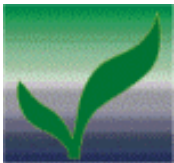


IENICA

REPORT FROM THE KINGDOM OF SPAIN

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0.1. MAP OF THE AUTONOMOUS COMMUNITIES (REGIONS) MAKING UP THE KINGDOM OF SPAIN

- Andalusia
- Aragon
- Principality of Asturias
- Balearic Islands
- Canary Islands
- Cantabria
- Castile-La Mancha
- Castile and León
- Catalonia
- Extremadura
- Galicia
- La Rioja
- Madrid
- Murcia Region
- Navarre
- Basque Country
- Valencia Region



0.2 AGRICULTURE IN GALICIA

Galicia is an *autonomous community* (region) situated in the extreme north-west of the Iberian Peninsula. It is bathed by the Cantabrian Sea to the north and by the Atlantic Ocean to the west. In the east it is bordered by the autonomous communities of the Principality of Asturias and Castile and León.

Its **climate** belongs to the so-called Iberian humid ocean type, characterized by regularity of precipitation throughout the year (1,000-1,500 mm per year over the region), mild temperatures and low annual temperature difference (8.8°C in Fisterra, on the coast, and 15.5°C in Ourense, inland).

Regarding **hydrography**, on the Atlantic versant are the Iberian Peninsula's longest rivers and those with the greatest flow-rate, primarily the River Miño (340 km) and its tributary the Sil (228 km), while other major rivers flowing the same way are the Ulla (126 km) and the Tambre (134 km). The watercourses on the Cantabrian side are shorter and more torrential owing to the nearness of the sea to their sources. The greatest river on the Cantabrian versant in the Eume (77 km), which flows into the Betanzos Ria. The regional relief has made it possible to build several dams (the Eume on the river of that name, the Belsar on the Miño and San Esteban and Sequeiros on the Sil).

Agricultural Production (hectares)

Cereals

- Wheat: 30,846
- Maize: 104,317
- Barley: 2,062
- Oats: 2,535
- Rye: 32,617

Tubers for human consumption

- Potatoes: 79,756

Fodder crops

- Rye-grass: 18,908
- Fodder cereals: 35,093
- Meadows: 126,068

- Other fodder crops: 55,839

Vegetables

- Vetch and leeks: 15,790

Flowers: 41,320

Fruit trees

- **Pip** fruit: 1,026
- Stone fruit: 112

Vine: 27,971

0.3 AGRICULTURE IN ASTURIAS

The **Principality of Asturias** is an autonomous community situated in the north-west of the Iberian Peninsula, on the Cantabrian Coast. It is bordered by Galicia in the west, Castile and León in the south, and Cantabria in the east. It has an area of 10,565 square kilometres and 401 km of coastline.

The **climate** is of the ocean type, with abundant precipitation (1,000-2,000 mm per year, depending on areas) distributed throughout the year with peaks in autumn and winter. The coastal area has warm temperatures (14°C annual average) while inland ones are lower (12°C). The Cantabrian Mountain area has a mountain climate with heavy snowfalls and very low temperatures.

It has a north-south **hydrography** of short, fast-flowing rivers with constant rates of flow. The most important are the Deva, with its tributary the Cares; the Sella, with the tributaries Ponga, Mampodre and Cobra, which forms the Ribadesella Ria, the Nalón, which forms the Pravia Ria; the Navia, the region's longest river (159 km), and the Eo, which forms a natural boundary with the province of Lugo and flows out at the Ribadeo Ria.

Agricultural production (hectares):

Food Crops:

Cereals:

- Wheat: 180
- Maize: 104,317
- Barley: 2,062
- Oats and rye: 34,682

Pulses: 2,607

Tubers for human consumption

- Potatoes: 3,7000

Fruit trees:

- Pip fruit: 6,886

Fodder crops

- Rye-grass: 9,231
- Fodder cereals: 355
- Meadows: 7,892
- Other fodder crops: 18,226

Vegetables: 1,270

Flowers: 300

Vine: 106

0.4. AGRICULTURE IN CANTABRIA

Cantabria has an area of 5,289 square kilometres and is one of seven autonomous communities comprising a single province. To the north is the Cantabrian Sea, to the west the Principality of Asturias, to the south Palencia and Burgos (provinces of the community of Castile and León) and to the east is Vizcaya, in the Basque Country.

Its climate is Atlantic, humid and warm throughout the region except for the extreme south, which has some continental features, with cold winters. The flat lands of La Marina allow masses of ocean air to reach inland and moderate the temperature. On the summits of mountains over 1,700 m high the climate has sub-alpine characteristics, with intense cold and perpetual snows. The Liébana Depression is a climatic exception, as it is protected by the Picos de Europa, having therefore hot summers, mild winters and little rainfall.

Precipitation occurs throughout the year, with a yearly average of 1,200 mm. Rainfall is high on the coast and in the mountains, where it can reach 2,000 mm.

Its **hydrography** is one of short rivers with a high flow-rate, with characteristics of glacial action at their headwaters. They have cut vertical gullies through the mountains, but on reaching La Marina they meander, to form wide estuaries, like those of the Besaya and the Pas.

Agricultural Production (hectares):

Food crops:

Cereals: 2,290

Pulses: 281

Tubers for human consumption:

- Potatoes: 2,681

Vegetables:

- Cabbages, leaks: 107
- Onions, lettuces, tomatoes: 540
- Green beans, peppers: 325

Fodder crops:

- Proliphyte meadows: 3,410
- Mangel-wurzels: 624
- Fodder turnips: 624
- Alfalfa: 1,088
- Rye-grass: 3,504
- Fodder maize: 5,529

0.5 AGRICULTURE IN THE BASQUE COUNTRY

The Basque Country is an autonomous community situated in the north of the Iberian Peninsula, at the easternmost end of the Cantabrian coast, comprising the provinces of Álava, Guipúzcoa and Vizcaya. To the north it is bathed by the Cantabrian Sea and to the west it is bordered by the autonomous communities of Cantabria and Castile and León, to the south by La Rioja and to the east by Navarre and by France. In area (7,261 square kilometres) it is the thirteenth of Spain's seventeen autonomous communities.

The **climate** of the Basque Country is of the so-called humid Iberian ocean type, characterized by a yearly rainfall around 1,000 mm and mild temperatures with little variation. It would, however, be appropriate to distinguish between the ocean area as such on the coast together with the Basque Mountains (with an annual rainfall of 1,719 mm at San Sebastián and a temperature difference of 12°C), and the southern area with its continentalized Mediterranean climate, with harsher winters and drier summers, of the central and southern parts of Álava (902 mm and 15°C temperature variation at Vitoria).

The Basque **hydrography** is characterized by short rivers with a high flow-rate, on two sides of a watershed, flowing into the Cantabrian Sea and towards the Mediterranean. Those on the Cantabrian side have a regular flow-rate and their courses run over a great vertical difference, while near their mouths they generally form fertile valleys and deep rias. The major rivers on this side are the Bidasoa, Oiatzun, Urumea, Oria, Urola, Deba, Nervión, Ibaizábal and Cadagua. Those on the Mediterranean side are the Ebro and its tributaries; they are longer, descending through a lesser vertical difference between sources and confluences, and have a more irregular flow-rate owing to the climatic conditions of their basins. The most important ones are the Ebro itself (100 km of boundary with Burgos and La Rioja) and its tributaries the Bayas, Zadorra, Inglares and Ega. The regional relief has made it possible to build numerous dams (the Puentelarrá on the Ebro, Urrunaga on the Urkiola, Urkulu on the Deba and the Gorostiza, Oiola, el Regato and Zollo dams in Vizcaya).

Agricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 25,195
- Barley: 16,342
- Oats: 3,118

Pulses: 2,025

Tubers for human consumption

- Potatoes: 3,355

Industrial crops

- Sugar beet: 3,321

Fodder crops

- Proliphyte meadows: 436
- Mangel-wurzels: 436
- Fodder turnips: 889
- Alfalfa: 1,171
- Rye-grass: 177
- Fodder maize: 1,185
- Clover: 67

Vegetables: 3,180

Vine: 11,354

Flowers: 3,250

O6. AGRICULTURE IN NAVARRE

Navarre is a single-province autonomous community situated in the centre of the north of the Iberian Peninsula, bordered in the north by France, in the west by the Basque Country, in the south by La Rioja and in the east by Aragon. It has an area of 10,421 square kilometres.

The **climate** of Navarre is one of contrasts. Its rainfall varies from 400 mm in the far south-east to over 2,000 mm in the north-western mountains. The climate in the north-west, owing to the lie of the land, is of the ocean type, with high rainfall (over 1,000 mm) and moderate temperatures. In the Pyrenean area the climate is of the sub-alpine type. The Ribera, on the other hand, has a continentalized Mediterranean climate, with scant and irregular rainfall and a great temperature variation.

