

FORESTS AND NON WOODEN PRODUCTS IN ITALY

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Forests feed with their products over 1 billion people in the world by supplying with water, carbohydrates, proteins, fats, vitamins, fuels, medicines and maintain the natural balance for rural systems. While the world's agricultural diversity is based on no more than 20-30 animal and plant species, the forest provides thousands of plant forms for those who live near it. These constitute a considerable economic resource to complement and enhance the quality of life and production of the rural and mountainous population. In particular, the Mediterranean forests are home to over 25,000 species of plants, a magnitude as compared to 6000 present in central and northern Europe. In addition, the services and goods offered by the forest to agriculture and food chain also consist in greater balance of agricultural ecosystems. Suffice is to recall the action of pollinators, agricultural use of wild and wild varieties resistant rootstocks, the action of predators for biological control of pests, control of microclimates, storage of water reserves, the effect of litter and the formation of humus, erosion control and so on. The descriptors and indicators introduced in European statistics and recently adopted by the Italian Institute for Statistics (ISTAT), have entered the statistical categories for non-timber forest products that put the country in line with the new features recognized forests. The EU rules and the globalization of international trade have opened new challenges and introduced new problems including the trade of products at low prices and uncontrolled from the point of view of plant health and greater competitive pressure on the markets. To overcome these problems only food quality and safety can be the winning for European producers, especially Italians, for whom the new markets of rich emerging economies and the significant growth of per capita income are creating new consumer groups.

Keywords: non-wood products, food from the forest, Italy, cork, forest fruits, truffles, mushrooms, game.

Parole chiave: prodotti non legnosi, alimenti dal bosco, Italia, sughero, frutti del bosco, tartufi, funghi, selvaggina.

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1. Introduction

The 178 million hectares of forests and other wooded land in European cover many different biogeographic regions and have adapted to a variety of natural conditions, ranging from bogs to steppes and from lowland to alpine forests. Over the past 20 years, forests have increased on average by 5% - approximately 0.3 % per year - although the rate varies substantially among countries. From the sociological and economical point of view, their distribution varies from industrial and post-industrial societies to societies where the rural component based on small family holdings is still high. State forests and large estates owned by companies, many as part of industrial wood supply chains are present everywhere. In this context, over the last half century, the perception of the forest and its use by the Italian public opinion as an energy source and withdrawal of services has been transformed. Indeed, while still high demand for wood, the wood is valued for other reasons such as biological conservation, the functionality of the biosphere, the use of leisure, cultural values. The evolution of the society has given a different

availability of products and widened the extension at international level the wood resources supply. On the other hand, urbanization has led to a greater awareness of the ecological role of the forest. These two aspects have helped to keep the public away from the understanding of the processes taking place in the woods and real interactions man's role in them. Those who live in the city are inevitably more informed and influenced in their opinions by the media, that the direct experience and are more easily influenced by clichés that simplify the reality and not interpret it correctly.

In Italy the forest is much more than a reserve of wood and has always been a primary source of valuable resources for the populations. Always collecting fruits, mushrooms, cork, chestnuts and pine nuts, hunting and meat game locally plays a not indifferent economic role. This role was far more pronounced in the past when the non-timber forest products were widely used in the everyday life of most of the population: the oak acorns to feed the animals and sometimes for making bread, beech seeds to extract oil, resin and oils from coniferous bark and tannins of various species for tanning leather, saponins and fibers from brooms, manna extracted from

