



4<sup>th</sup> meeting, Kilis 8-11 th May 2013

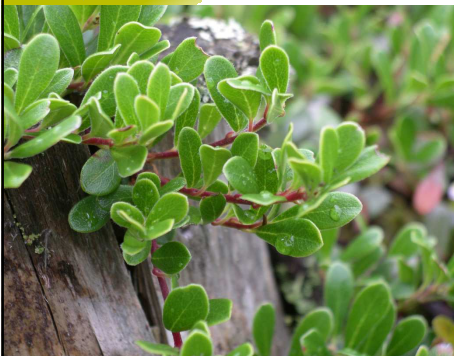
## Wild harvesting businesses of Medicinal and Aromatic Plants in Spain

Eva Moré, [eva.more@ctfc.cat](mailto:eva.more@ctfc.cat)

Non-wood Forest Products Department

[www.ctfc.cat](http://www.ctfc.cat)

## Resource description and distribution



***Arcrostaphylos uva ursi* (L.) Spreng** – Cast.  
Gayuba Cat. Boixerola

**Biogeographical region:** Alpine / Boreal-  
supalpine, Submediterranean, Northern  
Mediterranean

**Type of vegetation:** *Juniperion nanae*

**Altitude range:** 600-2500



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Gentiana lutea* L.** – Cast. Genciana Cat. Gençana

**Biogeographical region:** Alpine / Boreal-alpine

**Type of vegetation:** *Vaccinio-Piceetalia*

**Altitude range:** 900-2100



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Crataegus monogyna* L.** – Cast. Espino blanco  
Cat. Arç blanc

**Biogeographical region:** Mediterranean/ Late  
Euro-siberian

**Type of vegetation:** *Prunetalia spinosae*

**Altitude range:** 0-1800



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Rosmarinus officinalis* L. – Cast. Romero Cat. Romani**

**Biogeographical region:** Mediterranean

**Type of vegetation:** *Rosmarino-Ericion*

**Altitude range:** 0-1400



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Thymbra capitata* (L.) Cav. – Cast. Orégano, tomillo carrasqueño Cat. Frigola**

**Biogeographical region:** Mediterranean / Southern Mediterranean

**Type of vegetation:** *Rosmarino-Ericion*

**Altitude range:** 0-200



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Lavandula latifolia* Medik.** – Cast. Espliego,  
Alhucema Cat. Espígol, Barballó

**Biogeographical region:** Mediterranean /  
Northern Mediterranean

**Type of vegetation:** *Rosmarinetalia*

**Altitude range:** 0-1700



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Thymus zygis* Loefl. ex L..** – Cast. Tomillo blanco

**Biogeographical region:** Mediterranean /  
Western Mediterranean

**Type of vegetation:** *Rosmarinetalia*

**Altitude range:** 0-500



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



***Cistus ladanifer* L.** – Cast. Jara pringosa

**Biogeographical region:** Mediterranean / Western Mediterranean

**Type of vegetation:** *Lavanduletalia stoechadis*

**Altitude range:** 0-1000



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



*Micromeria fruticosa* (L.) Briq.  
Sierra de Salinas, Villena (Alicante)  
© Santiago González-Tomé  
www.spabta.com

***Satureja fruticosa* (L.) Briq. [*Micromeria fruticosa* (L.) Druce]** – Cast. Poleo blanco Cat. Poniol

**Biogeographical region:** Mediterranean / Western Mediterranean

**Type of vegetation:** *Asplenion petrarchae*

**Altitude range:** 0-1500



## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



*Thymus mastichina* L. – Cast. mejorana

**Biogeographical region:** Mediterranean / Western Mediterranean

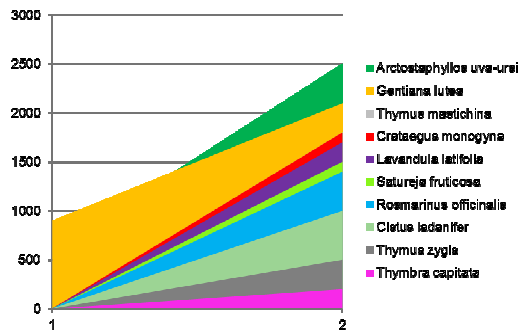
**Type of vegetation:** *Quercetum rotundifoliae*

