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EVALUATION DE L'IMPACT ENVIRONNEMENTAL DE L'ORGANISATION COMMUNE DE MARCHE DES CULTURES PERMANENTES

ANNEXE 20 : OCM VIN
ETUDE NATIONALE PORTUGAL

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Av. da República, 412 - 2750-475 Cascais, Portugal
Tel. +351 21 484 7440 Fax. +351 21 484 7441 email: mail@agroges.pt

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GLOSSARY

AEA - Agri-Environmental Agreements

AEM – Agro – Environmental Measures

CCA – Chemical Control Under Advice

IVV - Instituto da Vinha e do Vinho

IFADAP – Instituto Financeiro de Apoio ao Desenvolvimento Agrícola e das Pescas

GI – Geographical Indications

INGA - Instituto Nacional de Garantia Agrícola

INE – Instituto Nacional de Estatística

IDRHa - Instituto de Desenvolvimento Rural e Hidráulica

ENV - Estação Vitivinícola Nacional

INIA - Instituto Nacional de Investigação Agrária

GAP - Good Agricultural Practice

INT PROT – Integrated Protection

INT PROD – Integrated Production

MT – Minimum Tillage

OF - Organic Farming

OP – Producer Organization

VTD – Vine on Terraces in the Douro region

VSC- Vine System of Colares

ILPC – Inter Row Lawn Under Permanent Crops

RDP - Rural Development Programme, RURIS

QWPSR – Quality Wine Produced in Specified Regions (quality wine psr) i.e. Vinho de Qualidade Produzido em Região Determinada.

VITIS - system for the restructuring and conversion of vineyards (art.11 Reg. 1493/99)

1. CONTEXT OF WINE PRODUCTION IN PORTUGAL

1.1 Main characteristics of wine production in Portugal

The wine sector has gone through many changes after the accession to the EU (1990) and has now the capacity to offer quality wines from a wide range of VQPRD regions, based on modern vineyards and wineries.

Wine production in Portugal is an important agricultural activity, even if at EU scale it represents a small production (less than 1/6 of France or Italy). There are vineyards in all the country's regions and in some of them they hold significant economic importance.

Since a long time ago, vineyards and wine have a big social and economic importance and they were therefore always considered as a cultural and historical heritage of great significance, particularly in the Douro region, where Port wine is produced.

1.1.1 Evolution of the vineyards area - 1990 to 2003

The vineyard area in Portugal in 1999, according to the results of the inventory of wine-growing potential (council regulation n° 1493/99), amounted to around 260 thousand ha, with 63% of that area in three northern regions: Minho, Douro and Beiras.

Generally speaking, vineyards occupy areas of poor productive capacity with steep slopes that do not allow for any other type of crop. The most significant consequences of this occupancy of the territory are low productivity and high production costs, which are more evident in the Douro region, where this activity provides for the settlement of 35 thousand vine growers and the regional economy depends almost 100% from this sector, in a region which would be practically deserted were it not for the vineyards.

Most vineyards and all VQPRD vineyards have plantings composed of traditional varieties, amounting to approximately 300, grown in Portugal alone, originating different wines from those obtained from the so-called international varieties. The varieties Castelão, the various Tourigas and Malvasias, stand out.

Actually the area corresponds to quality wines produced in a well defined region (VQPRD), representing 51 % of the total area, far above the 36% registered in 1990.

As we have seen, vineyards are a very important culture in Portugal, and in some regions, like Douro (Porto) they represent the most important income for farmers. However, in other regions like Ribatejo e Oeste, where table wine is more important and accounts for the biggest area of vineyards in the country (62.000 ha), vineyards are becoming less important, in terms of area and income, and are therefore responsible for the overall reduction of the Portuguese vineyard area.

Table 1. Vineyard Area (ha) – Break-down by wine type.

	VQPRD	Table wine	Total
1990	100.058	154.771	254.829
1991	106.411	155.685	262.096
1992	108.758	155.097	263.855
1993	106.390	156.741	263.131
1994	106.390	153.016	259.405
1995	107.850	149.830	257.680
1996	107.380	149.336	256.716
1997	107.381	149.336	256.717
1998	107.615	150.619	258.234
1999	122.934	90.704	213.638
2000	123.603	90.651	214.254
2001	127.805	88.590	216.395
2002	128.707	91.485	220.192
2003	-	-	-

Source: EUROSTAT tables Viann 50.

The area of vineyards has changed from region to region, due to the crisis of table wine market. The existence of more attractive crops, like corn, the existence of a legal framework for the production of VQPRD in 28 new regions, since the early nineties, and the possibility to transfer vineyards between some regions (1994) were the main reasons for this change.

Table 2: Evolution of the Portuguese vineyard area (ha) – Breakdown by region

	Total Vineyard Area		%Change	%VQPRD Area	
	1990	2002	1990-2002	1990	2002
Portugal (PT)	254.829	220.192	-14%	39%	58%
Norte (PT11)	105.693	95.934	-9%	68%	74%
Centro (PT12)	58.055	49.404	-15%	41%	76%
Lisboa e Vale do Tejo (PT13)	73.732	50.809	-31%	3%	13%
Alentejo (PT14)	10.678	18.752	76%	0%	59%
Algarve (PT15)	2.418	2.192	-9%	96%	82%

Source : EUROSTAT tables Viann 51 and 61.

Within IVV's action for the management of viticulture potential, Portugal is divided into seven Regions, since its action in this area is done through Regional Directorates of Agriculture (RDAs), which are part of the Ministry of Agriculture and Fisheries, but for FADN purposes Portugal is divided into 5 Regions : North, Centre, Lisboa e Vale do Tejo, Alentejo and Algarve.

The different approach in the various information sources, makes it more difficult, and same times impossible to analyse figures at a regional level.

Figure 1 : Regional Directorates of Agriculture

1.1.2 Evolution of production - 1990 to 2003, and if known by categories e.g; table wine, vqprd, etc

Wine production has annual variations, stronger than in other countries due to the age of a significant part of the vineyard area, which explains the effort producers make to access to the restructuring measures from the moment they were available (1989, in the context of the pre-accession regime, by Reg. CEE nº. 2239/86, also concerning grubbing)

However, table wine production has fallen from about 6 million hl during the mid 1980's to about 4 million hl nowadays, and the volume of distilled table wine follows this development. It reached its maximum in the 1991/1992 campaign. Since 1993/1994 table wine distillation occurs more regularly, but in average below 1 million hl per campaign.

Table 3: Evolution of the wine production by categories and distillation (1000 hl)

	Total Wine Production		Wine Categories		Destillation
	EU	Portugal	Quality Wine	Table Wine	
1990	181.413	11.351	2.850	8.501	1.311
1991	156.315	10.021	2.400	7.521	2.282
1992	190.977	7.771	2.260	5.511	1.358
1993	158.981	4.871	1.823	3.048	602
1994	153.269	6.521	3.121	3.400	304
1995	152.817	7.255	3.028	4.227	260
1996	169.323	9.712	4.183	5.529	880
1997	157.777	6.124	2.280	3.844	548
1998	162.562	3.750	1.910	1.840	178
1999	179.117	7.859	3.746	4.113	680
2000	176.006	6.694	3.253	3.440	667
2001	158.555	7.691	4.135	3.556	1.020
2002	150.856	6.210	1.710	4.500	

Source : EC histvino file, EC statistics.

Table wine market in Portugal had strong fluctuations during the 1990-2003 period, with many "upward" and "downward" peaks both in production and in consumption. In this period, domestic availability of table wine has decreased by 16% and total consumption has decreased by 32%, this

growing decrease of consumption being responsible for table wine surplus, as in other producer countries. The annual volume of distillation reflects the need to use EC supply measures to achieve table wine market equilibrium, which in fact are proportionally lower for Portuguese producers compared to other countries' producers.

1.1.3 Evolution of the number of distilleries and plants which make concentration of grape must - 1990 to 2003

The number and size of Portuguese distilleries have changed in this period. The main reasons for this change were the adoption of EU supply measures in 1991 and the raise of excise duties for alcohol. The small domestic plants disappeared, justifying the need of producers to resort to "withdrawal of by-products under supervision instead of delivering them for distillation" in almost all regions. In fact, from the 16 Portuguese districts, only in part of 5 of them do producers have available distilleries at an acceptable transportation cost.

Portugal does not have plants that concentrate grape must, and therefore imports all the quantity needed for the enrichment of the domestically produced wine.

1.1.4 Evolution of the number of producers and producer organisations (PO) - 1990 to 2003

The number of wine producers was altered between 1989 and 1999, in such a way as to comply with the introduction of new policy measures within the sector and investment support measures, following Portugal's accession to the EU. The creation of 28 new vqprd producing regions in 1991 and 1992 and the existence of support to processing and marketing (Reg. 866/ 90 at the time) were the more relevant change factors.

According to the Agriculture Census performed by INE, which is the most important source for information regarding the number of wine producers per region, one verifies that such a number has decreased significantly in all regions between 1989 and 1999. This decrease results from the decommissioning of private wineries (each wine grower used to make his own wine), which has started with the establishment of cooperative wine growers associations in the sixties and seventies and with the outcome of new producers, bottlers and traders, in the new VQPRD areas, as is the case of Alentejo.

Table 4 : Evolution of the number of producers by wine type between 1989 and 1999

	1989		1999		Total	
	VQPRD	Other	VQPRD	Other	1989	1999
Norte	104.949	80.861	71.002	52.945	185.810	123.947
Centro	44.824	78.790	45.925	38.245	123.614	84.170
Lisboa e Vale do Tejo	493	53.510	1.235	30.297	54.003	31.532
Alentejo	0	3.850	783	2.887	3.850	3.670
Algarve	3.086	259	17	3.278	3.345	3.295
Portugal	**153.352**	**217.270**	**118.962**	**127.652**	**370.622**	**246.614**

Source : Recenseamento Geral da Agricultura 1989 – 1999 (INE)

The information on the distribution of production, in hectolitres, between individual producers and producers associated into cooperative wine growers associations was collected by IVV up to the accession of Portugal, based on crop and production declarations. The alteration of declaration forms, as a consequence of the application of community rules, caused this collection to be interrupted, having been re-established as from 1999. Therefore, only since that date do we have available information regarding the relative importance, now in terms of volume of obtained wine by cooperative wineries or by individual producers. The annual variations result from the addition of individual decisions, either of winemaking in the farm, or delivery of grapes to a co-operative winery.

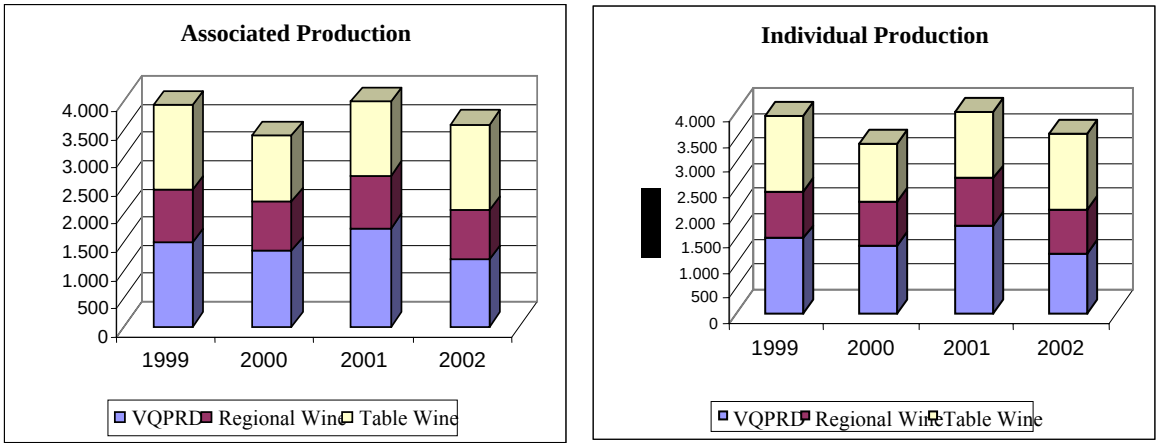
Table 5: Individual and co-operative production, in 1000 hl

Values in 1000 hl	1999		2000		2001		2002	
	Associated Production	Individual Production	Associated Production	Individual Production	Associated Production	Individual Production	Associated Production	Individual Production
VQPRD	1.486	2.252	1.345	1.916	1.741	2.407	1.192	1.742
Regional Wine	935	560	857	485	932	568	874	514
Table Wine	1.498	1.113	1.180	928	1.313	829	1.515	840
Total	**3.919**	**3.925**	**3.382**	**3.329**	**3.986**	**3.804**	**3.581**	**3.096**

Source : IVV

The collection of this information allows us to verify that, along time, the importance in terms of volume of grapes processed in private or co-operative wineries, has remained steady, distributed in fairly equal volumes, in spite of slight annual variations.

Chart 1. Evolution of associated and individual production (1 000hl) – 1999 to 2002.



There are no producer organisations having as objects those described in Art.39, and recognised and controlled by Member States according to art. 40º of Reg. ECC nº 1493/99. Traditionally, we do not have such types of producer organisations in Portugal, and therefore until now there was not one single appliance for recognition of such organisations.

Regarding interbranch organisations as defined in art. 41º of Council Reg. 1443/1999, there are also no Portuguese organisations with such statutory objects, also because there is no tradition in producer organisations to act within the frame of the dispositions described there. The Douro region is an exception, with the tradition, since its establishment in 1787, of fixing every year the quantity of the Port wine production, a tradition regarding all the relevant rules on quality, period of stage and conditions to sell Port wine, even if this has been done by means of an agreement between regional institutional organisations, farmers and producers, and not exactly as provided for in the abovementioned article.

However, we have seen the creation of a significant number of producer organisations in this period, because of the need of receiving mandatory technical support in order to be in a position to apply for agri-environmental measures. We show their regional distribution below:

Table 6: Number of OP by region, for integrated protection and production

At 19-02-2004

Region	Integrated Production	Integrated Protection
Entre Douro e Minho	11	4
Trás os Montes	25	6
Beira Litoral	8	2
Beira Interior	13	4
Ribatejo Oeste	24	10
Alentejo	5	2
Algarve	2	0
TOTAL	**88**	**28**

Source: IEDRa

1.2 Level of implementation of the various measures of the CMO in Portugal

The expenses in Portuguese table wine to provide market equilibrium, such as optional distillation, show their relatively low importance when compared with those of France or Italy. Almost all the expenses are due to distillations from Beiras and Estremadura, and are related with factors such as:

- part of the wine production having not adapted to demand;
- inefficient company management, due to lack of qualifications;
- lack of international visibility for some wines from these regions;
- lack of promotional and marketing actions.

Table 7 : Expenses of the CMO's measures

Values in 1000 EUR	Measures							Total
	Export Refunds	Private Storage	Optional Distillation	By-Products Distillation	Purchase of Alcohol	Use of Must	Production of Grape Juice	
1993/1994	432.936	51.324	159.535	45.768	63.504	89.424	0	
199419/95	274.186	54.738	16.020	41.579	64.635	91.434	0	
1995/1996	258.035	55.506	8.142	73.047	92.164	26.665	0	
1996/1997	10.051	2.185	9.382	2.853	6.230	2.878	10	**33.589**
1997/1998	6.759	1.282	5.202	2.110	4.589	2.702	0	**22.644**
1998/1999	3.227	309	544	1.197	2.599	1.816	0	**9.692**
1999/2000	773	1.028	8.170	2.803	6.115	5.362	0	**24.251**
2000/2001	1.227	1.885	12.266	2.648	5.710	4.856	0	**28.592**
2001/2002	1.087	2.359	17.905	3.579	7.813	5.991	0	**38.735**
2002/2003	1.097	1.524	10.794	2.213	6.743	4.051	0	**26.420**
Total	**989.378**	**172.140**	**247.960**	**177.797**	**260.102**	**235.179**	**10**	**183.923**

Source : IVV.

The other CMO measures, mainly the ones meant to improve wine quality, like by-products distillation, have a level of expenditure related with the quantity and quality of grapes of each year's harvest, and are much more similar than the others, from one year to another.

Export refunds, a measure related with trade with third countries has a level of expenses that show a break from 1996/97 to 2002/2003, from around ten million euros to one million, showing the importance of production and table wine availability on the wine volume of Portuguese exports.

Table 8 : Total wine production, domestic availability of table wine and total distillation (1 000hl)

Campaign	Total wine production	Availability Table wine	Total wine distillation
1990/91	11.351	10.736	1.311
1991/92	10.021	13.021	2.282
1992/93	7.771	9.810	1.358
1993/94	4.871	6.355	602
1994/95	6.521	5.759	304
1995/96	7.255	6.632	260
1996/97	9.712	8.401	880
1997/98	6.124	7.458	548
1998/99	3.750	5.277	178
1999/2000	7.859	7.089	680
2000/2001	6.694	7.479	667
2001/2002	7.790	8.327	1.020
2002/2003	6.651	9.530	
2003/2004	7.284		

Source: European Commission, DG Agriculture.

1.3 Institutional framework of the wine production in Portugal

The Instituto da Vinha e do Vinho (IVV) is responsible for the reception and approval of all CMO measures related with planting rights and supply and quality measures. The physical control is developed, at regional level, by the regional services of IVV for all market and quality measures and the vineyards' control is made by the regional structures of Ministry of Agriculture and Fisheries, distributed in accordance with the above chart.

The quality wine psr, Vinho de Qualidade Produzido em Região Determinada is certified in all regions by the Comissão de Viticultura Regional (Regional Winemaking Commission), except for Port wine, where Instituto dos Vinhos do Douro Porto (IVDP) (Douro e Port Wine Institute) still performs this certification, until the institutional changes in the region will be complete.

For the Development measures, there are three institutions : IFADAP, INGA and Instituto de Desenvolvimento Rural e Hidráulica (IDRHa), the first one responsible for AEM with physical controls made by its regional structures, and the second through the application of special environmental measures, as will be detailed below.

The AEM are integrated in the Ruris Programme and, in the case of vineyards, they include vineyards on terraces in Douro and the Colares region vineyards, but in this case control is made by RDAs.

Still within RURIS is included the support of farms and management of support to marketing and processing. The physical controls are made by the IFADAP structures.

Concerning AEM, IFADAP is also supported by its regional structures, which co-ordinate and manage measures and perform the physical control of measures, although such measures are within a frame of a programme called RURIS, for which there is a manager.

