



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

**ANNEXE 4 : OCM OLIVE
ETUDE NATIONALE ITALIE et
ETUDE DE CAS SICILIA**

Novembre 2005



<p>OCM OLIVE ETUDE NATIONALE ITALIE</p>

Novembre 2005

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GLOSSARY

AGECONTROL S.P.A. = National Monitoring Agency for olive sector

AGEA = National Paying Agency for Agriculture

AEM = Agro-Environmental Measures

A.O.P = Producers' Organisations at national level

CMO = Common market organisation

CNR = National Council for researches

CRA = National Council for researches in agriculture

EAGGF = European Agricultural Guidance and Guarantee Fund

EM = environmental measures

EurepGAP = Euro-Retailer Produce Working Group (EUREP) + GAP (Good Agricultural Practices)

FO = operational funding

GIS = geographical information system

GAP = Good Agriculture Practices

INEA = Istituto Nazionale Economia Agraria

ISMEA = Servizio per il Mercato Agricolo Alimentare

ISTAT = Istituto Nazionale di Statistica

MGQ = Maximum guaranteed quantity

NGQ = National guaranteed quantity

PDO = Protected Denomination of Origin

PO = Producers' Organisations

OP = operational program of the OP

MiPAF = Ministry of Agriculture and Forestry

RDP = Rural Development Plans

SIAN = Sistema Informativo Agricolo Nazionale

SINAB = Sistema di informazione nazionale sull'agricoltura biologica

1. CONTEXT OF OLIVE OIL AND TABLE OLIVES PRODUCTION IN ITALY

1.1 Main characteristics of olive oil production in Italy

1.1.1 Evolution of the olive groves area - 1990 to 2003

Over the past 13-year period, according to Agencontrol data, the Italian olive grove area and production have not substantially changed: as matter of fact, there has been a very slight increase in the total area of olive groves.

Table 1 : Olive groves surface (000 ha)

Year	North	Centre	South	Italy
"1988/89	29	180	932	1.141
"1989/90	29	192	932	1.153
"1990/91	27	189	918	1.134
"1991/92	26	189	900	1.115
"1992/93	26	209	891	1.126
"1993/94	24	209	886	1.119
"1994/95	24	211	884	1.119
"1995/96	23	212	872	1.107
"1996/97	24	212	868	1.103
"1997/98	23	212	873	1.108
"1998/99	24	214	877	1.115
"1999/00	23	217	908	1.149
"2000/01	24	222	891	1.137
"2001/02	24	219	893	1.136
"2002/03	25	222	891	1.138

Source: AGECONTROL. Report 2002

Data on the olive groves change according to the considered sources. As matter of fact, ISTAT census data show that there has been a considerable decline in the olive groves surface in some regions (e.g. Liguria) and a significant increase in some other regions, such as Sardegna and Puglia.

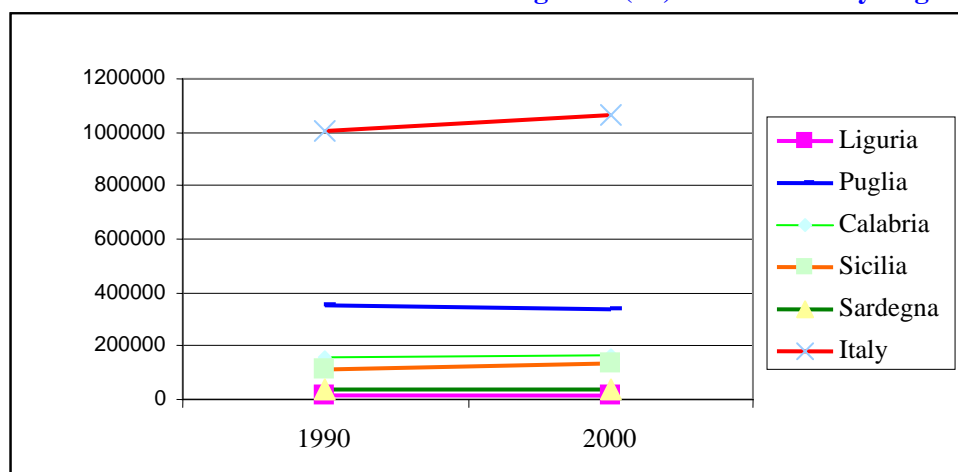
In Liguria the decline has been due mainly to abandonment, because of the marginal positions of the olive groves.¹ As the data on the number of holdings show (ISTAT, 1990-2000), during ten years, the most significant trend of reduction in the number of holdings has been recorded in Liguria (-28,9%) and in Lombardia (6,6 %), confirming the previous consideration.

