching). Heating of the curd goes on for 2-4 hours up to the temperature drops to 45-50 °C. Cheese is then placed on a table for 24-48 hours turning upside down the shape many time.

Salting of the cheese is carried out in dry condition and the ripening takes place in appropriate room with a good ventilation for a minimum of 4 months (for the semi-matured cheese) up to 12 months.

Figure 25: Pecorino Siciliano
(<http://www.consorziopecorinosiciliano.it>)

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Website

<http://www.consorziopecorinosiciliano.it/>

PECORINO TOSCANO

Characteristics - (PDO 1 July 1996 modified on 14 April 2010) - The name Pecorino is a generic term to indicate a cheese produced from only sheep's milk. Pecorino Toscano is a cheese produced in two typologies: soft cheese (fresh) and semi-hard (ripe) cheese, only from whole sheep's milk from the production area.

It has a cylindrical shape with slightly convex outer sides; dimensions: diameter of the faces from 15 to 22 cm, height of the heel from 7 to 11 cm, weight: from 0.75 a 3.50 kg.

Production area - The geographical area of production is Toscana region and some municipalities of Umbria and Lazio regions, during all year.

Cheesemaking - Whole raw or pasteurized ewe milk, that can be inoculated with cultures of autochthonous or selected starter, must be coagulated at a temperature ranging between 33 and 38 °C with the addition of calf rennet in order to obtain the curd within 20-25 minutes. The cheesemaking and processing between the two cheese typologies of Pecorino Toscano differ, in particular, in the breaking mode of the curd. The curd for the preparation of the soft cheese (fresh typology) is broken into grains of a hazelnut size, while to produce hard and ripened cheese the curd is broken more finely until a size of grain to dry off immediately the whey. In this last cheesemaking, it is possible, for the Disciplinary, the semi-cooking of the curd until at 40-42 °C for 10-15 min. After breaking and possible cooking, the curd is put in suitable forms for the draining of whey and the syneresis is carried out by manual pressing or stewing in steel containers heated by injection of steam until to 50 °C. Duration of this stewing is variable and longer (until to 10 hours) for hard cheeses. The obtained product is commonly dry salted for side for an average of 32 hours or in brine solution at 12-15 °C for 10-36 hours.

Ripening of soft cheese typology is at least of 20 days at low temperatures (> 5 °C) while semi-hard cheese should be left for at least four months of ripening at <12 °C, both with a humidity between 75-90%. This last type is frequently used for grating.

According to the Disciplinary of Production, Pecorino Toscano cheese must have at least a fat content (on dry matter) of 45% for soft cheese and 40% for semi-hard typology.

Figure 26. Pecorino Toscano
(<http://www.pecorinotoscanodop.it/>)

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Website

<http://www.pecorinotoscanodop.it/>

PIACENTINU ENNESE

Characteristics - (PDO 15 February 2011) – Piacentinu Ennese is a particular semi-cooked, hard, pressed cheese produced from whole raw ewe's milk, at natural acidity of fermentation at pH 6.5-6.8 of autochthonous sicilian breed of sheeps (Comisana, Pinzirita, Valle del Belice) characterized by the addition of saffron (*Crocus sativus*) produced only in the same area and whole black peppercorns (*Piper nigrum*). It has a cylindrical shape, with slightly convex or almost straight outer sides.

Dimensions, obtainable by the use of a rattan basket, are: outer sides minimum 14 cm up to 15 cm, with a diameter of the pot minimum 20 cm, maximum 21 cm. Weight is between 3.5 and 4.5 kg. Cheese smell is delicate with slight aroma of saffron, salt as barely perceptible, spicy as slight in the first phases of ripening that could increase.

Production area - The geographical area of production is only in Province of Enna (Sicilia region).

Cheesemaking - In the disciplinary of production of this particular cheese, a lot of attention is focused on the animal feed. In fact whole raw ewe's milk is used in the cheesemaking and produced from ewes bred at natural pastures located at an altitude between 400 and 800 m above sea level, and/or fodder, hay and straw obtained in the production area. Wheat stubble and vegetative byproducts from, for example, cladodes of prickly pear, non OGM cereals grains and concentrates are allowed as animal feed too.