Its **hydrography** is one of short rivers with a high flow-rate on the Atlantic versant. The Urumea basin in Navarre covers 216 square kilometres and the Bidasoa 671. Of the Mediterranean versant rivers we may point out the Ega, Arga and Aragón.

Agricultural Production (hectares).

Food crops

Cereals:

- Wheat: 95,514
- Maize: 17,323
- Barley: 97,014
- Oats and rye: 3,061

Pulses: 1,125

Tubers for human consumption

- Potatoes: 1,587

Industrial crops

- Lavender: 23
- Flax: 14
- Rape: 1,055

Fodder crops:

- Alfalfa: 7,119

- Fodder maize: 808

- Meadows: 1,248

Vegetables:

- Tomatoes: 3,860
- Peppers: 1,152
- Cauliflower: 2,150

Flowers: 1,100

Vine: 18,850

Fruit trees:

- **Pip** fruit: 1,984
- Stone fruit: 2,017

Olive: 2,320

0.7 AGRICULTURE IN ARAGON

Aragon is situated in the north-east of the Iberian Peninsula. It borders with France in the north, and from west to east with the regions of Navarre, La Rioja, Castile and León, Castile-La Mancha, Valencia and Catalonia. It is the fourth largest autonomous community in area, with 47,669 square kilometres.

Aragon's **hydrography** consists of the River Ebro, the greatest river in Spain, the great artery crossing the region from north-west to south-east. From the left it receives water from its Pyrenean tributaries, the Aragón, Gállego and Segre, with its own tributary the Cinca. The tributaries on the right carry less water, the most important being the Jalón, Herva, Martín and Guadalope. Two Levantine rivers rise in the extreme south of the region, the Mijares and the Turia, which in this area is called the Guadalaviar. Long irrigation canals branch off from the rivers covering a large area of the Ebro valley and such districts as Las Bárdenas and Cinco Villas.

The region's **climate** depends largely on its relief. There is a mountain climate, damp and cold, in the Pyrenean part, with long winters, snowfalls, high rainfall (1,000-2,000 mm) and cool summers. The Ebro depression has a continentalized Mediterranean climate, with scant precipitation, hot summers (22-24°C mean in August) and cold winters (6.5°C). The prevailing wind is north-westerly - the *cierzo* - which blows in winter and at the beginning of the spring, while the summer wind is the *bochorno*, very hot and dry. The Iberian Mountain area has a colder climate than the flat areas, with precipitation varying from 400 to 800 mm on the southern slopes.

Agricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 247,086
- Maize: 68,348
- Barley: 419,152

Pulses: Vetch: 32,003

Tubers for human consumption

- Potatoes: 4,768
- Sweet potatoes: 4

Industrial crops:

- Sugar beet: 112
- Sunflower: 51,028
- Flax: 3,785
- Saffron: 85

Vegetables: 14,014

Fodder crops:

- Alfalfa: 72,867
- Fodder vetch: 12,16
- Clover and sulla: 7,371

Flowers: 1,000

Vine: 58,966

Fruit trees:

- **Pip** fruit: 19,985
- Stone fruit: 28,425

Olive: 52,922

0.8 AGRICULTURE IN CATALONIA

Catalonia is situated in the north-east of the Iberian Peninsula. To the north it borders France, to the east the Mediterranean, to the south the Valencian Region and to the west Aragon. In area (31,930 square kilometres) it is the sixth largest of Spain's autonomous communities.

Regarding **climate**, two areas may be distinguished, the humid and the dry. The humid area (Pyrenees, Pyrenean foothills and the upper parts of the Central Depression and the coastal mountains) is typified by a yearly rainfall of over 600 mm, cool summers and cold winters (15°C temperature variation at Olot and 995 mm annual rainfall). The other area (coast and centre of the Depression) is characterized by dryness (less than 600 mm rain). The inland parts of this area have a strongly continental tendency (20°C temperature variation and 351 mm rain at Lleida) as opposed to the Mediterranean climate as such of the coast (long, dry summers, very mild winters, maximum rainfall in the autumn). The Valley of Arán is exceptional for its clearly Atlantic type climate, with regular rainfall and less temperature variation.

Its **hydrography** is organized into two great areas, depending on sources: Pyrenean and Mediterranean rivers (the latter rising in the coastal mountains). Among the Pyrenean rivers, a distinction should be made between those flowing into the Ebro (the Noguera Ribagorçana, Noguera Pallaresa and Segre) and those reaching the Mediterranean (the Llobregat, with its tributaries Cardener and Anoia, and the Ter, Fluvià and Muga). The Mediterranean system is made up of rivers of scant and irregular flow (the Francolí, Foix, Besòs and Tordera). Finally, the Garonne, not really part of Catalonia's river system, flows through the Valley of Arán and empties out into the Atlantic. There are very many small lakes in the Catalan Pyrenees, most of them glacial corries. The largest lake in Catalonia, a karst lake, is Banyoles (2,128 m long by 235 m wide).

Agricultural Production (hectares):

Food crops:	• Linseed: 27
Cereals:	• Ground nuts: 116
• Wheat: 58,361	• Flax: 1,445
• Maize: 28,861	Fodder crops:
• Barley: 222,468	• Alfalfa: 51,126
• Rice: 22,525	• Meadows: 5,397
Tubers for human consumption:	• Fodder vetch: 15,048
• Potatoes: 7,689	• Fodder maize: 11,824
• Sweet potatoes: 22	Flowers: 21,615
Vegetables: 22,544	Vine: 65,798
Pulses: 4,946	Fruit trees:
Industrial crops:	• Pip fruit: 36,148
• Sunflower: 19,290	• Stone fruit: 21,800
• Rape: 1,801	• Citrus fruit: 6,313
• Textile hemp: 1,285	Olive: 116,223

0.9. AGRICULTURE IN CASTILE AND LEÓN

Castile and León is situated in the centre and north-west of Spain. To the north it borders Galicia, Asturias, Cantabria and the Basque Country, to the south Extremadura, Madrid and Castile-La Mancha, to the east La Rioja and Aragon, and to the west Portugal. With its area of 94,147 square kilometres and its nine provinces, León, Zamora, Salamanca, Burgos, Soria, Segovia, Ávila, Valladolid and Palencia it is the largest autonomous community in Spain and the largest region in the European Union.

Its hydrography is presided over by the Douro, which, with a length of 845 kilometres, dominates the region. Its basin has an area of 79,326 square kilometres and takes in and uses the abundant rainwater and run-off from the mountains that almost enclose the plain, which makes the Douro the river with the second greatest flow-rate in the Peninsula, with 570 m³/sec. The Esla and the Pisuerga are its main tributaries from the right, while those on the left are the Eresma-Adaja and the Tormes. Many dams, such as Saucelle, Villalcampo and Castro, have been decisive for the region's economy. Other rivers in the region include the Cares and the Sella, which flow into the Atlantic, the Tiétar and the Alberche, which are tributaries of the Tagus, and tributaries of the Ebro.

The **climate** is continental, with extreme temperatures. The cold winters give an average of 4°C and minima of around -15°C are frequently recorded. Low temperatures are normal from October until April or May. Summers are short and mild, with average temperatures around 21°C, and typified by a great night/day variation. Rainfall is scant but, owing to the region's size there are great differences between the interior of the plain, where dry weather predominates, and the mountains around the edge, where rainfall is much greater, reaching up to 1,900 mm in some areas, such as Los Ancares in León, near Galicia.

Agricultural Production (hectares):

Food crops:	•	Hops: 1,075
Cereals:	•	Chicory: 164
• Wheat: 657,145	•	Lavender: 346
• Maize: 61,991		
• Barley: 1,406,912	Fodder crops:	
• Rye: 105,267	• Alfalfa: 48,159	
Tubers for human consumption:	• Proliphyte meadows: 13,350	
• Potatoes: 27,501	• Fodder cereals: 35,148	
Vegetables: 19,087	• Fodder maize: 10,539	
Pulses: 81,316	• Clover and sulla: 5,247	
Industrial crops:	• Vetch for fodder: 17,345	
• Sugar beet: 110,160	Flowers: 2,098	
• Sunflower: 215,638	Vine: 70,265	
• Linseed: 255	Fruit trees:	
• Flax: 2,681	• Pip fruit: 3,510	
• Spearmint: 27	• Stone fruit: 1,664	
• Tobacco: 437	Olive: 9,567	

0.10 AGRICULTURE IN LA RIOJA

La Rioja is situated in the western angle of the Ebro valley, the river forming its north-eastern boundary. It is bounded by Castile and León to the south and west, the Basque Country to the north, Navarre to the north and east and Aragon to the east. With an area of only 5,045 square kilometres, it is one of Spain's smallest autonomous regions.