¹ According to ISMEA data, in Liguria, more than 40% of olive groves are located in sloped areas (see evaluation question 2.1.1; Tab.22)

Table 2: Evolution of the surface of olive groves (ha) -1990-2000 - by Region

Region	1990	2000
Piemonte	n.a.	26,97
Lombardia	n.a.	1.271,53
Liguria	16.190	12.954,97
Trentino-Alto Adige	n.a.	382,4
Veneto	n.a.	3.579,54
Marche	6.122	10.152,91
Lazio	73.252	76.462,24
Abruzzo	35.918	40.277,12
Molise	12.472	13.468,12
Campania	62.626	73.742,79
Puglia	349.952	336.250,49
Basilicata	25.417	28.437,95
Calabria	156.984	162.213,57
Sicilia	113.125	134.477,65
Sardegna	39.491	38.531,22
Italy	1.005.659	1.061.946,01

Source: ISTAT census data

Chart 1: Evolution of the surface of olive groves (ha) -1990-2000 - by Region

Source: ISTAT census data

Our interviews² (see below) report that the strong adjustment of the Italian olive sector has been right after the hard frost in the 1985, which destroyed many olives plantations, especially in the Centre North part of Italy. During the period 1985-1989, 53.645 ha of olive grove were replanted with citrus orchards and vineyards in the more productive areas, whereas they were abandoned in the more marginal areas. Overall, during the period 1974-90 in spite of the decrease in the olive area of -7.2%, an increase in productivity per hectare of +9.2% occurred (ISTAT, 1991).

1.1.2 Evolution of the holdings number - 1990 to 2003

According to ISTAT data, the holdings number has slight increased over the time. If we have a look at regional data, we can find that only in Liguria and in Lombardia the number of holdings and their average size has strongly decreased over time. On the other hand, the average size of farm groves has fallen from 0,94 ha in 1992 up to 0,89 ha in 2000 (census data); at the moment the Italian average holding size is below 1 ha. Intense fragmentation is a feature of the Italian olive cultivation. For instance, even if the number of farms below 1 ha is about half of the total number, their weight in terms of surface is about one tenth, whereas the middle-large farms (beyond 50 ha), which are less than 1000, cover about one tenth of the total olive groves surface.

² University of Pisa; CNR Perugia

Table 3 : Evolution of the holdings number and area at national level (2000, 1990, 1982)

2000		1990		1982		Average of the holding area (ha)		
Holdings n.	Area ha	Holdings n.	Area ha	Holding n.	Area ha	2000	1990	1992
1.212.300	1.081.255,17	1.131.097	1.033.590.869	1.093.869	1.026.124,8	0,89	0,91	0,94

Source: ISTAT census data

Table 4 : Number of holdings and related surface by size of olive groves - 2002

	Less than 1 ha	1 - 2	2 - 5	5 - 10	10 - 20	20 - 50	50 - 100	Beyond 100	Total
Holdings	594.296	231.624	205.780	84.294	43.664	25.113	6.551	3.214	1.194.536
Area (ha)	190.069	173.585	242.617	146.072	106.380	98.115	50.627	54.857	1.062.326

Source: ISTAT census data

Table 5 : Evolution of the number of holdings (1990-2000) - by Region

	n. holdings	variation % 2000-1990	Average area of holdings (ha)		
			2000	1990	Var. %
Piemonte	63	0,75	0,75	0,37	0,38
Lombardia	1.885	-1,4	0,71	0,67	0,04
Liguria	25.949	-19,7	0,51	0,45	0,06
Veneto	7114	63,1	0,54	0,48	0,05
Friuli Venezia Giulia	266	1,2	0,47	0,78	-0,31
Emilia-Romagna	5.104	101,9	0,52	0,42	0,09
Toscana	78.979	9,1	1,23	1,26	-0,03
Umbria	31.592	18,1	1	0,98	0,02
Marche	30.852	66,2	0,34	0,23	0,11
Lazio	129.908	3,3	0,61	0,61	0
Abruzzo	61.537	11,5	0,67	0,57	0,09
Campania	114.014	17,2	0,65	0,63	0,02
Puglia	269.628	6,0	0,8	1,4	-0,5
Sicilia	198.989	14,4	0,7	0,71	-0,01
Calabria	137.704	3,7	1,2	1,15	0,05