Whole raw ewe milk, coming from two manufacturing area milkings within 24 hours, after heating to a maximum temperature of 38 °C, is filtered, added and solubilized the saffron (maximum 5 g/100 l of milk) and then coagulated after the addition of lamb or kidskin rennet into a wooden vat within 45 minutes. The curd is cut into particles at size of rice's grains, then summarily separated from the serum and collected in rush baskets ("*fascette* ") that leave on the surface of rind cheese a particular modeling. During this phase, whole black peppercorn is added in the curd that, at each pepper addition, is strongly pressed, then it is burned for 3-4 hours, set on a wooden board to dry at room temperature. The curd is then dry salted with coarse salt, repeating the operation twice at a distance of ten days. Minimum time of Piacentino Ennese ripening is 60 days in ventilated rooms or in local with 8-10 °C of temperature and a humidity between 70-80 %.

From a point of view of the chemical characteristics of Piacentinu Ennese PDO cheese, the disciplinary describes that it is shown that the fresh forages from area production, eaten by sheeps, have characteristic terpenic fingerprints, that can be found even in milk and cheeses produced during the summer pasture. These terpenoidic molecules, such as the α -terpineol, are considered thus chemical biomarkers, found in the cheese too.

According to the Disciplinary of Production, Piacentino Ennese PDO must have at least a fat (on dry matter) of 40 %, protein content (dry matter) of 35 %, salt content (dry matter) of 5 %, a pH between a 4.8-5.7.

Figura 27. Piacentinu Ennese
(<http://www.blogsicilia.eu/>)

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PIAVE

Characteristics (PDO 21 May 2010) - Piave is a cooked, hard and ripened cheese. It is produced using 80% of Italian Bruna, Pezzata Rossa and Frisona cow's milk, comes from the mountains of the production area. Cheese is made inoculating autochthonous starters and it is produced in dairies located within the same territory. Piave is made from milk of cows fed with a minimum of 70% of local forages and industry feed, vegetables, fruit and urea. Biuret as feed must be excluded.

Piave cheese is produced in five different aged typologies:

- 1) *Fresh* with a ripening between 20 and 60 days; diameter of 320 mm \pm 20 mm; heel height of 80 mm \pm 20 mm; weight of 6.8 kg \pm 1 kg.
- 2) *Medium* ('*Mezzano*'): ripening between 60 and 180 days; diameter of 310 mm \pm 20 mm; heel height of 80 mm \pm 20 mm; weight of 6.6 kg \pm 1 kg.
- 3) *Old* with a ripening aged more than six months; diameter of 290 mm \pm 20 mm; heel height of 80 mm \pm 20 mm; weight of 6.0 kg \pm 1 kg.
- 4) *Old gold selection* with a ripening aged more than 12 months; diameter of 280 mm \pm 20 mm; heel height of 75 mm \pm 20 mm; weight of 5.8 kg \pm 1 kg.
- 5) *Old reserve* with a ripening aged more than 18 months; diameter of 275 mm \pm 20 mm; heel height of 70 mm \pm 20 mm; weight of 5.5 kg \pm 1 kg.

Piave presents these sensorial characteristics:

Flavor: sweet for Fresh and Medium typology cheese that, with the ripening, begins more intense until a slightly spicy in aged typologies.

Rind: clear and tender in the Fresh typology, during the ripening it begins darker and thicker tending towards ocher colour.

Paste: blank in Fresh typology without holes while, in aged cheese, the paste is more granular and crumbly with a slight yellowish color.

Production area - The geographical area of production is the Province of Belluno (North Italy).

Cheesemaking - Whole raw cow's milk, coming from two or four milkings within 72 hours, is titrated by centrifugation to have a final fat content of 3.5 \pm 0.3 % w/w. Milk is then pasteurized at 72 °C for 16 seconds, added of lysozyme and starter to reach a final acidity of 10 °SH/50 \pm 3. Afterwards milk is inoculated with whey starter (acidity of 27 °SH/50 \pm 3), heated at 34-36 °C and coagulated after the addition of rennet (at least of 50% chymosin). The curd is cut into particles at size of rice's grain, cooked at 44-47 °C and subjected to agitation for 1.5-2 hours. The curd is pressed inside the mold, marked with the name 'Piave' and therefore salted in brine solution at for at least 48 hours. Ripening of the cheese is carried out in locals with a temperature of 8-14 °C and a humidity of 70-90 %.

Disciplinary of Piave ensures the traceability of the product by means of a control plan on breeders, cheese-makers and packers and the compliance monitoring is carried out by a Control Organism.

Figure 28. Piave
(<http://www.agraria.org>)

Website

<http://www.formaggiopiave.it/>

PROVOLONE DEL MONACO

Characteristics (PDO 9 February 2010) – Provolone del Monaco is a semi-hard '*pasta filata*' (stretched-curd) seasoned cheese, produced only with raw cow's milk from autochthonous cows fed in the production area of the Napoli province. Disciplinary pays particular attention on the production of the raw materials such as milk as well as the welfare of the animals. Animal feed can be represented for at least 40% (on dry matter) of forages and/or brushwood produced, for example, by pruning of citrus and olive. A list of not permitted animal feed is indicated, such as genetically modified crops or animal origin feed.