The **climate** is of the continentalized Mediterranean type. Upper La Rioja has more rainfall than Lower La Rioja, colder winters and more moderate summers. The temperatures of these two areas have an average ranging from 11.8 to 31.8°C and rainfall from 300 to 600 mm per year. In Tierra de Cameros, the temperature is much lower (8°C yearly average) and annual rainfall reaches from 700 to 1,000 mm. The *cierzo*, the cold, damp north-west wind, is frequent in winter and part of the spring.

Hydrography is dominated by the Ebro depression in the north of the region, which has alluvial plains entering the valleys of the tributaries: the Tirón, with its tributary the Oja, the Najerilla, the Iregua, the Leza and the Cidacos. The River Alhama runs between La Rioja and Navarre. All these tributaries are short and with little flow, but their lower reaches are in fertile valleys.

Agricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 35,586
- Barley: 24,344
- Maize: 1,814

Fodder crops:

- Alfalfa: 2,669
- Proliphyte meadows: 965

Pulses: 806

Flowers: 400

Vine: 36,502

Tubers for human consumption:

- Potatoes: 5,709
- Vegetables: 12,052
- Cauliflower: 2,547

Fruit trees:

- Pip fruit: 4,015
- Stone fruit: 3,247

Industrial crops:

- Sugar beet: 3,922
- Hops: 5

Olive: 2,597

0.11. AGRICULTURE IN MADRID

The Community of Madrid consists of a single province, in the centre of the Iberian Peninsula. It is bounded in the north and west by Castile and León and in the east and south by Castile-La Mancha. It is the twelfth region in area, with 8,028 square kilometres. Madrid, its capital, is also capital of Spain.

The Madrid region has two areas clearly differentiated by their **climate**. The mountainous area has cold winters (with an average temperature of 0°C in January at Navacerrada) and mild summers (17°C in July). The rest of the region has a continentalized Mediterranean climate with an average annual temperature of 14°C, relatively cold winters, and summers with high maximum temperatures in the hottest month, with an average of 24-25°C. Rainfall is scant, between 350 and 600 mm, with more precipitation in the mountains than in the flat areas.

The region's **hydrography** is as follows: to the south of the mountains there is undulating flat land crossed by the Tagus in its southernmost part. Within the region this river's tributaries are the Alberche, the Guadarrama and the Jarama, which is fed by the Manzanares, the Guadalix, the Lozoya, the Henares and the Tajuña.

Agaricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 24,042
- Barley: 59,222
- Maize: 8,698

Pulses: 3,522

Tubers for human consumption:

- Potatoes: 2,584

Industrial crops:

- Sugar beet: 4,975
- Flax: 185

Vegetables: 8,681

Fodder crops:

- Alfalfa: 1,264
- Vetch for fodder: 729

Flowers: 1,100

Vine: 21,109

Fruit trees:

- **Pip** fruit: 203
- Stone fruit: 124

Olive: 23,208

0.12. AGRICULTURE IN CASTILLE-LA MANCHA

Castile-La Mancha is situated in the southern sub-Meseta of the Iberian Peninsula. It is bounded in the north by the regions of Madrid and Castile and León, in the east by Aragon and Valencia, in the south-east by Andalusia and in the west by Extremadura. With an area of 79,230 square kilometres, it is the third largest of Spain's autonomous communities.

Its **climate** belongs mainly to the dry Iberian type, with the exception of the highest parts of the mountain ranges, and may in general be classified as continental Mediterranean (long winters with persistent frosts and very hot summers), very dry in the central parts of the two basins, with an annual rainfall of only 300-400 mm. Temperature variation is high, over 23°C, and precipitation occurs mainly at the equinoxes.

The **hydrography** of the region, as has already been said, has two main areas, the Tagus in the north and the Guadiana in the south, both with their tributaries. The Tagus carries the most water, as it is fed by the rain and snow of the Iberian Mountains and the Central Mountains, from which most of its tributaries come from the right (the Jarama, Guadarrama and Alberche). The Guadiana, a strictly pluvial river, has the lowest flow-rate of any river in Spain, with a maximum in spring and a long summer period of relative dryness. Its main tributary is the Cigüela. Also to be taken into account in La Mancha is the basin of the Júcar, which rises in the mountains of Cuenca and flows towards the Mediterranean. There are also some endoreic areas in the region (the "Eyes" [*Ojos*] of Guadiana, the lakes of the Ruidera, El Taray, Peñahueca, Tirez, La Vega, Manjavacas, Alcázar and Cerro Mesado). Mention should also be made of the overflow lakes or *tablas* in areas of scant excavation, the most important being the Tablas de Daimiel, between the Cigüela and the Guadiana.

Agricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 271,521
- Barley: 941,191
- Maize: 36,227

Pulses

- Lentils: 29,376
- Chickpeas: 15,305
- Peas: 23,643
- Vetch: 82,114

Tubers for human consumption

- Potatoes: 10,499

Vegetables and cucurbits:

- Onions and garlic: 21,458
- Melon: 13,716

Industrial crops

- Sugar beet: 9,733
- Sunflower: 309.48
- Rape: 8,869

- Linseed: 156

- Flax: 3,256

- Saffron: 1,064

- Tobacco: 212

- Lavender: 1,140

- Cotton: 12

Fodder crops:

- Alfalfa: 21,970

- Fodder cereals: 22,096

- Fodder maize: 2,605

- Vetch for fodder: 16,297

Flowers: 1,100

Fruit trees:

- **Pip** fruit: 1,472

- Stone fruit: 5,821

Vine: 590,890

Olive: 291,541

Osier: 1,339

0.13 AGRICULTURE IN EXTREMADURA

Extremadura is made up of Spain's two largest provinces in area, Cáceres and Badajoz. It is situated in the west of Spain and is bounded in the north by Castile and León, in the east by Castile-La Mancha, in the south by Andalusia and in the west by Portugal. It has an area of 41,602 square kilometres.

The **climate** is of the Mediterranean type with some continental features but moderated by the ocean influence reaching the region from the Atlantic coast of Portugal. Summers are hot and dry, with an annual mean temperature of over 25°C, and winters are mild, with a January average of 6°C.

Rainfall is between 400 and 600 mm per year, the driest areas being Tierra de Barros and Vegas del Guadiana. Abundant winter precipitation and dry summers bring about a river regime of contrasts, dry beds becoming rivers that burst their banks and cause floods.

Hydrography is made up of the courses of the River Tagus in Cáceres and the River Guadiana in Badajoz, their flow regulated by a large number of dams and reservoirs. On the Tagus is the Alcántara reservoir, with a capacity of over 3,160 hm³ and on its tributaries are those of Borbollón, Gabriel y Galán and Rosarito. On the Guadiana there are seven dams: Cíjara, García de Sola, Orellana, Zújar, Montijo, Alange, and La Serena, with a capacity of 3,232 hm³.

Agricultural Production (hectares):

Food crops:	•	Flax: 373	
Cereals:			
•	Wheat: 110,055		
•	Barley: 97,670	Fodder crops:	
•	Maize: 14,650	•	Alfalfa: 6,350
Pulses		•	Fodder cereals: 84,500
•	Chickpeas: 25,400	•	Fodder maize: 2,520
•	Vetch: 7,450	•	Proliphyte meadows: 10,000
Vegetables and cucurbits:		•	Vetch for fodder: 9,600
•	Tomatoes: 3,803	•	Clover: 10,950
•	Peppers: 1,215	Flowers: 2,300	
•	Watermelon and melon: 5,428	Fruit trees	
•	Onion and garlic: 2,310	•	Citrus: 22
Tubers for human consumption:		•	Pip fruit: 3,755
•	Potatoes: 10,100	•	Stone fruit: 10,780
Industrial crops:			
•	Tobacco: 14,299	Vine: 81,843	
•	Sugar beet: 3,700	Olive: 250,070	
•	Cotton: 40		
•	Paprika: 1,250		
•	Linseed: 54		

0.14 AGRICULTURE IN VALENCIA

The **Valencian Community** comprises the provinces of Alicante, Castellón and Valencia. Situated in the east of the Iberian Peninsula, it is bounded in the north by Catalonia and Aragon, in the west by Aragon and Castile-La Mancha, in the south by the Murcia Region and in the east by the Mediterranean Sea. It has an area of 23,305 square kilometres.

Its **climate** is subject to the influence of air masses from the Mediterranean Sea. Its winters are fairly mild (with an annual average temperature of 7-11°C) and hot dry summers (from 18 to 26°C yearly average). In the more continental areas the effect of the Mediterranean is less noticeable and there is a greater contrast between the cold winters and high summer temperatures. Precipitation occurs mainly in autumn and spring, ranging from 650 mm per year in the northern highlands, to 250 mm in the southern districts of Alicante, through 300-400 mm in the coastal plain.

