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【Short Review】

Traditional Italian meats and cold cuts: a valuable support for economic sustainability and/or animal biodiversity



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Introduction

Italy is a country with a livestock vocation, oriented towards the production of dairy products, meat and meat products, and eggs. Italian meat production is estimated at around 3.5 million tonnes, with a prevalence of poultry and pork meat (Table 1).

Among conventional meats, those most consumed by Italians are pork (32.9 kg per capita/year), followed by poultry (19.6 kg per capita/year), and beef (15.9 kg per capita/year) (Table 2). However, unlike than other parts of the world, specific unconventional meats are also routinely consumed (white veal meat, horse meat, quail

meat, rabbit meat), as well as a wide variety of traditional cold cuts (or cured meats), mostly of pork origin (Dalle Zotte, 2014; Dalle Zotte *et al.*, 2017).

To cover the high demand for pork meat, Italy imports fresh and frozen pork from lightweight breeds or hybrids, whereas heavy breeds, improved by National genetic selection, are farmed for meat processing, characterising the Italian pork supply chain. Therefore, pork meat processing, to obtain cured meats, represents a conspicuous market for a wide list of meat products, many of them traditional and certified.

Table 1. Meat (by livestock sector) production (million of tonnes).

	Meat					
	Poultry*	Pork	Beef	Sheep & Goat	Rabbit	Horse
World	138	120	72.4	16.4	0.86	0.72
Europe	21.9	30.8	10.5	1.17	0.15	0.09
Japan	2.44	1.32	0.48	0.0003	—	0.005
Italy	1.37	1.35	0.75	0.03	0.03**	0.006**

*chicken, turkey, goose, duck, guinea-fowl, pigeon, quail

** FAOSTAT 2019 (16 million rabbits)

Source: FAOSTAT 2021

Table 2. Meat (by livestock sector) consumption (kg/capita/year).

	Meat				
	Poultry*	Pork	Beef	Sheep & Goat	Other
World	16.4	14.6	9.1	1.98	0.67
Europe	25.3	33.7	13.5	1.64	1.44
Japan	22.3	21.3	9.6	0.15	0.10
Italy	19.6	32.9	15.9	0.76	1.07

*chicken, turkey, goose, duck, guinea-fowl, pigeon, quail

Source: FAOSTAT 2020

Traditional Italian meats

Valuable autochthonous livestock breeds are farmed for meat production purposes. Bovine breeds such as the “Chianina” and “Piemontese”, and the pig breed “Cinta senese”, are not only breeds characterised by rusticity, and the object of preservation of biodiversity, historical and cultural heritage, but also provide meat of high nutritional, technological and economic value. The peculiar consumption of traditional meats (many of which are considered unconventional by non-Italians) and the very wide range of cured meats, derive from centuries of cultures and traditions that have succeeded one another in the Italian peninsula.

Beef meat

Since ancient times, native Italian bovine breeds have been linked to Italian culture and tradition. The Italian bovine breed “Piemontese” is the most prevalent. It is highly specialised for beef production thanks to the double-muscle phenotype, due to a specific mutation in the myostatin gene. Its meat is very tender, with low intramuscular fat and cholesterol content, and a healthy fatty acid profile (Dalle Zotte *et al.*, 2017). The “Chianina” breed has twenty-two centuries of history; it is characterised by somatic gigantism, being considered the largest and heaviest cattle breed in the world (Bigi and Zanon, 2008), by an exceptional meat quality, and by a remarkable adaptability to different environments. For this reasons purebreds and crossbreds are now successfully farmed worldwide (Feliuss *et al.*, 2014).

Veal calf meat

The tradition for calf farming in Italy dates back to ancient times (INALCA, 2023). Today, veal is a significant meat source of substantial value in Italy and, in 2022 suckler calves for veal production represented 20.2% of the cattle herd slaughtered in Italy (ISTAT, 2022). The veal industry is an important side market of the dairy industry and involves male calves. Thanks to this peculiar feeding strategy (fed with milk replacer and small amounts of roughage until slaughter at 26–28 wk of age), the resulting meat has a pink color (lower content of myoglobin) and it is tender, resulting in traits particularly appreciated by Italian consumers, and widely used in baby food production.

Horse meat

Horse meat consumption dates back to 1000 BC in the north-east of Italy (the current Veneto Region) and nowadays the horse meat is a significant part of the Italian culinary tradition, even though regional differences exist both in consumption and in culinary recipes, which include frayed (tiny frayings) raw and dried meat, steak form the diaphragm, stewed meat, minces as a sauce for pasta dressing, sausages or salami stuffed into casings. The Italian production of meat-type horses (7,997 tonnes of slaughtered animals in 2022; ISTAT, 2022) does not provide for the country’s consumption of horse meat, thus Italy imports worldwide horse meat to the self-sufficiency (26,652 tonnes imported in 2021; FAOSTAT, 2021), and is also the world’s largest importer. Moreover, horse meat is also valued for its high iron content (3.9 mg/100 g edible portion; CREA, 2019), which is why it is traditionally consumed in cases of anaemia risk, especially in children, adolescents, and adult women.