The cheese has a slightly elongated shape, a weight between 2.5 and 8 kg, a thin rind of slightly yellowish color with slight longitudinal bays in correspondence of raffia strings to subdivide the cheese at least in six faces and used as support of a pair of cheeses. The interior paste is cream-colored, elastic and compact, with typical holes of diameters until to 5 mm. It has sweet and butter flavor and a light and pleasant spicy taste that will be more spicy after seven-eight months of ripening.

Production area - The geographical area of production are some municipalities of Campania region (Province of Napoli), South Italy.

Cheesemaking - Whole raw cow's milk, coming from one milking, after heating at a temperature of 34-42 °C, is coagulated with the addition of kid or calf rennet. The curd is cut into particles at size of maize' grains, and then allowed to stand for 20 minutes. The curd is then heated at a temperature between 48-52 °C and left to stand for 30 minutes allowing the whey to be extracted. After spinning trials of the curd to have a positive elasticity and resistance, the curd is cut into ribbons at hand in hot water (85-95 °C) and then refrigerated in cold water for firming. After the product is salted in brine at for 8-12 hours/kg of product.

Provolone del Monaco has to be ripened for first 20 days at room temperature for lactic-proteolytic maturation and then at 8-15 °C at least for six months.

According to the disciplinary, traceability is guaranteed documenting incoming and outgoing products.

Cheese need to have a fat content (dry matter) of at least 40.5 %.

Figure 29. Provolone del Monaco

(http://www.agricoltura.regione.campania.it/tipici/provolone_monaco-new.html)

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PROVOLONE VALPADANA

Characteristics (PDO 12 June 199 modified on 7 November 2012) – Provolone Valpadana is a semi-hard cooked '*pasta filata*' cheese produced exclusively by whole cow's milk comes from production area. Cheese can be distinguished in two typologies, one sweet and one spicy if they are obtained by using pasteurized or thermized milk respectively.

Spicy cheese, after eight months of ripening, can be marked as P.V.S. (Provolone Valpadana Stagionato i. e. Provolone Valpadana Ripenend) exclusively after a technical verification about the external appearance of the form, the texture of the paste, the colour, the flavor and the taste.

Provolone Valpadana is made from milk of cows fed with at least 70% of local forages which are guaranteed according to the disciplinary, with incoming and outgoing documents.

Different shapes are produced such as salami, melon or pear forms with a smooth and thin rind that can be absent for sweet typology. The paste is generally compact, but not dry, may have sparse holes. Flavor is delicate until to three months of maturation, that becomes spicy at more advanced ripening.

Production area - The geographical area of production are different provinces of the North-east Italy (Lombardia, Veneto, Emilia-Romagna regions) and the Province of Trento (Trentino-Alto Adige).

Cheesemaking - In cheesemaking rules, disciplinary describes only the requirement for using natural whey starters, obtained by incubation of the residual whey of the previous cheesemaking until an acidification of a maximum of 26 °SH/50 mL. This choice in the disciplinary could result in a reduction of the microbial diversity of natural whey starter but, at the same time, the advantage of a less variability of the lactic fermentation. Whole raw cow's milk, coming from one milking, after heating to a temperature of 36-39 °C, is coagulated with the addition of calf rennet for sweet cheese typology and lamb and/or kid rennet for the spicy typology without lipases addition.

The practice of cooking is not described in the disciplinary, while it is reported the spinning of the paste (*filatura della pasta*), that it must be carried out manually, after the natural lactic fermentation, on a clot of the curd with spinning pH of between 4.70 and 5.20. Cheese is then allowed to stand in cold water, and the forms of cheese are salted in a brine solution for a period from few hours to 30 days, depending by the weight of the forms. Before the ripening, performed in suitable locals suspended from a support, forms are subjected to the drying. During the maturation, the cheese could be coated of additives such as E202 (potassium sorbate), E203 (calcium sorbate), E235 (pyramicin) or paraffin.

The period of ripening depends on the weight of the forms:

until to 6 kg, a minimum ripening of ten days

over 6 kg, minimum ripening of 30 days

over 15 kg and for spicy typology, a minimum ripening of 90 days

over 30 kg and spicy typology, ripening over 8 months.

The cheese can be smoked.