The **hydrography** is made up of rivers rising in the region itself: the Cervol, the Magre (a tributary of the Júcar), the Sella, the Monnegre, the Vinalopó, the Serpis and the Palancia. Their flow is scant and irregular, with long dry spells and sudden swellings due to torrential rain. The Turia (243 km) rises at the Muela de San Juan, in the Albarracín mountains, and waters the Garden of Valencia. Its regime is typical of the Mediterranean rivers, with two maximum flows, in spring and autumn. Farther to the south is the Júcar (498 km), which rises at Ojuelos de Valdeminguete, in Cuenca, waters the gardens of the Ribera Alta and the Ribera Baixa before reaching the sea at Cullera. The Segura (341 km) rises in the mountains of the same name and only its final stretches pass through the province of Alicante.

Agricultural Production (hectares):

Food crops:	•	Onions and garlic: 3,780	
Cereals:	•	Globe artichoke: 6,481	
•	Rice: 15,571	•	Peppers: 1,051
•	Wheat: 6,984	Flowers: 23,937	
•	Barley: 17,867	Fodder crops:	
Pulses: 2,720		•	Alfalfa: 4,261
Tubers for human consumption:		Citrus fruits:	
•	Potatoes: 6,849	•	Oranges: 87,035
•	Sweet potatoes: 178	•	Lemons: 13,793
Industrial crops		•	Mandarins: 82,144
•	Cotton: 2,683	•	Pip fruit: 4,895
•	Groundnuts: 76	Stone fruit: 31,125	
•	Saffron: 7	Vine: 100,157	
•	Tobacco: 89	Olive: 94,768	
•	Hops: 5	Other crops:	
•	Lavender: 370	•	Carob: 41,521
Vegetables and cucurbits:		•	Capers: 7
•	Tomatoes: 2,023	•	Reeds: 557
•	Lettuce: 2,653	•	Osier: 25
•	Watermelon and melon: 5,341		

O.15. AGRICULTURE IN MURCIA

The Region of Murcia is a single-province one situated in the south-east of the Iberian Peninsula. It is bounded in the north by Castile-La Mancha, in the south by the Mediterranean Sea and Andalusia, in the east by Valencia and the Mediterranean and in the west by Andalusia and Castile-La Mancha. It has an area of 11,317 square kilometres.

Its **climate** is typically Mediterranean, modified by the influence of the relief and is characterized by its aridness. Rainfall is scant, with yearly averages in the coastal areas of 300 mm, mainly occurring in the autumn, when sudden downpours can give readings of up to 200 mm in a few hours, causing rapid swellings of rivers, bursting of banks and frequent flooding in low-lying areas. Annual temperatures reach an average of 18°C in the areas nearest the coast, so there is no winter as such. In the inland areas, which are more mountainous, winter frosts can occur as can waves of cold weather.

Its **hydrography** is limited to the Segura and its tributaries, the Guadalentín - also called the Sangonera - the Mula, the Argos and the Benamor with their winterbournes, which make up the whole river system of the region. The Segura rises in the Alcaraz mountains in Jaén and reaches the sea at Guardamar in Alicante. Its flow is very irregular and can increase spectacularly and tragically with the autumn downpours. The water flowing into it over its 325 km is well used for watering market gardens.

Agricultural Production (hectares):

Food crops:	•	Watermelon and melon: 5,598
Cereals:		
•	Wheat: 5,908	
•	Barley: 60,466	
Pulses: 326		Fodder crops
Tubers for human consumption:		• Alfalfa: 2,013
•	Potatoes: 2,251	Flowers: 36,200
•	Sweet potatoes: 6	Citrus fruits:
Industrial crops		• Oranges: 9,478
•	Cotton: 2,683	• Lemons: 21,448
•	Paprika: 964	• Mandarins: 1,604
•	Saffron: 1	Pip fruit: 2,518
•	Spearmint: 1	Stone fruit: 31,125
•	Lavender: 370	Vine: 100,157
Vegetables and cucurbits:		Olive: 17,194
•	Tomatoes: 3,803	Other crops:
•	Lettuce: 10,659	• Carob: 1,981
•	Globe artichoke: 5,723	• Capers: 285
•	Cauliflower: 3,145	• Reeds: 54

0.16. AGRICULTURE IN ANDALUSIA

Andalusia is an autonomous community situated in the south of the Iberian Peninsula. It is bounded, from west to east, by Portugal and the regions of Extremadura, Castile-La Mancha and Murcia. Its southern edge is made up of 910 km of Atlantic and Mediterranean coastline. It is the second largest region in area, with 87,268 square kilometres, and the largest in population.

In **hydrography**, the River Guadalquivir (657 km) is the most important, flowing from east to south-west and forming the great artery of the valley of the same name. It flows for much of its length boxed into the Sierra Morena, which means that its tributaries from the right flow down steep slopes (the Jándula, Yeguas, Guadalquivir, Guadiato and Bembézar). To its left is a wide plain across which come tributaries with scant flow, important among them being the Genil. The lower reaches of the river go through a wide plain with marshes and swampy areas. Its mouth is next to the town of Sanlúcar de Barrameda.

Other rivers on the Atlantic side are the Odiel-Tinto and the Guadalete, which flows into the Bay of Cádiz. The Mediterranean versant has very short and irregular rivers. Their courses are characterized by a great vertical difference and long dry periods, some even drying up completely in summer. The major rivers here are the Guadiaro, Guadalquivir, Guadalquivir, Almería and Almanzora.

The Andalusian **climate** is known for its diversity within the temperate Mediterranean type. The sheer size of the region and the peculiarities of its relief give rise to major differences. The Gulf of Cádiz has an ocean Mediterranean climate without extremes of temperature and with moderate averages. The middle part of the Guadalquivir Valley has a continental Mediterranean climate with a high summer temperature (28.5°C), relatively cold winters (9°C) and rainfall between 500 and 700 mm per year, depending on the year and the area. The Intrabetic Trough has more extreme winter temperatures (6°C) and scant precipitation (around 450 mm). The Málaga and Granada part of the Mediterranean coast, known as the Costa del Sol, enjoys a sub-tropical Mediterranean climate with rainfall over 520 mm per year and hot summers and very mild winters. The Almería part of the coast is the driest part of Europe, as its annual rainfall does not exceed 250 mm and its winters are the warmest of the Iberian Peninsula (12°C). Finally, in the highest mountains of the Betic Range, there is a Mediterranean mountain climate with very cold winters (0°C), abundant precipitation (1,000 mm), much of it in the form of snow, and short dry summers.

Agricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 552,718
- Barley: 182,564
- Oats: 62,173
- Maize: 7,983
- Rice: 1,510

Pulses:

- Beans: 9,023
- Chickpeas: 54,402
- Peas: 16,860
- Vetch: 13,283

Tubers for human consumption:

- Potatoes: 27,036
- Yams: 354
- Sweet potatoes: 229

Industrial crops:

- Sugar beet: 64,997
- Sugar cane: 9,528
- Sunflower: 395,206
- Rape: 46,152
- Tobacco: 2,237
- Linseed: 54
- Aniseed: 1,557
- Lavender: 70

Vegetables and cucurbits:

- Tomatoes: 13,487
- Peppers: 9,967
- Watermelon and melon: 22,314
- Strawberries: 6,670

- Aubergines: 13,487
- Garlic and onions: 12,071
- Green beans: 9,833

Fodder crops:

- Alfalfa: 9,633
- Cereals for fodder: 107,191
- Fodder maize: 3,227
- Vetch for fodder: 21,573
- Proliphite meadows: 25,106

Flowers: 94,150

Fruit trees:

- Pip fruit: 1,558
- Stone fruit: 25,104
- Citrus fruit:

- Oranges: 31,740
- Lemons: 6,512
- Mandarins: 5,196

Vine: 55,426

Olive: 1,353,621

Other crops:

- Carob: 795
- Capers: 607
- Agave: 5
- Reeds: 5
- Osier: 16

O.17. AGRICULTURE IN THE BALEARIC ISLANDS

The Balearic Islands Community comprises the archipelago of the same name. It has an area of 5,014 square kilometres, making it the smallest of Spain's autonomous regions. Situated in the centre-west of the Western Mediterranean, the group includes three larger islands: Majorca (3,640 square kilometres), Menorca (702 square kilometres) and Ibiza (Eivissa, 541 square kilometres) and two smaller ones, Formentera and Cabrera and such islets as Dragonera, Conillera (Conejera) and Espalmador.

The **climate** is of the pure Mediterranean type, with mild temperatures averaging 16-17.5°C over the year, except in the Tramuntana mountainous area, where it is around 14°C. Rainfall is scant but varies from one island to another, the driest being Ibiza and Formentera, which do not usually receive more than 400 mm per year, and the wettest Menorca, with nearly 600 mm. The north wind, the *Tramuntana*, blows fiercely in the northern slopes of the islands, especially on Menorca.

