

# Medicinal and Aromatic Plants in Italy: Situation and Perspective for the Piedmont Region

Silvana Nicola, Jeanet Hoeberecht, Emanuela Fontana and Daniela Saglietti  
Dipartimento di Agronomia, Selvicoltura e Gestione del Territorio, Università di Torino  
Via Leonardo da Vinci, 44 I-10095 Grugliasco (TO) Italy  
E-Mail: silvana.nicola@unito.it

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## Abstract

This abstract presents the results of the first 2 years of activity of a three-year project on Medicinal and Aromatic Plants (MAPs) in Piedmont, Italy (45° North). Cultivation of MAPs in Italy has a long tradition. The last available data indicate that in Italy there are about 3300 ha cultivated, of which half are cultivated with herbaceous species. The Piedmont Region plays a key role having about 570 ha of herbaceous species until 1999. Recently, there has been a growing interest on the opportunities and potential increase in the cultivation of MAPs. This is particularly true for the area, which is either marginal or abandoned by inhabitants that moved to live in the big cities and suburbs. In fact, the cultivation of MAPs could aid in raising the low farm income typical of these zones. In addition, there is a new approach toward the return of people to rural areas, especially related to organic farming system. Lastly, there is a growing interest among localities to increase agricultural activities relating to social and environmental aspects; such as culture, tourism and education; through the promotion of activities that enhance the restoration and conservation of agricultural land and of the environment. The aim of the present work is to understand the MAPs situation in Piedmont in terms of cultivated surfaces and type of market for these herbaceous species. The results from the project are also intended to offer solutions to implement cost effective key actions for land management in marginal areas. The results for the first two years of the project are presented, with the data from the survey in the region regarding the major areas involved in MAP cultivation.

## INTRODUCTION

Cultivation of MAPs in Italy has a long tradition and nowadays MAP cultivation enters in a concept of rusticity and rediscovery of ancient traditions. The last available data indicate that in Italy there are about 3,300 ha cultivated, of which half are herbaceous species, (bergamot orange, manna ash, sweet orange flowers) cultivated in the south region of Italy (Calabria, Sicilia) (Marzi, 1999; Vender, 2001). The Piedmont (45° North) is the first Italian region in terms of surface cultivated, with 38.6 % of the total national land of herbaceous MAPs. Even though the sector is important, Italy imports more than 173 M€ worth of Map products (ISTAT, 1995), due to foreign greater product availability and cheaper prices.

Recently, there has been a growing interest in the opportunity and potential to increase the cultivation of MAPs. This is particularly true for areas which are either marginal or abandoned by inhabitants that moved decades ago to live in cities and suburbs. In fact, the cultivation of MAPs could contribute to the increase of low farm income, typical of these rural areas. In addition, there is a new approach to the return of people to rural areas, especially related to organic farming system. Lastly, there is a positive trend among localities to increase agricultural activities that relate to social and environmental aspects, such as culture, tourism and education, through the promotion of activities that enhance the restoration and conservation of agricultural land and of the environment.

MAP production represents a niche of Italian farmers and production-chain operators, which are both scattered throughout the nation, lacking in producer association

organizations and in an adequate extension service. This results in lack of information regarding the real situation in terms of cultivation areas, marketing issues and logistical distribution. Official data regarding the sector impact on Italian agriculture are generally given in aggregated form, impeding the understanding of commodity distribution and farm location (De Donno, 2001). This is especially true and important in the Piedmont Region, which is characterized by a broad topology of lands; ranging from very fertile valleys, to hilly zones and high-altitude mountain areas that are impossible to reach by transportation or communication. Consequently, the Regional government has funded the present research with the objectives of knowing the current situation of MAPs cultivation in Piedmont in terms of cultivated area, farmer peculiarities, and production chain organization; by surveying, collecting information, analyzing data and creating maps of the sector impact in the region.