Cheese needs to have a fat content (dry matter) between 44-54 % and a water content over 46 % in sweet and spicy typology until 6 kg and a water content over 43 % in spicy typology over 6 kg of weight.

Figure 30. Provolone Valpadana
(<http://www.consorziotutelaprovolone.it/>)

Website

<http://www.consorziotutelaprovolone.it/>

QUARTIROLO LOMBARDO

Characteristics (PDO 12 June 1996) – Quartirolo Lombardo is a soft table cheese produced by whole or semi-skimmed cow's milk, coming from two milkings obtained from production area.

Quartirolo Lombardo cheese has a quadrangular parallelepiped shape with flat sides, 4-8 cm high, 18-22 in diameter and weight 1.5-3.5 kg. Rind is thin and soft, pinkish white in cheeses during the initial stage of ripening while reddish gray-green in mature product. The texture of the paste is crumbly that becomes more compact and soft during the maturation of white colour. Taste is slightly sour in fresh cheese and more aromatic in ripened cheese.

Production area - The geographical area of production are different provinces of Lombardia (North Italy).

Cheesemaking - Coagulation is performed by adding calf rennet during the heating at 35-40 °C within 25 minutes with the possibility to add natural starter cultures. The curd is cut twice to reach a grain size as a hazelnut and then mixed with the whey in special forms. After the stewing at 26-28 °C for a minimum of four hours to a maximum of 24 hours, cheese is shaped. It is salted in dry condition or in brine solution in locals at 10-14 °C. The ripening is carried out in local at 2-8 °C and umidity of 85-90% at a time between five to 30 days for soft cheese. Over 30 days of aging, it is marked 'Quartirolo Lombardo maturo' (i.e. Quartirolo Lombardo ripened).

No treatments of the rind are allowed.

Disciplinary allows a fat content (dry matter) at least 30% for the cheese produced by semi-skimmed milk.

Figure 31. Quartirolo Lombardo
(www.quartirololombardo.com/)

Website

<http://www.quartirololombardo.com/>

RAGUSANO

Characteristics (PDO 1 July 1996) - Ragusano is a traditional *pasta filata* cheese, produced from cow's whole raw milk, fed with wild plants, herbs and hay too, from the mountain plateau of the production area.

The cheese has a quadrangular parallelepiped shape, dimensions: sides of the square cross-section from 15 to 18 cm, length of the parallelepiped from 43 to 53 cm, weight from 10 to 16 kg. Cheeses have thin, smooth, yellow-brown rind and a compact and yellow body with small holes.

Young cheese is characterized by milk, sweet and delicate notes while the aged cheese presents spicy, butyric and floral aroma.

Production area - The geographical area of production are the province of Ragusa and some municipalities of Siracusa, of Hyblean region (at seaside and mountain levels), of Sicilia region.

Cheesemaking - Milk, coming from one or more milkings, is coagulated with natural lamb or kid rennet paste likely to entail a time of setting and hardening from 60 to 80 minutes. Cut of the curd is made, following the addition of water at 80 ± 5 °C, to obtain rice-grain size. Then curd is drained by sedimentation and pressing to facilitate the purging of the whey, and a coherent mass curd is obtained. The curd is then reheated under the whey or water at 80 °C for at least 85 minutes which allows the fusion. A stage of drying is conducted leaving the paste for approximately 20 hours and then it is cut into slices, that are covered again with water about 80 °C for 8 minutes. Paste then is stretched to obtain a spherical mass in shape with a smooth outer surface and then in order to assume a parallelepiped shape. The technology of this '*pasta filata*' cheese differs drastically from other cheese varieties in using hot water (around 85 °C) to stretch the curd. Typically, these forms are immersed in saturated salt brine in order to obtain a cheese with inferior content (dry matter) of 6 % of sodium chloride and then it is ripened in two blocks of cheese tied together with rope and hung over rafters to facilitate moisture loss in ventilated rooms at 14-16 °C. A cover with olive oil is allowed for aged cheeses as a smoking of the cheeses that are marked as smoked words.

A minimum period of ripening is not mentioned in the disciplinary, even if two levels of minimum fat content (dry matter) is depending from time ripening: at least 40 % for table cheeses and a minimum of 38 % for cheeses over six months of ripening. The maximum humidity content is of 40 %, without differentiate the cheeses.