Payment of all above mentioned supports are the responsibility of one sole paying agency, Instituto Nacional de Garantia Agrícola, IFADAP/INGA

1.3.1 Interbranch organisations,

ACIBEV – Associação dos Comerciantes de Bebidas Espirituosas e Vinho
AND - Associação Nacional dos Destiladores de Produtos e Subprodutos Agrícolas
ANCEVE – Associação Nacional dos comerciantes de espirituosos e v
AEVP – Associação de empresas do Vinho do Porto
FENAVI – Federação Nacional de Produtores Independentes
FEVIPOR – Federação dos Viticultores de Portugal

1.3.2 Producers organisations at national level

The only two organisations that represent Portuguese production of grapes and the cooperative sector at national level are:

FENADEGAS – Federação Nacional das Adegas Cooperativas,
CAP - Confederação dos Agricultores de Portugal

The first one represents almost all the cooperative wineries and the second represents vineyard growers and individual wine producers. Both have their registered office in Lisbon.

1.3.3 Unions

There are no Unions of the viticulture or wine organisations in Portugal, unless we consider the associations of co-operative wineries at regional level, such as UDACA – União das Adegas Cooperativas do Dão. The main object of this type of association, existing also in the region of Verde Wines and Douro, is bottling and selling wines from the region.

1.3.4 Research and technical institute

The Estação Vitivinícola Nacional (ENV) was established in the early 19th century (1909), and was later integrated in the Instituto Nacional de Investigação Agrária (INIA), as its operational service.
In 1977, and since then, the EVN has been a Science &Technology Unit of the INIA at national level, concerning the research, experimental development and professional post-graduation training for the viticulture sector. These activities have been developed by their Departments (Viticulture, Oenology) and by their Centro de Formação Profissional Vitivinícola (Center of Professional Training on Viticulture and Oenology), with the support of several services. Since 1982, the EVN has been editing the scientific review Ciência e Técnica Vitivinícola. Of all the investigation and experimental work made in the past years by INIA e EVN, the most important one is that related with improving, by varietal selection, yield and sanitary quality of Portuguese varieties, especially those more common in the Douro and Alentejo regions. Many regional universities were involved in this work, such as Universidade de Trás-os-montes e Alto Dourro (UTAD) and Universidade de Évora.

It is important to notice that the institutional organisational frame of the Portuguese wine sector had to change a lot due to EU accession, such changes being related in the first place with the change of the wine classification in vqprd and table wine. So, before the adoption of EU regulation (Reg. 822/87 at the time) there were three regions where all the wine produced inside the delimited region was considered as VQPRD. There was another region called “area of the Corporative organisation”, meaning the rest of the country, where all the wine produced was considered as table wine.

For statistical purposes, those changes meant that IVV, the new structure established (in 1986) was responsible for collecting all the information and send it to Instituto Nacional de Estatística (INE), the only body in Portugal responsible for statistical information.

Over this study we have collected a lot of information from IVV, which is not available at EU level, but represents the official data available, mainly regarding the regional level.

1.4. CMO implementation context in Portugal

CMO measures that can be related with environmental concerns are mainly those relating to vineyards, like abandonment, restructuring and conversion. AEM are applied in the context of the RDR Programme and have been dealt with in another section.

The application of the CMO measures related to vineyards do not provide for any obligation related with AE actions, such as those provided for by REG. (CE) Nº 1257/1999.

The application of REG. (CE) N.º 1257/1999 has two measures concerning vineyards, one related with agricultural practices (GROUP I) including Integrated Protection (M12), Integrated Production (M13) and Organic Farming (M14), which are destined to all regional production. The other group of measures (group II) concern specific protections, and only the Douro and Colares regions and certain traditional conservation practices can be object of support.

The first group of measures is not specific to vineyards, although vineyards are the most important culture to benefit from these measures, which is easily understood considering the importance of vineyards in the whole country.

Measures like Good Agricultural Practice (GAP) are not specifically made for vineyards, even if they pay attention to the phytosanitary treatments, an important environmental issue in the case of vineyards.

Table 9 : Distribution of integrated protection areas in viticulture from 1995 to 2001

Region	Area (ha)	%	Average area per beneficiary (ha)
Entre Douro e Minho	4.140	7	5,3
Trás os Montes	24.989	43	4,8
Beira Litoral	2.332	4	5,6
Beira Interior	4.223	7	3,8
Ribatejo Oeste	11.954	21	8,4
Alentejo	10.321	18	12,5
Algarve	98	0,2	8,9
TOTAL	**58.057**	**100**	**5,9**

Source : IEDHRa, Colóquio Integrate Production and Protection, Nicolau Galhardo, 23 May, 2002

2. ANSWER TO EVALUATION QUESTIONS

2.1 Wine – Theme 1: supply control

Question 1(V1): ***What is the environmental impact of the ban on planting new vines except in regions of growing demand?***

In the analysed period, 1980 until 2003, many changes occurred in regulations concerning production potential. In the eighties, Portuguese rules were in force (Decree-Law no. 513-D/79), which was a bit different from EU rules at that time. Later, along the nineties, EU regulations started to be applied, with transfers in 1995 and new planting rights in 1998. By the end of the nineties, with the approval of new common organisation of the market in wine, through Council Reg. 1493/99, the rules for potential of production changed again, now in the some way as they did in other EU countries.

The environmental impact of those changes along these 23 years, have to consider that vine is a permanent culture for many years submitted to the interdiction of planting, to a strong and long market crisis (with the decrease of consumption and loss of Angolan and Mozambican markets), and with a complex subsidy system that changed almost every two years since such rules began to applied, before EU accession (1987).

The environmental impact, particularly the crop occupation, meaning the options vineyard growers might have had in this same period, was influenced by all the mentioned changes concerning vine potential and wine market mechanisms, but also with the existence of crop alternatives, which also changed in this period.

Although having verified that rules have changed along the analysis period, we also verify that the environmental impact, namely in what concerns crop occupation, cultivation practices and consequences in the landscape, is influenced not by slight annual variations in planting rights, but by trends which, in practical terms, express such impacts better.

New plantings

New plantings in Portugal were generally forbidden since the early 20th century and only special and point authorisations were given occasionally, as part of regional developing plans like in Douro (Decree order 685/82), or to allow an adjustment of offer to demand, like in the Verde Wines (500 ha) and Dão (100 ha) regions (Decree order nº 14/MAFA/84), and later in Alentejo (350 ha, Decree order 112/85).

It is important to notice that these were the approved areas that were granted to growers on request and not those which were in fact planted. Growers communicate these plantings to regional responsible entities, but the global figures were not communicated to the central institution (IVV, after 1986).

In the other regions new plantings were forbidden until the new planting rights were established within the 1999 reform, when newly created planting rights not exceeding a total of 68000 ha were to be allocated to Member States (under article 6.(1)).

The lack of permission to plant or to move vineyards from one region to another caused the use of soil, the landscape and the cultivation practices to remain the same for decades.

In practical terms, this measure meant that whoever had the vineyards benefited from a protected income from wine and so vineyards were considered as an asset with a limited access to the market, the growth of wine offer being therefore hampered. This kind of policy associated with no market

mechanisms from 1980 until 1992, did not promote the intensification of cultivation practices and induced a low cost production which meant a lack of interest in improving and investing in new cultivation practices.

Within the authorisation granted following the commitment obtained in the Council of Ministers of 23rdJuly 1996, confirmed by Council Reg. 1627/98, of 20th July, the possibility for an authorisation for new vineyard plantations was granted, for the 1998-1999 and 1999-2000 wine campaigns, up to a limit of 719 ha**.**

The rules with a possible environmental impact are:

1. the Douro region is excluded
2. minimum 1 ha area for continuous plots, or 0,50 ha when the case is to complete plots of the existing vineyard
3. maximum 20 ha area
4. priority regions: QUALITY WINE PSR from Colares and Carcavelos

New planting rights were granted through the application of this regulation, as follows:

Table 10 : Demands and granted area of new planting rights, in 1998-1999

ha	Entre Douro e Minho	Trás os Montes	Beira Litoral	Beira Interior	Ribatejo Oeste	Alentejo	Algarve	**CONTINENTAL PORTUGAL**
Demands	180	64	956		224	3454	63	**5297**
Granted area	6	13	10	31	109	382	27	**577**

Source : INE, 1999.

It is important to notice the huge gap between the amounts of applied for area and the granting of rights, showing the interest of Alentejo producers to expand their area. Notice that Douro is excluded from these newly created planting rights.

With the approval of the new wine common market organisation scheme, 3760 ha of new planting rights were granted to Portugal. As provided for in the respective Council Reg. 1493/99, the area already distributed in 1999 was deducted from these rights, as mentioned above.

The management of the granting of those new planting rights is very similar, in environmental terms, to those decided in 1999, and likewise, such rights were to be granted to producers of quality wine psr and IG wine, in a maximum of 10 ha for each grower, except for Port producers.

The regional distribution of areas to be granted by IVV, is as follows:

Table 11. New planting rights in accordance of Art. 6(1) of Council reg. 1493/99

Total A. R.	**Area (ha)**
Entre Douro e Minho	355
Trás os Montes	626
Beiras	569
Ribatejo	358
Estremadura	255
Terras do Sado	108
Alentejo	741
Algarve	29
TOTAL	**3.041**

National Quotas

Portugal has not yet created the rules to implement the national reserve of planting rights, and new plantings were not granted since those authorised within the 1443/99 reform, so there are no reasons to call for EU planting reserve.

The evolution of the vineyard area is closely related with the way the measures related to investment support are granted and, in this sense, the most important fact is the impossibility to approve all the applications for support of vine restructuring and conversion. The quantitative analysis is based on the situation on 1/09/1999 and 1/09/2002 of the inventory of wine-growing potential and, for 2003, on the use of planting rights.

These data show that the total area in a given year depends on how farmers affect each year their rights to plant, such as grubbing for restructuring, planting new rights, rights obtained by transfer and farmers' own rights. This is not sequential in time, the grubbing does not necessarily precede the re-plantation, and there is a limited period to use the right of planting.

It this context, and considering that vineyards are a permanent culture looking for the trend, we verify that from 1999 to 2002, total area was reduced, but this reduction may be considered as a temporary situation having to do with payments management, and finally the closing of applications to access to VITIS in 2002. The market situation in Portugal and EU also explain the extended period to use the rights.

If the market situation remains, the impact on the usage of land can be affected with the risk of being marginalized, since the soils where vineyards are planted, are, as we have seen before, the poorest in the country.

In 1999 the granted replanting rights correspond to around seven thousand ha, which means that the total planted area was in fact around 252 thousand ha.

Table 12. Inventory of wine-growing potential (Council Regulation n° 1493/99)

Situation on 1/09/1999

POTENTIAL (Total) Area (Ha)

Region	QWPSR	TW + GI	Replanting rights	TOTAL
Minho	37.656	1.982		39.638
Trás-os-Montes	42.168	30.578		72.746
Beiras	36.400	16.886		53.286
Estremadura	1.412	37.338		38.750
Ribatejo	1.074	22.458		23.532
Terras do Sado	2.690	6.677		9.367
Alentejo	5.720	7.737		13.457
Algarve	1.450	483		1.933
Total PORTUGAL	**128.570**	**124.139**	**7.498**	**260.207**

Source: DG agri

Situation on 1/09/2002

Region	QWPSR	TW + GI	Replanting rights	TOTAL
Minho	32.317	1.701		34.018
Trás-os-Montes	40.032	29.029		69.061
Beiras	39.214	18.191		57.405
Ribatejo	771	20.401		21.172
Estremadura	1.244	26.002		27.246
Terras do Sado	2.673	6.636		9.309
Alentejo	8.824	11.936		20.760
Algarve	1.612	536		2.148
Total PORTUGAL	**126.687**	**114.432**	**n/a**	**241.119**

Source: IVV

Transfer of replanting rights

Table 13 shows how important the movements of planting rights and vineyards were in 2003, directly related to the grubbing and planting, importance that goes up and down according to the period allowed for planting (2 years for new rights, which Commission has authorized a longer period, and 8 years for transfer) and to market and subsidies expectations.

Table 13. Use of planting rights in 2003

Regions	New vines	Replanting		Rights Transferences
		With previous grubbing	Without previous grubbing	
Continental Portugal	**-**	**5.691**	**243**	-
Entre Douro e Minho	-	1.077	42	-93
Trás os Montes	-	1.418	93	108
Beira Litoral	-	476	-	-70
Beira Interior	-	263	15	-27
Ribatejo Oeste	-	2.198	40	-277
Alentejo	-	224	54	372
Algarve	-	37	-	-13

Source: INE, 2003

This has an every year impact on soil occupation but in environmental terms this is not a trend, considering the importance of wine and the existence of no crop alternatives in some important wine regions like Douro and even Alentejo. If the prohibition to plant were not in force, these two Portuguese wine-growing regions would continue to expand, until their market would fall, with an unpredictable impact on the landscape.

Transfer authorizations were possible only after April 1995, before the only transfers of rights allowed were those between the different plots belonging to the same owner (according to 1979 Portuguese wine potential law). The impact of this transfer is non-existent, since the plots had to be in the same region.

Transfers adopted in 1995, which were applied in order to provide the country with internal regulations as provided for in approved EU regulations, at that time, may be seen in Table 14, where figures for all the countries show the transfer of planting rights granted by IVV.

Table 14. Plantation rights for transfer, by year

Year	Granted rights		Portuguese regulation
	Nº	Area (ha)	General
1995/1996	21	123	Decree order 156/95
1996/1997	34	165	
1997/1998	104	472	
1998/1999	250	854	
1999/2000	730	2173	Decree order 789/99
2000/2001	1080	2919	
2001/2002	1073	1979	
2002/2003	351	624	
TOTAL	**3643**	**9309**	

Source : IVV, 2005

The environmental impact of transfer measures should be seen in two ways. The first one, is the actual movement of vineyards from one region to another, done under the rights granted by IVV. The second is the impact of forbidding or limiting vineyard transfers.

The limit of transfers between regions was always present in Portuguese rules, limitations that concerned not allowing the growing of vineyard areas in the region and, on another hand, not letting that the reduction of a large amount of area could have a big impact on the regions' economics. And the first Portuguese rules did not allow for the transfer of vineyards in the Douro and Verde Wine regions. (within or to the outside of the region).

The impact is estimated by the planting rights granted, since we do not have figures on the planting situation of the grants at stake. For regional analysis IVV did not yet disclose the rights granted and so we used the area applied for by producers and already approved by IVV, as they comply with the conditions imposed for transfers, in relation with a minimal of a potential area.

In the long run this type of requirements regarding the minimum size of the vineyard plot will have an impact on the landscape. For the moment, their weight in the global vineyard area is so small, that we can only conclude they have no impact whatsoever.

It is important to notice that in the Douro region, only from 1999/2000 was it possible to grant planting rights through transfer from the outside of the region, and only to bring the situation of some vineyards into line.

A limit of 1204 ha was fixed for 2000/2001, reduced to 241 ha in the current campaign, for the entrance of rights aiming at the plantation of appropriate vineyards for the production of regional wine and VQPRD Douro.

Replantation rights obtained through grubbing of vineyards appropriate for the production of Port Liqueur Wine Produced in a Well Defined Region (VLQPRD) may only be transferred within the Douro region.

Table 15. Area (ha) approved by IVV for selling and buying planting rights, by region

Total R. A.	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	Total of the period
Entre Douro e Minho	0	3	34	90	177	356	234	203	**1.096**
Trás os Montes	5	0	3	14	140	670	502	313	**1.648**
Beiras	32	21	31	52	83	138	64	111	**2.743**
Ribatejo	3	6	13	36	118	100	59	78	**412**
Estremadura	12	44	16	67	27	37	53	90	**344**
Terras do Sado	4	7	1	27	69	89	171	21	**388**
Alentejo	25	87	203	501	1.297	2.232	981	481	**757**
Algarve	2	0	0	37	71	69	18	11	**208**

Source: IVV

In what concerns transfers between regions, it is evident that the only two regions with a positive balance are the Trás-os-Montes and Alentejo wine regions, where the market situation is better, both in terms of prices and quantities. Available data, although not representing a real situation, show nevertheless the potential environmental impact of transfers should regulations and the market situation allow such rights to be actually transferred from one region to another.

Growers wish to sell more area than that applied for by producers in the overall period, since 1995, where transfer rules were applied for the first time, until 2003, except in Douro (forbidden) and Alentejo, where transfers were limited to 782 ha, for the first time, in 2001/2002.

Table 16. Balance between areas to be transferred, by region

Regions	**Transferred area (ha) (from 1995 to 2003)**
Entre Douro e Minho	-268
Trás-os-montes	671
Beiras	-49
Estremadura	-789
Ribatejo	-390
Terras do sado	-222
Alentejo	3029
Algarve	-41

Source: IVV, 2005

Evolution of soil occupation

Available data by FADN do not allow for a quantitative analysis of the regional impact of soil occupation at farm level. Figures show that Total Used Agricultural Area grew from 1999 to 2002, and explain such a result from a little increase in the average area of nearly all crops, but a significant increase (it has tripled) of the forage crops area in Alentejo was the main reason to such an increase. On wine-growing regions the impact is also going to be evaluated by other measures such as abandonment, restructuring and conversion of vineyards, allowing us to see the impact in vine in a more detailed manner.