Rabbit meat

The consumption and trade of the European rabbit (*Oryctolagus cuniculus*) meat dates back to the Phoenicians, around 1100 BC (Dalle Zotte, 2014). Despite the interest of humans for rabbits as food, specialised farming for meat production started only from the 1920s and, since the 1970s rabbit production played an important role in the Italian economy. However, in the last two decades, rabbit meat consumption has decreased drastically (down to 0.291 kg/per capita/year; Russo *et al.*, 2017) due to high price compared to other conventional meats, animal welfare issues, socio-cultural reasons, limited marketing strategies and limited convenience of rabbit meat products (Cullere and Dalle Zotte, 2018), despite its excellent nutritional properties (Hernández and Dalle Zotte, 2010). Indeed, it is worth mentioning that the regular consumption of rabbit meat could provide consumers with bioactive compounds, such as vitamin B12, vitamin E, and selenium. With regards to vitamin B12, 100 g of rabbit meat provides three times the recommended daily intake. Moreover, rabbit meat is low in sodium and cholesterol, playing a role in controlling hypertension and CVD diseases (Dalle Zotte and Szendrő, 2011).

Quail meat

Since the second half of the 20th century, the Japanese

quail (*Coturnix japonica*) has been considered not only as a game bird for Italy's long hunting tradition, but also become a popular meat source among consumers, and in some Italian Regions it currently represents an alternative meat to chicken and turkey. In 2021, about 12.6 million broiler quails were slaughtered in domestic slaughterhouses, with a carcass production of 2,082 tonnes, comparable to duck carcass production (ISTAT). Quail breeding is characterised by a rapid return on investment due to productivity precocity, rapid growth, short generation interval and limited feed and space requirements. However, as with other intensive livestock farms, upcoming welfare regulations could discourage quail breeders, due to the drastic structural changes, and thus lead to a contraction of farms. The breast meat of broiler quails is moderately lean (4.6% lipids), with lipids rich in polyunsaturated fatty acids (42.7% total FAME), and a favourable n-6/n-3 ratio of 9.3 (Cullere *et al.*, 2018).

Traditional cold cuts

Cold cuts are traditionally and routinely consumed in Italy, and in 2021 their production totalled 1.17 million of tonnes. As far as individual cured meats are considered, the largest productions concern the leading products of the sector: cooked ham (288,200 tonnes/year), and dry-cured ham (282,500 tonnes/year). Other typical Italian products are mortadella (163,800 tonnes/year), salami (120,200 tonnes/year) and speck (33,600 tonnes/year) (Falasconi, 2023). Many of the cured meats produced are exported, and in the period January-September 2022 their exports amounted to 147,860 tonnes (ISTAT, 2022). In 2021, the domestic real consumption of cold cuts accounted for about 11.3 kg/year. Of these, cooked ham is always in first place, accounting for 27.1% of all cured meats consumed, followed by dry-cured ham (21.9%), mortadella/frankfurters (18.8%), salami (8.0%), and bresaola (2.5%). Other cured meats accounted for the remaining 21.7% of cured meat consumption (ASSICA, 2022).

The preservation of meat through drying, salting and smoking is a very old practice. During the Etruscan-Roman period (5th century BC - 6th century AD) the first cured wild boar and pork legs were produced, not only for self-consumption, but also for trade (ASSICA, 2011). In the 19th century, the first shops exclusively selling meat products (*salumerie*) spread throughout Italy and modern processing and curing methods began to develop

(IVSI, 2017).

Today, Italy possesses an exceptional heritage of meat products, many of them dating back to ancient times, whose formulations, preparation procedures and know-how have been handed down from generation to generation. It is therefore a heritage not only of traditional value, but also of high historical and cultural value.

European Quality Schemes and Geographical Indication of meat and meat products

In the European Union, many food products have specific quality labels for the purpose of protecting authenticity and typicality, promoting their origins, their traditions and unique characteristics related to a specific know-how. These products (agricultural products, foodstuffs, wine and spirit drinks) are registered in a legal register (eAmbrosia, 2023), which provides a direct access to information on all registered "Geographical Indications", including the legal instruments of protection and product specifications.

The main Geographical Indications comprise PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication), both aiming at protecting the names of products that originate from specific regions and have specific qualities or enjoy a reputation linked to the production territory. Products registered as PDO have a stronger link to the place of production than PGI products.