Figura 32. Ragusano

(<http://en.wikipedia.org/wiki/>)

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RASCHERA

Characteristics (PDO 1 July 1996) - Raschera is a semi-hard, pressed, medium fat or fat cheese, produced from raw or pasteurized cow milk, eventually supplemented with small additions of sheep and/or goat milk. Raschera is a cylindrical or quadrangular cheese with flat surfaces. The cylindrical shape has a diameter of 30-40 cm, a convex edge of 7-9 cm and a weight of 7-9 kg. The square shape has a side of 40 cm, an irregular edge of 12-15 cm and a weight of 8-10 kg. The rind is thin, elastic and regular, reddish-grey with yellow highlights and red patches. The paste is white or ivory-white with few small and sparse holes. The texture is consistent and elastic.

From a sensorial point of view, the odour must be fine, delicate, typically fragrant in fresher cheeses and the taste is slightly spicy and savory when seasoned. The ripening lasts at least 30 days.

Production area - The geographical area of production is Piedmont, in Monregalese Valley (Italian Maritime Alps, NorthWest Italy), of entire province of Cuneo. This cheese can be named “*d’Alpeggio*” when is produced in mountain pasture summer from the Italian Alps at an altitude of over 900 meters above the sea level.

Cheesemaking - In the traditional Raschera PDO cheesemaking, raw cow milk, or partly skimmed milk, coming from two manufacturing area milkings, is warmed to 27–30 °C and left resting for 20–30 min after the addition of liquid bovine rennet. Clotting time is established visually by the cheese maker. When pasteurised milk is used, a commercial starter, generally made with thermophilic and mesophilic lactic bacteria, is used. The curd is cut into particles, then separated from the serum and collected in a hemp cloth which are left for approximately 10 min of drainage. Finally, the curd wrapped in the cloth is put into cylindrical or quadrangular forms and pressed to allow remaining whey to drain away for at least 12 h. At the end, the product is ready to be dry salted for three days for side and ripened in natural cells dug underground at 12-15 °C for at least 30 days. Here the constant temperature and humidity create the optimal conditions for the 1–6 months of ripening and consequently for the formation of the reddish rind characteristic of this cheese.

According to the Disciplinary of Production, Raschera PDO cheese must have at least fat (dry matter) of 32 %.

Figura 33. Raschera

(<http://www.raschera.com/>)

Website

<http://www.raschera.com/>

ROBIOLA DI ROCCAVERANO

Characteristics - (PDO 1 July 1996) – The Robiola di Roccaverano is a fresh cheese produced from ewe's or goat's milk or a mixture of ewe, goat and cow's milk. Quantity of cow's milk must be less than 85%. The Robiola di Roccaverano cheese is cylindrical with flat surfaces. The cylindrical shape has a diameter of 10-15 cm, an edge of 4-5 cm and a weight of 250-300 g. There is not rind and the paste is white or ivory-white without holes. The texture is soft and slightly consistent. The odour is fine, delicate, rarely pungent. The taste is mainly acid and fine.

Production area – The geographical area of production are 11 towns in the province of Asti and 9 towns in the province of Alessandria.

Cheesemaking – The Robiola di Roccaverano is produced with raw or pasteurised milk. The milk is curdled by the addition of bovine liquid rennet at a temperature of 30-35 °C. Is also used a commercial starter generally made with mesophilic lactic bacteria. Generally each producer uses a different starter to characterise his production. The curd is cut to produce granules with the size of an hazelnut. The curd is collected and drained inside specific molds. The cheese is dry salted. Natural aromas as truffle, hot pepper, herbs or rosemary may be added.

According to the Disciplinary of Production, Robiola di Roccaverano must have at least a fat content (in dry matter) of 50 %, protein content (in dry matter) of 34 % and ash (in dry matter) of 3 %.

Figure 34. Robiola di Roccaverano
(<http://www.robioladiroccaverano.com>)

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Website

<http://www.robioladiroccaverano.com/>

<http://www.assopiemonte.com/>

SALVA CREMASCO

Characteristics - (PDO 20 December 2011) – The Salva Cremasco is a quadrangular cheese with flat surfaces. The square shape has a side of 11-13 cm or 17-19 cm, an edge of 9-15 cm and a weight of 1.3-1.9 or 3-5 kg. The ripening is carried out for at least 75 days. The rind is soft, regular with typical surface bacteria and a yellow-brown colour. The paste is white or pale-yellow, with small, irregular and sparse holes. The texture is consistent and springy, very weak above the rind. The taste is aromatic, intense and piquant in the more ripened cheese.