Agricultural Production (hectares):

Food crops:

Cereals:

- Wheat: 4,593
- Barley: 7,947
- Oats: 10,189

Pulses: 3,360

Tubers for human consumption:

- Potatoes: 1,895
- Sweet potatoes: 65

Industrial crops:

- Sugar beet: 581
- Rape: 273
- Groundnuts: 22

Vegetables and cucurbits:

- Tomatoes: 1,153
- Watermelon and melon: 2,099

Fodder crops:

- Alfalfa: 3,500
- Cereals for fodder: 27,487
- Maize for fodder: 11,824
- Rye-grass: 3,900

Citrus fruits:

- Oranges: 1,836
- Lemons: 283

Pip fruits: 601

Stone fruits: 1,321

- Almonds: 60,155

Flowers: 14,600

Vine: 1,462

Olive: 10,446

Other crops:

- Carob: 14,414
- Capers: 751

0.18. AGRICULTURE IN THE CANARY ISLANDS

The Canary Islands comprise seven major islands (Tenerife, La Palma, La Gomera, Hierro, Gran Canaria, Lanzarote and Fuerteventura) and six minor ones (Alegranza, Graciosa, Montaña Clara, Lobos, Roque del Este and Roque del Oeste). The group is situated in the Atlantic Ocean off the coast of Africa. Its northernmost point is at latitude 29°N and its southernmost at 27°N. Its area is 7,447 square kilometres and it is the region with the longest coastline in Spain; 1, 583 km.

The climate of the Canary Islands is of the sub-tropical ocean type. The temperature is mild throughout the year and rainfall scant, especially on the southern slopes of the mountains. Fuerteventura and Lanzarote are the driest islands, with only 150-200 mm annual rainfall. The Trade Winds frequently have a moderating effect on the climate. The wind from the Sahara causes sharp rises in the temperature and often has dust in suspension. The shape of Tenerife gives it temperate areas: La Laguna has an average annual temperature of 16°C, while the most frequent average for the coastal areas of all the islands is over 19°C. Snow usually remains on Mt Teide throughout the year.

Agricultural Production (hectares):

Food crops:	•	Aubergines: 43
• Cereals:	•	Green beans: 344
• Maize: 792		
		Fodder crops: 3,712
Pulses: 248		Flowers: 34,200
Tubers for human consumption:		Non-citrus fruit trees:
• Potatoes: 6,152		• Bananas: 8,598
• Yams: 200		• Avocados: 769
Industrial crops:		
• Sugar beet: 282		Vine: 11,768
• Tobacco: 3		
• Lavender: 200		
Vegetables:		Other crops:
• Tomatoes: 4,530		Agave: 140
• Peppers: 265		

1. INFORMATION CONCERNING NON-FOOD CROPS IN SPAIN

Surpluses of almost all farm products in the European Union have led to a need to diversify natural farm resources, especially in regions under low-profit extensive continental crops.

1.1 NATURAL OIL CROPS

The natural oils traditionally made in Spain for human consumption are olive and sunflower oil, produced in Andalusia, Catalonia, Valencia, Murcia, both Castiles and Extremadura. Today, however, part of the production, particularly in the case of sunflower oil is used for lubricants and fuel.

1.1.1. Sunflower

i) Science and Technology

Varieties grown in Spain:

- Peredovick, Osuna HS 101-C, Osuna HS 105-C, SH 25, SH 75, Smena, Sungro-380, Mirasol, Permir, Florasol, Alcotán, Almansur and Alborea SH-300, among others.

Production Methods:

- Monogerm drill 4-5 kg/ha.
- Average crop yields: Dry farming: 1,500 kg/ha
Irrigation farming: 3,000 kg/ha
- Yields; Oil: 68-70% by weight dry matter/kg of seeds
Lubricants and fuels:
Cattle cake: 1 t. of seed = 300 kg cattle cake and residues
Honey: 1 ha gives 20-30 kg honey

ii) Industry

Industrial Uses:

- Oil and animal feed production

Potential uses

- Lubricants, fuel, honey

Processing systems

- Oil production: PRESSING AND REFINING OF SEEDS.
- Lubricant and fuel production: CHEMICAL INDUSTRY.

Problems involved and possible solutions

- Low profitability.
- Finding alternative uses.
- Reduction of iodine content for use in engines.

iii) Markets

Areas of production:

- Andalusia, Castile- La Mancha, Castile and León, Extremadura.

Real and potential markets:

- Oils for human consumption, animal feed.
- Natural lubricants for industrial use
- Hydrocarbons for combustion.

Market demand:

- Drop in the use of fossil fuels and derivatives

Farm and factory production costs:

Farm costs:

- Direct crop costs: € 248.35
- Indirect costs: € 61.60
- Total costs: € 309.95

Factory costs: unavailable

iv) *Environmental considerations*

Ideal for traditional crop rotation.

1.1.2. Rape

i) *Science and Technology*

Varieties grown in Spain:

- Spring sewing: Cresor, Brutor, Erglu, Gulliver and Duplo.
- Autumn sewing: Brink, Lesira, Quinta, Primor, Ledos and Rafal.

Production methods:

- Cereal drill: 8 kg/ha.
- Average crop yield: very variable
- Yields: Oil: 39% by weight dry matter/kg of seed
Lubricants and fuels: Methyl ester of rape
Cattle cake: 55%

ii) *Industry*

Industrial Uses:

- Industrial oil production, animal feed.

Potential Uses

- Lubricants, fuel.

Processing systems

- Oil production: PRESSING AND REFINING OF SEEDS.
- Lubricant and fuel production: CHEMICAL INDUSTRY.

Problems involved and possible solutions

- Low profitability.
- Finding alternative uses.

iii) *Markets*

Production area:

- Andalusia, Castile-La Mancha, Aragon, Castile and León, Extremadura.

Real and potential markets:

- Cattle feed.

Adapts perfectly to traditional crop rotations, even in dry farming, and requires little water.

1.3. CARBOHYDRATE CROPS

1.3.1. Maize

i) Science and Technology

Varieties grown in Spain:

- Experimental varieties.

Production methods:

- Monogerm drill: 70,000 plants/ha.
- Average crop yield: Irrigation farming: 14,000 kg /ha
- Yields: Oil: 18-20% by weight dry matter/kg seed
Cattle cake: 80% seed weight

ii) Industry

Industrial Uses:

- Biodegradable plastic.

Potential Uses

- Limitless applications.

Processing systems

- On trial.

Problems involved and possible solutions

As for traditional maize.

iii) Markets

Production area:

- Aragon, Catalonia, Castile and León, Castile-La Mancha and Extremadura.

Real and potential markets:

- All kinds of manufactured items that may decompose in the environment without polluting.

Market demand:

- In limitless applications.

Farm and factory production costs:

Farm costs:

- Direct crop costs: € 1,053.56
- Indirect costs: € 213.28
- Total costs: € 1,266.84

Factory costs

* Being calculated.

iv) Environmental Considerations

As for traditional maize.

1.4. OTHER CROPS

1.4.1 Agave

i) Science and Technology

Varieties grown in Spain:

- Henequén, Tampico, Sisal.

Production methods:

- Dispersed plants.

ii) Industry

Industrial Uses:

- Textile fibre production, string and rope making.

Potential Uses

- Stimulation of the use of vegetable fibres.

Processing systems

- Manufacture of fibres, string and rope: Brushes.
- Pulp foam in soap production.
- Alcohol production. Distilling.

Problems involved and possible solutions

- Crop to be developed.

iii) Markets

Production area:

- Canary Islands

Real and potential markets:

- Textile market, shoemaking.

Market demand:

- Drop in the use of acrylic fibres and polyesters.

iv) Environmental Considerations

Adapts to untilled land and requires little water.

1.4.2. Osier

i) Science and Technology

Production methods:

- Dispersed and spontaneously growing trees on river banks.

ii) Industry

Industrial Uses:

- Young, thinner, branches are used for basket making; the wood is resistant to knocks.

Potential Uses

- Stimulation of employment and rural diversification.

Processing systems

- Manufacture of fibres, string and rope.

Problems involved and possible solutions

- Crop to be developed.

iii Markets

Production area:

- Castile-La Mancha, Valencia, Murcia, Andalusia.

Real and potential markets:

- Traditional basket making.

Market demand:

- Ornamental uses.

iv Environmental Considerations

Needs wetlands, and so fares well on river banks, thus avoiding erosion and flooding.

1.4.3. Lavender

i) Science and Technology

Varieties (species) grown in Spain:

- *Lavandula spica* and *L. vera*

Production methods:

- Nurseries-Transplanting: 74,074 plants/ha.
- Crop yield: dry farming: 3,800 kg flowers/ha

ii) Industry

Industrial Uses:

- Production of aromatic oils and essences.

Processing systems

- Water vapour distillation.

Problems involved and possible solutions

- Low profitability.
- Finding alternative uses.

iii Markets

Production area:

- Castile and León, Castile-La Mancha, Murcia and Canary Islands.

Real and potential markets:

- Cosmetics, pharmacy and naturalist medicine.

Market demand:

- Naturalist medicine, ecological cosmetics, ornamental uses.