Table Q1V1 - 1. Farm Structure in 1999 and 2002, according to FADN

YEAR 1989 — Values in ha

Region	Total Used Agricult. Area	Cereals	other field crops	Veget flower	Vine	Olive groves	other perm. crops	Forage crops	Agricultural fallows	Set aside
Entre Douro e Minho/Beira Litoral	3,40	0,84	0,32	0,05	**0,51**	0,04	0,00	1,30	0,21	0,00
Trás os Montes/Beira Interior	13,20	1,99	0,39	0,04	**1,32**	1,54	0,00	3,30	4,05	0,00
Ribatejo e Oeste	7,70	1,05	0,25	0,29	**1,01**	0,85	0,00	2,00	1,68	0,00
Alentejo and Algarve	49,40	11,76	1,25	0,16	**0,44**	3,46	0,00	5,90	24,43	0,00
Azores	8,70	0,05	0,09	0,01	**0,15**	0,00	0,00	8,20	0,00	0,00
TOTAL	**11,40**	**2,27**	**0,41**	**0,10**	**0,76**	**0,89**	**0,00**	**2,60**	**3,90**	**0,00**

YEAR 2002

Region	Total Used Agricult. Area	Cereals	other field crops	Veget flower	Vine	Olive groves	other perm. crops	Forage crops	Agricultural fallows	Set aside
Entre Douro e Minho/Beira Litoral	5,1	0,99	0,31	0,08	**0,63**	0,09	0	2,8	0,16	0,01
Trás os Montes/Beira Interior	18,2	1,64	0,31	0,02	**1,68**	2,06	0	6,6	4,7	0,08
Ribatejo e Oeste	8,2	1,45	0,49	1,02	**1,56**	0,03	0,01	1,5	1,25	0,1
Alentejo and Algarve	71,4	12,47	2,21	0,27	**0,38**	4,43	0	16,9	30,2	2,52
Açores	11,3	0,03	0,18	0,05	**0,11**	0	0	10,8	0,03	0
TOTAL	**17,1**	**2,5**	**0,55**	**0,24**	**0,99**	**1,09**	**0**	**5,7**	**4,99**	**0,33**

Source : FADN

Summary

In the first decade, 1980 to 1991, the planting regime was the one approved in 1979, the rules of which only changed after the adoption of EU accession, in 1994/95, the first year of the application of the possibility to transfer rights from one region to another. In the meantime, new plantings were forbidden except in some referred regions (and areas), the conditions of which were established by a Plan supported by the World Bank in the early eighties for Douro region, and a relatively small area in the Verde Wine and Dão regions.

The planting regime, where new plantings are forbidden between 1980 to 2003, contributed for the maintenance of landscape in all wine regions. The absence of mechanisms to support farmers income in the period 1980 to 1992 (the year where EU mechanisms entered in force in Portugal) did no induced a cultural intensification, inducing instead a low cost production to produce wines for a low budget consumers, with an average consumption of 100 per capita.

Regarding the other vine control measures, the most important are the new rights given all along the evaluation period and the rights transfer between regions, since 1995.

New planting rights granted by IVV (we do not have the exact area planted) do not have a significant impact on landscape, once they represent a relativity small area when compared with the regional vine area. FADN allows us to know that the structure of specialized vine farms did not change over time.

The transfer of planting rights has been managed considering the market situation, alternative crops and other factors, by each wine-growing region, what allowed that Alentejo expanded the vine area, modifying the landscape, so the region could attend the growing demand for their wines in the last years.

Inventory data is available for the years 1999 and 2002 and, although they show the vine area by region they refer to a small and recent period regarding what is intended (1980 to 2003). Data concerning farm structure based on FADN, available since 1989 until 2002, do not allow to see their evolution because average vine area did not change significantly along the period.

Finally, we conclude that forbidding new planting is the main reason to maintain vines in the same location over time, being responsible for the landscape conservation in wine regions. The possibility of right transfer is responsible for the growing of vine area in Alentejo region, with a significant impact on the landscape of this region.

Question 2 (V1) : What is the environmental impact of the by-products distillation mechanism, and other market measures like aid for the use of concentrated grape must ?

In all EU producing countries the over pressing of grapes, whether or not crushed, and the pressing of wine lees is prohibited. All wine-makers who make more than 25 hl of wine, must deliver for distillation all the by-products of that winemaking. The quantity of alcohol contained in the by-products must be at least equal to 10 % of the volume of alcohol contained in the wine produced if the wine has been made directly from grapes.

This obligation may be discharged through the withdrawal of the by-products of vinification under supervision, and under certain conditions. The obligation may also be accomplished by delivering by-products to a vinegar manufacturer.

The main characteristics of by-products distillation in Portugal, related with environmental impact, are the followings ones:

1 – There is a small number of distilleries approved by IVV (under art. 42 Commission Reg. 1623/2000) and in a position to carry out this kind of distillation, and since many regions have many small producers, withdrawal appears in many regions, especially in the northern country. The list of regions where withdrawals may be accepted is published by IVV.

3 – There still exists a big number of small producers and, for that reason, they are comprised by the provisions of n. 2, art.[1] 45 of EC Reg. n.1623/2000, and therefore withdraw their by-products under supervision. The number of small producers is estimated in 42980 from the total of 43382 Portuguese wine producers[2]

3 – There are many small vinegar manufacturers, in many wine regions, and in Ribatejo - Oeste there is one very important manufacturer.

Data about distillations, made available by IVV or INGA do not allow for the identification of the importance of the two ways through which Portuguese producers have to comply with for the mandatory disposal of their by-products.

Therefore, in environmental terms, Portugal has to be considered, regarding the issue of by-products, as having regions where producers are obliged to delivery by-products for industrial processing, and other regions where they do it by disposal of such by-products, mostly by composting at the vineyards. The size of the regions with withdrawal under supervision is bigger than the first one. Those two types of regions will be considered separately. Notice that small producers with possibility of withdrawal of their by-products may be located in areas where this is not allowed.

[1] In the Italian part of wine-growing zones C and the Portuguese wine-growing zone, people subject to the obligation referred to in paragraph 1 may be released from such an obligation through the withdrawal of the by-products of vinification under supervision, provided they have made wine

[2] Form “Initiatives for action in the Portuguese Wine Cluster” Monitor Group, 2003

Withdrawal regions

The importance of the quantity of by-products that are used for composting at the vineyards, by comparing withdrawal under supervision in recognised regions with the production of those regions, is not possible to evaluate, because they are not at the same geographic unit. However, comparing those regions with producing regions, allows us to have a qualitative appreciation, and to conclude that, in fact, this composting is important in northern wine producing regions and in all the South regions. In fact, Alentejo is also a region where wine-makers may discharge the obligation through withdrawal under supervision.

The regions where by-products are used in processing are Beiras and Ribatejo e Oeste, in almost all of their territory.

The environmental impact of this measure is not the subject of known studies by IVV or by research institutions in Portugal, or even at EU level, and experts' questionnaires do not allow to arrive to a conclusion on this subject, which seems to be quite different in southern and northern wine regions. The evaluation of the evolution of this situation is not known but, as it depends mainly on how the distillers approvals have changed, in time, we may say that the situation is roughly the same since the beginning of the application of this measure in Portugal (1991/92 campaign).

In Portugal, the withdrawal under supervision is usually considered as an economic disadvantage for producers, as they do not have an income from their by-products and have a cost for using them for composting their vines. A study[3] is being made by Direcção Regional de Agricultura de Entre-Douro-e-Minho, Escola Superior de Biotecnologia da Universidade Católica Portuguesa, Terras de Felgueiras, Caves Felgueiras CRL, in order to evaluate the technical possibilities of extracting from by-products substances/ingredients which could allow the upgrading of such by-products.

It is important to notice that withdrawal must be made as quickly as possible, latest by the end of the campaign, and that such withdrawal has to be both inscribed in the registers established for the application of article 70 of Reg. (EC) no. 1493/1999 and recognised by the competent authority.

Besides this, the minimum alcohol contents of the by-products of vinification which are subject to withdrawal under supervision have been fixed.

Distillation Regions

The evaluation of the environmental impact of distilleries and wineries has not been made. There are different solutions for the environmental treatment of by-products which are produced at the end of the process, and those coming from distilleries used to be considered more polluting than those coming from wineries. The solutions are related with the size of such production and with the existence of collective solutions nearby the installation.

The Portuguese regulations are clear regarding this environmental aspect, and distillers are obliged to adopt solutions regarding their specific situation. There is only one institution to certificate the environmental international rule ISO14001, and consulting them we concluded that, in the wine and distillery sectors in Portugal, there is not one single certified company.

Regarding the wine sector and taking into account that the EU support granted to the processing and marketing of agricultural products (Reg. 1257/99) makes it mandatory for applicants to propose a solution for the treatment of effluents and, due to the large number of beneficiaries of this programme, it seems that the situation is evolving in a very positive manner since that type of aid has been applied (1990).

[3] Project 757 – GRAPE MARK – upgrading of by-products from wineries, resulting from the vinification process, *Project manager* - Francisco Xavier Delgado Domingos Antunes Malcata (Professor), Escola Superior de Biotecnologia da Universidade Católica Portuguesa (ESBUC). Execution period - 01-11-2003 to 31-10-2006.

The use of concentrated grape must

The use of concentrated grape must and rectified concentrated grape must in Portugal is relatively low when compared with southern producing countries. The use of must began in 1993, when this aid was first applied. The quantities used have been subject to fluctuations over time, according to the total production, as can be seen in Table 17, showing the EU expenditure with this aid in Portugal.

Table 17. Aid for the use of concentrated grape must and rectified concentrated grape must in Portugal

	Values in 1000 Eur
1993/94	89.424
1994/95	91.434
1995/96	26.665
1996/1997	2.878
1997/1998	2.702
1998/1999	1.816
1999/2000	5.362
2000/2001	4.856
2001/2002	5.991
2002/2003	4.051

Source: IVV

There is no production of concentrated must and/or rectified concentrated must in Portugal.

Summary

The obligation of by-product distillation is mainly applied in Portugal by withdrawal under supervision and by distillation of those products, assuming withdrawal an important way, due to the existing distance between wineries and distilleries approved for EU distillations.

It is not possible to make an environmental evaluation of the impact of this practice once there are data or Studies about this issue. Once there is no production of concentrated must grape, there are obviously no vines cultivated with this intention.

The by-products treatment coming form wineries and distilleries have to comply with rules related with industrial authorisations activity, which is also a condition for the IVV approval for EU market mechanisms.

It is important to notice that the investments in the treatment of effluents are supported by EU funds (actually in reg. 1257/99 context)and due to the large number of beneficiaries of this programme, allow us to conclude that the situation is evolving in a very positive since 1990.

2.2 Wine – Theme2: structural measures

Question 1 (V2): What are the environmental effects of abandonment premium?

The abandonment measures were applied in the analysis period, 1987 until 2003, based on three different EC regulations.

First period - 1987/88 to 1991/92, EC regulation 2239/86

The first one came into force during the 1987/88 campaign, through EC Regulation 2239/87, concerning specific measures for Portuguese vines, seemed necessary to promote the structural adaptation of Portuguese vines to EU CMO market requirements. The premium amounts granted to vine growers, under this regulation, were mainly related to the yield average of the total area receiving the abandonment premium.

2nd period – 1992/93 until 1995/96, EC Regulation 1442/88

Regulation 1442/88 came into force in 1992, for four campaigns, until the commitment of the Agriculture Council in 1995, based on the total EU grubbed area and the perspective of 1995

production being lower than used to be in the preceding campaigns, and particularly than those of the eighties, where abandonment premiums were considered an important measure to reduce supply. The premium per hectare abandoned was increased in relation to the average yield of the grubbed area.[4]

3rd period – since 1996/97 – EC Council Regulation 1493/99

With the 1999 wine CMO reform, the system changed, with each country having annually established quotas and rules and Member States having to indicate the regions where the premium could be granted, according to rules and amounts that they fixed taking into account the EU parameters, included in EU regulations.

Application results of the different EU regulations concerning abandonment

EC Council Regulation 2339/86, which was meant to expire in 1995, is the practical result of the recognition in the EC Treaty Concerning the Accession of Portugal to the European Union, of the need to grub 15000 ha of vines planted in soils which were not appropriate for the production of quality wine, therefore corresponding to soils where vines were more productive.

The premiums were granted taking into consideration the average yield of all the vines meant for abandonment and a supplementary aid was granted whenever the area at stake corresponded to the whole vineyard area of the producer. The amount was lower than the premium established in Reg. 1442/88 for the abandonment in other producing countries.

The criteria related with the environmental aspects were only applied when the number of applications was so high that selection criteria needed to be provided for. However, if it was not necessary to apply such criteria, they were used to guide the technical assessment that was made by technicians and by IVV to make a final assessment of applications for grubbing.

From those priority criteria, the most important positive factors contributing for a favourable advice were soil quality (high usage capacity) and how easy it would be to turn the plots into irrigated land. Vine varieties were never considered in the assessment procedure, because growers used to graft traditional vine varieties, but usually had other technical problems contributing to a lower quality level, particularly related with cultivating practices, namely vine planting and training.

Table 18. Grubbed area by region and regime, and by campaign.

Values in ha

Reg. 2239/86

Year	Entre Douro e Minho	Trás os Montes	Beira Litoral	Beira Interior	Ribatejo Oeste	Alentejo	Algarve	Total
1987/88	31	64	43	105	658	63	51	**1.015**
1988/89	129	162	297	534	1.986	79	88	**3.275**
1989/90	108	175	57	51	95	6	2	**494**
1990/91	12	79	57	157	468	93	11	**877**
1991/92	87	10	26	38	102	0	0	**263**
Total	**367**	**490**	**480**	**885**	**3.309**	**241**	**152**	**5.924**

Reg. 1442/88

Year	Entre Douro e Minho	Trás os Montes	Beira Litoral	Beira Interior	Ribatejo Oeste	Alentejo	Algarve	Total
1992/93	59	25	72	63	2.515	357	201	**3.292**
1993/94	184	258	239	275	2.976	775	158	**4.865**
1994/95	53	195	242	178	1.513	328	149	**2.658**
1995/96	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	**n.d.**
TOTAL	296	478	553	516	7.004	1.460	508	**10.815**
Total	**663**	**968**	**1.033**	**1.401**	**10.313**	**1.701**	**660**	**16.739**

Reg. 1493/99

1996 a 2003	**Abandonment according to art. 8 of Reg. 1493/99 was not applied**

[4] Last year of the transitional period of portuguese acdession

The impact of this measure in this period (1987 - 1991) is generally considered as being below the real interest to abandon the vine in certain regions, mainly in the Ribatejo wine-growing region. As a matter of fact, wine-growers had to face two main problems when it came to receiving such subsidy: the first one related to the administrative complexity of the applications and the second related with financial limitations, resulting from the lack of experience in the management of these programs.

In the second period, where the rules in Portugal were the same as in other producing countries but the level of amounts paid to producers was below the values paid in other producing countries, and Community support amounted to 100%, the area grew considerably, by around 6 thousand ha (from 1987 to 1991) to almost 12 thousand ha (from 1992 to 1995).

The quantitative assessment of the regional impact is limited by the lack of regional distribution and the results have to take into consideration the qualitative analysis made by experts. The results of that evaluation, based on a ten year average area (data from INE) added to the area of abandonment show (Table Q1V2 - 1) that the global grubbed area under this regime was around 7 % of the total Portuguese vineyard area, with the biggest impact in the Ribatejo – Oeste region.

In this region the impact of the abandonment regime was in fact the most important, with 14% of grubbed vineyard area, but this value does not show the differences between Ribatejo, Estremadura and Terras do Sado, the vineyard area of which are now known by the Portuguese Vine Inventory.

Considering all the three regions, we have seen an impact of 14%, but experts say that almost the whole area was grubbed in Ribatejo, where vines were occupying fields which were considered as the most productive in the country (Lezíria do Tejo). So, if we consider the vineyard area of Ribatejo and that the abandonment regime reaches 90% in Ribatejo alone (the other 10% in the other regions), the percentage of abandonment areas increases to around 30 % of the whole of the area estimated by the vine inventory (plus the abandonment area, based on inventory vine data in 1999).

Table 19. Assessment of abandonment in the region's vine-growing area.

Indicators	Entre Douro e Minho	Trás os Montes	Beiras	Ribatejo Oeste	Alentejo	Algarve	Total
Vine area (ha)	34.855	68.591	55.486	71.913	14.862	2.867	**248.573**
Abandonment							
- area (ha)	663	968	2434	10.313	1.701	660	**16.739**
- % of vine area	**1,9**	**1,4**	**4,4**	**14,3**	**11,4**	**23**	**7,1**

Source: INE

In fact, experts agree that this was the only Portuguese region were the abandonment regime had a real impact, changing soil occupation, from vine to corn and later to sugar beet. Corn is an irrigated crop, as opposed to vine, which has no tradition of irrigation in that region.

It is also important to notice that the reduction of the area in the Ribatejo e Oeste region (INE data) shows that in the same period vine area with around 10 thousand ha of the total of 17 thousand ha grubbed, was reduced even more if we consider INE figures, showing that the abandonment premium did not cover all the area grubbed through this regime.

Table Q1V2 - 2. Vine evolution in Ribatejo e Oeste vine-growing region.

Values in ha

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Inventory 2002
Ribatejo e Oeste	73.732	74.076	70.806	67.535	63.575	59.615	58.449	57.282	53.401	49.519	49.606	57.727

Source: INE and IVV (for Inventory)

The existence of alternative, economically more interesting crops, the outcome of a new irrigation technique (pivot), obsolete wineries, very low market prices and inadequate soils for the production

of high quality wines, capable of competing with other regions which are highly prepared for the production of wines of the highest quality, are the reasons pointed out by experts for the abandonment of vines verified in the Ribatejo region.

Concerning environmental impact of this measure, we may consider the following situations:

- **Soil erosion**: changing vines for annual crops means a more intensive soil tillage which affects the soil structure and speeds up the mineralization of organic matter, increasing soil loss trough superficial draining.
- **Pollution of superficial and underground waters**: increases trough the dragging of pesticides and fertilizers, used in bigger quantities to satisfy the needs of annual crops like corn or sugar beat, instead of vine.
- **Landscaping**: the grubber of 7% of Ribatejo vine area represents a change in landscape region.

Summary

The available information about vineyard area in Portugal reflects the institutional changes in consequence of Portuguese accession, and so data is available only since 1990 at national level. Before, data were collected at regional level by DRA.

The abandonment premium was available since 1987, in the first stage of accession, in the framework of a EU regulation (nº 2239/86). From 1992 and until 1995 abandonment premium rules were the same of EU. Since 1996 until now, there are no vine abandonment regimes. The conditions to access to abandonment premium were given to Table wine vines and related with yields, once those conditions did not consider environmental issues.

The evaluation of abandonment areas compared with vineyard area data available allow us to conclude that the only wine region were abandonment had a real impact was in Ribatejo region, with a value above 10%. The existence of an enormous varieties usually used (more than 300), a traditional situation of Portuguese vines, does not allow to identify the existence of dominant variety abandoned. This type of situation does not exist in Portugal because wines were, in almost all of the cases, planted with a lot of varieties. Wine producers organizations recognise that abandoned vines were mainly the most productive and with a low alcohol potential, related with soil type and varieties used.