Source: ISTAT census survey 2000

1.1.3 Evolution of the density of plantation - 1990 to 2003

Over ten years, the Italian average of number of plants per hectare have not substantially changed; however there has been a very strong increase in some southern regions (e.g. Puglia), where the density of plantation has increased from 111 plants/ha in 1990 up to 175 plants/ha in 2000 (Istat, 1990 - 2000).

Table 6 : Data on structure of olive growing in 1990 and 2000 by region

Region	1990		2000	
	n. of plants	plants per ha	n. of plants	plants per ha
Piemonte	n.a.	n.a	n.a	n.a
Lombardia	200.776	149	234846	124,59
Liguria	3.380.735	205	2857001	215,8
Veneto	335.128	143	632425	88,90
Friuli-V.G.	1.993	16	19976	75,10
Emilia r.	162.321	124	391243	76,65
Toscana	10.447.935	118	14427024	182,67
Umbria	3.484.419	130	6292054	199,17
Marche	1.440.695	229	2382734	77,23
Lazio	10.429.837	137	11048021	85,04
Abruzzi	7.763.401	211	8.820.269	143,33
Campania	10.654.903	167	12966937	113,73
Puglia	39.154.391	111	47010995	174,36
Calabria	17.606.112	111	18784155	136,41
Sicilia	10.996.096	91	14955640	75,16
ITALY	125.219.041	121	140.823.320	118,75

Source : ISTAT and Agecontrol

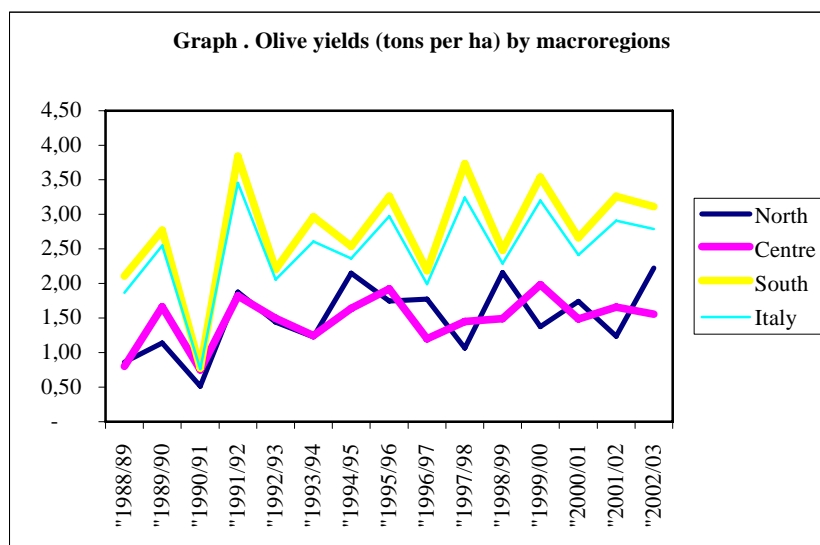
1.1.4 Evolution of the olive groves Yields (100kg/ha) -1990 to 2003

The olive groves yields have remained largely stable, apart from the usual annual fluctuations in production (which tends to attenuate, as an effect of the improvement of the agricultural practices and of the existence of irrigation). Moreover, during most recent years, it emerges a tendency to decrease also in the Southern regions. It largely recognized that high yields could be reached only with cultivation practices that worsen the quality standards.

Table 7 : Evolution of the olive groves Yields (100kg/ha)

	1990	1991	1992	1993	1994	1995	1996
Olive groves yield	7,94	34,79	20,76	26,41	23,34	29,39	19,53
	1997	1998	1999	2000	2001*	2002*	2003*
Olive groves yield	31,32	22,45	32,56	24,19	28,89	27,60	29,20

Source: EUROSTAT data

Chart 2 : Olive yields (tons/ha) by macroregion

Source: Agecontrol, 2002

1.1.5 Evolution of oil production - 1990 to 2003, and if known of table olives

During the period 1990-2003 the annual productions of olives has not substantially increased. However, it can be observed that fluctuations in production have been reduced over the time.