Production area – The geographical area of production is the whole province of Bergamo, Brescia, Cremona, Lecco, Lodi, Milano

Cheesemaking – The Salva Cremasco is produced with whole raw or pasteurised cow's milk. The milk is curdled by the addition of bovine liquid rennet at a temperature of 32-40 °C. Autochthonous starters could be used. Generally each producer use a different starters to characterise his production. After 10-20 min the curd is cut in two times to produce granules with the size of hazelnut and therefore put in typical squared molds. After a period at 21-29 °C for 8-16 hours, the cheese is salted in dry condition or in brine solution. The ripening is performed at 2-8 °C with 80-90 % of humidity. During the ripening the rind is washed with brine to obtain a thin and coloured rind and a strong proteolysis of the paste.

According to the Disciplinary of Production, Salva Cremasco must have at least 48% of fat in dry matter and water content lower than 47 %

Figure 35. Salva Cremasco
(<http://www.mondodelgusto.it>)

Website

<http://www.salvacremasco.com/>

SPRESSA DELLE GIUDICARIE

Characteristics – (PDO 22 December 2003) – The Spressa delle Giudicarie is a cylindrical cheese with a diameter of 30-35 cm, an edge of 8-11 cm and a weight of 7-10 kg. The ripening lasts at least 90 days for the “fresh” cheese and at least 180 days for the “ripened” cheese. The rind is soft, regular with a grey or yellow-brown colour. The paste is white or pale-yellow, with small, irregular and sparse holes. The texture is consistent and springy with aromatic odour. The taste is sweet in the “fresh” cheese and salty and piquant in the “ripened” cheese. The Spressa delle Giudicarie can be produced between September 10 and July 30.

Production area – The geographical area of production are the Giudicarie, Chiese, Rendena and Ledro valley.

Cheesemaking – The Spressa delle Giudicarie is produced with partially skimmed cow’s milk obtained with natural surfacing. The milk is curdled by the addition of bovine liquid rennet at a temperature of 33-37 °C. Starters could be used. Generally each producer use a different starter to characterise his production. After 20-50 min the curd is cut to produce granules with the size of rice then the cooked at 40-44 °C for at least 20-30 min. The curd is mixed for further 35-65 min then removed and put in cylindrical molds. The curd is then left to stand for 24 then salting in brine for 4-6 days or dry for 8-12 days. Ripening is performed at 10-20 °C with 80-90% of humidity. According to the Disciplinary of Production, Spressa delle Giudicarie must have at least the fat content in dry matter of 33 % and a water content ranging from 32 and 40 % for the fresh cheese and 28 and 38 % for ripened cheese.

Figure 36. Spressa delle Giudicarie
(<http://www.agraria.com>)

References

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SQUAQUERONE DI ROMAGNA

Characteristics - (PDO 24 July 2012) – The Squaquerone di Romagna is a spreadable cheese with a weight of 0.1-1 kg. The ripening is carried out for 1-4 days. There is not a rind and the paste is white, without holes and a defined shape. The texture is soft, creamy, spreadable. The odour is soft and milk flavoured. The taste is sweet.

Production area – The geographical area of production is the entire province of Ravenna, Forlì-Cesena, Rimini, Bologna and Ferrara between the SS24 and the Po river.

Cheesemaking – The Squacquerone di Romagna is produced with whole pasteurised cow's milk. The cheesemaking must be done within 48 hours from milking. The milk is curdled by the addition of bovine liquid rennet at a temperature of 35-40 °C. Starters could be used. Generally each producer use a different starters to characterise his production. After 10-30 min the curd is cut to produce granules with the size of nut and left to stand to obtain a pH of 5.9-6.2. The curd is put in typical cylindrical molds and left to stand for 24 hours at 15 °C. The curd is then salted in brine for 10-40 min for each kilogram of cheese. Ripening is performed at 3-6 °C for 1-4 days. According to the Disciplinary of Production, Squacquerone di Romagna must have the fat content in dry matter ranging from 46 and 55 % and a water content ranging from 58 and 65 %.

Figure 37. Squaquerone di Romagna
(<http://www.ravennaintorno.it>)

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STELVIO O STILFSER

Characteristics - (PDO 15 February 2007) – The Stelvio o Stilfser is a cylindrical cheese with a diameter of 36-38 cm, an edge of 8-10 cm and a weight of 8-10 kg. The ripening is carried out for at least 60 days. The rind is soft, regular with a yellow-orange colour for fresh cheese or yellow-brown colour for ripened cheese. The paste is pale-yellow with irregular and sparse holes. The texture is consistent and springy with aromatic odour.

Production area – The geographical area of production is the entire province of Bolzano.