ash trees for medicinal purposes and fruits of many species of trees and shrubs. The bush, was (in some regions still is) an important element in animal pets, and the collection of litter was carried out systematically in many forests. Hunting, which today is essentially a recreational activity, a time was a not occasional food integration for people. Forests feed today, with their products, more than 1 billion people in the world. They provide water, carbohydrates, proteins, fats, vitamins, fuels, medicines and help maintain the natural balance for rural systems. If the world's agricultural diversity traditional, on which the technological world, is based on no more than 20-30 animal and plant species, forests provides thousands of plant forms used and usable by those who live near it. In developed countries, the food production from the forests constitutes a considerable economic resource to complement and enhance the quality of life of rural populations and mountainous, particularly in the Mediterranean region whose forests are home to over 25,000 species of plants, a magnitude when compared the 6,000 ones growing in central and northern Europe. In this field, the services and goods offered from forests to agriculture and food chain also consist in the greater equilibrium of agricultural and not just for the direct use of products. The action of pollinators, the agricultural use of wild and wild varieties resistant rootstocks, the action of predators for biological control of pests, control of microclimates, storage of water reserves, the effect of litter and the formation of humus, erosion control and so on are widely diffused examples in the world. In this area the new descriptors and indicators¹ introduced by the IEEAF² (Integrated Environmental and Economic Accounting for Forests) system into the European statistics, then implemented by ISTAT (National Institute for Statistics), have included items related to non-timber forest products that put Italy in line with the new objectives for the new functions ascribed to forests from forest strategy European (<http://eurlex.europa.eu/legalcontent/IT/TXT/PDF/?uri=CELEX:52013IR7115&from=EN>). The statistics thus bring out the importance of non-timber forest products (Tab. 1, ISTAT) more traditional such as cork, chestnuts pine nuts, mushrooms and acorns, all products that can check high prices on the market and well-usable and exploitable by industry supply chain.

2. The non-wood forest products

In the trade balance of our country (Tab. 2) non-wood products, including cork have considerable potential for expansion. You cannot distinguish well in the current national statistics the actual weight of the natural and spontaneous productions from the crops of forest fruits. The production chains for their implicit characteristics and structure do not facilitate this distinction. In many cases, in fact, the market does not follow official channels and the primary production often takes place

directly in the forest by collection, difficult to monitor. The Italian food sector has considerable figures that attest to the high potential in terms of absolute production and in relation to the supply of important induced food and confectionery, the most famous in the world for quality and variety.

2.1 Seeds, stones and fruits

Among them a good contribution is given by the Rosaceae, the Cupuliferae and Conifers, but we have to add the contribution, among various other species, by the hazel, the manna ash, walnut trees and we must remember the important contribution of bushes and herbaceous plants of the forest to the pharmacopoeia and the production of flavors for food. Each of these productions is or was concentrated in particular areas of production, suited to the climate or historical tradition (eg. Hazel nuts, manna, oregano). Europe produces about 620 000 tons of berries. Since 2000, the annual production of small fruit crops and or grown in our country is more than 3,000 tons of which 55% are covered with raspberries, 17% with blackberries, 13% with currants and gooseberries, and the rest from various fruits introduced. You must remember that it is not possible to distinguish direct deposits in the forest from crops. The ability to self-supply has almost halved in recent years, rising from 41% to 21% giving a major boost to the import. Italy is now in 5th place as an importer of small fruits after Germany, the Netherlands, Great Britain and Belgium. Imports from Eastern Europe and from Austria and Spain is made at prices difficult to apply for Italian companies.

2.2 Honey and derivatives

In the case of honey, 38 M € involved in the national trade, Italy is the 9th European producer, if bees are domesticated for over two thousand years old, it is important transhumance of hives in the woods, where the production of honey can have connotations of quality and special organoleptic traits determined by the forest species that provide pollen and nectar.

2.3 Chestnuts and dry seeds and fruits

Italy is the second largest European chestnut (*Castanea sativa*) producer for fresh products, dry and flour for the confectionery industry and livestock. Relatively walnut (*Juglans regia*), with 10,500 tons per year, is able to meet only 20% of domestic needs. Hazelnuts (*Corylus avellana*) are one of the main bases for the confectionery industry (second only to Turkey) and feeds to a value of 36 M €. The market for pine (*Pinus pinea* and *Pinus cembra*) fruit in shell affects over 208,000 tons per annum, 80% absorbed by the industry (ISMEA, 2013).

2.4 Other special productions

At local level, several specialized and high value productions can be noted. Three examples can be shown very rapidly. One can be observed traditionally near very old mountain Benedictine abbeys where seeds from silver fir (*Abies alba*) in Apennine forests are used for preparing spirits to restore pilgrims since the year 1000 a.C. and nowadays to be sold to tourists.

¹ Pan-European indicator 3.3: Value and quantity of marketed non-wood goods from forest and other wooded land.

² That IEEAF initiative started in the late 1990s and it is part of environmental satellite accounts to Eurostat.