**Altitude range:** 0-1800



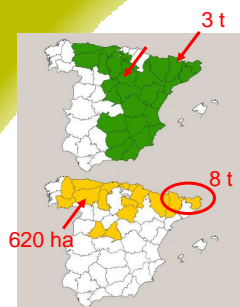
## Wild harvesting businesses of MAPs in Spain

### Resource description and distribution



Production and use

Productive areas



	collected part	botanical registrations
<i>Thymus mastichina</i>	plant in flower	2.244
<i>Crataegus monogyna</i>	Inflorescences, fruit	2.092
<i>Thymus zygis</i>	plant in flower	1.972
<i>Rosmarinus officinalis</i>	plant in flower	1.811
<i>Lavandula latifolia</i>	flower (whole spike)	983
<i>Cistus ladanifer</i>	plant (after flowering)	943
<i>Arctostaphylos uva-ursi</i>	leaves	616
<i>Thymbra capitata</i>	flower	338
<i>Gentiana lutea</i>	roots	286
<i>Satureja fruticosa</i>	plant	142



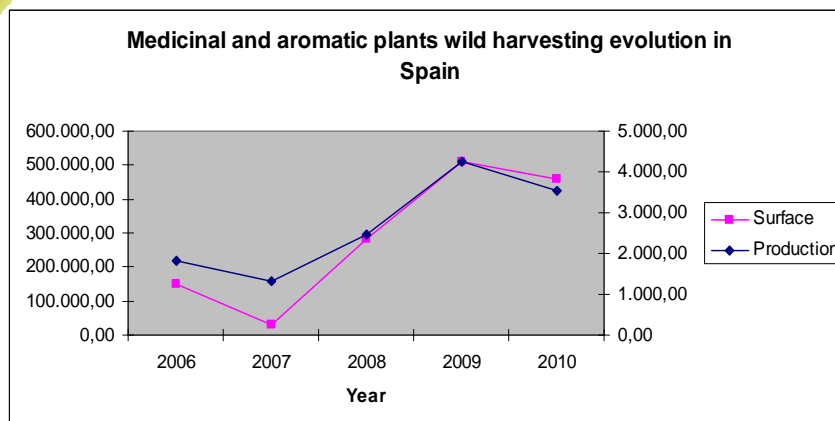


Use estimation	Associated surface (ha)	total production (t)	Economic value (€)
Total aromatic and medicinal plants	457.246 (1)	3.528 (1)	64.506 (2)
Total non-wood forest products (plants and mushrooms)	3.310.471 (1)	9.411.395 (1)	143.672.984 (2)

(1) Anuario de Estadística Forestal (2010) (2) Anuario de Estadística Forestal (2008)

- **Main NWFP productions:** mushrooms and other plants;  
**main surfaces:** mushrooms and truffles collection
- MAPs are only the 0,04% of NWPF value.
- Most of MAPs are aromatic ones (*Thymus*, *Thymbra*, *Lavandula*, *Cistus*, *Rosmarinus*)

Land property: 73% private (Andalucia), 27% public



## Wild harvesting businesses of MAPs in Spain

### Production and use

REGION Province	Total MAPs 2009		Total MAPs 2010		2010 Forest and wild harvesting certified organic  Surface (ha)
	Production (t)	Surface (ha)	Production (t)	Surface (ha)	
<b>ANDALUCIA</b>	<b>3.797</b>	<b>505.187</b>	<b>2.867</b>	<b>454.445</b>	181.349
Almería	332	38.682	319	38.952	
Cádiz	249	28.739	239	29.234	
Córdoba	552	63.681	529	64.778	
Granada	1.036	168.104	958	110.465	
Huelva	668	76.070	341	75.909	
Jaén	417	67.217	227	67.227	
Málaga	192	22.268	91	26.578	
Sevilla	350	40.426	164	41.122	
<b>Total MAPs</b>	<b>4.243</b>	<b>508.553</b>	<b>3.528</b>	<b>457.246</b>	

Anuario de Estadística Forestal (2009, 2010)

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## Wild harvesting businesses of MAPs in Spain