## MATERIAL AND METHODS

The work consisted of a regional survey and a market investigation. The activity started in the year 2000 and was conducted in the whole Piedmont region. The agricultural information was collected through visits, inspections and the filling of a questionnaire addressed to the different consortia of communes in mountain areas (Mountain Communities), experts of the officinal sector and farmers. The questionnaire data were put in Access database (Microsoft Corporation, Redmond, WA, USA), and then they were graphically represented with a Geographical Information System (ArcView GIS, ESRI, Inc., Redlands, CA, USA).

## RESULTS AND DISCUSSION

During this investigation, 154 farms were contacted: 67 in the province of Torino, 48 in the province of Cuneo, 16 in the province of Alessandria and the 23 remaining farms in the provinces of Verbania, Asti, Biella and Novara. No farm was found in the remaining province of Vercelli. Results of the survey indicated that there were ca 590 ha cultivated with medicinal and aromatic herbaceous species in Piedmont region. The distribution of MAP cultivation in the region was revealed to be very diverse from province to province (Fig. 1). More than 90 % of the regional cultivation is concentrated in two provinces (Torino and Cuneo).

The most cultivated medicinal and aromatic species in the Region is *Mentha piperita* (326.2 ha), second is *Anthemis nobilis* (84.3 ha), then several other species follow in the range between 13 and 19 ha (*Artemisia pontica*, *Cannabis sativa*, *Lavandula angustifolia*, *Foeniculum vulgare*); all the other species have a minimal impact in terms of acreage, but include more than 40 species (Table 1).

Analyses of data aggregated by altimetric position revealed that 89% of the hectares are located on plains, 5 % on hills and 6 % in mountain areas (Fig. 2a). Results also indicated that farms are located 49 % on plains (75 farms), 16% on hills (25 farms) and 35 % in mountain areas (54 farms) (Fig. 2b). The ratios between the variables indicate that on plains there are 0.5 farms per hectare, on hills 3.2, and in mountains 5.8. These results are also confirmed by the farm size, which is much bigger in the plain areas than in the hill and mountain areas (Table 2).

The mean total farm surface and the surface invested in medicinal and aromatic plants were different according to the farm altitude, in particular:

- the average farm size on the plains is 35.2 ha, of which 19 % cultivated with MAPs,
- the average farm size in the hills is 7.3 ha, of which 14 % cultivated with MAPs,
- the average farm size in the mountains is 4.7 ha, of which 17 % cultivated with MAPs.

Consequently, the MAP cultivation has a greater agricultural impact in the plain, while it has a greater employment impact in the hills and mountains. The farm approach in terms of cultivated species, agricultural techniques and systems, production chain and market target changes if the farmers are located either on the plains, in the hills or in the mountains. The cultivated species change according to location: on the plains the major

part of the species are cultivated for flavors for liquor and beverage production industries (wholesalers that will make the transformation, Table 4). In the hills and in the mountains, species are cultivated for more diversified targets: the farmers sell the final product directly to the consumers, through retail shops, to herbalist's shops, to wholesalers, to cooperatives which handle the commercialization phase and even to local restaurants (Table 4). By doing so, the farmers located in marginal lands, even though they have the logistic disadvantage, take advantage of the controlling the whole production chain, giving an added value to the agricultural product. Lastly, it must be kept in mind that many farmers in the hill and mountain areas have a double job: this would explain how farmers could economically continue in these marginal areas, given their small farm size. Cultivation techniques are different among the farms located on plain, hill and mountain areas. On plains, 71.1 % of farms cultivate MAPs with conventional agricultural systems; in hill and mountain areas, 64.8 % and 96.6 %, respectively, of farms use low-environmental impact agricultural systems (Integrated Pest Management, i.e. EU Reg. 1752/99, biodynamic, conversion and organic farming systems) (Fig 3).