Cheesemaking – The Stelvio is produced with whole pasteurised cow's milk. The cheesemaking must be done within 48 hours from milking. The milk is curdled by the addition of bovine liquid rennet at a temperature of 32-33 °C. Starters and lysozyme could be used. Generally each producer use a different starters to characterise his production. After 20-30 min the curd is cut to produce granules with the size of maize then about 25% of the whey is removed and water at 50-70 °C is add to obtain a finally temperature of 36-40 °C. The curd is mixed for some minutes then removed and put in cylindrical molds. The curd is then pressed from 30 min to 2 hours and after a period in a hot room, the cheese is salted in brine solution for 36-48 hours. Ripening is performed in local at 10-14 °C and 85-95% of humidity. During the ripening the rind is washed with a brine containing a mix of chromogenic bacteria to obtain a coloured rind. According to the Disciplinary of Production, Stelvio o Stilfser must have a fat content in dry matter higher than 50 % and a water content lower than 44 %.

Figure 38. Stelvio o Stilfser
(<http://www.turismo-trentino-alto-adige.com>)

Website

<http://www.stilfser.it>

TALEGGIO

Characteristics - (PDO 12 June 1996) – The Taleggio is a quadrangular cheese with flat surfaces. The square shape has a side of 18-20 cm, an edge of 4-7 cm and a weight of 1.7-2.2 kg. The ripening is carried out for at least 40 days. The rind is thin and soft, regular with a light yellow-red colour. The paste is white or ivory-white with small and sparse holes. The texture is moderately consistent and elastic. The odour is soft with milk and cream characteristics. The taste is very soft and mainly sweet.

Production area – The geographical area of production is the entire province of Bergamo, Brescia, Como, Cremona, Lecco, Lodi, Milano, Pavia, Novara, Treviso

Cheesemaking – The Taleggio is produced from whole pasteurised cow's milk. The milk is curdled by the addition of bovine liquid rennet at a temperature of 36-38 °C. Starters are used. Generally each producer use a different starters to characterise his production. After 15 min the curd is cut to produce granules with the size of hazelnut and put in typical square molds. After a period at 22-28 °C for at least 10 hours, the cheese is salted in dry condition or in brine solution. During the ripening the rind is washed with a brine to obtain a thin and coloured rind and a strong proteolysis of the internal paste. According to the Disciplinary of Production, Taleggio must have a fat content (in dry matter) ranging from 48 and 53 %, a protein content ranging from 36 and 44 %, an ash content ranging from 3 and 4 % and a water content ranging from 45 and 50 %.

Figure 39. Taleggio
(<http://www.italos.it>)

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Website

<http://www.taleggio.org>

TOMA PIEMONTESE

Characteristics - (PDO 1 July 1996) – The Toma Piemontese is a cylindrical cheese produced in two sizes: large (6-8 kg) with a diameter of 24-34 cm and small (1.8-5.9 kg) with a diameter of 15-25 cm. The ripening lasts at least 15 days for the small size and 60 days for the large size. There are two types of Toma Piemontese:

- Toma Piemontese: the rind is smooth, elastic and regular. The colour is ranging from light straw yellow to reddish brown depending on its ageing. The paste is white or ivory-white with small and sparse holes. The texture is moderately consistent and elastic. The odour is soft with milk and cream characteristics. The taste is also very soft and mainly sweet. It is produced in small and large sizes.

-Toma Piemontese semigrassa (semi-skimmed): the rind is smooth and regular but not elastic. The colour is wrinkled, hard, reddish-grey with yellow and white highlights depending on its ageing. The paste is yellowish with small and sparse holes. The texture is consistent and not elastic. The odour is strong and persistent. The taste is very savoury and mainly salty in ripened products. It is produced only in large size.

Production area – The geographical area of production is the entire province of Cuneo, Biella, Novara, Turin, Verbania and Vercelli and in some villages of the provinces of Alessandria and Asti.

Cheesemaking – The Toma Piemontese is produced with whole raw or pasteurised cow's milk. The milk is curdled by the addition of bovine liquid rennet at a temperature of 32-35 °C. With pasteurised milk is also used a commercial starter generally made with thermophilic lactic bacteria. Generally each producer uses a different starter to characterise his production. The curd is cut twice to produce granules with the size of maize. After the draining, the curd is put in molds and pressed for at least 5-6 hours. The cheese is then salted in brine for about 36 hours. Dry salting is also used. The Toma Piemontese semigrassa (semi-skimmed) is produced with skimmed raw or pasteurised cow's milk. The cheesemaking is similar to that used for Toma Piemontese. According to the Disciplinary of Production, the chemical composition of Toma Piemontese is correlated to the size type. For Toma Piemontese large size the water content is 43-51 %, protein content (in dry matter) is 37-49 % and fat content (in dry matter) is 44-54 %. For Toma Piemontese small size the water content is 42-48 %, protein content (in dry matter) is 40-46 % and fat content (in dry matter) is 50-54 %. For semi-skimmed type water content is 46-54 %, protein content (in dry matter) is 50-60 % and fat content (in dry matter) is 30-38 %.

