



Review article

The enhancement of native sheep's wool: Three case studies from some Italian regions[☆]



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ARTICLE INFO

Article history:

Available online 19 December 2015

Keywords:

Local wool
Sustainable supply chain
Native sheep breeds
Multifunctional sheep farm
Innovation
Valorisation

ABSTRACT

In a few decades, the downturn of the traditional textile sector, the spreading of synthetic fibers and the fierce competition of major wool producing countries converted the Italian wool from an income opportunity to a problem to deal with. In fact, in Italy are produced around 14,000 tons yearly of wool but no more than 5% of it finds profitable applications, mainly in niche markets. Sheep shearing represents for Italian breeders an unavoidable cost rarely covered by the selling price of greasy wool. If not transformed, wool must be managed as a special waste, as the European law prescribes. The above described scenario force farmers to get rid of their wool as quickly as possible weakening the whole supply chain. In order to contrast this vicious circle several initiatives of local wool valorisation have been promoted in Italy in recent years by exploring innovation of traditional wool applications and new market strategies. This paper analyzes three case studies implemented in different regional socio-economic contexts to highlight strategic and methodological approaches for enhancing the Italian supply chains of local wools. The MED-Laine project followed a cross-border cooperation way of promoting research and development actions in the agriculture, handicraft and tourism industries in Sardinia, Tuscany and Corsica (France). PartnerSheep, it is a capacity-building and institutional development project aimed at increasing the ability to make system of sheep farmers located in the Alta Murgia National Park area (Apulia region). The Plauto project, also implemented in Apulia, similarly promotes skills, procedures and new organization models of sheep farming.

The analyzed case studies highlight that to converge energies on local wools are justified by economic, environmental and cultural factors. The recovery and the enhancement of the Italian wool supply chain in an innovative and sustainable way strongly depends on cooperation and networking capacities/opportunities among breeders and among them, local government administrations and research centres.

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1. Introduction

Competitiveness of micro, small and medium-sized rural enterprises dealing with traditional agricultural products strongly depend on their sustainability and innovative improvement. The best practices and successful experiences all around the world showed that there is no need to distort or give up the “identity”

of each production system but it is crucial that the link between products, environment and territory is strengthened and valued. The case of the Italian wool supply chain is a major example of how, whenever there is a combination of resources, will and talent, despite possible low revenues, there is still an opportunity (Duce, 2011).

No official data are available about the greasy wool production in Italy, but considering a national sheep population of about 6.3 million heads (more than 70% located in Sardinia, Sicily, Lazio and Tuscany) (ISTAT, 2013), it is realistic to estimate that the Italian annual average wool production is around 14,000 tons (the wool production per head usually ranges from 1.2 to 3.5 kg depending on the sheep breed). No more than 5% of this production finds a com-

[☆] This paper is part of a Special Issue entitled “SIPAOC Conference 2014”. Guest Edited by Annunziata Giangaspero, Agostino Sevi and Maria Manfredi.

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mercial outlet and the remaining basically represent a by-product of sheep breeding. With rare exceptions, the average price paid to farmers for their sheep fleeces is lower than the cost of having them shorn (0.50 €/kg versus 2.50 €/head, respectively). With the only exception of “Gentile di Puglia” breed, the Italian wool is generally coarse with predominance of “kemps” (short and dead fibers) and consequently not particularly suitable for industrial textile and clothing applications. The lack of profitable opportunities forces sheep farmers to get rid of their wool as quickly as possible, since it is quite a voluminous product that, unless transformed, needs to be disposed of as a special waste with additional cost. This situation exposes the supply chain to vulnerability and criticalities on many levels: as far as the production process is concerned, good practices in sheep breeding and shearing are lacking; obsolete technologies and a limited range of semi-finished products have a detrimental effect on wool processing/scouring; from a market perspective, there are too many middlemen across the industry, a lack of effective marketing strategies and poor protection and promotion of markets for traditional products. Nevertheless, only a few decades ago wool represented for Italian farmers a valuable resource with a wide range of applications – from textile to the mattress industry – and a favorable market (1 kg of wool were often more expensive than 1 kg of cheese). The causes of this vertical downturn are multiple and complex but fundamentally linked to the broader evolution of the Italian textile sector, which historically represented the “natural outlet” for local wools. On one hand, the strong competition of major producing countries (more than the 50% of the world wool production is concentrated in China, Australia and New Zealand, which cover with fine Merino fleece the bulk of Italian wool demand), on the other hand the spreading of synthetic fibers that have almost completely replaced the coarse wool in most of the traditional applications (Zoccola et al., 2014).