### Production and use

REGION Province	Total MAPs 2009		Total MAPs 2010		2010 Forest and wild harvesting certified organic  Surface (ha)
	Production (t)	Surface (ha)	Production (t)	Surface (ha)	
<b>ARAGON</b>	<b>115</b>				547
Zaragoza	115				
<b>C.VALENCIANA</b>		<b>229</b>	<b>229</b>		6.213
Valencia		229	229		
<b>CASTILLA Y LEÓN</b>		<b>428</b>	<b>215</b>		1.166
Léon		428	115		
Soria			100		
<b>CASTILLA LA MANCHA</b>	<b>104</b>	<b>2801</b>	<b>104</b>	<b>2.801</b>	5.222
Albacete	104	2801	104	2.801	
<b>R.MURCIA</b>	<b>33</b>		<b>43</b>		341
<b>Total MAPs</b>	<b>4.243</b>	<b>508.553</b>	<b>3.528</b>	<b>457.246</b>	

Anuario de Estadística Forestal (2009, 2010)

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***Arctostaphylos uva ursi* (L.) Spreng**



**Collected part:** leaves

**Prices:** 2,50-3,50 €/kg dry herb

**Main market:** Medicinal

**Elaborated products:**  
phytomedicines

**Raw material obtained:** dry herb

**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping and milling of leaves
4. Distribution to medicinal plant laboratories
5. Packaging in bags or capsules
6. Distribution to herbal shops and pharmacies



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***Arctostaphylos uva ursi* (L.) Spreng**



**Collected part:** leaves

**Prices:** 2,50-3,50 €/kg dry herb

**Main market:** Medicinal

**Elaborated products:**  
phytomedicines

**Raw material obtained:** extracts

**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping of leaves
4. Distribution to extracts laboratories
5. Obtaining of extracts
6. Distribution to medicinal plant laboratories
7. Packaging in glass dropping bottle
8. Distribution to herbal shops and pharmacies



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**Gentiana lutea L.**



**Collected part:** roots

**Prices:** 7,50-8,50 €/kg dry root

**Main market:** Medicinal

**Elaborated products:**  
phytomedicines

**Raw material obtained:** dry herb

**Production process:**

1. Cleaning, cutting and drying at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping of roots
4. Distribution to medicinal plant laboratories
5. Packaging in bags or pills
6. Distribution to herbal shops and pharmacies



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**Gentiana lutea L.**



**Collected part:** roots

**Prices:** 7,50-8,50 €/kg dry root

**Main market:** Food

**Elaborated products:** Liquors

**Raw material obtained:** dry herb

**Production process:**

1. Cleaning, cutting and drying at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping of roots
4. Distribution to alcoholic companies
5. Maceration in alcohol and packaging in bottles
6. Distribution to food sector



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*Crataegus monogyna* L.



**Collected part:** flower top

**Prices:** --

**Main market:** Medicinal

**Elaborated products:**  
Phytomedicines

**Raw material obtained:** dry herb

**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping and milling of leaves
4. Distribution to medicinal plant laboratories
5. Packaging in bags or capsules
6. Distribution to herbal shops and pharmacies



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*Crataegus monogyna* L.



**Collected part:** flower top

**Prices:** --

**Main market:** Medicinal

**Elaborated products:**  
Phytomedicines

**Raw material obtained:** extract

**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping of leaves and flowers
4. Distribution to extracts laboratories
5. Obtaining of extracts
6. Distribution to medicinal plant laboratories
7. Packaging in glass dropping bottles, tablets, pills
8. Distribution to herbal shops and pharmacies



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*Crataegus monogyna* L.



**Collected part:** fruits

**Prices:** --

**Main market:** Medicinal

**Elaborated products:**  
Phytomedicines

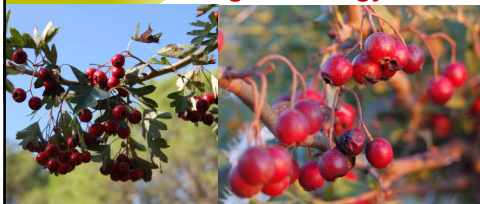
**Raw material obtained:** dry herb

**Production process:**

1. Drying at harvesters facilities
2. Distribution to wholesalers
3. Cleaning, quality control
4. Chopping and milling of fruits
5. Distribution to medicinal plant laboratories
6. Packaging in bags, capsules or pills
7. Distribution to herbal shops and pharmacies

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*Crataegus monogyna* L.