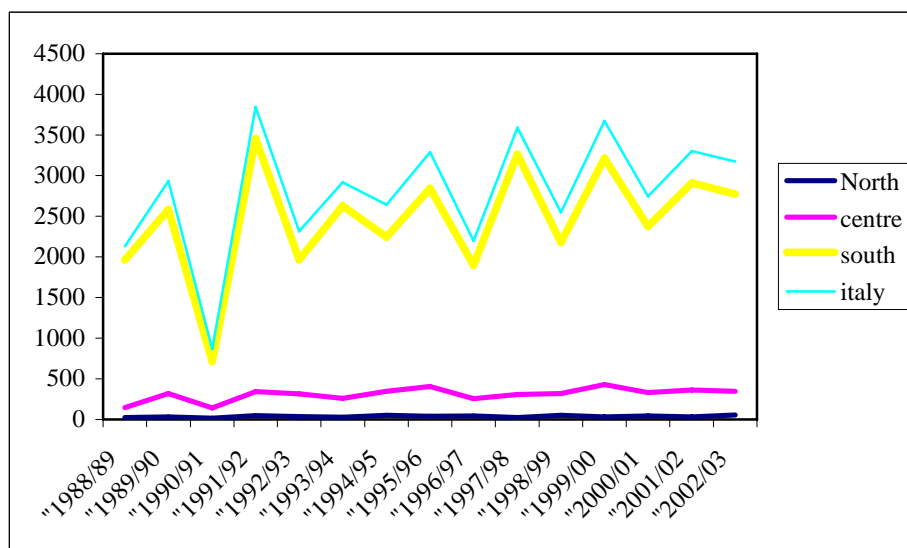
Table 8 : Evolution of olives production (1000 tons)

	1990	1991	1992	1993	1994	1995	1996
Olive production	912.54	3946	2366	2993	2640	3288.8	2195
Table Olives	44.54	98	52.68	77	47	85.8	55

	1997	1998	1999	2000	2001*	2002*	2003*
Olive production	3591.681	2549.634	3765.128	2810.255	3363.985	3231.302	3391.112
Table Olives	91.681	74.896	75.506	69.643	61.698	57.29	62.057

Sources: EUROSTAT data

Significant diversities between macro regions emerge: southern regions show more intensive cultivation systems, which turns in yields which are sometimes double than in the northern regions. However, the annual variations in production is much higher in the southern regions than in the northern regions, as the following Chart shows:

Chart 3 : Evolution of olive production by macroregion

Source: Agecontrol, 2002

As said before, apart from a peak in the campaign 1999/2000, the olive oil production has remained steady during the last years.

Table 9 : Evolution of oil production (000 tons) by macroregion

Year	North	Centre	South	Italy
"1988/89	5,2	27,6	397,9	430,7
"1989/90	6,9	60,8	510,5	578,2
"1990/91	2,5	25,5	135,3	163,3
"1991/92	10,2	61,3	696,7	768,2
"1992/93	6,8	51,2	376,5	434,5
"1993/94	5,8	48,1	511,5	565,4
"1994/95	8,7	61,2	416,5	486,4
"1995/96	7,3	79,2	544,5	631
"1996/97	8,1	43,3	390,1	441,5
"1997/98	4,5	54	593,6	652
"1998/99	10,6	55,2	405,6	471,3
"1999/00	5,3	73,5	632,2	711,1
"2000/01	6,9	55	445,2	507,1
"2001/02	5,1	62,8	571,4	639,4
"2002/03	9,7	55,7	509,5	574,9

Source: Agecontrol, 2002

Within this trend it should be mentioned the production of quality olive oils: the analysis carried out by ISMEA (2000; 2004) shows a strong increase in PDO olive oil productions, from 1.191 tons in 1998/99 up to 4.434 tons in 1999/00; in the southern regions the quality production has significantly grown from 60 tons in 1998/89 up to 1272 tons in 2002/03.