A typical product diffused in the Alpine region is the “mugolio” production where needles and stone of *Pinus mugo* are used to distill oils and turpentine’s for medical purposes. This market has attracted attention abroad and PEFC (2006) is doing efforts to establish protocols and quality certification schemes.

Another important example of high value production owning a higher economic potential at local level is that of “manna”. Italy is the first world producer of manna with 3200kg/year. The manna production is concentrated in a spot area of the Madonie range in Sicily, in the lands around the villages of Pollina and Castelbuono, province of Palermo. Manna is a natural product, at high content of *Mannithol* harvested by the incision of the bark from two different species of Ash Tree, *Fraxinus ornus* and *Fraxinus angustifolia*. Mannithol is used as medicinal, food and in cosmetics. Although the high value of the product, in the last decades Manna Ash Tree cultivation has been going through a deep crisis, due to a lack of turnover among producers, to a supply which is inadequate to satisfy the demand of a market deeply oriented to quality production and, in the end, due to a lack of attention by public administration. Nevertheless, the cultivation of the Manna Ash Tree ought to be preserved for its social and cultural meaning and because of its environmental significance.

2.5 Mushrooms and truffles

Collecting mushrooms and truffles today assumes considerable importance in the economy of rural mountainous and hilly areas. It is a tradition dating back to the Romans use fresh truffles in the kitchen.

Making statistics of mushrooms and especially of truffles productions in Italy is very difficult, due to low traceability of products in the market. Indeed these products escape easily to any accounting effective, being among other things practically impossible any control action on the collection.

The available data may refer only to the few areas where the local stock market or are better organized. Even today, actual statistics based production on the number of licenses for the collection at the regional level. However, sources of error of the estimates are determined also by non-unique criteria for issuing licenses and by regional laws which do not indicate in a consistent manner standards on the amount of withdrawable product. As for the Italian production of truffles in Italy we have estimates at the regional level (Tab. 3). That can help you understand the dynamics between regions producing regions and regions with high user or ability to market the product. Italy is the 3rd producer, with a turnover of over 19 M €; anyway, the northern European countries and Americans started to consider only since a few years the gastronomy potential of truffles and this will lead, at least for some species, for a future market competition. In this framework, a policy of transformation of the product for export becomes strategic, in that Italy still lags behind Spain and France, who also are not producers of the “precious” white truffle. Most of the truffle market is supplied from forest plantations made with materials mycorrhized artificially. It is estimated that about half of the pro-

duction of black truffles gathered in Italy and France comes from truffle plantations (Zambonelli *et al.*, 2012), a practice adopted today also in other countries as U.S., New Zealand and Australia (Hall *et al.*, 2007).

The white truffle (*Tuber magnatum*) is the most valuable species and fortunately peculiar to our country. It is however difficult to achieve in truffle for the hard artificial mycorrhization (Mello *et al.*, 2001; Paolocci *et al.*, 2006). This is definitely an advantage for domestic production, which may qualify as the right ecological conditions (Zambonelli *et al.*, 2012). Studies are underway to evaluate the effect of silvicultural treatments on mycological production. Among these it is the LIFE Nature project “SelPiBioLife”³, coordinated by CRA SEL, which aims to assess the effects of new techniques in high forest thinning regimes on soil microclimate, and on biodiversity of edible mushrooms. Even in Italy, researches are addressed to develop silvicultural techniques targeted to the production of mushrooms and truffles (*mycological forestry*) in the Mediterranean, as it is happening in other countries, especially in Spain (Oria de Rueda *et al.*, 2008; Bonet *et al.*, 2012, 2014).

2.6 Wildlife

Forests are the habitat for different forms of wildlife. Large abundance of herbivore and of ungulates especially can become a major threat to the regeneration of forests and their stability (Cutini *et al.*, 2015).

At present time there are 20 ungulate species in Europe, with an estimated total number of 18 M of heads and a total biomass of 770.000 tons around (Apollonio *et al.*, 2010). Overall, wildlife contributed significantly to biodiversity and represented an important cultural, aesthetic social asset (hunting tradition included) with important economic revenues. For example, game meat production as alone was estimated over 121.000 tons in EU-27, corresponding to a total value of above 394 M €. In addition, pelts, hides, trophies and other animal products have an estimated value of 20 M € (UNECE-FAO, 2011).