**Collected part:** fruits

**Prices:** --

**Main market:** Medicinal

**Elaborated products:**  
Phytomedicines

**Raw material obtained:** extract

**Production process:**

1. Drying at harvesters facilities
2. Distribution to wholesalers
3. Cleaning, quality control
4. Distribution to extracts laboratories
5. Obtaining of extracts
6. Distribution to medicinal plant laboratories
7. Packaging in glass dropping bottle, tablets, pills
8. Distribution to herbal shops and pharmacies



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*Crataegus monogyna* L.



**Collected part:** fruits

**Prices:** --

**Main market:** Food

**Elaborated products:** Food supplements

**Raw material obtained:** fresh juice

**Production process:**

1. Direct selling from harvester to medicinal plant laboratory / food supplements laboratories
2. Cleaning, quality control, juice squeeze
3. Packaging in glass bottles
4. Distribution to herbal shops

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*Rosmarinus officinalis* L.



**Collected part:** leaves

**Prices:** 1,60-1,70 €/kg dry leaves

**Main market:** Food

**Elaborated products:**  
Condiments

**Raw material obtained:** dry herb

**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping and milling of leaves
4. Distribution to condiments packagers
5. Blending and packaging in jars and boxes
6. Distribution to food sector



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*Rosmarinus officinalis L.*



**Collected part:** leaves

**Prices:** --

**Main market:** Cosmetics

**Elaborated products:**  
Cosmetics

**Raw material obtained:** fresh herb

**Production process:**

1. Harvesting of fresh leaves by artisanal cosmetic laboratories
2. Maceration in alcohol or vegetable oil
3. Distribution to cosmetic sector



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*Rosmarinus officinalis L.*



**Collected part:** plant in flower

**Prices:** 36 €/kg essential oil

**Main market:** Medicinal

**Elaborated products:**  
phytomedicines, aromatherapy,  
cosmetics, perfumery

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to medicinal plant laboratories
6. Packaging in glass dropping bottle
7. Distribution to herbal shops and pharmacies



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*Rosmarinus officinalis L.*



**Collected part:** plant in flower

**Prices:** 36 €/kg essential oil

**Main market:** Food

**Elaborated products:** food additives (flavours)

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to flavours enterprises
6. Blending and obtaining of flavouring additives
7. Distribution to food industries



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*Rosmarinus officinalis L.*



**Collected part:** plant in flower

**Prices:** --

**Main market:** Food, Cosmetics

**Elaborated products:** preserving additives

**Raw material obtained:** antioxidants

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution of remaining distilled plant to extracts laboratories
4. Obtaining of antioxidant
5. Distribution to additives wholesalers
6. Distribution to food industries and cosmetic industries



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***Thymbra capitata (L.) Cav.***



**Collected part:** flowers

**Prices:** 66-110 €/kg essential oil

**Main market:** Perfumery

**Elaborated products:** perfumes

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to fragrances enterprises
6. Blending and obtaining of fragrances
7. Distribution to perfumery industry



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***Thymbra capitata (L.) Cav.***



**Collected part:** flowers

**Prices:** --

**Main market:** Food

**Elaborated products:** Liquors

**Raw material obtained:** dry herb

**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping and milling of flowers
4. Distribution to traditional alcoholic enterprises
5. Maceration in alcohol
6. Distribution to local food market



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***Lavandula latifolia* Medik.**



**Collected part:** flowers

**Prices:** 36 €/kg essential oil

**Main market:** Perfumery

**Elaborated products:** perfumes

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh flowers to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to fragrances enterprises
6. Blending and obtaining of fragrances
7. Distribution to perfumery industry



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***Thymus zygis* Loefl. ex L.**



**Collected part:** flowers

**Prices:** 85 €/kg essential oil

**Main market:** Perfumery

**Elaborated products:** perfumes

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to fragrances enterprises
6. Blending and obtaining of fragrances
7. Distribution to perfumery industry



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***Cistus ladanifer* L.**



**Collected part:** plant after flowering

**Prices:** 85 €/kg essential oil

**Main market:** Perfumery

**Elaborated products:** perfumes

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to fragrances enterprises
6. Blending and obtaining of fragrances
7. Distribution to perfumery industry