A general regional view of the production chain generated by the farmers indicated that almost 50 % of the product goes to wholesalers (Fig. 4); only 26 % of the product is directly handled by the farmers. In turn, this leaves out many farmers from the phase during which the product gains an added value (either essential oils, liquors, spices, flavours, cosmetics prepared from herbs, infusions and any other herbal product) and enters into the most remunerative part of the chain.

In the investigated area there are associations and cooperatives which collect the product from many farmers and do the transformation (Fig. 5). The most important cooperative is "Erbe aromatiche Pancalieri," in the typical area of the *Mentha piperita* production; the Cooperative produces or sells to producer of syrups, liquors, mint chocolates. The Cooperative "Agronatura" represents farms of hill and mountains areas of the provinces of Cuneo, Alessandria and Torino, which focus on plant production for herbalist's shops and for essential oil extraction.

## CONCLUSION

In conclusion, farmers from hill and mountain areas showed an increased interest towards the MAP cultivation, given the future opportunities that the sector could offer to the marginal areas, but complained about the lack of technical and market information and the difficulty to find selected plant material. Besides the lack of specific machinery (more than 41 % of farms does not use machinery specific for MAP cultivation), the reduced farm size, and the supply fragmentation contribute to increase production costs and reduce farmer bargaining power. Increasing the comprehension of the MAP sector implication in the territory would provide to the Regional government further tools to ameliorate the recovery of abandoned marginal lands in the region.

## ACKNOWLEDGMENTS

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## Tables

Table 1. Medicinal and Aromatic Plants cultivated in Piedmont Region.

Species	ha
<i>Menta piperita</i>	326.2
<i>Anthemis nobilis</i>	84.3
<i>Artemisia pontica</i>	18.4
<i>Cannabis sativa</i>	15.6
<i>Lavandula angustifolia</i>	15.4
<i>Foeniculum vulgare</i>	13.9
<i>Hyssopus officinalis</i>	9.1
<i>Artemisia absinthium</i>	6.8
<i>Lavandula hybrida</i>	6.4
<i>Hypericum perforatum</i>	6.1
<i>Salvia officinalis</i>	5.9
<i>Satureja hortensis</i>	5.2
<i>Thymus vulgaris</i>	4.3
<i>Artemisia vallesiaca</i>	3.4
<i>Salvia sclarea</i>	3.1
<i>Ribes nigrum</i>	3.0
<i>Melissa officinalis</i>	3.0
<i>Artemisia mutellina</i>	2.9
<i>Coriandrum sativum</i>	2.5
<i>Rosmarinus officinalis</i>	2.4
<i>Escholtzia californica</i>	2.0
<i>Thymus serpyllum</i>	1.8
<i>Viola odorata</i>	1.7
<i>Boswellia carterii</i>	1.5
<i>Malva sylvestris</i>	1.2
<i>Aloe vera</i>	1.4
<i>Passiflora incarnata</i>	1.0
<i>Plantago psyllium</i>	1.0
<i>Taraxacum officinale</i>	0.8
<i>Aquilegia vulgaris</i>	0.8
<i>Cnicus benedictus</i>	0.7
<i>Artemisia dracuncululus</i>	0.5
<i>Leontopodium alpinum</i>	0.4
<i>Ocimum basilicum</i>	0.3
<i>Ruta graveolens</i>	0.2
<i>Achillea millefolium</i>	0.1
<i>Saponaria officinalis</i>	0.1
<i>Sanguisorba minor</i>	0.1
<i>Gallium odoratum</i>	0.1
<i>Artemisia annua</i>	0.1
<i>Gentiana lutea</i>	0.1
<i>Peucedanum ostruthium</i>	0.1
others	36.3
TOTAL	589.7

Table 2. Medicinal and Aromatic Plants land investment per farm.

	Mean (ha)	Min (ha)	Max (ha)
Plains	6.8	0.020	67.0
Hill	1.1	0.010	4.6
Mountain	0.8	0.005	4.9

Table 3. Medicinal and Aromatic Plants distribution by species according to altimetry classification.