A significant part of those revenues (around 150 M €) were produced in South-West Europe only. Recently, the game meat produced in Tuscany, estimated by means of the average culled heads, was valued around 25 M € Apollonio (pers. comm.). The large number of heads culled each year in Europe (around 5.2 M), besides their direct value, feeds an increasing important collateral economic segment like the hunting tourism, with additional and considerable revenues (Cutini *et al.*, 2015). On the other hand, increasing criticisms in damages to agricultural crops and forests due to the overall wildlife expansion and the ungulates populations increase especially are observed.

The forest area damaged by wildlife and grazing grew from 1 M ha in 1990 up to 2.4 M ha in 2005; at the same time the percentage of forest area with damage by wildlife and grazing grew from 1.1% up to 1.9% (UNECE-FAO, 2011). Data provided for the European region (without the Russian Federation) indicated that

³ <http://www.selpibio.eu/>

approximately 2% of the forests are facing damage by wildlife. In the EU-27 countries the corresponding proportion was slightly higher (2.2%). Albania (13%), Sweden (6.2%), and Italy (3.5%) faced the largest areal proportions affected by wildlife (UNECE-FAO, 2011). In addition, vehicle collisions with wildlife represent a new and relevant criticism (Cutini *et al.*, 2015).

Overall, the larger and larger ungulate damages to agricultural and forest crops makes the time of refunding over, due to the not enough money available at European and country level for compensations. The matter is crucial in many districts and regions. Proper solutions may issue from new and more integrated management schemes between forestry and wildlife management and by means of the definition of a common set of indicators useful in the monitoring of forest - fauna relationships in the medium-long time.

Doing that may be a decisive step towards the definition of appropriate protection measures and of sound management guidelines able to improve forests stability and production (game meat too). At the same time, it will be easier defining common schemes at European or country level for compensating damages to agricultural crops, forestry and vehicles collisions, whereas the present situation shows marked differences among the European countries (Cutini *et al.*, in press).

2.7 Herbs (aromatic, medicins, extracts...)

A particular area that has aspects similar to agricultural crops is that of “medicinal plants”, particularly important for the Mediterranean area. It considers medicinal, aromatic and perfume plant species. As required under the Law 99/31 governing the sector, the medicinal plants can be used for direct consumption or processed for the extraction of active ingredients such as: alkaloids, glycosides, gums, mucilage, bitter principles, tannins, organic acids, enzymes, vitamins, resins, balsams, gum and essential oils.

The “medicinal plant” or “officinale”, according to WHO, is a plant organism which substances can be used in therapy or as precursors of hemi-synthesis of drugs (WHO 1977 “Resolution -Promotion and Development of Training and Research in Traditional Medicine”, WHO document No: 30-49).

In recent years the industry has expanded as a result of changes in the EU Common Agricultural Policy and the elimination of public networks of price protection. It has also increased the need to diversify production to reduce the risk of income by increasing the sector.

A considerable boost also came from an increased demand for products related to health and wellness.

Alongside these outside forest productions the direct collection in forest is very important. It drawn by traditional pharmaceutical companies, those intended producing homeopathic and herbal remedies.

To get an idea, in Italy in 2010 the manufacturers of “aromatic, medicinal and seasoning” were 2,938, for a total area of over 7,200 hectares. Our country therefore covers approximately 3% of the total area of the European producers. Among the most exported products we include:

- medicinal plants used primarily in perfumery, medicine or insecticides and pesticides; in 2011, they were exported 2,700 tons with revenue for about 16 M €, corresponding to approximately 4% of total collections of Italy;

- tanning extracts of vegetable origin and tannins, among them being the voice extracts sumac, valonea, oak or chestnut; of the latter, in 2011, they were exported 5,500 tons with revenue to around 14 M €, corresponding to 3% of total collections of Italy.

Finally, data on Italy’s foreign trade of medicinal plants and derived products (finished or unfinished) showed a deficit in the trade balance in 2011 amounted to about 600 M €, that may indicate the potential expansion for domestic producers.