In brief, suitable uses are actually limited to niche applications and the wool management represents for Italian breeders a relevant problem to deal with. Certainly, the focus on Italian wools is justified by a number of economic, environmental and cultural factors (Bacci et al., 2013). The imperative is to identify new types of products and new market opportunities, reconstructing the vertical supply chain on an innovation-and-sustainability-driven strategy. According to this approach, several initiatives of wool valorisation have been promoted in the last years in Italy by both public and private organizations. This paper analyzes some selected case studies with the aim of discussing strategic and methodological approaches for enhancing the Italian supply chains of local wools as applied in different regional socio-economic contexts.

2. MED-Laine project. Science and marketing help develop new opportunities for local Mediterranean wool

2.1. Strategic context and key objectives

Sardinia is the most important Italian region for sheep breeding with more than 2.9 million ewes – about 46% of total Italian flock (ISTAT, 2013) – and provides more than 1/3 of the Italian wool production. Sheep farming represents a significant activity also in Tuscany and Corsica (France)–Mediterranean regions which are socially and economically closely connected with Sardinia. Looking for turning the annual wool production (more than 4000 tons) of these Regions and its “special waste” into a real resource, thus increasing business incomes, CNR IBIMET (National Research Council of Italy, Institute of Biometeorology), in cooperation with other research centres and stakeholder associations, launched MED-Laine project. The project strategy searches for ways to promote production and marketing innovation in micro, small and medium-sized enterprises dealing with traditional high-quality

products in the agriculture, handicraft and tourism industries. This includes three primary areas of interest: wool, native plants and educational and rural tourism. For each lines of intervention, MED-Laine defined the following set of specific key objectives with medium term perspective: (1) enhancement of the wool industry as a factor for development in rural areas; (2) enhancement of local and native plants for textile natural dyeing and medicinal applications; (3) enhancement of educational and cultural tourism as a vehicle to promote food and non-food resources.

The recovery and enhancement of wool from local and native sheep breeds is meant to produce handmade textile handicrafts and green building applications, based on technological properties of local wool (high insulating power, high water repellency, high resistance to compression, etc.) and inspired by local traditions and culture. Examples of products from this area of activity include traditional carpets and innovative functional clothing using sustainable technologies and other applications for the green economy trade, such as insulating panels or biomedical technologies.

The project included a total investment of about 2.6 million euro granted by the Cross-Border Cooperation Program Italy–France Maritime through two different implementation periods: from May 2009 to November 2011 and from July 2013 to July 2015.

2.2. Key actions

In coherence with the project’s strategy guidelines, MED-Laine workflow consisted of the following work-packages:

WP1. Local wool supply chain:

- SWOT analysis and identification of development strategies for the local wool sector, through surveys, focus groups and interviews with stakeholders;
- studies for selection, recovery and certification of autochthonous sheep breeds (“Pecora Nera di Arbus”, in Sardinia, “Amiatina” and “Vissana”, in Tuscany);
- chemical and physical characterization of native sheep wool and analysis of mechanical properties of derived fabrics;
- sensory evaluation and instrumental measurements to determine tactile properties of wool fleeces and fabrics;
- realization of woollen prototypes derived from an ideas contest, “Pure Sardinian Wool”, in which more than thirty designers put forward ideas for innovative uses, layouts and characteristics for modern woollen items.

WP2. Local and native plants for textile natural dyeing and functional products:

- in-depth studies of selected local and native plant species for textile natural dyeing and medicinal applications;
- scientific tests to evaluate the anti-UV, anti-moth and antimicrobial proprieties of the selected plants;
- assessment of the environmental impacts of production and use of natural wool dyes using a Life Cycle Assessment (LCA) approach.

WP3. Rural tourism and territorial marketing:

- economic analysis and consumer sciences application to wool market and products;
- design and implementation of territorial marketing models;
- series of cultural/educational tourism and communication events.

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