3a. Plain

Species	ha
<i>Mentha piperita</i>	326.205
<i>Anthemis nobilis</i>	83.576
<i>Artemisia pontica</i>	18.350
<i>Cannabis sativa</i>	12.600
<i>Artemisia absinthium</i>	6.760
<i>Satureja hortensis</i>	5.200
<i>Lavandula hybrida</i>	4.300
<i>Lavandula angustifolia</i>	3.880
<i>Artemisia vallesiaca</i>	3.380
<i>Ribes nigrum</i>	3.000
<i>Hypericum perforatum</i>	2.640
<i>Foeniculum vulgare</i>	2.200
<i>Rosmarinus officinalis</i>	2.090
<i>Escholtzia californica</i>	2.000
<i>Salvia officinalis</i>	1.943
<i>Viola odorata</i>	1.699
<i>Salvia sclarea</i>	1.500
<i>Hyssopus officinalis</i>	1.500
<i>Boswellia carterii</i>	1.500
<i>Plantago psyllium</i>	1.000
<i>Passiflora incarnata</i>	1.000
others (<1 ha)	34.975

3b. Hill

Species	ha
<i>Foeniculum vulgare</i>	3.220
<i>Hypericum perforatum</i>	3.020
<i>Cannabis sativa</i>	3.000
<i>Salvia officinalis</i>	2.763
<i>Lavandula hybrida</i>	1.704
<i>Thymus vulgaris</i>	1.548
<i>Hyssopus officinalis</i>	1.376
<i>Melissa officinalis</i>	1.286
<i>Malva sylvestris</i>	1.000
others (< 1ha)	6.390

3c. Mountain

Species	ha
<i>Foeniculum vulgare</i>	8.500
<i>Lavandula angustifolia</i>	6.495
<i>Hyssopus officinalis</i>	6.240
<i>Artemisia mutellina</i>	2.825
<i>Coriandrum sativum</i>	2.500
<i>Thymus vulgaris</i>	2.388
<i>Salvia sclarea</i>	1.590
<i>Thymus serpyllum</i>	1.526
<i>Aloe vera</i>	1.400
<i>Salvia officinalis</i>	1.155
others (<1 ha)	3.964

Table 4. Product distribution chain according to altimetry classification.

	Percentage (%)		
	Plain	Hill	Mountain
Wholesalers	71	12	33
Retails	9	44	15
Cooperatives	16	32	13
Herbalist's shops	4	12	7
Restaurants			2
Unknown*			30
	100	100	100