Farm production costs:

- Direct crop costs: € 242.02
- Indirect costs: € 40.53
- Total costs: € 282.55

iv Environmental Considerations

Adapts to untilled land and requires no irrigation.

1.4.4. Spearmint and Peppermint

i) Science and Technology

Varieties (species) grown in Spain:

- *Mentha spicata* and *M. piperita*

Production methods:

- Nurseries-Transplanting: 70,000 plants/ha.
- Yield: irrigation farming: 23,000 kg/ha

ii) Industry

Industrial Uses:

- Production of essences and infusions.

Processing systems

- Water vapour distillation.
- Drying and chopping of plants for infusions.

Problems involved and possible solutions

- Low profitability.
- Finding alternative uses.

iii) Markets

Production area:

- Castile and León, and Murcia.

Real and potential markets:

- Pharmacy and naturalist medicine.

Market demand:

- Naturalist medicine.

Farm production costs:

- Direct crop costs: € 225.42
- Indirect costs: € 40.53
- Total costs: € 265.85

iv) Environmental Considerations

Adapts to untilled land and does not exhaust the land.

1.4.5. Tobacco

i) Science and Technology

Varieties grown in Spain:

- Burley, Flue-cured

Production methods:

- Yield: irrigation farming: 2,200 kg/ha

ii) Industry

Industrial Uses:

- Tobacco and paper companies.

Processing systems

- Drying, chopping and rolling of leaves.

Problems involved and possible solutions

- Low profitability.

- Finding alternative uses.

iii Markets

Production area:

- Castile and León, Extremadura and Castile-La Mancha.

Farm production costs:

- Direct crop costs: € 2,031.93
- Indirect costs: € 121.91
- Total costs: € 2,153.84

iv Environmental Considerations

Would make an interesting addition to traditional crop rotations.

1.5. ENERGY CROPS

1.5.1. Alcohol Beet

i) Science and Technology

Varieties grown in Spain:

- On trial

Production methods:

- Monogerm drill: 1.5 units/ha
- Average crop yield: irrigation farming: 120,000 kg/ha
- Yield: Sugar: 8-12% = 12,000 kg/ha

ii) Industry

Industrial Uses:

- Alcohol production. Potential uses: motor fuel.
- Stimulation of the use of alcohols in petrol mixtures to reduce the consumption of fossil fuels.

Processing systems

- Simpler than traditional ones.

Problems involved and possible solutions

- Similar to sugar beet.
- Finding alternative uses.

iii Markets

Production area:

- Castile and León, Andalusia and Castile-La Mancha.

Real and potential markets:

- Injection engines.

Market demand:

- Reduction of fuel costs

Farm and factory production costs:

Farm production costs:

- Direct crop costs: € 1,684.00

- Indirect costs: € 190.44
 - Total costs: € 1,874.44
- Factory costs: unavailable

iv Environmental Considerations

As for sugar beet.

1.5.2. Cynara

i) Science and Technology

Varieties grown in Spain:

- On trial

Production methods:

- Monogerm drill or transplant (on trial): 10,000 plants/ha
- Average crop yield: dry farming: 15,000 kg/ha
- Yield: 15,000 kg/ha dry matter.

ii) Industry

Industrial Uses:

- Generation of heat. Potential uses: motor fuel.
- Generation of electricity.

Processing systems

- Boilers and turbines.

Problems involved and possible solutions

- Nutrition, plague control, illnesses and weeds.
- Varieties with minimum wastage.

iii) Markets

Production area:

- Castile and León, Andalusia and Castile-La Mancha.

Real and potential markets:

- Heating systems and small power stations.

Market demand:

- Reduction of fuel costs

Farm and factory production costs:

Farm production costs:

- Direct crop costs: under study
- Indirect costs: under study
- Total costs: under study

Factory costs:

- Under study

iv Environmental Considerations

Stimulates the use of renewable resources.

Does not pollute.

Helps combat erosion in dry-farming areas of Spain.

1.5.3 Black Poplar for Biomass

i) Science and Technology

Varieties grown in Spain:

- On trial

Production methods:

- Replanting of 8-10,000 trees/ha.
- Average Yield: irrigation farming: 15,000-20,000 kg/ha
- Use: 15-20,000 kg/ha dry matter.

ii) Industry

Industrial Uses:

- Generation of heat.
- Generation of electricity.

Processing systems

- Boilers and turbines.

Problems involved and possible solutions

- Nutrition, plague control, illnesses and weeds.
- Fast growing varieties with minimum wastage.

iii) Markets

Production area:

- Castile and León, Andalusia and Castile-La Mancha.

Real and potential markets:

- Heating systems and small power stations.

Market demand:

- Reduction of fuel costs

Farm and factory production costs:

Farm production costs:

- Direct crop costs: under study
- Indirect costs: under study
- Total costs: under study

Factory costs:

- Under study

iv) Environmental Considerations

Stimulates the use of renewable resources.

Does not pollute.

Helps combat erosion in dry-farming areas of Spain.

1.6. FOREIGN TRADE

FOREIGN TRADE
SPAIN'S AGRICULTURAL TRADE WITH THE EUROPEAN UNION(1995)

Product		Trade with the European Union			
		IMPORTS		EXPORTS	
		Amount (tonnes)	Value (€ 000s)	Amount (tonnes)	Value (€ 000s)
Oilseeds:					
	Linseed	2,327	1,276.96		
	Sunflower seed	108,309	26,409.18	10,358	6,418.88
	Cottonseed	83,567	9,496.61	2,769	452.59
	Safflower seed	167	81.39		
	Rapeseed	4,538	2,116.94	487	574.74
Vegetable fats and oils:					
	Soybean oil	4,956	3,926.11	58,020	28,504
	Olive oil	44,107	121,905.52	103,297	310,125.45
	Groundnut oil	541	801.64	102	115.00
	Sunflower oil	21,593	11,383.39	34,217	21,122.83
	Rapeseed oil	21,560	11,987.19	151	140.09
Waste products of industry:					
	Beet pulp	41,201	6,245.78	29,809	4,200.19
	Soybean cake	16,964	3070.66	35,172	5,541.53
	Linseed cake	770	128.24		
	Sunflower seed cake	82,733	8,045.16	2,595	308.61
	Maize germ			3,978	554.28
Tobacco and derivatives:					
	Tobacco in leaf	1,529	6,130.42	12,365	1,056.09
	Cigars	7,154	303,975.79	793	20,980.55
	Cigarettes	6,820	292,275.13	672	16,939.62
	Loose tobacco	3,499	35,345.74	94	545.67
Vegetable textile fibres:					
Cotton:					
	Uncarded and uncombed	5,758	9,668.24	5,904	8,771.91
	Carded and combed	277	813.15	15	97.53
	Cotton sewing thread	213	2,013.41	129	1,673.61
	Cloths of under 200 g/m	5,699	54,145.87	2,554	31,297.35
	Cloths of over 80%	813	7,212.96	837	11,224.76
Others:					
	Raw linen, burlap	11,066	8,650.85	277	295.23
	Raw hemp	1,864	477.88		0.63
	Jute and other fibres	4,415	1,225.94		7.34
	Agave and sisal fibres	88	118.31		109.18
	Linen yarns	571	4,573.21	721	7,230.14
	Jute yarns	602	585.64		81.75
	Linen cloth	273	4,526.89	236	3,051.05
Materials for plaiting, rope making, etc:					
	Furniture-making cane	355	362.41	1,702	2,735.06
	Filling materials (e.g., for chipboard)	4	57.80		
	Vegetable materials for brooms	29	116.88	3	9.62
	Vegetable materials for other uses	5,868	3,843.64	472	547.42
Basket making:					
	Matting	123	389.64	3,285	3,681.28
	Basket making	227	1,490.62	579	3,565.06

2. BARRIERS TO PROGRESS: TECHNICAL, LEGAL AND ECONOMIC CONSIDERATIONS OF ALTERNATIVE CROPS

2.1 TECHNICAL CONSIDERATIONS

In the coming years, agriculture will have to adapt to changes in market evolution, market policy and international trade regulations. These changes will also, of course, affect the local economies of rural areas, at a time when many of them are beset with serious problems of economic development. Furthermore, rural areas are being more and more called upon to fulfil major environmental and recreational functions.

With regard to this last point, a major role will be played by agro-environmental methods to encourage maintainable development in rural areas and respond to society's ever-increasing demand for environmental services.

Measures concerning agro-environmental issues must be strengthened and encouraged through the increase in alternative crops.

Another possibility worthy of greater consideration is the taking into account of the fact that the least favoured areas and those of great natural value are often the same places, and gradually turning the system of related aid into a basic instrument for maintaining and encouraging systems of farming less dependent on input.

2.2. LEGISLATIVE MATTERS

ORDER of the 21st April 1998 concerning the Production Regionalization Plan for Spain, applicable to the system of compensation payments to be made to the producers of certain herbaceous crops in the 1998-99 season.