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***Cistus ladanifer* L.**



**Collected part:** plant after flowering

**Prices:** --

**Main market:** Perfumery

**Elaborated products:** perfumes

**Raw material obtained:** labdanum gum, absolute, resinoid

**Production process:**

1. Contracted harvesters deliver fresh plant to essences enterprises
2. Gum or Absolute or Resinoid obtaining
3. Distribution to essences wholesalers
4. Quality control, standardization
5. Distribution to fragrances enterprises
6. Blending and obtaining of fragrances
7. Distribution to perfumery industry



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**Satureja fruticosa (L.) Briq.**



**Collected part:** leaves

**Prices:** --

**Main market:** Food

**Elaborated products:** herbal teas

**Raw material obtained:** dry herb

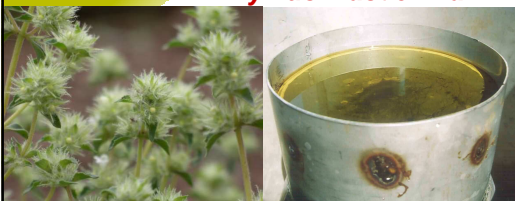
**Production process:**

1. Drying and separation at harvesters facilities
2. Distribution to wholesalers
3. Quality control, chopping and milling of leaves
4. Distribution to herbal teas packagers
5. Blending with mints (*Poleo-menta*) and packaging in herbal tea bags, bags, boxes
6. Distribution to food sector



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**Thymus mastichina L.**



**Collected part:** flowers

**Prices:** 80 €/kg essential oil

**Main market:** Perfumery

**Elaborated products:** perfumes

**Raw material obtained:** essential oil

**Production process:**

1. Contracted harvesters deliver fresh plant to distillers
2. Essential oil obtaining
3. Distribution to essential oil wholesalers
4. Quality control, standardization
5. Distribution to fragrances enterprises
6. Blending and obtaining of fragrances
7. Distribution to perfumery industry



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## Wild harvesting businesses of MAPs in Spain

### Value chain

	collected part	raw material	local population	Group of harvesters	Professional harvesters	Enterprises
<i>Arctostaphylos uva-ursi</i>	leaves	dry herb				
<i>Arctostaphylos uva-ursi</i>	leaves	extracts				
<i>Gentiana lutea</i>	roots	dry herb				
<i>Crataegus monogyna</i>	flower top	dry herb				
<i>Crataegus monogyna</i>	flower top	extracts				
<i>Crataegus monogyna</i>	fruits	dry herb				
<i>Crataegus monogyna</i>	fruits	extracts				
<i>Crataegus monogyna</i>	fruits	juice				
<i>Rosmarinus officinalis</i>	leaves	dry herb				
<i>Rosmarinus officinalis</i>	leaves	fresh herb				
<i>Rosmarinus officinalis</i>	plant in flower	essential oil				
<i>Rosmarinus officinalis</i>	plant in flower	antioxidants				
<i>Thymbra capitata</i>	flowers	essential oil				
<i>Thymbra capitata</i>	flowers	dry herb				
<i>Lavandula latifolia</i>	flower (whole spike)	essential oil				
<i>Thymus zygis</i>	plant in flower	essential oil				
<i>Cistus ladanifer</i>	plant after flowering	essential oil				
<i>Cistus ladanifer</i>	plant	labdanum absolute				
<i>Cistus ladanifer</i>	plant	labdanum gum				
<i>Cistus ladanifer</i>	plant	labdanum resinoid				
<i>Satureja fruticosa</i>	plant	dry herb				
<i>Thymus mastichina</i>	plant in flower	essential oil				

## Wild harvesting businesses of MAPs in Spain

### Value chain

Province	Detected harvesting enterprises
Albacete	Peñarrubia del Alto Guadiana, S.L.
Almería, Granada	El Jarpil
Girona	Lluch Recol·lectors
Girona	Laboratorios Alqvimia
Girona	Cosmètics Giura, S.C.P.
Huelva	El repión
Huelva	Biolandes Andalucía, S.A.
León	APROGEN - Asociación Promotora de la Genciana y otras plantas de interés de la montaña occidental leonesa
Lleida	Herboristeria Nogué
Lleida	TaüllOrganics, S.L.
Lleida	Plantarom
Lleida	Herbocat
Soria	Soria Natural, S.A.
Teruel	Matarrania
Valencia	Ecoaromuz
Valencia	Siempreviva, Coop.V.