Table 10 : Evolution of PDO olive oils production (tons) - by PDO

PDO brand	1998/99	1999/00	2000/01	2001/02	2002/03
Aprutino Pescarese	60,00	78,00	71,40	63,40	76,40
Bruzio	0,00	0,00	24,90	49,00	17,10
Colline di Brindisi	0,00	17,50	22,50	24,50	57,30
Colline Salernitane	0,00	3,00	29,00	65,30	40,70
Colline Teatine	0,00	0,00	55,10	95,20	44,60
Dauno	0,00	189,90	193,90	142,90	113,80
Lametia	0	0,00	38,00	68,50	22,10

Monti Iblei	0,00	0,00	4,40	69,00	55,50
Penisola Sorrentina	0,00	12,00	11,30	8,00	13,10
Terra di Bari	0,00	694,20	499,40	592,20	650,00
Terra d'Otranto	0,00	0,00	10,90	16,00	17,40
Ville Trapanesi	0,00	23,00	57,30	160,80	164,00
Brisighella	3,00	9,00	5,60	17,90	1,80
Canino	0,00	42,00	84,70	131,40	62,90
Cilento	0	10,00	6,40	17,20	15,20
Garda	71,00	86,60	121,60	127,90	150,00
Laghi Lombardi	0,00	0,00	0,70	2,80	4,90
Riviera Ligure	222,00	225,00	441,90	379,44	540,40
Toscano Igp	550,00	1.521,20	1.252,20	1.904,40	2.419,40
Terre di Siena	0	1.017,60	6,30	26,90	40,50
Umbria	285,00	431,80	576,10	525,50	650,20
Sabina	0,00	85,30	90,70	118,00	72,10
Centre North	1.131,00	3.428,50	2.586,20	3.251,44	3.957,40
South	60,00	1.017,60	1.018,10	1.354,80	1.272,00
Total Italy	1.191,00	4.446,10	3.604,30	4.606,24	5.229,40

Source: ISMEA 2000, 2004

1.1.6 Evolution of the number of producers (farms) 1990-2003

If we consider the census data of 1990 as point of reference and confront with AGECONTROL data (available only from 1999-2000), we can deduct a certain trend of reduction in the number of producers.

Table 11 : Evolution of the number of olive producers

Region	1990 (census)	1999-2000	2000-2001	2001-2002	2002-03	2003-2004
Lombardia	2.018	2.028	1.811	1.882	1.387	1.626
Liguria	36.520	9.336	12.421	7.344	13.717	6.763
Veneto	4.837	3.712	3.796	3.907	3.873	4.008
Trentino A.A	817	769	795	852	795	833
Friuli V. G.	158	99	102	104	93	81
Emilia R.	3.089	3.827	3.355	4.039	3.318	3.619
Toscana	70.561	51.068	47.575	45.823	48.824	35.843
Lazio	125.344	85.015	72.225	83.189	68.677	71.448
Umbria	27.397	27.761	26.249	24.851	25.975	17.629
Marche	27.470	28.140	25.359	27.787	26.460	25.848
Lazio	n.a.	n.a	n.a	n.a	n.a	n.a
Abruzzo	63.978	65.762	60.561	60.752	60.522	60.183
Campania	100.815	100.989	96.139	100.350	100.011	97.519
Basilicata	39.468	41.069	34.542	39.571	23.952	40.611
Calabria	138.445	133.744	106.203	125.857	121.682	123.335
Molise	21.604	22.752	21.675	21.431	21.108	19.653
Puglia	252.424	275.700	245.055	266.286	242.382	244.085
Sicilia	170.612	152.370	145.213	131.576	147.057	148.464
Sardegna	45.538	30.930	19.147	26.898	22.989	26.433
Total	1.131.097	1.035.071	922.223	972.499	932.822	927.981

Sources: ISTAT, Agecontrol (2002)

The difference between census data and Agecontrol data means that a large number of farmers don't apply for subsidies: this fact confirms the common opinion that an increasing share of olive groves is cultivated for other purposes, besides the commercial ones.

1.1.1 Evolution of the number of mills 1990-2003

During the last years, the number of active mills has decreased, as there has been a tendency to concentration of the milling activity, especially in the southern regions. However, the 73% of the mills is localised in the Southern regions, and they mill a share of 88% of the national produce (Agecontrol).

