

ITALIAN COPPICES AND THEIR ECONOMIC INCOME

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ABSTRACT: Coppice is one of the most important management system of Italian forests. An overall view of Italian coppices situation taken from National Forest Inventory is given in the present work. Moreover forest enterprises characteristics were analyzed and the overlay between these investigated parameters allowed to an evaluation of the improvement possibilities of coppice management in Italian context. The main results of this analysis showed that the main problems of Italian forest sector, with particular reference to coppice are: predominance of private properties, lacking of forest utilizations planning, lacking of technological innovation mostly linked to bunching-extraction operation, low economic value of fuel wood and lacking of products diversification.

Keywords: CO2 emission, mechanization, wood.

1 INTRODUCTION

Coppicing is considered the oldest form of sustainable forest management and recent studies assessed that over 23 million hectares in the Mediterranean area are managed in this way [1].

Its past and current application is mainly due to its capacity to contribute to rural livelihoods, the bio-economy, environment and cultural heritage [2]. Despite the reduction of coppice forest area, new interests have reactivated this management system related to landscape, environmental, social and economic aspects [3].

Actually the main product of Italian coppices is fuel wood [4]. This management system, in the Mediterranean area, generally produces woody biomass rapidly (on average one cutting cycle every 12–18 years). In Italy, the main management system for this species is coppice with standards (about 70–120 standards/ha) [5].

Considering the importance of this management system in the context of Italian forestry this paper was developed with the aim of giving to the reader an overall view of Italian coppice situation, overlaying data from National Forest Inventory and forest enterprises' features, these last obtained through interviews.

2 MATERIALS AND METHODS

2.1 Italian National Forest Inventory data

Italian National Forest Inventory [6] data were used for analyzing coppice's situation within Italian forestry system. In particular data concerning:

- Coppice extension
- Coppice in conversion extension
- Coppice extension within Rete Natura 2000
- Property type

2.2 Interview to forest enterprises

The survey was conducted with reference of the

entire national territory implementing obtained data with existing literature [7,8]. About 200 forest enterprises answered to the proposed questionnaire which dealt with the following topics:

- General information (society type, number of workers, etc...)
- Used machinery for forest operations
- Surface and management system harvested in one year
- Yearly work days for the forest enterprise
- Used work systems
- Obtained woody assortment

3 RESULTS AND DISCUSSION

3.1 Italian National Forest Inventory data

Coppice extension within National territory is given in Table I.

Table I: coppice extension in Italy

Italian Macro-Region	Overall Coppice Surface [ha]	Percentage of coppice surface in relation to total forest [%]
North Italy	1122934	32%
Central Italy	1591574	67%
South Italy	624060	37%

As it is possible to see coppice management is particularly important most of all in central Italy where almost 70% of forest are coppice.

Data on coppice in conversion are instead reported in

Table II.

Table II: coppice in conversion within Italian territory

Italian Macro-Region	Coppices in Conversion [ha]
North Italy	52836
Central Italy	77000
South Italy	399834

As it is possible to see a consistent amount of coppice in conversion is present in South Italy.

For what concerning data about the percentage of coppice surface within Rete Natura 2000 areas are given in Table III.

Table III: coppice surface within Rete Natura 2000

Italian Macro-Region	Coppice within Rete Natura 2000 [ha]	Coppice within Rete Natura 2000 [%]
North Italy	214676	19.12%
Central Italy	377127	23.70%
South Italy	173150	27.75%

As it is possible to notice the highest percentage of coppice forests within Rete Natura 2000 areas is located in South Italy with almost 30% of overall coppice surface.

Finally data on property type of Italian coppices are reported in the following Table IV.

Table IV: property type in Italian coppices

Italian Macro-Region	Private Property [%]	Public Property [%]
North Italy	87.13%	12.87%
Central Italy	29.32%	70.68%
South Italy	58.35%	41.65%

As it is possible to see most coppices are private in North Italy and South Italy, instead in Central Italy public property is predominant.

3.2 Interview to forest enterprises

The major part of interviewed enterprises showed seasonal work (58%), for these forest work is alternated mostly with agricultural one. Average yearly work days are 187 N/yr.

In the period between 2001 and 2012 average overall utilized coppice surface was about 96200 ha with about 94000 annual interventions. Thus average intervention surface is 1.02 ha, so a very little surface.

Average coppice surface yearly used by Italian forest enterprises correspond to 21 ha.

Prevalent Work System is TLS (Tree Length System) with 55% of cases, SWS (Short Wood System) was used in 40% of the cases and only 5% corresponds to the alternative use of TLS and SWS.

Focusing on felling methodologies motor manual felling-processing is substantially predominant with about 85% of the cases, mechanical felling with harvester or feller-buncher corresponds to 15% of the cases.

Similar situation is shown by bunching-extraction systems; most of these operations is conducted with a medium level of mechanization (70%), mostly with a forestry fitted farm tractor equipped with forest winch or with loading cages.

High level machinery like forwarders or skidders are used in 20% of the cases. About 10% of the extraction is still done by animals.

Main woody assortments from Italian coppices are fuel wood and pulp wood (72%), only 28% of material is feasible for timber. Obviously most of this is taken from chestnut coppices. Fuel wood price, taken from ISTAT, is about 50 €/t, so a very low price with often can't lead to positive stumpage values.

4 CONCLUSIONS

Without a deep knowledge of the overall situation of Italian forest sector it is impossible to achieve Sustainable Forest Management features, this study is aimed properly to fill this "knowledge gap".

The main problems of Italian forest sector, with particular focus on coppice management are: predominance of private properties, lacking of forest utilizations planning, lacking of technological innovation mostly linked to bunching-extraction operation, low economic value of fuel wood and lacking of products diversification.

This preliminary evaluation gives to the reader an overall view on the investigated topics and it represents the base for further studies in which scientific research should aim to develop Best Practices of Sustainable Forest Management for Italian coppices and, most of all, an organized and comprehensive effort of all stakeholders is needed to put into practice what revealed and found by scientific world.

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