Question 2 (V2): What are the environmental effects of restructuring and conversion of vineyards (variety conversion, relocation, adoption of new production techniques) ?

Evolution area by category

There is statistical information available concerning the 1990/2002 period regarding the vineyard areas. Their distribution by vineyards that produce quality wine psr and table wines, in such a period, evolved according to the regulations regarding the definition of 28 new regions, which had been decided before the accession of Portugal to the EU, but the production rules of which were published from 1991 to 1993.

The vine area before the application of community regulations for the wine sector in the first of January 1991, was distributed by quality wine, meaning all the wine produced in Entre Douro e Minho, Douro, as well as Trás-os-Montes, Dão and Bairrada. As we said before, the rest of the country produced wine which was considered as table wine.

So in the analysed period the vine area reflects these changes, and we have to consider vine area evolution in global terms for the whole period, because only after 1994 can we see the vine area in terms of vine meant for the production of either quality wine psr or table wine.

Table 20. Vine area evolution by region

Values in ha

Total R. A.	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Entre Douro e Minho	37.425	39.416	37.047	34.678	34.347	34.015	33.600	33.185	31.753	30.321	30.321
Trás os Montes	68.268	68.287	68.329	68.297	68.037	67.852	67.774	67.774	67.787	65.726	65.725
Beira Litoral	33.360	34.911	32.538	30.165	30.345	30.524	28.327	26.129	25.673	25.216	25.260
Beira Interior	24.694	25.607	25.894	26.181	25.018	23.855	23.007	22.159	21.762	21.366	21.576
Ribatejo Oeste	73.732	74.076	70.806	67.535	63.575	59.615	58.449	57.282	53.401	49.519	49.606
Alentejo	**10.678**	**12.562**	**12.953**	**12.832**	**12.614**	**12.614**	**12.531**	**12.531**	**12.913**	**16.088**	**16.458**
Algarve	2.418	2.507	2.371	2.234	2.128	2.022	1.996	1.969	2.085	2.200	2.207
TOTAL	**252.565**	**259.357**	**251.930**	**243.915**	**238.058**	**232.492**	**227.680**	**223.026**	**217.372**	**212.435**	**213.153**

Source: INE, Estatísticas Regionais da Produção Vegetal e Animal, 1990-2000

In global terms, we notice a trend towards the reduction of vineyard area in all regions except in Alentejo, where the area increase was in 2002 around 60% bigger than in 1990. In the Trás-os-Montes region, with Douro wine representing almost the total wine from the region, the trend is towards the stabilization of the vine area, and so it has to be, once transfer of rights were forbidden since the beginning of the EU transfer rights regulation.

In all the other regions there was reduction of vine area, more noticeable in the Ribatejo e Oeste region. Comparing these data with the ones given by the Portuguese vine inventory, we see that the area for Ribatejo e Oeste, becomes divided in three different regions: Estremadura, Ribatejo and Terras do Sado, and for those three regions the amount of area is quite different (71 thousand ha) from the one shown by INE (49606 ha), so for the quantity assessment we used the figures from the inventory DG Agri 1999, where information about quality wine psr and table wine is available at a regional level.

Table 21. Inventory of wine-growing potential on 01/09/1999 (Council Regulation n° 1493/99)

POTENTIAL (Total) Area (Ha)

Region	QWPSR	TW + GI	Replanting rights	TOTAL
Minho	37.656	1.982		39.638
Trás-os-Montes	42.168	30.578		72.746
Beiras	36.400	16.886		53.286
Estremadura	1.412	37.338		38.750
Ribatejo	1.074	22.458		23.532
Terras do Sado	2.690	6.677		9.367
Alentejo	5.720	7.737		13.457
Algarve	1.450	483		1.933
Total PORTUGAL	**128.570**	**124.139**	**7.498**	**260.207**

Source : DG Agri

The global impact of restructuring measures should take into consideration the different legal frameworks used for their application since 1988, the year when measures began to be applied, and 2002, the year when acceptance of applications was suspended, in what concerns environmental impacts at a regional level. The global assessment allows us to conclude from the start that the Alentejo region is, without any doubt, the region where there is a greater interest in vine restructuring, where the already approved area covers practically half the existing vineyards.

Table 22. Restructured vine area by region

Indicators	Entre Douro e Minho	Trás os Montes	Beiras	Ribatejo Oeste	Alentejo	Algarve	Total
Vine area (ha)	34.018	69.061	53.286	71.649	13.457	1.933	**243.404**
Restructured vine							
- area (ha)	5.421	5.911	4.436	7.490	5.900	406	**29.564**
- % of vine area	**15,9**	**8,6**	**8,3**	**10,5**	**43,8**	**21**	**12,1**

Source: INE

In the remaining regions, the global impact of this type of measures is similar to the one of regions in the Centre of the country (TM, BL, BI e RO), the total restructured area showing no big differences. In the Algarve region, where vine does not hold a significant importance as a crop, the total restructured area is a lot smaller than in other regions, although it represents 21% of the total area. There is a much greater will to restructure in the Entre Douro e Minho region, for reasons we will explain ahead.

Restructuring and conversion of Portuguese vines started in 1988, based in EC Council Reg. 2239/86 and through a Plan drawn by Portugal, which was approved by the end of 1988. This plan had some problems in its application, mainly related with administrative procedures which made it more difficult for wine growers to obtain support than within the EC Council Regulation 797/85, which was the legal framework to support farm investment at the time. Premiums in this context were in some cases (like, for instance, for young farmers) even higher than those within the restructuring frame.

However, the simplification of procedures and a more appropriate financial management, in the next programme (Operational Program of the Community Support Framework) show how important an appropriate application is to the results of structural measures of support. Thus, in the period from 1988 to 1991 (4 years) a restructuring of about 2280 ha was supported, an area so small (minus 1%) against the global area (260.000 ha), that we consider that during this period the restructuring of vineyards did not have any impact whatsoever in the vine crop, independently of the environmental measures which were provided for in the restructuring Plan drawn at the time.

Table 23. Vine areas restructured from 1992 to 1998, by region (CSF I e QCA II)

Indicators	Entre Douro e Minho	Trás os Montes	Beiras	Ribatejo Oeste	Alentejo	Algarve	Total
Vine area (ha)	34.018	69.061	53.286	71.649	13.457	1.933	243.404
Restructured vine							
- area (ha)	3.953	3.984	2.502	4.820	2.039	160	17.458
- % of vine area	11,6	5,8	4,7	6,7	15,2	8,3	7,2

Source: IVV e IFADAP

In the period when restructuring and conversion were made within the first, second and third Community Support Frameworks, from 1992 to 1998, i.e. 8 years, there was a restructured vine area of about 17.500 ha and it is therefore important to make a quantitative and qualitative assessment of the impact of this measure.

Restructured areas are significant from a quantitative point of view in all regions, although more significant in the Entre Douro e Minho and Algarve regions, but it is in the other regions that the impact concerning cultural changes is more obvious from a qualitative point of view.

The application of the different frameworks that have supported restructuring during this period took into account the definition of production conditions established for the production of the new 28 established regions, which took place for most cases during 1989. Within this framework, and through the application of community regulations (at that time, Council Reg. 823/87), rules were established for each region to comply with for the production of grapes in order to obtain quality wines.

In the case of vineyards supported by restructuring Plans, varieties and the choice of locations should be emphasised. The average productivity of vineyards in Portugal is far below that of most community countries (see Evaluation of the Common Market Organisation for Wine, December 2004), due to the average aging of vineyards and to the use of varieties which have never been

subject to any kind of varietal improvement whatsoever. The use of traditional varieties which have been subject to improvement, namely in what concerns sanitary aspects, was paid special attention by the vine growers.

The changes induced by the measures of restructuring and conversion are almost the same in every producing region, with the exception of the Verde Wines region (Entre Douro e Minho), and concern mainly the varieties used, and some changes in some practices related to quality.

In the Verde Wines region restructuring was a measure used to change the cultivation system. The traditional cultivation in this is region was "in height", a unique system in the European Union, as is done in Galicia. Vines would be led around trees which border the crop, sustained by wire, and would reach some 4 meters high. Vintage had to me made with the help of stairs.

As is obvious, this system is not compatible with the modernisation of society and, based on studies developed by regional institutions, the Directorate-General of Agriculture in particular, this system is being replaced by another which can be mechanised. The research that preceded this change allowed for the identification of the cultivation changes which were necessary not to alter the quality of the traditional varieties.

The changing costs involved and the strong need for replacement of the traditional system have explained the high volume of restructured areas in the region. Naturally, there is some impact on the landscape, but the continuance of that system could only be achieved if the price of Verde Wine would be strongly compensated, what does not happen since a relationship between the cultivation system and the price paid for the grapes has not been established, and it has not been considered as capable of integrating a special conservation measure, within the context of Rural Development, as happened with the vine terraces in the Douro region and with the vine training system in Colares.

In all the other regions, the attention paid to the choice of varieties and the use of one single variety in the same vine plot is the main change verified as a result of restructuring measures.

The choice of varieties to be used bore in mind the established rules for the production of quality wine psr and GI wines, because none of the quality wine psr producing regions allows the cultivation of the so-called international varieties. One other important aspect, mentioned above, was the care in using varieties resulting from the cloning selection carried out by the Estação Agronómica Nacional (INIA) in co-operation with regional services and local universities. This improvement has been recognized by many vive growers as responsible for the recovery of varieties of an outstanding quality, but which are very sensitive to climatic variations and also subject to viral infections which have led the vine growers to replace them, as is the case of "Tourigas" in the Douro region.

The vine inventory shows the most important varieties cultivated in Portugal. As can be seen, no so-called international varieties can be found, because their importance is insignificant. From the near three hundred varieties approved for cultivation in Portugal by the European Commission, those identified in the inventory represent the more important varieties cultivated in each region.

The adoption of drip irrigation systems represented an important cultural innovation in the Alentejo region, while preventing moisture stress caused by long term droughts, which are typical of the region, from affecting the quality of grapes.

These cultural changes do not show signs of having any impact on produced quantities, what is evidenced by the fact that wine output in Portugal has remained below the values obtained in the early nineties.

Cultural changes which occurred in most wine regions had a visible impact on the increased quality of produced wines, along with a strong investment in wineries, which in general terms had aged and were obsolete. These changes were followed by measures of differentiation of price paid to

producers, what justifies the interest that was always there for the restructuring and conversion of vines. Some wineries provide technical assistance to their associates, so that the restructuring of vines will correspond to an increase in the quality of grapes, and in the case of Alentejo such support is co-ordinated by Associação Técnica dos Viticultores do Alentejo (ATEVA).

Impact on landscape occurs only in the region of Alentejo where vines, a crop which is spread throughout a large region and has a reduced global area, now shows patches corresponding to the delimited regions, and now has some significance in a number of municipalities.

At the same time, cultural changes have occurred resulting from the strong adherence of vine growing to the agri-environmental measures within Rural Development, which will be assessed by us when answering to this particular issue.

We should refer that the beneficiaries of the measures "Integrated protection", "Integrated production", "Organic farming", "Douro's vineyards on terraces" and "Colares vineyards" provided for in the Regulation for Application of Agri-Environmental Measures (Decree order n.º 475/2001) while the contract for granting of support made under the terms of such Regulation is in force, are allowed to carry out the restructuring and conversion of vineyards (Decree order n.º 685/2000)
With the 1999 reform, a national plan for the restructuring and conversion of vineyards was established, called VITIS (Decree order n.º 685/2000, of 30th August), approved in 2000, within EC Council Reg. n.º 1493/99, which had an exceptional adherence, which resulted, in just over one year, in a volume of applications involving larger financial amounts than those foreseen for the total execution of the plan, until 2005.

Table 24. Distribution of restructured areas (ha) by region, from 2000 to 2002

	EDM	TM	B	RO	AL	ALG	**TOTAL**	Legal framework
2000 a 2002	1.038	1.630	1.211	1.909	3.340	175	**9.303**	Reg. 1493/99

Source: IVV e IFADAP

Concerns established in the Restructuring Plan by IVV, together with the sector's organisations, tend to make the expenses with technical conversion of vineyards eligible, such as drainage, retaining walls, double grafting and the alteration of vine training systems where there is a reduced density of planting.

The environmental aspects concerning cultural practices were considered as falling within the framework of agri-environmental measures, because since 1994 such measures have been applying successfully to vineyards, consequently there being no need to introduce changes. These are, in fact, Programmes with different objectives (investment on installation and annual cultural care) which may even allow vine growers who have undertaken to carry out "integrated protection" to apply for restructuring support.

It is also intended to take advantage of this Plan to establish the distribution of areas between vine growing regions and the way in which to manage applications. This is a very important aspect, since specific support to investment in vineyards was suspended for two years (1999 and 2000) and thus there was from the start an expectation for a high number of applicants.

It should be noted that since 1991, when support was integrated in a Specific Operational Programme (called Structural improvement of vineyard), the number and area of the applications for investment in vines represent support values far above the ones made available by the Programmes, what led to an accumulation of projects regarding some years and Plans for other years, including stoppages in the reception of applications, which generated an instability climate in the producers' investment decisions.

Up to the implementation of the Programme now in force, investments on vine renewal, considering the high amounts such investments represent and the fact that such Programme grants an aid for loss of income, led most of the converted areas to resort to existing support, with vine growers preferring to wait for the support, since rules are strict in what concerns the possibility of investing before approval of the project.

From 2001 onwards, with available sums having been spent, and the temporary closing of reception of applications (until Feb. 2004), therefore with a very long time horizon for new sums to be made available (June and July 2005), many vine growers have been choosing to invest without waiting for EU support.

Like previous plans, the 2000 restructuring Plan establishes a set of incentives meant to improve the quality of grapes and to promote the increase of minimum area of plots, by excluding applications for areas of less than 0, 1 ha.

The environmental effects of this Plan are identical to the ones above referred to (1991 to 1998 period), since the foreseen support measures are a continuation of the previous ones and the needs for conversion are still high.

This CMO measure is considered very important to the improvement of Portuguese wine quality, although there is no environmental impact, once it is the same culture almost always in the same plot.

Summary

Vine restructuring programme began in 1989 with the EU regulation in the context of the first stage of Portuguese accession. Since 1991, the support was given in the RDP framework and after 2000 according to wine reform (reg. 1493/99). Along this period, rules and amounts of premiums changed justifying the great differences in the restructured and converted area.

Comparing those areas with vine area in each wine region is limited by absence of vine area by region and by the changes in the possibility of classification of vines in QUALITY WINE PSR occurred between 1992 and 1994.

The rules did not considered environmental issues, unless those related with soil protection. However, there is no data available referring to vine area receiving this type of aid. The inexistence of studies about the impact of this kind of aid does not allow us to evaluate the real impact of this measure in environmental or landscape terms.

In regional terms we may conclude using the available data that Ribatejo – Oeste and the Alentejo region are the most important regions benefiting from Restructuring and Reconvertion programmes. Regional impact is more important in Alentejo once vine area in this region is considerably less than in Ribatejo – Oeste.

2.3 Wine – Theme3: other regulatory measures and especially those for quality wines produced in specified regions

Question 1 (V3): What are the environmental impacts of the CMO requirements for quality wines produced in specified regions? [in particular those concerning: traditional conditions of production, cultivation methods, yield per hectare and demarcation of production]

Each of the 32 Portuguese denominations of origin for the production of WQPSR has rules for vine culture and for the wine, according to Chap. VI of EC Council Reg.1493/99.

In Portugal, wine-growing region regulations for the production of WQPSR grapes are quite similar in what concerns the factors that need to be considered for the production of each wine region and do not differ a lot from the provisions of EU regulations. For vines, the provisions consider, for all regions and denominations, the type of soil, the cultural system, vine varieties and the yield per hectare.

All those mentioned provisions, necessary to comply with in order to produce a quality wine psr wine, have an environmental impact, as they have an effect on cultivation methods and represent a limitation to the possibility of increasing the use of inputs, inducing an increase of vine yields. All regions have limited yields of around 60 hl/ha, except for Ribatejo and Estremadura, where soil and climate lead to higher outputs (90 hl/ha).

The quantitative analysis of the impact of provisions on the production of quality wine psr could be obtained by comparing the importance of the QW vine area with the total area of a given region.

As we have seen before, vine data for Portugal have the following characteristics:
- Vine area is broken down by DRA region (not quality wine psr region) and is only available as from 1990, the year before the adoption of wine CMO in the country (INE).
- Data from the Vine Inventory are available only for 1999 (DG AGRI), and 2002 (IVV).
- Area data from Eurostat consider quality wine psr and other wine areas under production, but at national level (see Ex-post evaluation of the Common Market Organisation for wine, December 2004)
- The new 28 wine-growing regions started producing quality wine psr in 1991 (5 regions from Alentejo) and in the following years (the other 23 regions).

The only data available to evaluate the regional importance of quality wine psr are production data, and even this statistical information does not consider quality wine psr and table wines separately in any of the more recently delimited regions.