Table 12 : Evolution of the number of mills (1995-2004)

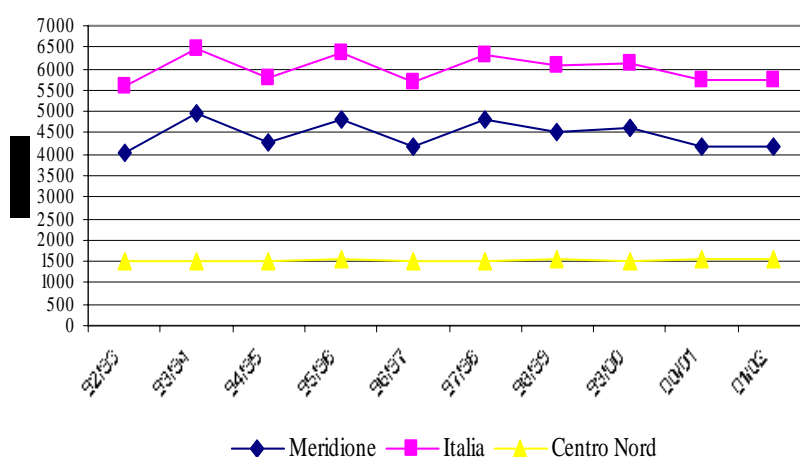
Region	1995-96	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Lombardia	n.a	22	25	20	19	19
Liguria	204	172	171	152	170	150
Veneto	n.a	35	37	38	36	38
Trentino A.A.	n.a	2	2	2	2	2
Friuli V.G.	n.a	3	3	4	4	4
Emilia Romagna	n.a	26	25	25	25	26
Toscana	423	425	411	400	396	382
Lazio	397	382	371	371	372	375
Umbria	277	269	262	258	259	229
Marche	169	164	158	158	159	160
Abruzzo	532	510	491	480	469	472
Molise	146	131	119	118	114	120
Campania	579	556	524	524	526	522
Basilicata	179	187	168	178	153	175
Puglia	1.217	1.219	1.151	1.168	1.151	1.157
Calabria	1.342	1.209	1.025	1.062	1.093	1.056
Sicilia	685	703	691	653	692	676
Sardegna	116	125	110	126	123	131
Total		6.140	5.744	5.737	5.763	5.694

Source : AGECONTROL on AGEA data; Casini et al. on AGEA data

Table 13 : Evolution of the number of mills and quantities of oil admitted to aid (tons): 1990-2003

	1995-96		1996/97		1999-2000		2000-2001		2001-2002		2002-2003		2003-2004	
Region	mills	oil	mills	oil	mills	oil	mills	oil	mills	oil	mills	oil	mills	oil
Abruzzo	532	32.373	521	15.112	510	29.521	491	16.533	480	17.469	469	19.055	472	18.640
Basilicata	179	10.536	170	9658	187	15.041	168	7.600	178	12.123	153	4.941	175	16.783
Calabria	1.34 2	219.88 5	842	62.426	1.209	223.87 1	1.02 5	153.15 6	1.06 2	207.13 1	1.09 3	213.17 5	1.05 6	243.38 2
Campania	579	55.536	552	31.440	556	45.639	524	36.375	524	43.736	526	46.203	522	38.584
EmiliaR.	n.a	n.a	n.a	n.a	26	1.296	25	905	25	1.456	25	809	26	1.120
FriuliV.G.	n.a	n.a	n.a	n.a	3	69	3	61	4	69	4	70	4	59
Lazio	397	38.528	362	13.608	382	55.110	371	24.914	371	33.681	372	20.810	375	20.024
Liguria	204	4.544	194	5.856	172	2.583	171	5.401	152	2.267	170	7.601	150	2.373
Lombardia	n.a	n.a	n.a	n.a	22	1.214	25	416	20	525	19	412	19	454
Marche	169	7.043	163	4.665	164	6.551	158	4.362	158	6.309	159	5.376	160	5.246
Molise	146	5.894	145	5205	131	6.658	119	5.252	118	4.964	114	5.027	120	5.481
Puglia	1.21 7	215.27 8	1.18 2	155.06 6	1.219	336.15 7	1.15 1	191.79 2	1.16 8	267.01 3	1.15 1	224.71 3	1.15 7	268.53 6
Sardegna	116	7.100	93	4385	125	13.453	110	15.361	126	9.346	123	6.844	131	10.534
Sicilia	685	62.150	614	26.681	703	66.849	691	50.095	653	43.822	692	58.454	676	55.986
Toscana	423	23.298	398	17.347	425	34.483	411	20.158	400	18.981	396	23.165	382	11.703
TrentinoA.A.	n.a	n.a	n.a	n.a	2	105	2	145	2	23	2	137	2	154
Umbria	277	10.270	278	6.642	269	16.545	262	11.766	258	6.525	259	9.170	229	3.884
Veneto	n.a	n.a	n.a	n.a	35	1.231	37	1.041	38	1.266	36	1.281	38	1.534
Total	n.a	n.a	n.a	n.a	6.140	856.38 5	5.74 4	545.34 1	5.73 7	676.92 1	5.76 3	647.25 2	5.69 4	704.48 7