Each PDO and PGI product must follow strict requirements set forth in a document called "Product Specification", and the PDO or PGI logo that accompanies the product (Figure 1) guarantees its authenticity in terms of regional origin, thus having a specific link to the territory.

The products are registered in one of the 2 product cat-



Figure 1. Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) quality logos of the EU regulation (No. 1151/2012).

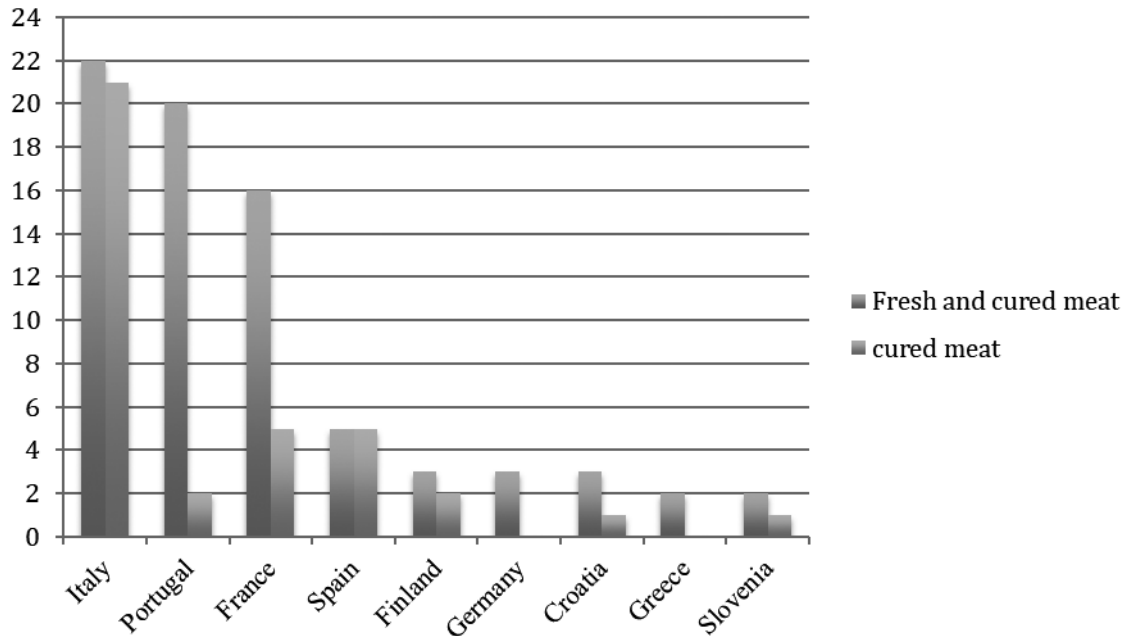


Figure 2. Number of PDO-certified fresh meat and meat products (cold cuts) (eAmbrosia, 2023).

egories: “fresh meat” and “meat products” (cured meat).

In the EU, Italy is ranked number one with 21 PDO-certified meat products and 1 fresh meat (from *Cinta Senese* pig breed) (Figure 2), and Italian meat products contribute for about one-third of the European meat products heritage (IVSI, 2017).

The PGI products include 22 meat products, and 5 fresh meats (two from indigenous cattle breeds - Vitellone bianco dell’Appennino centrale, Vitelloni Piemontesi della Coscia; and three from lamb - Agnello di Sardegna, Agnello del Centro Italia, Abbacchio Romano) (eAmbrosia, 2023).

The majority of the registered PDO and PGI Italian meat products traditionally come from pigs, and are traded and consumed within the domestic market. Only a few of them are distributed worldwide and widely known (i.e. two dry-cured hams - Prosciutto di Parma PDO, Prosciutto San Daniele PDO, and Mortadella Bologna PGI).

Conclusion

Meat and meat products are a valuable support for the sustainability of the Italian economy. In Italy, cured meats play an important role not only in the national economy, but especially in the local (niche or traditional) economy, which contributes a large part of the national total. Meat and cured meat production consists of a large

number of interconnected sectors in a supply chain, and the entire supply chain employs a large number of employees, thereby contributing 20% to the national GDP. In 2019, the average number of people employed in the meat processing and curing industry in Italy was 61,142 (Ozbun, 2022), and within them, 13,834 were employed in the PDO, PGI and TSG products sector (ISTAT).

Fresh meats and cured meats also provide valuable support for animal biodiversity. The Italian art of pork butchery, combined with the production of highly diversified traditional cured meats, contributes to the maintenance of animal biodiversity, since many cured meats are produced from native or improved pig breeds. Even some beef and sheep meats derived from local breeds would risk a drastic reduction in consistency if their meats were not enhanced according to traditional preparation and cooking practices.

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