Table 25. National wine output, by region

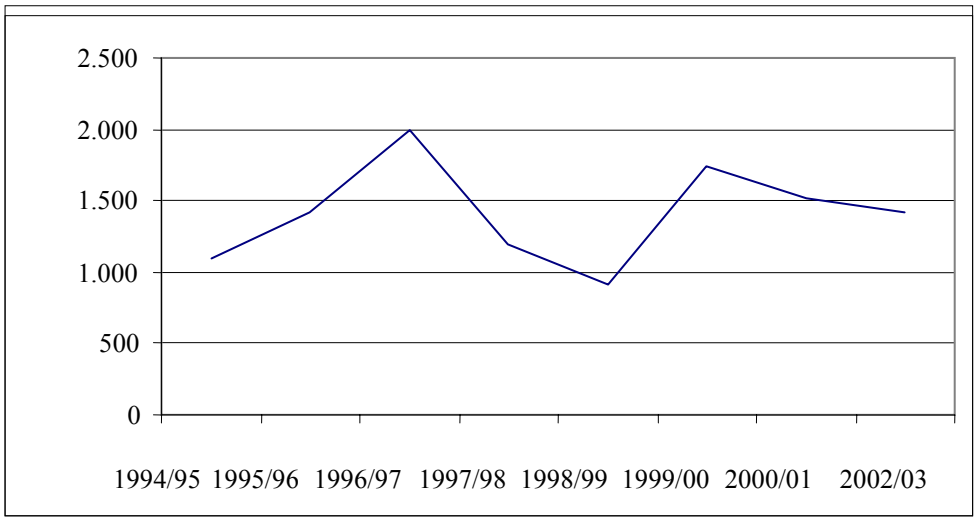
Values in 1000 hl

Wine-growing regions	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001	2002/2003
Minho	**1.375**	**1.228**	**1.703**	**508**	**608**	**1.237**	**881**	**836**
Trás-os-Montes	**1.209**	**1.705**	**2.350**	**1.332**	**1.011**	**1.960**	**1.715**	**1.636**
Douro	1.099	1.425	1.989	1.191	915	1.749	1.513	1.412
Remaining regions	110	280	361	141	96	212	202	224
Beiras	**1.068**	**856**	**1.567**	**773**	**381**	**1.338**	**1.202**	**1.102**
Dão	254	180	508	193	121	444	400	315
Bairrada	476	422	466	339	88	381	316	371
Remaining regions	338	254	593	241	172	513	485	417
Ribatejo	**810**	**948**	**1.058**	**1.019**	**536**	**854**	**744**	**834**
Estremadura	**1.379**	**1.781**	**1.894**	**1.590**	**698**	**1.514**	**1.306**	**1.235**
Terras do Sado	**286**	**373**	**424**	**352**	**200**	**348**	**329**	**348**
Alentejo	**333**	**305**	**626**	**463**	**241**	**497**	**434**	**594**
Algarve	**24**	**19**	**14**	**27**	**17**	**23**	**14**	**20**
Madeira	**36**	**38**	**55**	**52**	**44**	**59**	**62**	**51**
Azores	**1**	**2**	**21**	**9**	**14**	**16**	**22**	**21**
Total	**6.521**	**7.255**	**9.712**	**6.124**	**3.750**	**7.844**	**6.710**	**6.677**

Source: IVV

However, these data show the importance of the Douro vine region (DOC Douro and Port) within the Trás-os-Montes region, between around 85 to 90% of total production, and that production in this region has been constant, not considering the usual annual variations.

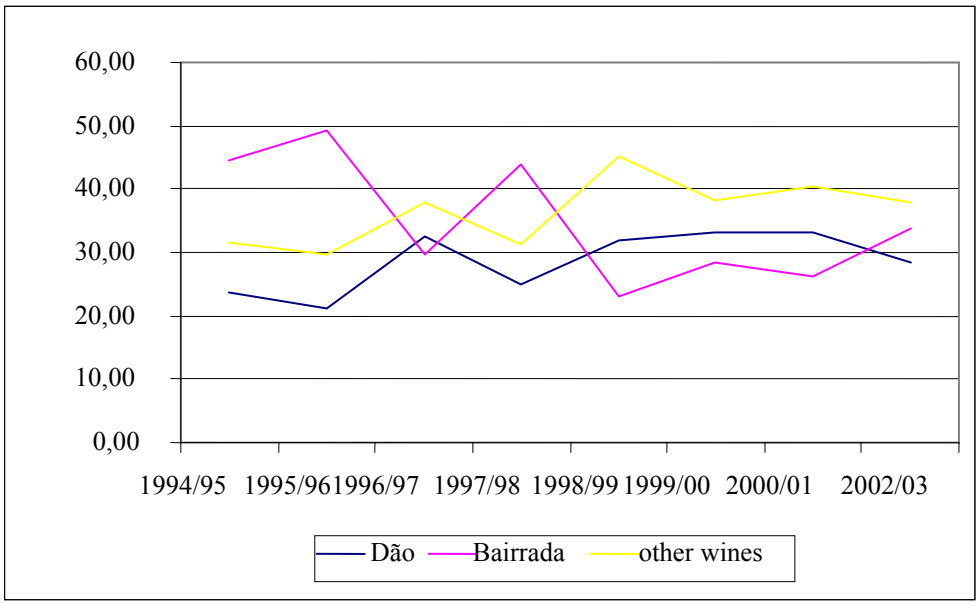
Chart 2. Quality wine Douro and Porto (hl)



Source : IVV

In the Beiras regions, the tendency of quality wine Bairrada is to reduce production, unlike Dão, in which case production is increasing slowly. Other wines show a growing trend, but since 1999 such trend seems to change with the decrease of other wines and the increase of Bairrada and Dão.

Chart 3. Production distribution in Beiras (%)



Source : IVV

The vine area of these regions has an equivalent importance to wine production, although without the usual annual variations verified in wine production.

Considering the vine evolution in the analysed period (1988 to 2003), evaluated in quality terms, we may consider that the main factor that contributed to the improvement of vines occurred in this period (evident by the restructured area) was the creation of 28 more wine regions for quality wine psr production, in the early nineties.

The creation of such regions, which cover almost the whole vineyard area of the country, induced vine-growers to adopt in these regions the provisions of WQPSR regulations for their own region, and to pay a particular attention to varieties they choose to use and to use them as pure/unmixed (not mixed in the same plot of vine as was usual in the past), as well as to the quality, particularly from a sanitary point of view, of purchased materials.

Environmental impact can also be considered important if it is taken into account that this movement towards improving wine quality has obtained results in the income of wine selling and therefore value was added to vines producing WQPSR wines.

In the eighties, the only existing WQPSR regions were Douro, Verde Wine, Dão, Bairrada and Algarve, and almost all the vines in such regions produced that category of wine, as done presently, but all the other regions have now a more or less significant area of quality wine psr.

Table Q1V3 - 1 shows the relative importance in all wine-growing regions of the wine produced form grapes coming from vines that comply with the rules to produce quality wine psr, and as we can see Alentejo has already almost all of its total production consisting of quality wine psr wines.

Table 26. Total and quality wine psr production by region, in 2003 (hl)

Wine-growing regions	Total (1)	QLWPSR	Quality wine			Total QWPSR (2)	(2) / (1) %
			QWPSR				
Continental Portugal	7 043 548	657 903	2 268 015	900 465	1 367 550	2 925 918	**41,54**
Minho	830 845		809 674	549 302	260 372	809 674	**97,45**
Trás-os-Montes	1 764 752	648 975	441 143	71 372	369 771	1 090 118	**61,77**
Beiras	882 670		441 335	101 712	339 623	441 335	**50**
Estremadura	1 110 347	60	69 066	20 775	48 291	69 126	**6,23**
Ribatejo	896 317	152	64 132	19 276	44 856	64 284	**7,17**
Península de Setúbal	416 968	8 333	56 838	5 261	51 577	65 171	**15,63**
Alentejo	817 049	383	370 750	129 840	240 910	371 133	**45,42**
Algarve	30 937		15 078	2 927	12 150	15 078	**48,74**

Source: INE

It is important to notice that, if the creation of these regions had not taken place, the tendency would have been to increase income through increased yields, the only alternative to improve income, since, as seen before, Portuguese yields are the lowest in EU producing countries, only similar to Spain, where production costs are above Portugal's, due to different cultural systems and the need of quite less phytosanitary treatments during the growing period.

The quality improvement in vines and wines is also very important in environmental terms, because it represents a continuation of vine-growing, which otherwise would have been abandoned, with or without premiums. However, the total wine output has suffered a significant reduction in the last ten years, as can be seen in the DG – AGRI statistical series.

Summary

There were two kinds of quality wine psr regions, those defined before Portuguese accession to EU, were Porto and Douro wine belong and the other recently delimited (after 1991)

In the « old » quality wine psr regions all the production inside the region used to considered as being quality wine psr, and in the « new » quality wine psr regions vines should fulfil the conditions provided in their regulations and this would depend on wine producer markets, once almost all the Portuguese wine growing regions were covered by the possibility of choosing to produce quality wine psr or Table wine.

There is no big difference in technical practices between vines that produce Table Wines and quality wine psr, mainly due to the fact that the conditions of production of quality wine psr were defined taking into account the existing practices of vine cultivation, and in all wine regions coexists quality wine psr and Table wine production. The only important difference is the limiting of yield for quality wine psr which is however very low (60 hl/ha) for most regions, but above the existing yields (average 30 hl/ha) in the whole country.

The production of quality wine psr or Table wines depends mainly on the market strategy of the wine producer, who can be the owner of vines or the one who bye them, depending on the options given for the wine-grower, which differ form one region to another. So the demanding of vines to be classified as potential quality wine psr by the regional CVR depends more from the wine market of each region than the way vines are cultivated, and according to experts this is related with the regional structure of production (number of cooperative and number or size of private wineries)

Question 2 (V3): What is the environmental impact of the regulated oenological practices?

There is no known studies done in National research institutes (after questing them) and about the evaluation of this environmental impact we can only say the same we said for distillers: Portuguese law oblige producers to resolve their effluents problems, and EU support for transformation and commercialization depend on implementing systems to treat them, and so the impact evolution is positive, in number and in size. As we have seen before there are no producers with ISO 14001 approved. And there are not any voluntary agreement known, in order to define a collective solution for effluent treatment.

As there are no studies on the subject and by questioning experts we could not achieve to have an answer to this question we may say that this issue should be evaluated in tow possible ways. It is important to analyse the qualitative of effluents by oenological practices and eventually by region and to know the kind of support given to wineries in the context of reg. 1257/99.

2.4 Wine – Theme 4: accompanying measures

Question 1 (V4): Are the accompanying measures to preserve vineyards in certain regions effective in terms of a positive environmental impact ?

Measures and Regulatory Framework in the period of 1994 to 2003

General agri-environment measures apply to the whole of Portugal, beginning in 1994 until today, giving farmers the opportunity to enter voluntary five-year Agri-Environmental Agreements (AEA) which cover one or several measures.

The measures applied in this context were first decided at EU level, using as instruments Council and Commission regulations, later decided at country level based on the Rural Development Programme for Portugal (RURIS), which is later approved by a Commission, which will decide on the basis of the factors listed by EC regulations and also approve the whole legal framework for applying the measures proposed in RDP.

The principal legal framework on which AEM are based are Council regulations nº 2078/92 for the period 1994 to 1999, and nº 1257/99 for the period of 2000 – 2006, and so referred in this work as that meaning the period and framework concerning the two periods of the evaluation.

The work will be based mainly in the Final Report of the Evaluation of RPD in Continental Portugal, for Reg. 2078/92 and the Interim report for the period of 2001-2003, for Reg. 1257/99. It is important to notice that in 2001, year when the AEM were not applied due to time spent on approval of the Programme, because of the complexity and the great number of measures. Experts' interviews were also important to the quality evaluation, especially those regarding the whole of Programmes.

Data available in the mentioned Report, made available by IFADPA and INGA, consider actual values for the period of Reg. 2078/92 from 1994 to 1996, and from 1997 to 1999 it considers estimated values (according to Report based on «percentage of established values » on previous applications.)

In the period of application of Council Reg. 1257/99, data refer to confirmed applications for 2001 and 2002, and applications received for 2003.

Several measures, considered as a third RPD priority, are grouped under the following five categories:

i) Protection and improvement of the environment, soils and water;
ii) Preservation of the landscape and traditional features of agricultural land;
iii) Conservation and improvement of cultivated areas of special natural significance;
iv) Conservation of residual plots of natural ecosystems in agricultural landscapes;
v) Protection of genetic diversity.

And grouped for their application in groups. The first one (GROUP I - Protection and improvement of the environment, soils and water), includes the application of AEM and has several measures concerning vines:

INT PROT – Integrated Protection
INT PROD – Integrated Production
OF - Organic Farming
CCA – Chemical Control under Advice
MT – Minimum Tillage
ILPC – Inter Row Lawn under Permanent Crops

The first group of measures are not specific to vineyards, although vine is the most important culture to benefit from these measures, what is easily understood considering the importance of vine all over the country. Like measures, Good Agricultural Practices (GAP) are not specifically developed for vineyards, even if they naturally take into special consideration phytosanitairy treatments, an important environmental issue in the case of vines.

There are several AEM provisioned in RURIS that are not being applied, and not being considered here. The first group of measures concerns the theme of question 5, so in that question we will deal with the above 6 measures

The other group of measures (group II - Preservation of the landscape and of the traditional characteristics of agricultural land) are related with specific protections, and only the Douro and Colares regions (which applied only for the period of 2000-2006) and certain traditional conservation practices that can be subject of support.

VTD – Vine on Terraces in the Douro region

VSC – Vine System of Colares

It is important to notice that all the evaluated AEM measures in the period 1994 – 2003, are almost the same (type and conditions), as we will see along this work.

AEM specific for the DOURO vines, from 1994 to 2003

As we have seen above, these measures are included in group II, a group which concerns measures of landscape preservation and traditional characteristics in agricultural land, and in this case they cover vines in terraces located in the Douro wine region (VTD) and the vine system of Colares (VSC).

They will be evaluated separately, beginning with VTD and with the description of the measure, which aims to maintain the traditional systems, typical from this wine region, which are considered as a World cultural heritage.

This system, known as “terraces”, “platforms” or “corridors” covers almost all the vines of the region, and its outstanding natural beauty is essential to agri-tourism activities, not counting its historical value.

The risk of loosing this landscape is related with the enormous costs of making stone walls, less and less compatible with the income obtained from wine. The trend is for farmers to replace these stone walls by modern ones, made of concrete, and for new plantings to use terraces without retaining walls.

To be in a position to receive payments, producers must have their vineyards in platforms with stone walls, and undertake 5 year commitments, most of them related with environmental issues, as follows:

- to keep vineyards in a good sanitary shape, making only appropriate treatments
- not to use herbicides on walls
- take in maximum two years to make the recovery of stone walls and to keep the retaining wall and simple vineyard stairs in good shape

In the analysed period, the measure "vines in terraces located in the Douro wine region" began to apply when AEM were first applied, and when Decree order 698/94 came into force, keeping a similar application throughout the whole period, including what concerns financial allocation. The only change in the legal framework has to do with a decrease of the minimum limit of eligible area in the application.

The incentive of this measure is centred on the preservation of landscape and, in what concerns this impact, the Evaluation Report concluded that there is no contractual situation to make a quantitative evaluation of the measure; therefore we have focused on the adherence to the measure in terms of vine area and number of applicants.

As farmers have also environmental duties, we have looked for the impact of those environmental actions in the Final Report on the Interim Evaluation of RPD, where, although it is difficult to evaluate the environmental impact of this measure (non-existence of situations with relevant variables), this measure is considered to have a positive impact on soil conservation and on the quality of superficial and subterranean water and also a positive impact on water resources, in the whole area benefiting from the support of this measure. Experts agree on the positive environmental impact of this measure.

However, the report makes also an almost obvious conclusion, saying that horizontal measures in group 1 aim to have a specific environmental objective and so are more effective for that purpose than this one.

Comparing the area which received this kind of support with the total area of the region[5], we find that in the whole period from 1994 to 2003, 19% of the total area benefited from this support, corresponding to about six thousand producers. The area is quite important, but the number of producers is low (taking into consideration the about 35.000 existing in the region (see inventory), perhaps justifying the reduction on the minimum area eligible after 2001.

Table 27. VTD - Vine area on terraces in Douro Region (ha)

NUTS II	2001	2002	2003	Total
NORTE	1.461,0	502,0	760,3	2.723,3
CENTRO	0,0	1,1	0,0	1,1
CONTINENTAL PORTUGAL	1.461,0	503,1	760,3	2.724,4

Source : INGA

[5] Knowing that the Douro area did not change, we considered a ten year average (1990-2000) and, taking into account that 90% of the total area of the Trás-os-Montes region corresponds to the Douro wine region, we obtain an area of 60.861 ha.

Table 28. VTD - Vine on terraces in Douro Region (number of applicants)

NUTS II	2001	2002	2003	Total
NORTE	772	364	408	1544
CENTRO	0	1	0	1
CONTINENTAL PORTUGAL	772	365	408	1545

Source : INGA

AEM specific for the Colares cultural system, from 2001 to 2003

This measure appears only on the second period, 2001-2006, when Decree order 475/2001 came into force. The measure Vine Systems in Colares (VSC), a region near Lisbon, has the same rules all over the period and concerned a traditional system, which consists of a characteristic landscape, made by loose stone walls, where vineyard management is supported by dry canes and struts, such vineyards planted in consociation with pine trees, allowing for the fixation/stabilization of dunes over time.

This vine is typical of the Colares region and obviously only producers located there can receive the provisioned support. The total vineyard area of the Colares wine region, which is integrated in the Parque Natural Sintra/Cascais and has suffered from a strong regression process, is now around 70 ha, in part of which the soil is sand. The region itself occupied in the thirties an area of nearly 1700 ha against the present 70 ha, the DOC area being estimated in 20 ha and the remaining 50 ha actually producing regional wine.

The regression of the area is due to s strong urban pressure and to the high costs involved in preserving traditional cultivation practices, which are unique and endure the quality of the Colares wine.

Vineyards of sandy soils have as a feature being composed of "engrafted stems" which, given the cultivation practices, are resistant to phylloxera and, through the agricultural practices associated, cause a characteristic type of landscape, exclusive in Continental Portugal, contributing to the fixation and maintenance of dunes

The granting of this measure depends on the accomplishment of some rules by the farmer, a 5 year commitment (like all AEM), but contrary to the measure applicable to the Douro region, the nature of commitments has been almost exclusively the objective of conservation of the landscape, along with the concerns regarding quality of the wine obtained:

- ✓ keeping vineyards in a good sanitary shape, making only appropriate treatments
- ✓ complying with the regulatory provisions for QW in Colares
- ✓ Using struts as a support to the vine (stakes) during ripening of the grapes.
- ✓ Recovering completely rush sections and/or walls in bad condition

The decision depends also of a favourable advisory report from Institute for Nature Conservation (ICN)

Table 29. VSC vine system of Colares

	2001	2002	2003	Total
Area (ha)	6,89	2,56	1,19	10,64
Nº applicants	8	4	3	15

Source : INGA

The level of execution of this measure is considered very low by the Report, and the causes considered are related with the average age of this region's producers and the small size of farms. The real problem is that the eligible vine area is estimated at 20 ha, and if that is the case the impact of this measure covers already half of that area and around 30% of the total area of the region.