Source: AGECONTROL on AGEA data

Chart 4 : Evolution of the number of mills (1992-2002)

Source: ISMEA 2004 on AGEA data

1.1.7 Evolution of the number of producers organisations (PO) - 1990-2003

The national decree 16/5/2003 implementing the Reg.(UE) n. 1334/2002, in concordance with the Reg.(UE) n. 1638/98 regulates the programs of activity of Producers' organisations of the olive sector for the marketing years 2002-03 and 2003-04. Even if in Italy nearly all olive growers belong to a PO (188 in 2000, ISMEA data), no POs meet the criteria for the recognition as defined by the regulations so far.

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

Data of implementation of CMO measures from 1996 to 2002 show an increase in the total expenditure (from 636 to 723 mio EUR). In 2002, the direct aids and 'other measures' were the two measures with more relevant impact.

Table 14 : EAGGF millions of ECU/euro

	1996	1997	1998	1999	2000	2001	2002
Export refunds	32,9	23.3	16.0	1.1	0.2	0.1	0.1
Direct aids to producers	545,5	915.0	485.3	625.8	661.8	842.7	715.8
Aids to consume	43,4	50.6	47.4	27.9	19.3	0.2	-
Stocks	-2,8	-22,1	-3.5	-4.8	-6.3	-4.3	0.0
Other measures	17,2	15,6	17.7	14.4	12.0	9.6	7.5
Total	636.4	982.5	562.9	664.9	686.9	848.3	723.5

Source: INEA on European Commission data

An analysis of the planned allocation of direct aids by region shows that only two regions, Puglia and Calabria, together cover more than 2/3 of the total production claimed for aid.

Table 15 : Evolution of the quantities claimed for aid to production

Region	1999-2000		2000-2001		2001-2002		2002-03		2003-2004	
	Applications	Production	Applications	Production	Applications	Production	Applications	Production	Applications	Production
		(Kg.)		(Kg.)		(Kg.)		(Kg.)		(Kg.)
Abruzzo	65.762	24.073.315	60.561	14.805.390	60.752	16.480.325	60.522	17.985.327	60.183	17.750.063
Basilicata	41.069	14.836.243	34.542	8.019.940	39.571	12.604.862	23.952	4.815.268	40.611	17.573.250
Calabria	133.744	216.243.473	106.203	149.351.804	125.857	202.561.876	121.682	209.947.970	123.335	239.808.751
Campania	100.989	41.355.558	96.139	32.728.680	100.350	39.155.937	100.011	42.402.328	97.519	34.299.025
Emilia R.	3.827	715.764	3.355	472.547	4.039	997.543	3.318	465.750	3.619	674.460
Friuli V. G.	99	12.334	102	16.533	104	16.939	93	25.247	81	10.571
Lazio	85.015	29.605.481	72.225	14.994.930	83.189	28.435.750	68.677	18.208.330	71.448	16.958.683
Liguria	9.336	2.060.502	12.421	4.618.802	7.344	1.693.844	13.717	6.541.963	6.763	1.924.232
Lombardia	2.028	343.707	1.811	263.115	1.882	353.523	1.387	241.396	1.626	260.327
Marche	28.140	5.032.483	25.359	3.138.666	27.787	4.972.281	26.460	4.045.575	25.848	3.794.456
Molise	22.752	6.883.916	21.675	5.432.136	21.431	5.017.234	21.108	5.113.525	19.653	5.670.309
Puglia	275.700	336.191.179	245.055	194.035.094	266.286	271.346.250	242.382	229.989.885	244.085	272.703.451
Sardegna	30.930	11.374.637	19.147	3.403.741	26.898	8.216.509	22.989	5.628.177	26.433	8.704.664
Sicilia	152.370	56.731.903	145.213	44.805.514	131.576	40.432.741	147.057	54.897.310	148.464	51.409.934
Toscana	51.068	19.655.587	47.575	14.336.875	45.823	15.894.922	48.824	20.021.127	35.843	9.157.097
Trentino A. A.	769	93.026	795	115.986	852	183.422	795	107.411	833	121.493
Umbria	27.761	9.781.249	26.249	6.989.184	24.851	6.007.889	25.975	8.712.428	17.629	3.168.209
Veneto	3.712	924.608	3.796	816.153	3.907	952.309	3.873	1.023.581	4.008	981.274
Total	1.035.071	755.914.965	922.223	498.345.090	972.499	655.324.156	932.822	630.172.598	927.981	684.970.249