ROYAL DECREE 136-1986, No. 1462/1986 OF THE MINISTRY OF AGRICULTURE, FISHERIES AND FOOD CONCERNING FARM AND FISHERY PRODUCE AND THE EUROPEAN ECONOMIC COMMUNITY. Stimulation of the improvement of transformation and marketing conditions.

ROYAL DECREE 466/1990 of 6-1990 AGRICULTURE AND LIVESTOCK. Sets the compensation to be paid in certain depressed areas.

ORDER of the 11th September 1997, whereby base hectarages are established for the determination of compensation payments to be made to the producers of certain herbaceous products.

ORDER 1-3-1996 AGRICULTURE-EUROPEAN COMMUNITY. Regulations for co-financing regional plans of rural renewal under the auspices of the Community LEADER initiative.

ORDER 2-4-1997 COTTON-EUROPEAN COMMUNITY. Establishment of the area to be sown with cotton for the period 1997-98.

ORDER 24-11-1997 FLAX AND JUTE-EUROPEAN COMMUNITY. Regulations for the requesting and granting of aid to flax and jute production in the sales period 1997-98.

ORDER 24-11-1997 AGRICULTURE-EUROPEAN COMMUNITY. Regulates, for the sales period 1998-99 (1998 harvest), the set-aside of plots benefiting from the compensation payments set out in EEC Council ruling 1765/1992 of the 30-6-1992, the specific regulations for aid to producers of oilseeds and the use of set-aside for growing non-food crops.

ORDER of the 27th November, 1997 regulating the procedure for requesting, channelling and granting aid to the producers of certain herbaceous crops in the sales period 1998-99 and the determination of hectareage for textile crops.

ORDER of the 8th July, 1998 establishing the regulations for requesting and granting aid to flax and jute for the sales period 1998-99.

ORDER of the 9th December, 1998 establishing regulations for the granting of aid for promoting the sale and consumption of flowers, aromatic plants and live plants.

2.3. ECONOMIC ISSUES: SUBSIDIES AND FINANCIAL AID

AID IN ANDALUSIA

Aim: Development and use of hillsides.

Target area: Rural areas in Andalusia.

Period: Open.

Granting body: Regional Department (*Consejería*) of the Environment.

AID IN ASTURIAS

Aim: Acquisition of machinery, auxiliary equipment and facilities for reforestation and the exploitation, handling, transformation and marketing of forestry products.

Target area: Principality of Asturias.

Period: Open.

Granting body: Regional Department (*Consejería*) of the Environment.

Aim: Handling, transformation and marketing of farm produce

Target area: Principality of Asturias.

Period: Open.

Granting body: Department (*Consejería*) of Agriculture.

Aim: Plans for improvement through all kinds of investment in farms.

Target area: Principality of Asturias.

Period: July.

Granting body: Regional Department (*Consejería*) of Agriculture.

Aim: New technology for farm machinery and equipment.

Target area: Principality of Asturias.

Period: November.

Granting body: Department (*Consejería*) of Agriculture.

Aim: Non-crop activities and remunerative investments, and instruction in new farm and forestry techniques.

Target area: Principality of Asturias.

Period: Open.

Granting body: Regional Department (*Consejería*) of Agriculture.

AID IN CASTILE AND LEÓN

Aim: Extensive agriculture.

Target area: Castile and León.

Period: December.

Granting body: Regional Department (*Consejería*) of Agriculture.

Aim: Marketing and transformation of farm and forest products

Target area: Castile and León.

Period: Open.

Granting body: Regional Department (*Consejería*) of Agriculture

AID IN CASTILE-LA MANCHA

Aim: Co-operativism, marketing and transformation of food products.

Target area: Castile-La Mancha.

Period: December.

Granting body: Regional Department (*Consejería*) of Agriculture.

Aim: Protection of the environment

Target area: Castile-La Mancha.

Period: Open.

Granting body: Regional Department (*Consejería*) of the Environment.

AID IN CATALONIA

Aim: Rural development under the LEADER II programme.

Target area: Municipalities in Catalonia.

Period: Open.

Granting body: Regional Department (*Consejería*) of Agriculture.

Aim: Transformation and marketing of farm, forest and fishery products .

Target area: Catalonia.

Period: Open.

Granting body: Regional Department (*Consejería*) of the Environment.

Aim: Development of the rural environment.

Target area: Municipalities in Catalonia.

Period: Open.

Granting body: Delegation of Rural Development of the Regional Department (*Consejería*) of Agriculture.

AID IN EXTREMADURA

Aim: Marketing of farm products.

Target area: Extremadura.

Period: Open.

Granting body: Regional Department (*Consejería*) of Agriculture.

AID IN THE BALEARIC ISLANDS

Aim: Farm production methods compatible with the protection and conservation of wetlands.

Target area: Balearic Islands.

Period: Open.

Granting body: Regional Department (*Consejería*) of Agriculture.

AID IN THE COMMUNITY OF MADRID

Aim: Marketing farm products

Target area: Madrid.

Period: August.

Granting body: Regional Department (*Consejería*) of Agriculture.

Aim: New farming technology and equipment

Target area: Madrid.

Period: Over.

Granting body: Regional Department (*Consejería*) of Agriculture.

Aim: Plant protection methods

Target area: Madrid.

Period: October.

Granting body: Regional Department (*Consejería*) of Agriculture.

2.4. IMPACT OF AGENDA 2000

2.4.1. Proposals of the Commission

Basically, the proposals for the reform of the cereal sector aim to continue the process begun in 1992. In principle, support prices will be cut by 20%. As for supply control, a tendency for prices to fall below those of the world market will reduce the need to limit production, as there are no limits to the amounts countries can export without subsidies. There would then be much less need to take land out of production.

The proposed cuts in support prices have not been completely offset by an increase in direct aid to income, but the Commission considers that, as far as is foreseeable, market prices will probably remain higher than support prices. This situation, together with changes in the behaviour of investors observed since the last reform, indicates that cereal producers will be able to keep their level of income.

Detailed proposals

Support prices will be cut by 20% as from the 2000-2001 season, falling from the present 119.19 ecus/t to 95.35 ecus/t., whereby support will again take on its original function as a safety net for farmers' incomes, allowing EU farmers to benefit from export possibilities;

The Regulation of herbaceous crops proposes an increase in direct payments from 54 ecus/t to 66 ecus/t, exactly the same as for oilseeds and non-fibre flax. Non-specific payments for oilseeds remove the initial requirement for production hectare limitations imposed by the Blair House agreement while allowing the Commission to repeal the specific provisions concerning oilseeds;

Once intervention has been stepped down, any seasonal price adjustments are no longer justified, so the system of monthly increases is suppressed, although no changes are foreseen in the support period;

The arrangements applicable to maize and sorghum, export rebates (especially on malt), minimum prices for potatoes for starch production and compensation payments to be made to producers of such potatoes will be adapted accordingly;

The idea of quality category will no longer mean anything, as intervention prices will be pegged to a given minimal quality, with no differentiation of any kind;

Compulsory setting aside of land will continue, but the normal percentage is fixed at 0%; if the percentage were higher, "small farmers" would remain exempt;

Voluntary setting aside will continue, but the system will be subject to certain improvements with the specific aim in view of protecting the environment: to be precise, conditions will be introduced regarding the minimum areas throughout the Community, while member States will be authorized to establish maximum areas; in relation to the environment, member States will be given the opportunity to bring in five-year programmes for set-aside in order to enhance the effects of the system on the environment;

To ensure the relative profitability of protein crops in comparison with others, they will be awarded a premium of 6.5 ecus/t in addition to the direct base payment of 66 ecus/t, with a consequent decrease in total aid to 72.5 ecus/t from 78.49 ecus/t.

The role of agriculture does not stop at the simple production of food and renewable energy. For centuries, farm production- by means of a system of land use adapted to natural conditions - has shaped landscapes of great beauty and rich in biodiversity. The total abandoning of farming could put this environmental heritage in jeopardy, with a resultant fall in biodiversity and an increased risk of erosion. Similarly, the intensification of land use, especially where production techniques are not suitable for local conditions, could also cause erosion, landslides and serious flooding.

Although agriculture has certainly made a vast contribution to the conservation of the environment and rural scenery, it is no less true that the use of more intensive methods has brought about new problems, including environmental deterioration. Increase in the use of fertilizers, pesticides and other means of production has increased the level of pollution of water, air and soil. The effects are more serious in some regions than in others, but the general intensification of land use, especially when production

techniques are not adapted to local conditions, has brought about undesired consequences for the environment.

If agriculture were subject only to the dynamics of the market, undesirable results would also arise as farmers would abandon uncultivated land, with the consequent irreversible loss of valuable habitats and scenery.

The Commission has decided to propose a new framework based on paying farmers in return for environmental services.

Direct payments for oilseed and non-fibre flax rise from 54 to 66 ecus per tonne.