Summary

The AEM considered in this answer concern the support of traditional cultural practices in Douro and Colares regions, as they are being abandoned by wine growers and so modifying the typical landscape of those regions. The support regards the high costs of these practices and environmental the impact of the measures may be considered positive, with a big dimension in Douro´s terraces, attending to the importance of this regions vine.

Final Report of the Evaluation of RPD in Continental Portugal, for Reg. 2078/92 and the Interim report for the period of 2001-2003, for Reg. 1257/99.

The mentions in products, like organic vine or other, do not applied in this case and as we will see in the next question, and also that they do not have a commercial impact in Portuguese wine sector.

2.5 Wine - Theme 5: environmental promotion

Question 1(V5): Has the promotion by Member States and regions of environmentally sound production techniques via producer organisations and inter-branch organisations been effective?

As we have seen in Q1V4, this group of horizontal measures, aiming to protect and improve environment, soil and water, includes some measures that are important for the wine sector. Such measures, already referred to in the abovementioned question, are applied in all the continental Portugal.

All the considerations we have made in the introduction of question Q1V4 will be considered as useful for this answer, including the approach and means used for the drawing up of the answer.

The relevant measures in this group to vine-growing are the following ones:

1- INT PROT – Integrated Protection
2- INT PROD – Integrated Production
3 - OF - Organic Farming
4 - CCA – Chemical Control under Advice
5 - MT – Minimum Tillage
6 - IGPC – Inter Row Grass Under Permanent Crops

Most of them are being applied since the beginning of AEM, coming into force with the publication of their respective regulatory provisions.

The extension of their description leads us to consider in the text only the most important issues to be taken into account for the evaluation of the environmental impact they have in Portuguese vineyards. The accession requirements to the measure and the commitments to be undertaken by the farmer during the 5 year duration of his contract can be found in annex 2.

There are some main characteristics of the application of this type of measures that have to be taken into account to understand the commitments farmers undertake, namely an intention to change the cultural practices that they used to carry out in their farms, in some cases for a long time, and to see that they receive training to learn those new practices. They also have the obligation of keeping a register and of being available for technical assistance from PO technicians.

Each and every one of these measures focuses on a given specific crop, in a minimum eligible area of 0,5 ha, so farmers can adopt the changes foreseen in each measure to the measure they choose. This also means that for vine the farmer can choose to adopt only one of those measures, for instance INT PRO but not ILPC.

The role of PO in the execution of AEM

For all this measures, access by farmers to support depends on his compulsory registration in a PO (until December 2004), in order to be able to attend training courses on agricultural practices compatible with the requirements of protection of the environment and natural resources, and maintenance of the countryside and the landscape, and particularly with codes of good farming practice or good organic farming practice.

PO are recognised by the Ministry of Agriculture and Fisheries, after a selection process made by regional (DRA) and central services (IEDHRa) on the capacity of the proposed PO to provide technical support and training to farmers in their own region.

In the case of PO acting in organic farming, besides this recognition, there is also a control of technicians by the central services (IEDHRa), depending on successful academic basic education and training courses. A list is published by central services and available at the IEDHRa site.

The number of organizations involved in the application of AEM, INT PROD and INT PROT, that were recognised on February 2004, are:

Table 30. Number of PO by region, for integrated protection and production

Region	Integrated Production	Integrated Protection
Entre Douro e Minho	11	4
Trás os Montes	25	6
Beira Litoral	8	2
Beira Interior	13	4
Ribatejo Oeste	24	10
Alentejo	5	2
Algarve	2	0
TOTAL	**88**	**28**

Source: IEDRa

Those are PO approved to work in the vine sector and the work is geographically delimited by a DRA region. They provide technical assistance to farmers, who have to make a contract with them.

Every year the PO has to present to the local DRA a Plan and a Report, including all the technical assistance they intend to provide during that year. PO must also keep a register of all the farmers with whom they make contracts, and for each one they have to register all information on the farm/holding and for the area subject to a contract of AEM, the plot and the technical visits made there. PO are responsible for farmers to use the field book approved by DRA.

The technical support of PO is the one necessary to enable the producer to accomplish the 5 years commitments they undertake when they receive support, and we have chosen to put them in annex 2, since they are different depending on the AEM .

The PO action is specific for wine sector and the data and evaluation available refer to the actions of all the sectors referring to one AEM, although the PO actions are considered in terms of the contribution they gave to each AEM, and we have adopted the same procedure.

It is important to notice that training courses are compulsory in order to receive AEM support, and that only PO can provide such training (in the first year, between 35-70 h),

according to the needs established in each AEM. Obviously, the number of applicants is the same as the number of producers having attended training courses.

Data available are not very detailed and do not allow us to have the number of applicants by crop, disclosing only the total per each AEM. The only available data for this kind of PO action is for the period from 1994 to 1999 (Table Q1V5 - 1), showing their increase along time.

Table 31. Agri-Environmental Programme of Continental Portugal – physical indicators, by measure

	1994	1995	1996	1997*	1998**	1999 **
N. Participants in training courses	690	2352	920	982	2200	3500
N. Demonstration fields		27	48	53	60	70

* Provisional values, ** Estimated values

Source: IFADAP, Out.97

In the evaluation report of RURIS, the role of PO is considered as decisive, as intermediaries between the Programme and the direct beneficiaries of the measure. Their activity is considered as agricultural extension services, which are financed through the application of the measures.

The existence of an incentive framework is also considered as crucial in their application, when allowing specific costs to be compensated and enabling these agricultural systems to be competitive against conventional agriculture.

AEM and the vine-sector: integrated protection and production

These two AEM are the most important from the six horizontal ones (group I), and so we have focused our attention on them. For that reason, data are available at a regional and wine sector level in terms of area, allowing for the evaluation of their impact at the sector's level.

Regarding CCA – Chemical Control under Advice, we see that the number of applicants for the whole period (1994 – 2003) was 11, and the area to be supported is 54 ha, therefore this measure is considered as not being applied in spite of its existence since 1994, without changes in the regulatory framework.

Another AEM which has a growing importance in vine sector is IGPC – inter row grass under permanent crops. However, data are not available at a wine sector level. For all the crops, all of them permanent crops, there is a trend towards increasing the coverage area, going from around 1000 ha in 2001 to around five thousand in 2003. For this growing area there are 138 applicants in 2001 and 324 in 2003.

Table 32. Inter row grass under permanent crops, by region (all cultures) in ha

NUTS II	1994-1999	2001	2002	2003	2001-2003
Norte		174	33	251	459
Centro		464	140	1.868	2.472
LVT		0	0	63	2.931
Alentejo		429	32	226	687
Algarve		52	321	667	1.040
CONTINENTAL PORTUGAL	**n.a.**	**1.119**	**527**	**3.076**	**4.722**

Source: INGA

The Minimum Tillage, another AEM of this group, does not have available data in terms of each crop and, so it is not possible for us to evaluate the impact on the vine growing sector. In the Interim Evaluation Report, AEM, Minimum Tillage and inter row grass under permanent crops, which aim at fighting against soil erosion, are considered as having great demonstrative potential,

but the adherence level (about 7 thousand ha) is very insignificant if compared with the area covered by integrated production and protection (87 thousand ha).

The analysis of INT PROT and INT PROT measures is therefore jeopardized for the whole of the period, since for the years 1994-1999 there are no broken down data per crop. We have therefore based our analysis on data for 2001 a 2003, including, whenever possible, references to values found in Works on the subject. The opinion of experts was also taken into account.

INT PROT represents without any doubt the most important measure for the wine sector, vine being the biggest beneficiary of this measure with about 41% of total benefited area.. Experts consider that the role PO represented a great contribution for this adherence level.

The largest vine area to benefit from this measure was the Northern region (EDM + TM), where there is also the largest vineyard area in the country. The total area where this measure is applied represents already a significant impact, of more than 10% against the total vineyard area (about 260 thousand ha).

Table 33. Vine in Integrated Protection, by region (ha)

NUTS II	1994-1999	2001	2002	2003	2001-2003
Norte		7.003	2.842	7.908	17.753
Centro		3.178	1.636	1.366	6.180
LVT		26	509	195	729
Alentejo		2.098	2.051	4.218	8.367
Algarve		45	89	79	213
CONTINENTAL PORTUGAL	**n.a.**	**12.351**	**7.127**	**13.766**	**33.243**

Source: INGA

Integrated production had an adherence level, in terms of area, far below the level verified for integrated protection. It has a relatively low impact on the sector, with a total area for the period and for the total regions of about 4 thousand ha. With the change of rules, namely with the increase of the amount of support, introduced in 2003 (Decree order 1212/2003), increased interest in this measure is expected.

Table 34. Vine in Integrated Production, by region (ha)

NUTS II	1994-1999	2001	2002	2003	2001-2003
Norte		69	452	1.589	2.041
Centro		810	685	770	1.456
LVT		11	0	147	147
Alentejo		52	314	327	641
Algarve		0	0	0	0
CONTINENTAL PORTUGAL	**n.a.**	**942**	**1.451**	**2.833**	**4.285**

Source: INGA

Table 35. Vine under Organic Farming measure , by region (ha)

NUTS II	1994-1999	2001	2002	2003	2001-2003
Norte		0,91	0	20,65	21,56
Centro		0	0	9,46	9,46
LVT		0	0	0	0
Alentejo		0	0	0	0
Algarve		0	0	0	0
CONTINENTAL PORTUGAL	**n.a.**	**0,91**	**0**	**30,11**	**31,02**

Source: INGA

The interim evaluation report and the opinions of experts are very clear as to the market impact of this type of products: it is inexistent. The non-awareness of consumers of the meaning of integrated protection and integrated production results in a non-marketing of products with such indications. In the case of organic farming, the label is used, but the insignificant amount of wine is sold in specialized organic food shops. Experts consider that the Portuguese consumer does not have a

special interest in this type of wine, what might justify the reduced level of interest, of 32 ha, in this measure in the wine sector. However, producers are exporting this type wine with success, so experts consider big expectations for organic wine.

It is important to refer the fact that the above described situation applied to the wine sector, the same not being registered in the fruit and vegetables sector, where, although the consumers does not perceive the meaning of integrated protection and production labels, distribution (big retail) prefers to do its procurement from this type of agriculture, since they have already understood that the application of plant protection products is controlled by technicians.

The environmental impact of these measures is considered in the Interim Report for 2001-2003 (Reg. 1257/99) as being difficult to measure, due to lack of adequate information for the purpose, and such report proposes for all measures a set of evaluation indicators, the adoption of which they recommend, before the term for application of RURIS expires.

The quantitative evaluation of these impacts was approached through the size of beneficiary areas, the only way allowed by statistics, according to what is explained above. An analysis based on environmental indicators, which use as reference the situation at the start, is not possible, since that type of evaluation was not carried out. In some measures, like integrated protection and chemical control under advice, the interim report considers such indicators as easy to implement, because of the simplicity of quantification of normally used chemical products, used following the advice of PO technicians. It is our opinion that arrangements should be made for PO to collect such data in the future, since it is them who handle that type of information.

However, the general opinion is that the environmental impact of these measures is very positive and that PO, through the rendered technical assistance, has been the main factor for farmers to adhere to these measures. The territorial coverage of their action in the whole of crops covered is remarkable. (88 for the vine crop alone).

Summary

The conclusions about this question are mainly based on Final Report of the Evaluation of RPD in Continental Portugal, for Reg. 2078/92 and the Interim report for the period of 2001-2003, for Reg. 1257/99, as they are the only available studies about this AEM (like in the question Q1(V4)). The measures are considered as being effective and this result is strongly related with the work of producer's organisations, where farmer's registration is compulsory to obtain economic support.

The environment impact of this kind of measures is only quantitative (area) because the qualitative evaluation depended on the evaluation of appropriated data collected by the Programme manager institution. The type of data that should be collected with that purpose is suggested in the Report. The most important measures are integrated and protection measures and support of organic farming has no significant impact (around 21 thousand ha, less that 1% of all Portuguese vines).

OP are responsible only for technical support and so the do not act in selling farmers products.

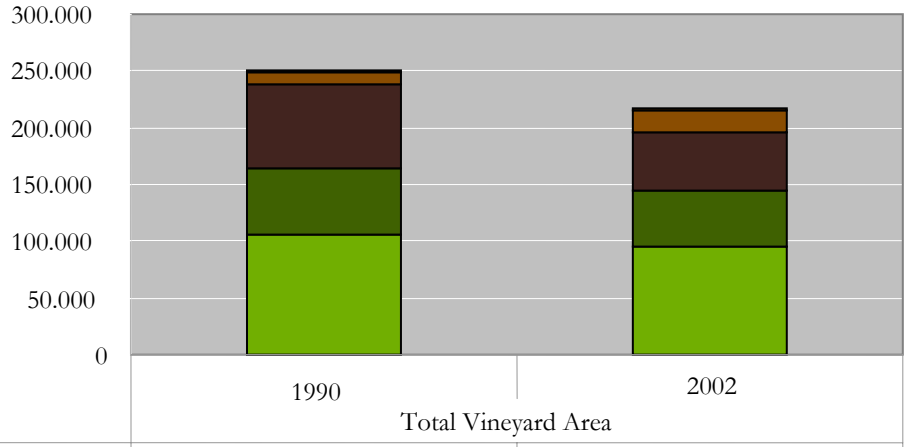
2.6 Horizontal questions

2.6.1 Horizontal – Theme 1: land use over time

Question 1(H1): Does the CMO lead to substantial changes in land use over time (abandonment, expansion and set-aside) and if so: what are the positive and negative environmental impacts? [This question should preferably consider typical patterns of alternative status/use after or before use of the land for the permanent crop to which the CMO relates.]

Vine area evolution, between 1990 and 2002, shows an overall diminution tendency, except in Alentejo region where vine area is growing. This tendency is more evident in Lisboa and Vale do Tejo Region, where vine area has decreased more than in any other region.

Chart 4. Vine area (ha) evolution from 1990 to 2002.

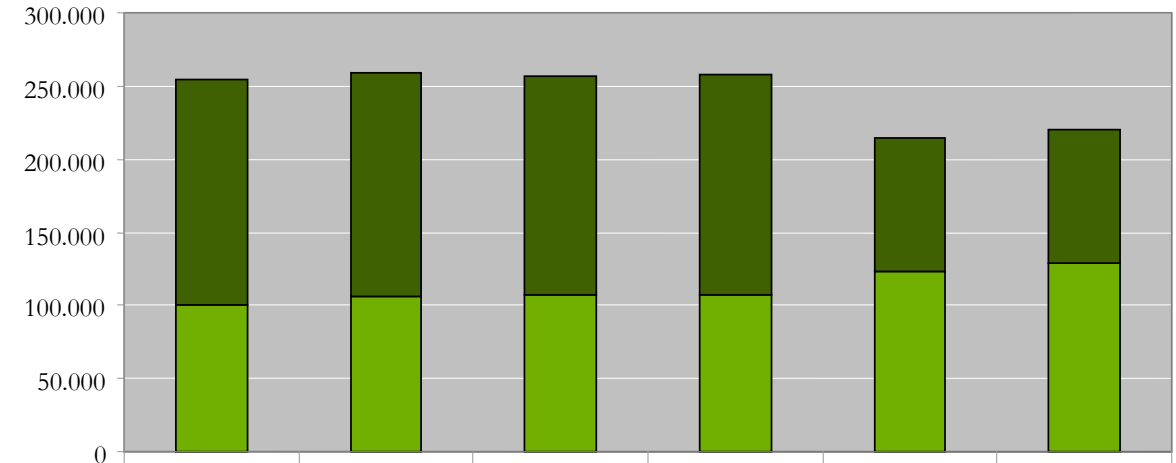


	1990	2002
Algarve (PT15)	2.418	2.192
Alentejo (PT14)	10.678	18.752
Lisboa e Vale do Tejo (PT13)	73.732	50.809
Centro (PT12)	58.055	49.404
Norte (PT11)	105.693	95.934

Source: EUROSTAT

As vine area is diminishing, the importance of table and WQPSR type is changing, with WQPSR area growing when compared to table wine area.

Chart 5. Vine area evolution for quality and table wine (ha)

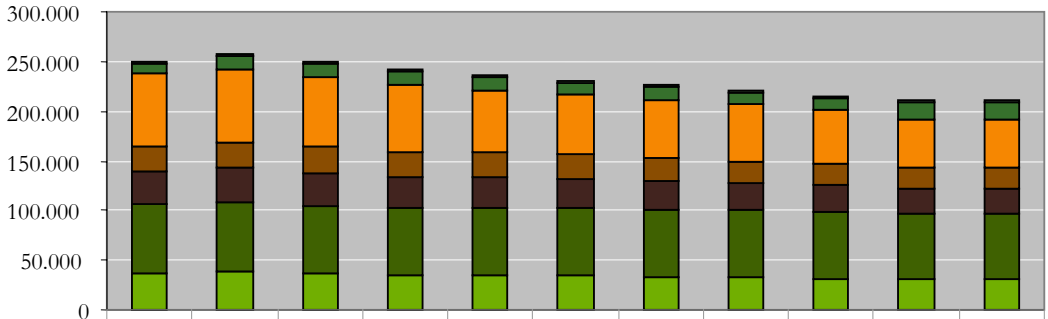


	1990	1994	1996	1998	2000	2002
Table wine	154.771	153.016	149.336	150.619	90.651	91.485
QWPSR	100.058	106.390	107.380	107.615	123.603	128.707

Source: EUROSTAT

The importance of those changes on vine area by region can be seen in table G1, the more relevant figures concerning the above mentioned regions. Alentejo region's vine area is around 6 thousand ha, which corresponds to an increase of around 60% from 1990 to 2000. In Lisboa and Vale do Tejo region, vine area in 2000 was around 24 thousand ha smaller than ten years before.