2.8 Cork

The main areas of diffusion of the cork oak (*Quercus suber* L.) are Portugal, Spain, Sardinia, Sicily, the Maremma (province of Grosseto), Corsica, southern France and North Africa, all located in the western Mediterranean. Currently over about 36,000 km² of Mediterranean cork, are economically exploited approximately 20,000 km² of which are harvested about 300,000 tons of cork a year. Of these, about 17,000 tons in Italy.

The Italian cork industry is concentrated in Sardinia in an area of about 210,000 hectares, which produce about 12,000 tons annually. About 250 companies (including industries and handicraft businesses) are involved in the cork primary production; they are mostly located within the so-called “District of cork” near Calangianus, where about 70% of the entire cork in Italy becomes worked.

The number of workers in the industry is about 6,000 employees, including direct, induced and seasonal ones. More than 104 companies were active in Italy in 2009 in the cork system. The cork production in Italy is mainly used for the production of caps, with annually about 1.5 billion pieces and represents about 60/70% of the entire sector. However, this production is in great suffering. Winemakers have trouble finding the best cork at affordable rates and many have begun to resort to plastic caps. With the use of poor cork, you risk ruining the quality of the product giving the wine “cork taint”. In most commercial wines, not Doc, plastic is now widely used. It therefore seeks to give impetus to alternative uses for cork. Currently the production not intended for caps is so divided: 16% in the bio-construction for insulation panels and furniture, 9% in the footwear industry and 3% in crafts.

3. Challenges and opportunities, considerations and conclusions

EU rules and globalization with the liberalization of international trade have opened new challenges and introduced many problems, but also open the door to many opportunities. Europe, but especially Italy with its weaknesses market faces competition from products not controlled by the new free trade areas, increased competitive pressure in the markets, and a huge availability

of cheap goods from countries in developing and emerging.

To overcome these problems only food quality and health safety can be the winning for European producers, especially Italians, for whom the new markets of rich emerging economies and the significant growth of per capita income are creating new consumer groups. You must however pay attention also to the new challenges imposed by the effects of climate change interacting with the globalization of transport and markets, are favoring the settlement in southern regions of Europe, of pathogenic organisms of plants producing important food. We have to remember the case of chestnut, which partially overcame the problems caused by canker must and now contend with the gall wasp (*Dryocosmus kuriphilus* Yatsumatsu⁴), the pine with the arrival of the so-called Western conifer cones bug (*Leptoglossus occidentalis* Heidemann, Agostini *et al.*, 2004) and other examples. Where yet do not appear phenomena of pathological order, the state of latent stress is evident, however, for various species.

The Sardinian cork, shows clear signs of stress. As above mentioned, both the globalization of transport and economies that the effects of climate change, are causing a major impact on ecosystems and forest species in general but especially on genetic resources of material economic interest that because subject to some level of selection over the centuries are more vulnerable, due to less variability, the attacks of new diseases.

The consequences of this we see in recent years in relation to agricultural production typical of the area (eg. the olive tree) is of characteristic examples of our world forest and mountain as chestnut and pine.

For the first time in our history from 2013 on our tables there are more chestnuts foreign homegrown. And 'what emerges from a Coldiretti analysis that highlights the serious decline of the foodstuff Giovanni Pascoli called "italics bread tree".

The unfavorable weather but especially the attacks caused by the "wasp gall of the chestnut" arrived from China, have caused the collapse of the domestic production to below 18 million pounds, with cuts of 70-80 percent compared to the previous years' infestation. Imports increased by 25-30 percent in 2013 and 2014 after which in 2012 had almost doubled from the previous year and almost tripled compared to 2010. Italians have today more than 50 percent probability of use unwittingly chestnuts foreign mainly from Spain, Portugal, Turkey and Slovenia. A blow to a product that in 1911 he had even reached a record production of 829 million pounds. The pine nut has a very important role for the confectionery market and sticking, shelled, high prices on the retail market. The formations of *P. pinea* occupy in our country about 20,000 hectares and up to the 1980 allowed a a national annual production of about 3000-6000 tons of shelled pine nuts, half coming from Tuscany coasts. That covered a value of retail 36,000 000 € (70-80 €/Kg), approximately 75,000-150,000 tons/year

of pine cones. The stone pine harvesting and extraction was employing no less than 400 units. Production of pine nuts would be necessary to add the income derived from the sale of domestic waste processing of pine cones, production completely absorbed by the market.

