

## Goat farming in pre-alpine area

Worldwide, goat farming is constantly growing in number of animals raised, with a 78% increase since 1990 (FAOSTAT, 2018). The goat sector is in third place for the number of animals reared, after cattle and sheep (1.489.744.504 cattle, 1.209.467.079 sheep, 1.045.915.764 goats, 978.332.119 pigs).

Europe owns only 2.5% of the world's goats, but produces 18% of goat's milk. European goat breeding is concentrated in the states overlooking the Mediterranean, and has different breeding conditions and techniques.

In Italy, goat farming is going through a phase of profound renewal and evolution in recent years. , a process that sees the transition from a marginal sector to a highly innovative element with a high level of professionalism employed. Goat farming, previously marginal, is turning into a highly innovative sector. Most of the goats reared in Italy reside in the southern regions, where they are reared according to traditional and extensive methods, to the detriment of productivity and innovation. Table 1 shows the number of animals reared, the production of milk collected on farms by the dairy industry and the average production per head for the three Italian macro-areas and for the total.

**Tab. 1. Number of animals reared, production of milk (100 kg) collected on farms by the dairy industry and average production per head per year for the three Italian macro-areas and for the total. (ISTAT, 2018)**

Macro-area	Goats number	Milk production	Milk/head
North	23132	130892	5.66
Centre	61148	11706	1.91
South	463986	227898	4.91
Italy	756454	370496	4.90

Since the 1970s, Lombardy has seen, unlike other Italian regions, a constant increase in the number of goats raised in its territory, also accompanied by the spread of new semi-intensive and intensive farming techniques, with the formation of medium-sized flocks of 50 or more animals.

In Lombardy, goat farms are concentrated above all in the hill and mountain areas where there is a wide availability of grazing areas and mountain pastures.

Among the breeds raised in Lombardy, the two cosmopolitan ones, the Saanen and the Chamois Coloured goat are of great importance. However, some autochthonous breeds such as the Bionda dell'Adamello, the Orobica (or Val Gerola) and the Frisa, and the Nera di Verzasca, of Swiss origin, also have good consistencies.

In Lombardy, all three types of breeding systems are found: intensive, semi-intensive and extensive. The intensive system is typical of the lowland areas. Intensive farming usually has more than 100 goats. In these farms, the animals are housed free in sheds usually closed with the possibility of accessing external paddocks. The animals are fed with self-produced or purchased fodder and complementary feed. Grazing is not implemented. With this farming system, it is possible to achieve the highest milk productions and, frequently, the seasonal adjustment of the reproductive phase is used in order to have constant milk production throughout the year. Milking is done once or twice

a day in the specific milking parlor or on milking stand. The breeds raised are normally Saanen and Chamois Coloured goat. Normally the milk produced is sold to the dairy industry.

Semi-intensive farms are concentrated in the hilly and mountainous areas, they are usually family-run, the milk is processed in the company's dairy and often have a direct sales point for the products. The flocks are normally composed of about 50 heads of the two cosmopolitan breeds (Saanen and Chamois) but also from the more rustic Nera di Verzasca. In the winter, the animals are fed with self-produced or purchased fodder and with complementary feeds, while from March to October, grazing is used by integrating the feeding of the goats with fodder and / or concentrates to different degrees depending on intensity of grazing. Grazing is a welfare factor for animals and the plant essences present on the grazing areas provide the cheeses with particular organoleptic characteristics. However, grazing is also a source of health risks as it exposes animals to the acquisition of parasites, specifically nematodes of the gastrointestinal tract, through the ingestion of fodder contaminated by weeds (larvae). These parasites are considered the most important on the zoo-economic level as their presence is correlated to significant production losses. Milking is done once or twice a day in the specific milking parlor or on milking stand.

The extensive system is found only in mountain areas. The main production is meat, milking, if done, can be manual or with mobile systems. The breeds raised are mainly more rustic indigenous breeds that are better adapted to the different environmental conditions.