Chart 6. Vine area evolution by region (ha)



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Algarve	2.418	2.507	2.371	2.234	2.128	2.022	1.996	1.969	2.085	2.200	2.207
Alentejo	10.678	12.562	12.953	12.832	12.614	12.614	12.531	12.531	12.913	16.088	16.458
Ribatejo Oeste	73.732	74.076	70.806	67.535	63.575	59.615	58.449	57.282	53.401	49.519	49.606
Beira Interior	24.694	25.607	25.894	26.181	25.018	23.855	23.007	22.159	21.762	21.366	21.576
Beira Litoral	33.360	34.911	32.538	30.165	30.345	30.524	28.327	26.129	25.673	25.216	25.260
Trás os Montes	68.268	68.287	68.329	68.297	68.037	67.852	67.774	67.774	67.787	65.726	65.725
Entre Douro e Minho	37.425	39.416	37.047	34.678	34.347	34.015	33.600	33.185	31.753	30.321	30.321

Source: INE

Portugal accession to EU, as we have seen before, did not happen from one year to another. This country had an agricultural pre-accession process, with some particularities in wine sector, where EU regulatory entered in force only after 1992, for both structural measures and market mechanisms.

Land use for vine reflects those regulatory changes over time, mainly because the management of structural measures, particularly regarding financial availability, led to a stop and go process, evident when we analyse their data. This stop and go management prevented vine growers from using them as they really needed, and concerning restructuring measures this situation continues to exist. Abandonment measures ended in 1995/96 campaign, for political reasons related with the quantity of applicants, and never entered into force after that.

CMO has several measures that can be considered as influencing land use and have consequently an environmental impact. The dimension of the impact depends of market situation of wine sector and the existence of alternative crops. In this context, we may refer by order of importance the following CMO measures: vine abandonment premium, restructuring plans, transfer of planting rights and finally, market mechanisms.

The abandonment premium and transfer of planting rights being the measures that contributed to the more important changes occurred in land use in Portuguese wine regions, we shall consider them in a special section.

Restructuring was an important measure, mainly in the latest campaigns (2000-2003), to support the transfer of planting rights from all other regions, (except Douro region where transfers are forbidden) to Alentejo, as a consequence of the adoption, in 1995, of internal regulatory provision for transfer of planting rights, according to CMO framework.

In market mechanisms context, CMO provides different kinds of measures, concerning quality improvement, the supply of potable alcohol for traditional uses and market equilibrium. The measures that may have an environmental impact are those related with market equilibrium (art. 28 and 30 of Council Reg. 1493/99[6]) and also with the production of potable alcohol for traditional uses.

Optional distillation for the production of potable alcohol was considered as having an impact on land use, as an alternative for wines that can not find a market. In this case land use continues to be occupied with vines, which probably would be naturally abandoned if this measure didn't exist. In Estremadura and also in part of Beiras regions, there are producers who benefit from the optional distillation, every year, but the quantities are so small (in EU context) that the land use impact is also very small.

Market equilibrium measures are not applied in Portugal, as we can see by the amount of aids paid to wine sector in this country. Art. 28 does not apply because grape varieties considered in this distillation are not cultivated in Portugal. The other measure (Art. 30) and the same measure in the CMO before (under Reg. 822/87) were not used by Portuguese producers in all the years EU market measures were applied (1992 – 2003).

Environmental impact of abandon and transfer of planting rights

The region where abandonment had a more important impact was Ribatejo and Oeste, with about 14% of total vine area abandoned, in an estimated area of about 10 thousand ha. In the other wine regions the abandoned area is less than 1% of total vine area, and so we assumed that there is no environmental impact in these wine regions.

Using the detailed results of Vine Inventory made available by IVV for 2001, we easily see that, in fact the only region where abandonment had impact was Ribatejo and Oeste.

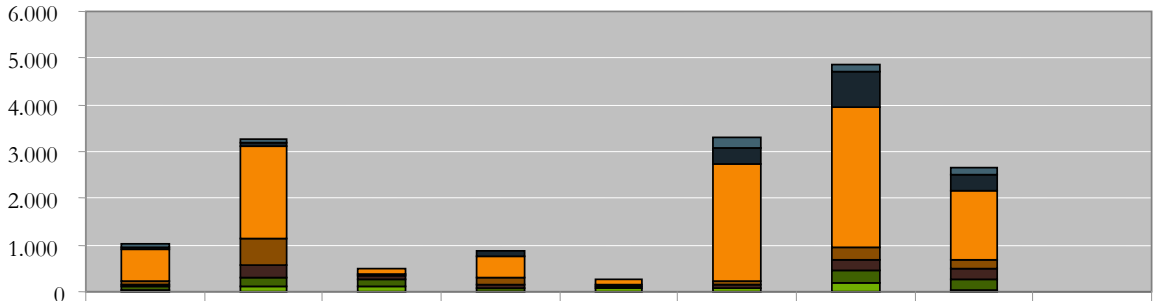
[6] Art. 28 - Where wine is produced from a grape variety listed in the classification for the same administrative unit as both a wine grape variety and a variety for use for another purpose, any wine which is produced in excess of the normal quantity and which is not exported during the wine year concerned shall be distilled by a date to be determined. Except by derogation, it may not be moved except to a distillery.
Art. 30 - There may be a crisis distillation measure if there is an exceptional case of market disturbance caused by serious surpluses and/or problems of quality.

Table 36. Grubbed area by region and by canpaign.

Region	Real Vine area	vine/TUAA	abandoned area
	(ha)	*(%)*	*(ha)*
EDM	34.069	16	663
TM	68.386	15	968
Beiras	57.374	8	2.434
Ribatejo	**22.177**	**8**	**9300**
Estremadura	30.738	21	
T do Sado	9.510	1	
Alentejo	16.817	4	1.701
Algarve	2.932	3	660

This region has 3 wine sub-regions: Ribatejo, Estremadura and Terras do Sado, but it is known that almost the entire abandonment area refers to Ribatejo, and so, to evaluate the environmental impact of this measure in this sub-region, we assumed that it represents about 90% of total abandonment area.

Chart 7. Grubbed area (ha) by region, regime and campaign.



	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
	Reg. 2239/86					Reg. 1442/88			
ALG	51	88	2	11	0	201	158	149	0
ALE	63	79	6	93	0	357	775	328	0
RO	658	1.986	95	468	102	2.515	2.976	1.513	0
BI	105	534	51	157	38	63	275	178	0
BL	43	297	57	57	26	72	239	242	0
TM	64	162	175	79	10	25	258	195	0
EDM	31	129	108	12	87	59	184	53	0

As we have seen before, abandonment in Ribatejo was the result of the replacement of vine located in fertile and irrigable soils of « lezíria » for corn and sugar beat. As those cultures are more profitable for farmers, because wine they produced was not considered as a quality wine (mainly white wine with a low degree of alcohol) we can say that in an economic point of view this replacement was positive, but the environmental impact is negative, as this means that there is a cultural intensification, with probably more use of fertilizers and herbicide, and with a more intensive land utilization.

As farmers transfer vine area to annual crops, like corn or sugar beat, the more significant impacts will be those resulting from **intensification of agricultural activity**. Ribatejo abandoned vine reached around 40% of all regional area, and occupies now about 8% of TUAA.

We have considered the following impact due to abandonment of vine in Ribatejo region:

- **Water use**, rises from zero consumption of water to be an irrigated area, with a water consumption that may be considered high, attending to the usual water needs of corn or

sugar beat. This is the result of land use for annual irrigated crops as opposed to vines, which are not irrigated that unlike vines are irrigated.

- **Pollution of superficial and underground waters**, since the use of fertilizers is more intensive in annual crops, and irrigation contributes to an intensification of fertilizer and pesticides infiltration.

- **Soil erosion and soil compaction**, are more intensive, due to successive soil tillage which affects the soil structure and speeds up the mineralization of organic matter, increasing soil loss through superficial draining and caused by successive run-throughs by heavy machinery in order to carry out more intensive cultural operations.

- **Decline in the ecosystem's biodiversity** due to the intensification of production (namely frequent tillage and a high use of herbicides and insecticides), which causes the disappearance of many non-agricultural species, with the consequent interruption of food chains and the disappearance of many species that existed under natural conditions. Soil erosion and compaction are also responsible for the decrease of activity of soil organisms.

The enormous intentions of **selling planting rights from all other regions**, compared with the intentions to buy (only from Alentejo) highlight the market situation of an important part of Portuguese wine sector. Notice that QWPSR did not reach half of total Portuguese wine production, a situation that is changing over time, but QWPSR still represents 41% of total wine produced in 2003/2004 campaign.

The increase in Alentejo vine area from around 13 thousand ha to around 21 thousand ha, corresponding to an area increment of 56% from 1990 tp 2001, had an environmental impact in land use. The increase represents more or less 50% of the existing area in 1990, vine being responsible for 4% of regional TUAA. The change of land use may be considered as not important attending to the importance of vines in Alentejo region, but if we consider that those vines were planted in five small wine regions, the impact is considerably bigger, leading us to look for the environmental consequences of those crop changes.

Alentejo is a dry region where for a long time traditional crops used to be an extensive cattle regime associated with cork production and sometimes olive oil. New vines were planted in these conditions, representing the environmental impact a **change in landscape** and an **intensification of agricultural activity,** since vines shall be considered as more intensive land use when compared with extensive cattle production.

- **Change in landscape** - the traditional landscaping with "quercus suber" and cattle becomes quite different with vines, planted in line and green all summer long.
-
- **Intensification of agricultural activity** - due to the use of pesticides and fertilizers according to the needs of wine production, that were not used before. Note that Alentejo average production of wine is relativity small but nevertheless land use is more intensive.

Summary

CMO had an impact on land use, mainly by **abandonment premiums**, in a reduction surplus context, from 1990 until 1995, with a negative environmental impact in Ribatejo region, where an important part of regional vine was replaced by annual irrigated cultures, like corn and sugar beat.

The transfer of planting rights to Alentejo region is another measure that had a regional environment negative impact.

2.6.2 Horizontal – Theme 2 : adequate spending level and method

Question 1 (H2): Are there indications that a change in total spending on the CMO <u>in its present form</u> would have a substantial positive or negative environmental impact? [This question should preferably address the claim of the literature that CMOs for permanent crops differ with respect to their overall environmental impact.]

When we answered to vertical questions, we analysed the CMO measures and AEM in the period from 1980 to 2003, and for that evaluation we considered the measures in force in that period, the results of those measures, and the environmental impact over time.

To answer this horizontal question we shall focus in actual CMO measures (Reg. 1493/99), and consider their period of application, from 2000/2001, the first campaign they entered in force, until 2002/2003, 2003 being the last year of our period of analysis.

The evaluation for the Portuguese wine sector has to consider that there are some CMO measures that did not enter into force in Portugal, for different reasons, and the measures in effective application. The CMO measures not considered are abandonment, art. 28[7], 30 of reg. 1493/99 and the production of grape must (art. 35). There are no expenditures for those CMO measures in Portugal.

We also considered that the use of must[8] (art. 34) does not have an environmental impact on Portuguese wine sector, because the only environmental impact that this measure could have is related with the vines that produce grape must, and <u>grape must is not produced in Portugal</u>, as can be seen in table of CMO expenditure.

This leaves us with two CMO measures, which have a relevant expenditure: restructuring and conversion of vines (art. 11), and optional distillation (art. 28).

In the Portuguese wine sector, the weight of each of these two measures on total expenditure shows that restructuring represents a higher expense (79%) than optional distillation, which has a low level (21%) of expenditure. Both have a direct environmental impact.

If we compare the expenditure of these two measures with total expenditure of CMO in Portuguese wine sector, we see that restructuring continues to be the CMO measure with more weight (61. 7%).

[7] Art. 29 - The Community may provide support for the distillation of table wines and wines suitable for yielding table wines in order to support the wine market and, as a consequence, facilitate the continuation of supplies of wine distillate to those parts of the potable alcohol sector, where the use of such alcohol is traditional.

[8] Aid is hereby established for **the use of**:
(a) concentrated grape musts;
(b) rectified concentrated grape musts,
produced in the Community, when they are used in order to increase alcoholic strengths of the wine products for which such increases are authorised within the meaning of this Regulation.

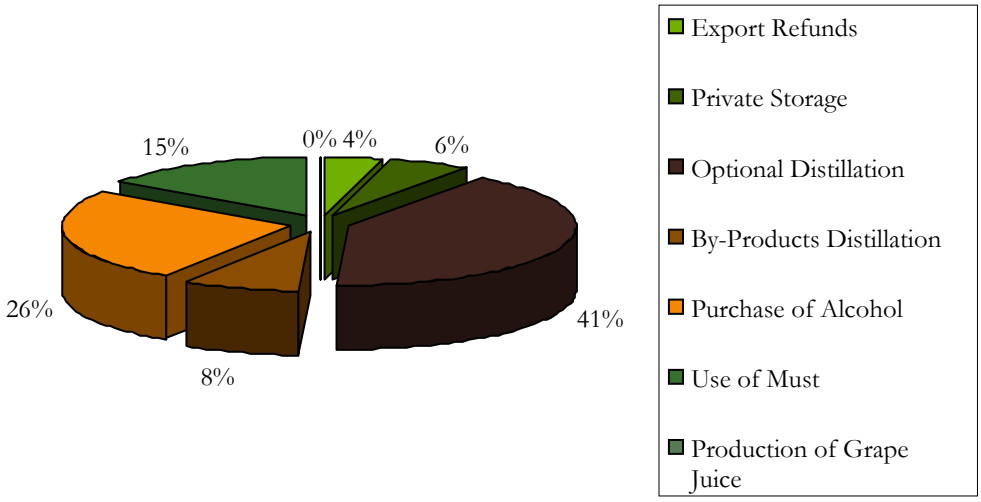
Table 37. CMO expenditure.

Values in 1000 EUR

TOTAL CMO	**Optional Distillation (1)**	**Restructuring and reconversion (2)**	TOTAL 1+2
244.952	40.965	151.205	192.170
100	**16,7**	**61,7**	
	21,3	**78,7**	**100,0**

Although the restructuring measure represents a much higher expense than optional distillation, in some way showing the effort made by farmers to improve quality, it must be said that it was not enough to cover investment intentions and so candidates´ files where not accepted from April of 2002 until March 2003.

Chart 8. CMO expenditure structure in 2002/03.



Environmental impact of Restructuring and reconversion

Evaluation parameters	**Type of notation**		
Positive	The vines that are not adapted to market demand shall be abandoned		
The objective of the system shall be the adaptation of production to market demand.	The system shall cover one or more of the following measures: (a) varietals conversion, including by means of grafting-on; (b) relocation of vineyards; (c) Improvements to vineyard management techniques related to the objective of the system. The system shall not cover the normal renewal of vineyards which have come to the end of their natural life. It shall cover the new planting rights awarded within the framework of material improvement plans referred to in Regulation (EC) No 950/97 and those awarded to young farmers during the 2000/2001, 2001/2002 and 2002/2003 marketing years.		
Spatial incidence	Local	Regional	National-Planetary
Level	Primary	Secondary	Tertiary
Duration			Long term
Intensity			Strong

Evaluation parameters	Type of notation		
Reversibility		More or less reversible	
Sensibility			Site very sensitive
Dimension of the impact (physical and intensity impact by the effect of several factors)	Positive		

Environmental impact of Optional distillation

Evaluation parameters	Type de notation		
Positive	The vines that are not adapted to market demand shall be abandoned		
The objective of the system	a) to support the wine market and, as a consequence, facilitate the continuation of supplies of wine distillate to those parts of the potable alcohol sector, where the use of such alcohol is traditional. b) support for the distillation of table wines and wines suitable for yielding table wines		
Spatial incidence		Regional	
Level	Primary	Secondary	Tertiary
Duration			Long term
Intensity			Strong
Reversibility		More or less positive reversible	
Sensibility		Site quite sensitive	Site very sensitive
Dimension of the impact (physical and intensity impact by the effect of several factors)	very positive		

The environmental impact of those two measures has a different regional incidence.

Restructuring and reconversion of vines have a great impact in Alentejo, with roughly one third of the total expenditure of this measure taking place in that region, and about 16% of regional vine area benefiting from it.

Optional distillation has more impact in Estremadura wine region. In this region vine represents (2001 inventory) about 21% of TUAA, being the region where vine has a more important economic and land utilization of all Portuguese wine regions. If an optional distillation didn't exist maybe part of this area would be abandoned (without premium) with a negative environmental impact. We assumed that the evaluation of the vine area using this measure is explained in Ex-post evaluation of the Common Market Organisation for wine, December 2004.

It is important to notice that the environmental impact must consider the possibility of replacement of vine for other cultures, in CAP and agricultural context, and regarding agricultural conditions, in almost all Portuguese wine regions, vines are located in poor soils with strong slopes, limiting cultural alternative options.

However, available data on restructuring in Estremadura, Ribatejo e Terras do Sado, show that for these three wine sub regions, the total restructured area was, in this period (2001-2003), only 1.9 thousand ha, which represents about 3% of total area of those three regions.

The total QWPSR area for Estremadura (inventory 2002) is about 1.244 ha, representing about 4.5% of total region area, showing the importance of a measure that intends to promote the adaptation of supply to a higher quality demanding consumer.

We may conclude that the impact of a restructuring measure also depends on the regional capacity (grape producers and caves) to change their customs and improve quality.

Summary

Total spending on CMO measures, in its present form, has a positive environmental impact in Portuguese wine sector, particularly in Alentejo and Estremadura wine regions, contributing for a land occupation that otherwise would be used for cultures that almost certainly would not have such a positive impact, particularly on secondary and tertiary levels (fixing population)

Question 2 (H2). Are there indications that decoupling of spending at its present level would have a substantial positive or negative environmental impact?

CMO in wine has not measures with decoupling of spending, so we assumed that this question was designed to another CMO (olive).

2.6.3 Horizontal – Theme 3: Subsidiarity of agri-environmental schemes and horizontal measures

Question 1(H3): Have the agri-environmental schemes and any environmental requirement ["cross-compliance" ex CE 1259/1999] related to these CMOs been sufficiently targeted by Member States and regions at hotspots of environmental degradation or possibilities for environmentally friendly production?

Our evaluation concerns the application to vines of Agri-environmental measures, both from CSFII and from CSFIII. Portugal did not introduce any measure made possible by art. 3 of Reg. (EC) no. 1259/99, which provides that MS can implement the environmental measures seemed necessary, so there is obviously nothing to evaluate.

Agri-environmental measures evaluated in this answer refers to those included in regulatory framework of **Reg. 2078/92** from 1994 to 1998, and **Reg. 1257/99** from 2000 to 2003, and RDP Programme.