## Wild harvesting businesses of MAPs in Spain

### Training needs

	Importance (1 to 6)	Training subjects							
		Sustainable WH techniques	Good Collecting Practices	Transformation training (drying/distillation...)	Good manufacturing practices	Products elaboration	Commercialisation and market aspects	Normatives and procedures	Other (indicate)
<b>collectors</b>									
1. Local population (work commissioned by a buyer)	5	x	x	x	x				x
2. Group of harvesters (work commissioned by a buyer)	6	x	x						x
3. Professional harvesters (selling to different buyers)	4	x	x	x	x	x	x	x	
4. Enterprises (auto-consumption for elaborating products)	5	x	x						x
5. Other (Forest owners)	3			x		x	x		x
<b>buyers</b>									
wholesalers	5				x				x
companies	4	x			x				x

## Wild harvesting businesses of MAPs in Spain

### Training needs

	Training actions								
	Regular training (courses, workshops)	Voluntary training (courses, workshops)	leaflets, posters, CD, DVD	technical documents	open seminars	mobile apps	media actions (TV, press...)	on-line training	other (indicate which)
<b>collectors</b>									
1. Local population (work commissioned by a buyer)		x	x		x		x		
2. Group of harvesters (work commissioned by a buyer)	x	x	x						enterprise training
3. Professional harvesters (selling to different buyers)	x	x	x	x	x			x	
4. Enterprises (auto-consumption for elaborating products)		x	x	x	x				enterprise training
5. Other (please indicate _ eg. Forest owners_)		x	x	x	x		x	x	
<b>buyers</b>									
wholesalers			x	x	x		x		enterprise training
companies		x	x	x	x		x		enterprise training

### Strengths

- Freedom of action due to the **few control** on certain species
- Not many **competence** (not many harvesters)
- **Rich flora** with high content in active compounds (mainly essential oils)
- Important **traditional consumption** of MAPs, mainly for seasoning
- MAPs products could be **sold during the year** because they are dried or distilled, not sold fresh

### Weaknesses

- **High labour costs** (50 years before harvesting was done by gypsy families).
- Current **high competence** of products from Western Europe and Northern Africa
- **Few knowledge** on botanics and chemistry (ex. chemotypes)
- Not local harvesters (commissioned by buyers) have **not information on the surroundings**
- Few information on **correct transformation** and good manufacturing practices
- Few information on **regulations and procedures**
- **Obsolete technologies** (distillers and dryers). There is no willing to modernize as it is a secondary activity
- Harvesters use **ancient harvesting techniques** and they are not willing to change



### Opportunities

- Professional harvesting enterprises for medicinal **high valued botanicals**
- Harvesting of aromatic plants to obtain **chemotyped essential oils**
- Harvesting based on **sustainability and organic production**
- **Crisis** will increase the number of people desiring to participate in this activity
- A serious survey on **value chain** and the **creation of producers organisations** would offer new opportunities on wild harvesting of MAPs
- **Research** and implementation of comprehensive technology transfer in ecological, technical and economic issues.
- **Sustainable management** of forest use, taking into account operating systems, population dynamics and erosion, to maintain the resource in long term.

### Threats

- **Old harvesters** have disappeared and there has not been knowledge transmission
- New harvesters have **not enough knowledge on botanics** identification leading to species misunderstanding
- Not local harvesters (commissioned by buyers) do not care about **species or habitat conservation**
- New harvesters have not knowledge in **sustainable wild harvesting**
- New harvesters have not information about plants transformation and processing to obtain a **quality raw material**
- More **frequently droughts** are decreasing the wild harvests
- Most collected species (e.g. *Thyme sp.*, *Rosmarinus officinalis* and *Cistus ladanifer* in Andalusia) have risks of **overexploitation**

Wild harvesting of *Cistus ladanifer*

[http://www.dailymotion.com/video/x4yk6c\\_el-region\\_creation](http://www.dailymotion.com/video/x4yk6c_el-region_creation)

Distillation of *Rosmarinus officinalis*

<http://www.youtube.com/watch?v=HEIddBpAdd4>

Wild harvesting of *Lavandula latifolia*

<http://www.youtube.com/watch?v=uFNyk0On990>

Wild harvesting of *Gentiana lutea* and others

[http://www14.gencat.cat/gencat\\_video/AppJava/detall.do?id=690113109061809](http://www14.gencat.cat/gencat_video/AppJava/detall.do?id=690113109061809)