In recent years, domestic production has seriously damaged by two major factors: competition from overseas productions launched in South America and in California, and that of other Mediterranean countries, which have made specialized plantations. While in Italy he continued to collect cones, at high cost, from coastal forests now overripe and renewed only partially, thereby losing competitiveness on the technical and market organization. To all this must be added the destruction of the cones made by the pest that has finally ditched the production.

Even productions of value and niche like the manna ash, could in the future be severely damaged. Is spreading in Europe in fact a bacterial disease of ash caused by *Pseudomonas savastanoi* pv. *fraxini* and others.

Besides these problems of biological and ecological order, domestic market must therefore have to deal with other related to economic globalization that raises various questions about the appropriateness of our system to the new challenges.

This globalization has resulted in a strong liberalization of international trade, often entertained with countries that do not respect international rules, nor its financial and legislative, nor concerning rules on the control plant pathology and the identity of the materials marketed. This situation has led to a greater competitive pressure on the markets by increasing the availability of lower-priced products from countries in the developing and emerging Europe and beyond, which obviously have lower labor costs and production in general.

Add to this the expansion of the European Economic Community with the enlargement of the EU borders and the consequent internal liberalization.

Other threats to our productive sector are identified in price volatility, and lack of aggregation of supply, which can best be analyzed by economists. However, the increase in world demand, the possibility of applying supply chain contracts, the development of new products and the possibility of carrying out the transformation directly to the production systems along with food certification of origin and the cutting edge may increase the sector's potential in a country like Italy.

We're certainly not the first to point out, but it is clear that the only way to safeguard our mountain and rural economy is developing containment and adaptation strategies to the effects of the climate, to improve the control in terms of certification of origin and of the health status in international trade products and to operate, mainly in Italy, to ensure quality and food safety by reorganizing an industry that however small compared to the overall economy of the country, however, has a role in local economies.

⁴ Per maggiori informazioni visitare il link del MiPAAF, <https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/6061>.

Table 1. Time series (ISTAT) concerning wood and non-wood production in the decade 1999-2010.

SerieStoriche | L'archivio della statistica italiana												Istat	
Tavola 13.17 segue - Utilizzazioni legnose e non legnose dei boschi - Anni 1934-2010 (a) (in migliaia di quintali salvo diversa indicazione)													
ANNI	Utilizzazioni legnose						Utilizzazioni non legnose (b)						
	Legname da lavoro (migliaia di m ³)			Combustibili			Sughero		Castagne	Pinoi	Funghi	Ghiande	
	Resinose	Latifoglie	Totale	Legna da ardere e	Carbone e carbonella	Sughero gentile	Sugherone						
1999	1.023	2.083	3.106	42.330	294	96,9	38,3	522	48,6	19,0	28,6		
2000	1.077	1.905	2.982	38.828	....	97,8	46,6	632	33,4	11,2	27,3	
2001	1.040	1.467	2.507	37.092	....	59,0	31,3	569	30,4	8,7	22,8	
2002	1.081	1.489	2.570	34.992	....	90,1	21,1	551	34,2	21,1	35,1	
2003	1.263	1.420	2.683	40.004	....	61,2	15,9	486	24,4	4,4	27,1	
2004	1.028	1.360	2.388	43.530	....	57,2	11,3	662	18,3	10,9	39,2	
2005	1.171	1.315	2.486	40.970	....	52,0	9,6	575	12,7	34,7	31,5	
2006	1.367	1.120	2.487	40.076	....	93,2	11,8	526	9,7	33,1	34,5	
2007	1.380	1.121	2.501	39.294	....	72,3	16,2	447	5,6	15,6	16,6	
2008	1.340	1.321	2.661	41.130	....	63,7	15,8	336	3,8	10,1	5,8	
2009	1.355	1.213	2.568	38.629	....	20,9	9,8	438	1,4	13,8	6,9	
2010	1.381	1.137	2.518	37.820	....	67,3	16,6	513	6,3	13,3	4,1	

Fonte: Istat, Indagine sulle superfici tagliate e sui prelievi legnosi e non legnosi
 (a) Il materiale statistico antecedente al 1934 e relativo alle produzioni forestali legnose e non legnose non consente la ricostruzione di serie storiche coerenti con i dati disponibili per gli anni successivi.
 (b) Compresi i prodotti forestali non legnosi provenienti da piante forestali non in formazione boschiva.