Figure 40. Toma Piemontese
(<http://www.langhe.net>)

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Website

<http://www.assopiemonte.com/>

VALLE D'AOSTA FROMADZO

Characteristics - (PDO 1 July 1996) – Valle d'Aosta Fromadzo is a cylindrical cheese with a diameter of 15-30 cm, an edge of 5-20 cm and a weight of 1-7 kg. The ripening lasts at least 60 days. The rind is soft, regular with a yellow-grey or yellow-brown-grey colour. The paste is pale-yellow, with irregular, small and sparse holes. The texture is consistent and springy with aromatic odour. The taste is sweet if fresh and salty-piquant if ripened. In 2011 the production was about 6 tons.

Production area – The geographical area of production is the entire area of Valle d'Aosta region

Cheesemaking – The Valle d'Aosta Fromadzo is produced with whole or partially skimmed raw cow's milk. The milk is curdled by the addition of bovine liquid rennet at a temperature of 34-36 °C. Autochthonous starters could be used. The curd is cut, cooked to 45 °C, mixed for some min then removed and put in cylindrical molds. The curd is pressed and salted in brine or in dry condition. Ripening is performed at 8-14 °C with an humidity higher than 60%. According to the Disciplinary of Production, valle d'Aosta Fromadzo must have a fat content (in dry matter) lower of 20 % for skimmed cheese and ranging from 20 and 35 % for whole cheese.

Figure 41. Valle D'Aosta Fromadzo
(<http://www.originalitaly.it>)

Web site

<http://www.fromadzo.com/>

VALTELLINA CASERA

Characteristics - (PDO 1 July 1996) – The Valtellina Casera is a cylindrical cheese with a diameter of 30-45 cm, an edge of 8-10 cm and a weight of 7-12 kg. The ripening lasts at least 70 days. The rind is soft, regular with a yellow-pale colour. The paste is pale-yellow, with irregular, small and sparse holes. The texture is consistent and springy with aromatic odour. The taste is sweet and piquant for the long ripened cheeses. In 2011 the production was about 1,200 tons.

Production area – The geographical area of production is the entire province of Sondrio.

Cheesemaking – The Valtellina Casera is produced with partially skimmed raw cow's milk. The milk is curdled by the addition of bovine liquid rennet then the curd is cut to produce granules with the size of maize and cooked between 40 and 45 °C for about 30 min. The curd is put in cylindrical molds and pressed for 8-12 hours. The cheese is salted in brine or in dry condition. Ripening is performed at 6-10 °C with an humidity higher than 80%. According to the Disciplinary of Production, Valtellina Casera must have a fat content (on dry matter) higher than 34 %.

Figure 42. Valtellina Casera
(<http://www.valsana.it>)

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Web site

<http://www.ctcb.it/>

VASTEDDA DELLA VALLE DEL BELICE

Characteristics - (PDO 28 October 2010) – The Vastedda della Valle del Belice is a cheese with a typical round loaf shape with a diameter of 15-17 cm, high 3-4 cm and a weight of 0.5-0.7 kg. The ripening is carried out for 1-2 days. The rind is absent and the paste is white, smooth, without holes. The texture is soft, soluble. The taste sweet and sour.

Production area – The geographical area of production are some villages of Agrigento, Trapani and Palermo province.

Cheesemaking – The Vastedda della Valle del Belice is produced with whole raw ewe's milk. The ewe must be of Valle del Belice race. Cheesemaking must be done within 48 hours from milking. The milk is curdled in copper boiler by the addition of lamb rennet at a temperature of 36-40 °C. After 40-50 min the curd is cut to produce granules with the size of rice and washed with hot water. The curd is then removed and put in typical molds of rush. After 24-48 hours the curd is cut, put in a typical basin on wood and mixed with hot water (80-90 °C). The curd is hand worked to obtain a sphere. This sphere is put in a pottery plate where the curd obtains the typical shape. After 6-12 hours the cheese is salted in brine from 30 min to 2 hours. According to the Disciplinary of Production, Vastedda della Valle del Belice must have a fat content (in dry matter) higher than 35 %.

Figure 43. Vastedda della Valle del Belice
(<http://www.gentedelfud.it>)

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Website

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