There are two types of measures, grouped by their objectives:

- First group of measures, which have as principal objective the "**Protection and improvement of the environment, soils and water";**

- Second group, related with specific protections, called "**Preservation of the landscape and of the traditional characteristics of agricultural land**" including only the Douro and Colares wine regions;

We will work separately those two groups, since their aims are quite different.

To evaluate if those AEM are sufficiently targeted by Member States and regions at hotspots of environmental degradation or possibilities for environmentally friendly production, we had to use

the available data (as seen is Q1V4 and Q1V5)[9], and so we have considered the covered area and the importance of expenditure, when possible.

Available data do not allow the use of any environmental criteria to evaluate efficacy, and the absence of this kind of information, in our opinion, limits the conclusions of the relation between their targets and their effective results. However, the area benefiting from AEM measures and the level of expenses show their importance and contribution to the specific objectives laid down in RPD Plan (RURIS) as an environmental priority.

Protection and improvement of the environment, soils and water

This horizontal group includes the application of several measures concerning vines:

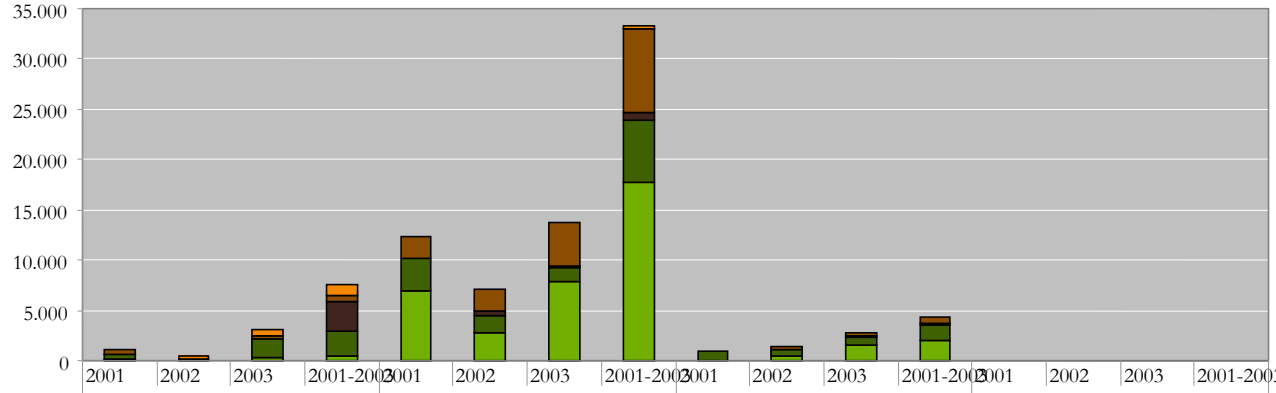
INT PROT – Integrated Protection
INT PROD – Integrated Production
OF - Organic Farming
CCA – Chemical Control Under Advice
MT – Minimum Tillage
ILPC – Inter Row Lawn under Permanent Crops

AEM and the vine-sector: integrated protection and production

From the six horizontal AEM (group I) we have considered the two with the highest support), Integrated Protecion (INT PROT) and production (INT PROD) and we used the same data as referred in answers Q1V4 and Q1V5.

The Graphic bellow shows the relative importance of all AEM for Portuguese vines, and makes more evident that INT PROT represents without any doubt the most important measure for the wine sector, and that organic farming has no expression. Note that vine is the biggest beneficiary of this measure with about 41% of total benefited area.

Chart 9. Area under AEM (ha)



	Inter row grass under permanent crops				Integrated Protection				Integrated Production				Organic Farming			
	2001	2002	2003	2001-2003	2001	2002	2003	2001-2003	2001	2002	2003	2001-2003	2001	2002	2003	2001-2003
Algarve	52	321	667	1.040	45	89	79	213	0	0	0	0	0	0	0	0
Alentejo	429	32	226	687	2.098	2.051	4.218	8.367	52	314	327	641	0	0	0	0
LVT	0	0	63	2.931	26	509	195	729	11	0	147	147	0	0	0	0
Centro	464	140	1.868	2.472	3.178	1.636	1.366	6.180	810	685	770	1.456	0	0	9	9
Norte	174	33	251	459	7.003	2.842	7.908	17.753	69	452	1.589	2.041	1	0	21	22

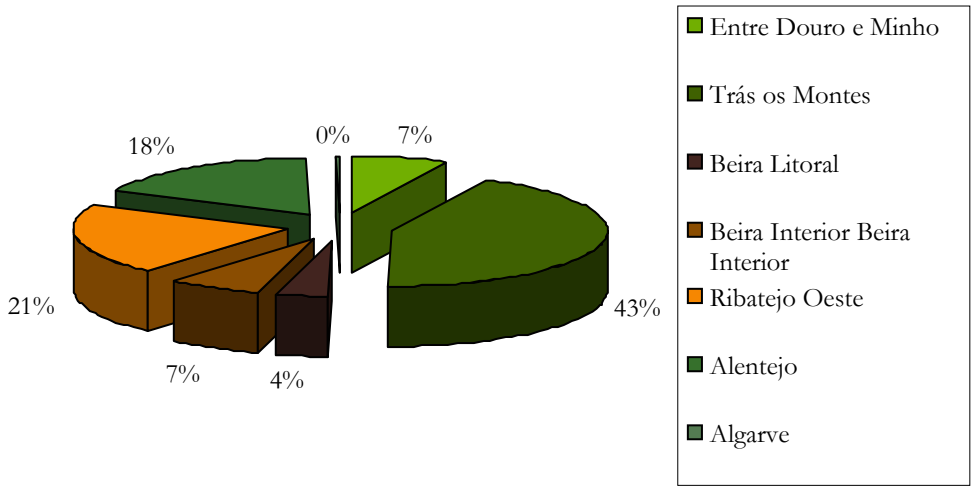
[9] Data available in the mentioned Report, made available by IFADAP and INGA, consider actual values for the period of Reg. 2078/92 from 1994 to 1996, and from 1997 to 1999 it considers estimated values (according to Report based on «percentage of established values » on previous applications.)
In the period of application of Council Reg. 1257/99, data refer to confirmed applications for 2001 and 2002, and applications received for 2003.

The largest vine area supported by this measure is located in the Northern region (EDM + TM), where the largest vineyard area in the country is also located, including Vinho Verde and Douro wine regions.

In this area cultural practices have already been changed to comply with financial support requirements, i.e. appropriate soil protection measures and technically controlled pesticides use (as described in Annex Q1V5), in more than 10% of Portuguese.

Statistical data for the 1994-1998 period (under Reg. 2078/92) is not available by types of crops so we can not evaluate the importance of the expenses incurred with those measures in the overall budget of AEM. In the following period, 2000-2003, (under Reg. 1257/99 and RURIS Plan) data is still not available broken by crop and measure, making impossible to evaluate their importance in economic terms.

Chart 10. Regional distribution of integrated protection area in viticulture, from 1995 to 2001.



Integrated production had an adherence level, in terms of area, far below the level verified for integrated protection. It has a relatively low impact on the sector, with a total area for the period and for the total regions of about 4 thousand ha. With the change of rules, namely with the increase in the amount of support, introduced in 2003 (Decree order 1212/2003), increased interest in this measure is expected.

Table 38. Vine in Integrated Production, by region (in ha)

NUTS II	1994-1999	2001	2002	2003	2001-2003
Norte		69	452	1.589	2.041
Centro		810	685	770	1.456
LVT		11	0	147	147
Alentejo		52	314	327	641
Algarve		0	0	0	0
CONTINENTAL PORTUGAL	**n.a.**	**941**	**1.452**	**2.833**	**4.285**

Source: INGA

Preservation of the landscape and of the traditional characteristics of agricultural land

Vine on Terraces in the Douro region - VTD

Douro region has an average estimated area, between 1990 and 2002, of around 61 thousand ha, and the area covered by this AEM specific measure for this wine region is 19.123 ha, for the whole period of it existence, since 1994 until 2003.

This represents an accession of about 30% of regional area to financial support for building of Douro terraces in a traditional way. If this support did not exist, producers would build the usual

retaining walls in concrete instead of using stone, or instead, and worst, they would opt for abandoning retaining walls, and than plant their vine according to land slope. In those cases Douro landscape then in the long term would become quite different.

Table 39. Vine area on Terraces in Douro region (ha)

NUTS II	1994-1999	2001	2002	2003	2001-2003	Total
NORTE		1461,03	502,03	760,26	2723,32	
CENTRO		0,00	1,11	0,00	1,11	
CONTINENTE	16.399,00	1461,03	503,14	760,26	2724,43	**19.123**

Source: INGA

In environmental terms this kind of support is not specific for the protection and improvement of the soils and water, like measures included in group one, but the contribution to maintain traditional landscaping is obviously important.

The level of expenses for this measure vis-à-vis the total expenses on AEM and their evolution in time show, in the first place, the low budget used and second that this reduced importance tends to diminish in the period of 1994 to 2002. So, in 1994, it represented around 3% of the total expenses on AEM, and at 1999 this was 1.8% of total budget. However, in these six years the amount used in this measure grew from 24 to 44 millions.

Table 40. Expenditure in SDV, from 1994 to 1999.

1000 Euros

	1994	1995	1996	1997	1998	1999
Total of expenses	24.617	85.265	83.275	105.872	193.536	249.844
Expenses of SDV	812	1841	1797	1694	3331	4423
SDV/Total expenses	3,30	2,16	2,16	1,60	1,72	1,77

Vine System of Colares – VSC

This measure was applied only for the period of 2000-2006, to support certain traditional conservation practices in a very small wine region, that has a total vine area of 50 ha , which is so small that the evaluation of its environmental efficacy does not make any sense.

Summary

From the 8 AEM measures evaluated, we concluded as having a positive impact the **integrated protection** and support of **traditional retaining walls form Douro region**, considering the area they represent in total regional vine area.

AEM to support organic farming did not have any impact (positive or negative) and when we compare approved areas for organic grape production with those benefiting from AEM measures, we may only conclude that this measure is not targeted for an agricultural environmental friendly production in wine sector.

APPENDICES

Annex 1: Indicators of the environmental impact of several measures

Annex 2: Organic farming and integrated production

Annex 1: Indicators of the environmental impact of several measures

All the measures have indicators considered necessary to evaluate their environment impact. Those indicators, regarding the concerned measures, are as follows:

INT PROT – Integrated Protection
- Alternative control means;
- Total number of treatments, when compared to the ones carried out by farmers in the region who did not adhere to this measure.

INT PROD – Integrated Production
- Alternative control means;
- Total number of treatments;
- Input/output balances of irrigation, fertilization.

CCA – chemical control under advice

- Total number of treatments, when compared to the ones carried out by farmers in the region who did not adhere to this measure

MT – Minimum Tillage
- Organic matter content

IGPC – inter row grass under permanent crops
- Organic matter content

OA – organic agriculture
- Balance of potentially leachable nutrients;
- Balance of organic matter;
- Balance of macro and micro organisms.

Annex 2: Access requirements for several measures

OF – organic farming

Access requirements:

- To farm a minimum area of one or more of the following activities:
- Fruit growing (pomoideae, prunoideae, citrus fruit, figs)
- Dried fruits (walnuts, hazel nuts, chestnuts, almonds) cultivated under an intensive agriculture system;
- Vine (table grapes and wine grapes);
- Having notified accordingly the Directorate-General of Rural Development, as provided for under Reg. (EEC) n.º 2092/91;
- Having submitted the farm to the control regime carried out by a control and certification entity, recognised for such a purpose;
- To attend a training course on Organic Farming, recognised for such a purpose;
- To join an Organic Farming Organisation, specifically certified by the Directorate-general of Rural Development, for the purpose of technical assistance within Organic Production and with which they have made a contract for the rendering of technical services;
- To submit a farming plan, validated by the technician of the recognised organisation, covering the whole farming area and with particular focus on the applied for area. The strategy for fertilization and phytosanitary protection must be established in such a plan.
- In case of non-perennial crops, indicate the rotations to carry out.

Disclose also existing machinery and the plan for progressive adaptation of the set of machinery to the needs of this type of production. If the livestock component is also to be farmed, a plan should be submitted, for the whole number of animals in the farm, and validated by the organization technician, covering the existing species, their number and replacement, feeding and sanitary strategy, description of buildings destined for installation of the animals and deposits for keeping effluents. Whenever applicable, the plan should specify the existence of cooperation with other farms that perform Organic Production in terms of usage of pastures and spreading of manures;

Requirements regarding the farm/system:

- To submit to organic production the whole area of the same variety of plants existing in the farm;
- To refer in the application all existing animals in the farm, regardless of the species indicated in the access requirements;
- The application should refer all animals of the same species in the farm;
- Animals of other species will be allowed in the farm, provided it is perfectly possible to differentiate the respective premises and pasture areas.

Commitments (to be undertaken for a period of 5 years):

- To comply with the principles of organic farming, as provided for under Reg. (CEE) n.º 2092/91 and respective updates, as well as with those provided for in national law for agricultural activity;
- To comply with the farming plan;
- To comply with the technical assistance contract made with the respective Organic Farming organisation;
- To keep a separate register, duly updated and validated by the organisation technicians, of:
- The application of organic or mineral fertilizers, or products for the conditioning of soils, justifying the need for their application and in what conditions they were applied;
- The application of phytosanitary products, disclosing the reasons that determined their application;
- The cultivation practices used in the maintenance and improvement of soil fertility;
- Analyses of soil, water or others, which should be carried out by accredited laboratories.
- To manage properly the equipment meant for storing manure and liquid manure, which should have enough capacity to avoid water pollution through direct discharges or through superficial flowing and infiltration in the soil.
- To apply in the farm, in the whole area which is not part of the application for organic farming, codes of good organic farming practice

int Prot – Integrated Protection

Access requirements:

- To farm a minimum area of: fruit; vine; olive grove; in rotation with, namely, an arable crop (only in pilot perimeters), open air or greenhouse horticulture;
- To be a member of a farmers' organisation recognised for the practice of Integrated Protection and have made a technical assistance contract with such an organisation;
- To have attended a training course in Integrated Protection;
- To submit a farming plan, specifically covering the applied for area, validated by the farmers' organisation, including the characterisation of the applied for area in terms of soil, installed crop, output in the latest years and existing phytosanitary problems.

Commitments (to be undertaken for a period of 5 years):

- To comply with the rules regarding Integrated Protection;
- To comply with the farming plan;
- To comply with the rules included in the contracts made with the respective association;
- To use only plant protection products included in the approved list;
- To keep a separate register of all the information regarding adopted agricultural practices, namely carried out phytosanitary treatments;
- To keep documentary evidence of purchased plant protection products.

int prod – Integrated Production

Access requirements:

- Orchards, if already installed, should be in their economically operating period. In the case of an orchard to be installed, the installation should take place in the first year of allocation of support;
- To be a member of a farmer' organisation recognised for the practice of Integrated Production and have made a technical assistance contract with such an organisation;
- To have attended a training course on Integrated Protection;
- To submit a farming plan, specifically covering the applied for area, validated by the farmers' organisation, including the applied for area in terms of soil, installed crop, output in the latest years, existing phytosanitary problems, as well as the intervention plan to execute, namely in terms of fertilisations, irrigations, pruning and other cultivation operations.

Commitments (to be undertaken for a period of 5 years):

- To comply with the rules regarding Integrated Protection;
- To comply with the farming plan;
- To comply with the rules included in the contracts made with the respective association;
- To keep a separate register of all the information regarding adopted agricultural practices, namely carried out phytosanitary treatments, as well as fertilizations, irrigations, pruning and other cultivation operations;
- To keep documentary evidence of purchased plant protection products and fertilizers, as well as of results of soil, foliar and irrigation water analyses, which should be carried out by certified laboratories
- In the case of crops to be installed, the installation should take place in the first year of allocation of support;

CCA – chemical control under advice

Access requirements:

- To farm a minimum area of 0,5 ha of the arable crops covered by the National Agriculture Warning Service in the region;
- Individual registration in the National Agriculture Warning Service;
- Previous attendance of a public awareness campaign on Advised Chemical Control

Commitments (to be undertaken for a period of 5 years):

- To carry out only treatments recommended by the National Agricultural Warning Service;
- To keep a separate register of carried out phytosanitary treatments;
- To keep documentary evidence of purchased plant protection products.

IGPC – inter row grass under permanent crops

Access requirements:

- Minimum area of 1 ha with irrigated permanent crops (Pomoideae, Prunodeae, Citrus fruit, Vine for table grapes), in non-flat plots, such as flood plains and irrigation perimeters;

Commitments (to be undertaken for a period of 5 years):

- To keep the vegetation (natural or sown) of the rows;
- To control the vegetative development of rows through cuts and without dipping;
- When sowing, to use always minimum tillage in the spaces between rows;
- Not to apply herbicides between rows;
- To use only residual herbicides in the row zone.

Mt – Minimum Tillage

Access requirements:

- Minimum area of 1 ha of sown annual arable crops;
- Plots with an average gradient below 10%;
- Annual crops on rotation, with or without temporary pasture;
- Density of trees below 40 trees/ha for Fruit Plants. In the case of mixed planting of the two previously mentioned species, the number of trees per hectare should be below 50.

Commitments (to be undertaken for a period of 5 years):

- To use always, in the whole area occupied by rotation, vertical tillage techniques, without soil ploughing or raising of earth balls – never to use tillage equipment or rotary ploughs;
- To use only a disk harrow (one only run through) when, following the previous crop, the option has been to leave hay on the ground or to establish a new cover crop not subject to pasturing;
- Not to carry out burnings, not even of aftermath hay;
- Not to carry out any kind of tilling before Spring, except in the case of Autumn/Winter sowings;
- Not to apply plant protection products by air;
- Not to carry out any pasturing in the period from 1st October to 1st March.

Additional commitments that confer the right to additional support for:

a) Maintenance of aftermath hays (following the growing of Autumn/Winter cereals):

- In the harvesting operation, leave aftermath hay with a minimum height of 25 cm;
- Not to carry out pasturing in the aftermath hay area, from harvesting until the 1st of March.

b) Cover crop:

- To sow a minimum area of 1ha with rain field crops, defined in a listing to be established by the Regional Directorate of Agriculture, during the Autumn/Winter period;
- Crops are meant to stay in the ground, being allowed for pasturing from 1st March onwards;
- To ensure soils coverage, in more than de 90%, from the month of November onwards.