In order to ensure the profitability of protein crops in comparison with other herbaceous ones, an additional direct payment is proposed of 6.5 ecus per tonne, which would increase the total amount available for these crops to 72.5 ecus per tonne. In this way, farmers would be offered a contract whereby they would provide environmental services capable of satisfying the demands of society in general.

2.4.2. Strengthening of Agro-environmental Measures

As a key factor in the strategy for integrating the environment in farming policy, agro-environmental plans will remunerate farmers on a contractual basis for the provision of environmental services and the use of farming practices that are friendly to the environment. Owing to the diversity of natural conditions and farm structures, it will be important to conceive agro-environmental measures depending on the target regions, but without applying them, as is done today, via regional funds.

Specific measures include aid to the improvement of production cost effectiveness, ecological agriculture, ecology-based set-aside and the conservation of such valuable elements of the landscape as hedgerows, ditches and woods. To date, no fewer than 1,300,000 contracts have been signed, one for every six farms in the European Union.

2.4.3. Special Measures for Depressed Areas

In depressed areas, whose difficult natural conditions mean low agricultural production, the Union gives direct aid to farmers in the form of compensation and aid to investment when conditions are favourable.

One of the basic aims has been to ensure the continuation of farming activity, which in many areas constitutes a pre-condition for maintaining scenic beauty and habitats of environmental value. Under current conditions, more than half the agricultural land in the EU (56%) is considered to be depressed, half of it being in mountain areas.

The Commission proposes maintaining the present system of compensation payments to depressed areas and making it compatible with a set of minimal environmental requirements. As before, payments will be granted in compensation for natural disadvantages. Member States must ensure, however, that such payments are used to help sustainable farming.

Both in its natural aspects and in man-made ones, the environment is of primordial importance within the new generation of rural development programmes destined to become operative as from the year 2000. These programmes will include measures to aid any form of management of the environment in rural areas aimed specifically at improving the soil, water management and the elimination of the effects of natural disasters. Furthermore, measures have been included in the programmes to contribute to the conservation of Europe's rural heritage, including village renewal.

2.5. CONCLUSION

The introduction of alternative crops yielding non-surplus products will prevent the mass abandoning of farmland and will stimulate the development of depressed areas, encouraging the use of cultivation techniques that are perfectly compatible with the environment.

3. PRIORITISATION

The autonomous communities, or regions, in potentially the best positions for the development of alternative crops for industrial use mentioned in this report are:

- Castile and León (Castilla y León)
- Castile La Mancha (Castilla la Mancha)
- Extremadura (Extremadura)
- Andalusia (Andalucía)
- Aragon (Aragón)
- La Rioja (La Rioja)

This is due to their specific characteristics of area, climate, water and human resources.



The basic aim consists in replacing all the unprofitable and surplus-producing extensive crops with others for industrial uses to make the best use of agricultural systems, maintain rural populations, encourage new production methods and improve the rural environment.

3.1 THE MOST SUITABLE CROPS

Among the crops most suitable for industry in the regions mentioned, apart from fuel crops, very important in the regions concerned, are the following:

Vegetable oils: sunflower, rapeseed, linseed, cameline.

Natural fibres; flax, kenaf, hemp.

Carbohydrates: maize

Others: dye crops, aromatic plants (lavender, mint, tobacco), medicinal plants, etc.

4. ANNEXE

4.1. KEY CONTACTS

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4.2. ACADEMIC CONTACTS

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Ciudad Universitaria 28071 Madrid (España)

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Instituto de Agricultura Sostenible. Consejo Superior de Investigaciones
Científicas. Alameda del Obispo s/n. B.P. 4.084. 14080 Córdoba (Spain)

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Dra. M. Luisa Suso Martinez de Bujo
Centro de Investigaciones Agrarias B.P. 1.056. 26080 Logroño (Spain)

4.3. COMPANIES

4.3.1. COTON INDUSTRIES

SOCIEDAD AGRARIA DE TRANSFORMACIÓN Nº 1381
Ctra. Jimenado km 2

30700 Torre Pacheco (Murcia).

MEDITERRANEO ALGODÓN, S.A.
Po. Ind. La isla parcela 15
41700 Dos Hermanas (Sevilla).

VIRSE,S.C.L.
Dip. De Lebor
30850 Totana (Murcia)

SUNGRO, S.A.
Pº de la Victoria, 31 1º A
14140 Córdoba.

SCDAD COOP. AGRICOLA DEL SUROESTE
Ctra. General, 6
30140 Santomera (Murcia).

ALGODONERA BLANCA PALOMA, S.A.
Ctra Villamanrique a Dehese de Banco, km 3
41849 Aznalcázar (Sevilla).

ALGODONERA DE LAS CABEZAS
Ctra. del Cruze, km 3,6
41730 Las Cabezas de San Juan (Sevilla).

Sociedad Coop. Andaluza Ecijana de Servicios Agropecuarios “C.O.E.S.A.G.R.O.”
Autovía Madrid-Cádiz km 458
41400 Ecija (Sevilla).

S.C.A. AGRÍCOLA Y GANADERA DE PINZÓN
c/ Cooperativa,1
41728-Pinzón Los Palacios (Sevilla)

ALGODONERA DE LEBRIJA, S.A.
Ctra. De Lebrija a Trebujena, km 5
41740 Lebrija (Sevilla)

AGRICOLADEL BARBATE, S.A.
c/ José Abascal, 44 2ºizda.
28003 Madrid.

NUEVA DESMOTADORA SEVILLANA S.A.
Ctra. de la Estación, km 3,5
41730 Las Cabezas de San Juan (Sevilla).

TRAJANO, S.C.A.
c/ Abrazamoza, s/n
Trajano-Utrera (Sevilla).

LAS PALMERAS, SOCIEDAD COOP. ANDALUZA
Ctra. El Trobal-los Palacios, s/n
41727 El trobal (Sevilla).

LAS MARISMAS DE LEBRIJA, SOCIEDAD COOP. ANDALUZA
Polígono Ind. Las Marismas, parcela 1029-BB
41740 Lebrija (Sevilla)

E.S. MORATALLA S.L.
c/ Eduardo, Dato, 8
14003 Córdoba.

S.A.T. CEREALES ASTIGI
Avda, de Emigrantes, 51
414800 Ecija (Sevilla)

EIROSEMILLAS, S.A.
Pº de la Victoria 31-1º
14400 Córdoba

ALGODONERA DE PALMA, S.A.
Avd. Diputación, 68
14700 Palma del Río (Córdoba)

SURCOTTON, S.A.
Pº de la Victoria 31-1º
14004 Córdoba.

4.3.2 TEXTILE FIBERS

PUIG CODINA, S.A.
Can Parellada
Terrasa (barcelona).

CORDELERÍA HIRCUMAN, S.L.
Avda. Ciudad Jardín 51-53
Callosa de Segura (Alicante)
96 5311181

CORDELERÍA REDESCOR
Nuestra señora de Monserrate, 8
03360 Callosa de Segura (Alicante).

ESPARTOS SANTOS, FIBRAS DE ESPARTO Y CORDELERÍA
Camino de la fuente Apto 53
30530 Cieza (Murcia)

TEXTILES MONTERO FORNET
Avda San Juan de la Salle 12
41008 Sevilla

4.3.3. FIBRE CROPS INDUSTRIES

ARTESANÍAS ESTEBAN
c/ La Reina 18
37339 Villoruela (Salamanca)

ARTESANOS REUNIDOS AIELO S.C.V.
c/ Leonardo arreras, 24
Aiello de Malferit (Valencia)
96 2904079

4.3.4. OIL CROPS INDUSTRIES

RIOJANA DE GRASAS S.A.
c/ La Calleja s/n
Baños de Ríotobía (La Rioja).

GRASAS INDUSTRIALES S.A.
Ctra. Soria km 4
Lardero (La Rioja).

MATEOS S.A.
Camino de la Estación s/n
Cabezón de Pisuerga (Valladolid)
983 500000

EUROLUVE: Lubricantes, aceites grasas y pinturas
Sant Vicent dels Horts
Barcelona 93-6566061

3.4.5. AROMATIC PLANTS

SORIA NATURAL
Polígono La Seca s/n
Garray (Soria)
975 252046

HERMINIO RBLES MARTINEZ
c/ General s/n

Vegas del Condado (León)

MARCELINO ABRIL MORAL
c/ Hermano Antonio 46
Valladolid
983 85 01 81

3.4.6. ENERGY CROPS

BABCOCK WILCOX ESPAÑOLA, S.A.	94 4957011
BESEL S.A	91 4425833
CASA TABARES S.A.	983 611761
ECODI Maquinaria	943 816321
ERATIC, S.A.	96 1548516
FLOAR SAMO, S.L.	976 773757
GASBI, S.L.	943 494416
GESTENGA S.A.	981 563777
HERGOM, S.A.	942 578000
IDOM S.A.	91 4471677
INI MEDIOAMBIENTE S.A	91 3300200