"... not cultivated but produced spontaneously from the forests for their own consumption or sale on the market".

Table 2. Commercial trade show (in millions of euro) the potential of the international market for the areas covered in this article in relations to the products of forestry (reworked after ISTAT 2014).

Economy classes	Export			Import			Total	
	2011	2012 (a)	var.% 2012/2011	2011	2012 (a)	var.% 2012/2011	2011	2012 (a)
Products from Silviculture	106	106		420	345	-17.8	311	-239
Non wood plant products	86	83	-3.7	53	50	-5.4	33	33
cork and other non wood products	1443	1507	4.4	3413	2984	-12.6	1970	-1477

Table 3. Amount and values of truffle productions in several Italian Regions (Marone, 2011, modified after Pettenella *et al.*, 2004).

Regione	Quantità (q)	Valore (mil. €)	Prezzo (€/hg)
Piemonte	23	1,65	71,74
Emilia Romagna	60	1,81	30,17
Toscana	52	1,39	26,73
Umbria	264	7,7	29,17
Marche	106	3,2	30,19
Lazio	64	0,72	11,25
Abruzzo	180	1,6	8,89
Molise	63	0,57	9,05
Altre regioni	53	0,21	3,96
Totale	865	18,85	21,79

Table 4. Exports of mushrooms and truffles, prepared or conserved 2013.
 Source: International Trade Centre (<http://www.trademap.org/>) (Euro x 1000).

			Germania	3250
<i>Italia</i>	<i>mondo</i>	21660	Francia	3201
			Svizzera	1770
			Germania	11900
<i>Francia</i>	<i>mondo</i>	38762	US	7777
			Belgio	5096
			Francia	3250
<i>Spegna</i>	<i>mondo</i>	64114	Portogallo	3201
			Italia	1770

RIASSUNTO

Foreste e prodotti non legnosi in Italia

Le foreste nutrono con i loro prodotti oltre 1 miliardo di persone nel mondo contribuendo con acqua, carboidrati, proteine, grassi vitamine, combustibili, medicinali e a mantenere gli equilibri naturali per i sistemi rurali. Mentre la diversità agricola mondiale tradizionale si basa su non più di 20 - 30 specie animali e vegetali, la foresta mette a disposizione migliaia di forme vegetali per chi vive vicino ad essa. Queste costituiscono una risorsa economica non indifferente per integrare e migliorare la qualità della vita e le produzioni delle popolazioni rurali e montane. In particolare, le foreste Mediterranee ospitano oltre 25000 specie di piante, un'enormità se confrontate alle 6000 presenti in Europa centrale e settentrionale. Inoltre, i servizi e beni offerti dalla foresta all'agricoltura e alla filiera alimentare consistono anche nel maggior equilibrio degli ecosistemi agricoli. Basti ricordare l'azione di impollinatori, l'impiego in agricoltura di portainnesti selvatici e varietà selvatiche resistenti, l'azione dei predatori di parassiti per la lotta biologica, il controllo dei microclimi, lo stoccaggio di riserve idriche, l'effetto della lettiera ed la formazione dell'humus, il controllo dell'erosione ecc. I descrittori ed indicatori introdotti nelle statistiche Europee e recentemente adottati dall'Istat, hanno inserito voci statistiche relative ai prodotti forestali non legnosi che mettono in linea il nostro paese con le nuove funzioni riconosciute alle foreste.

Le regole UE e la globalizzazione degli scambi internazionali hanno aperto nuove sfide e introdotto nuovi problemi tra cui il commercio di prodotti a basso prezzo e non controllati dal punto di vista fitosanitario ed una maggiore pressione competitiva sui mercati. Per ovviare a questi problemi solo qualità e sicurezza alimentare possono essere le armi vincenti per i produttori europei, soprattutto italiani, per i quali i nuovi mercati delle ricche economie emergenti e la sensibile crescita del reddito pro-capite stanno creando nuove fasce di consumatori.

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