\* not revealed by farmers

**Figures**

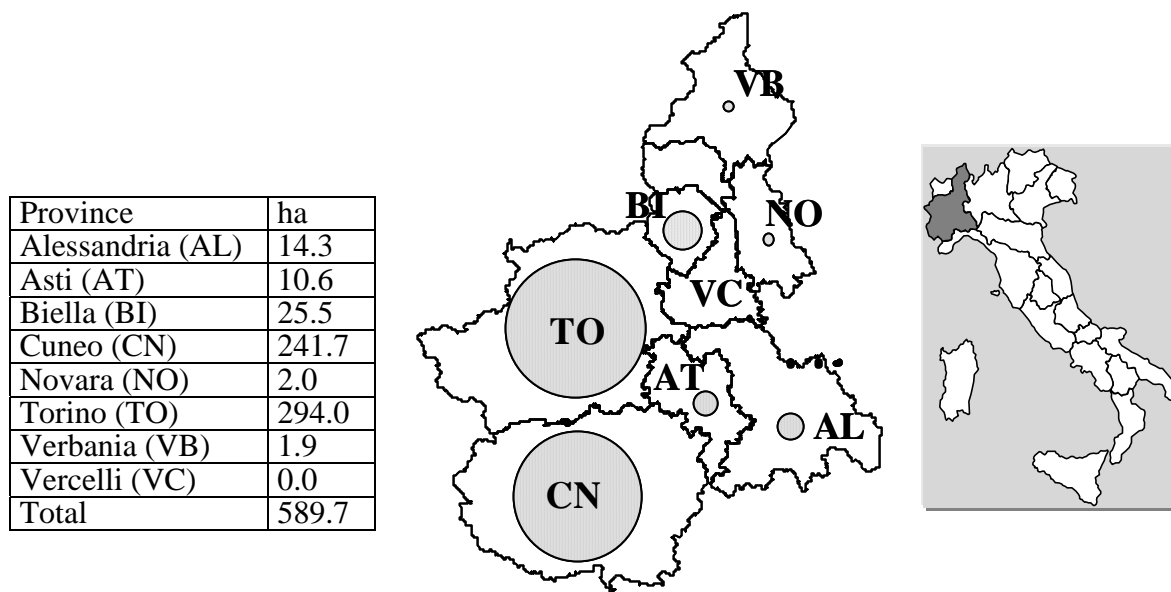


Fig. 1. Geographical distribution of cultivated areas with medicinal and aromatic plants in Piedmont Region.

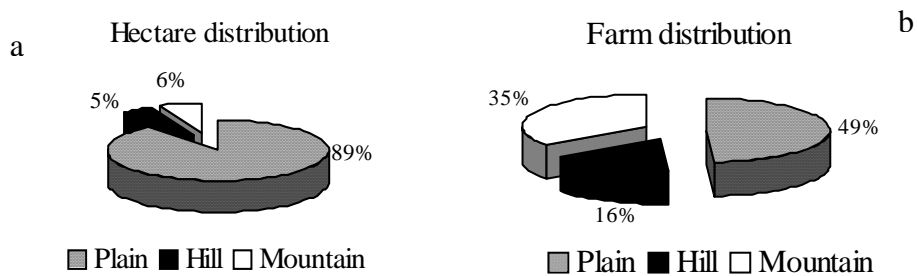


Fig. 2. Hectares and farms distribution according to altimetry classification.

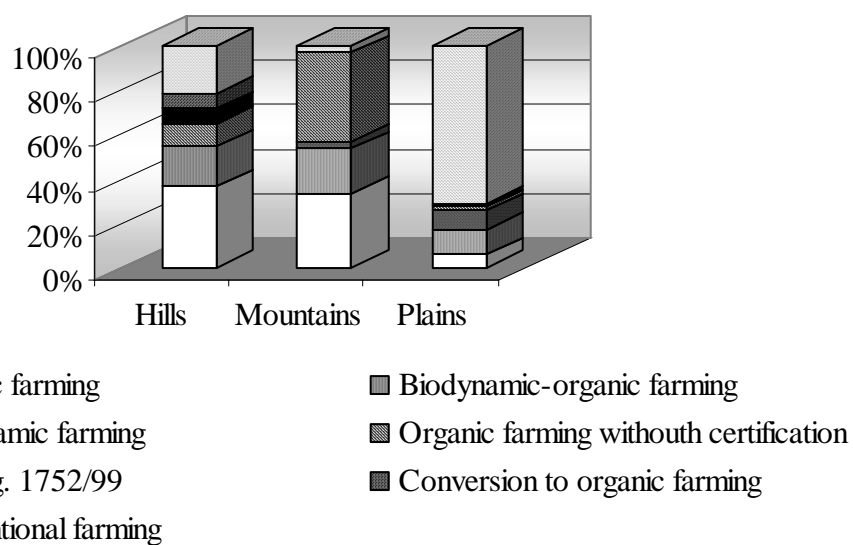


Fig. 3. Farm Agricultural system distribution according to altimetry classification.

*Legend of figure 3*

Farm agricultural system	Hills	Mountains	Plains
		Farms (%)	
Conventional farming	21	3	71
Conversion to organic farming	7	-	-
UE Reg. 1752/99	7	-	2
Organic farming without certification	11	40	2
Biodynamic farming	-	3	9
Biodynamic-organic farming	18	20	11
Organic farming	36	33	6
<i>Total</i>	100	100	100

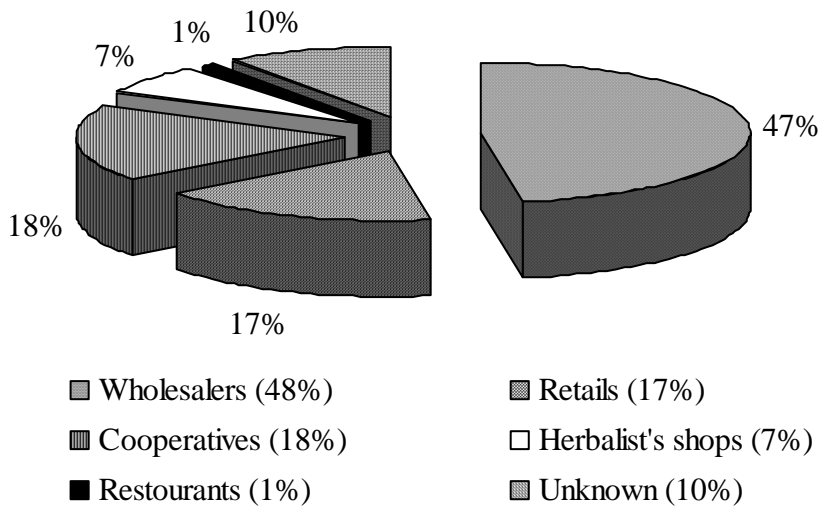


Fig. 4. Product distribution chain.

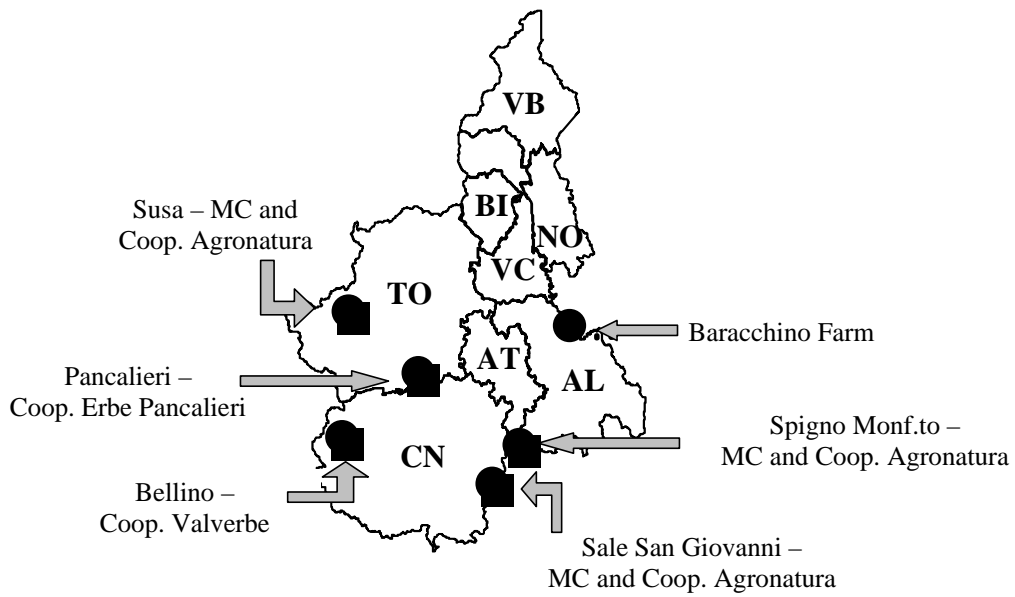


Fig. 5. Thematic map of processing centers in Piedmont.