Source : AGEA

1.3 Institutional framework of the olive for oil production in the country

The following are the most relevant actors of the Italian agricultural policy network.

1.3.1 Institutional framework of the olive production in Italy

The Ministerial Decree 16/5/2003 in actuation of the Reg (CE) n. 1334/2002 and the Reg. (CE) 1638/98 concerns the activities plans for the producers' organisations of the olive sector.

The Ministry of Agricultural policies

In the process of increasing political and decisional power by the executive branch, the political role of the Ministry of Agricultural policies grew during the '90s because of the institutional responsibilities in the EU context (political representation, CAP implementation) and in the domestic arena (direct negotiation with the agricultural syndicates - green tables), besides the need of regulation of the relations between the enterprises' system and society (consumers) and financial constraints. In the latter context, the ministry plays an important role in debating and dealing with important issues at national level (as food quality and safety, GMOs, agriculture-rurality), interacting with the representatives of the enterprises' system and the interest groups of society (consumers, environmentalists, etc.).

The Ministry of Agricultural policies is responsible for the recognition of the producers' associations (and for OPs) and it defines their *Pilot schemes* guidelines.

The regional governments

The important role of regional governments (distinct policy-making activity, control on national government activity, autonomous position in the Community arena) has been the result of the administrative devolution process implemented during the '90s (the final act of a growing conflict with the Ministry). The latter strengthened the effects of the evolution of CAP (increasing regionalisation also in the market and rural development policies, in addition to structural policy).

At the moment, regional governments have competencies on: formulation and implementation of regional policy in relation to economic development, social affairs, territorial planning, and in particular to agriculture, agri-tourism activity, forests, fishing, environment, wildlife and regional protected areas, tourism, culture, education and professional training. They consequently play a central role in the policy-making process at local level, also through the dialogue and negotiation with the representatives of economic and social actors.

The programs of the producer's associations (OPs) are submitted directly to the Regional Governments. The partial conversion of the olive-growing sector from traditional productive systems to modern systems was foreseen by a specific National Action Plan (*Piano Olivicolo Nazionale*) approved in 1990. The intention was to convert 25% of the total Italian olive area. In practice, the Plan has remained mostly non-operative, due to the lack of financial resources.

Payment for the funding of the above mentioned PO is the responsibility of one sole paying agency, the AGEA or its Regional Agencies. AGEA also selects the Operational Plans submitted by the Producers' organisations on the basis of the evaluation of an apposite Evaluation Committee.

The role of AGEA is to communicate to the Ministry of Agricultural Policies the total amount of funding, which has been allocated to the O.Ps.

1.3.2 Institutions in charge of the controls

Control activities are carried out by the **Agecontrol spa**.

Agecontrol has the task to ensure the compliance with European regulation in the processing sector through controls to :

- Producers' associations and their Unions;
- Producers;
- Recognised mills;
- Other enterprises of the industry such as refineries, packagers, traders, marc producers
- Management of the **GIS olive groves inventory**

1.3.3 Interbranch organisations

In Italy, there is only one Interbranch organisation called "*Associazione interprofessionale dell'olio d'oliva*", which has been set up on December 2000, with the followings purposes:

- Monitoring activities on the productions, and on the processing (mills)

- Research activities
- Valorisation activities of the certified produces (PDO, PGI, organic and integrated olive oils)

The organisation is based in the incumbent president's office (at the moment, the president Paolo de Carolis, who is the CNO president as well).

1.3.4 Producers organisations at national level

AGCI Associazione generale cooperative italiane

ANCALEGACOOOP Associazione Nazionale delle Cooperative Agroalimentari aderente alla Lega delle Cooperative

FEDEROLIO La Federazione Nazionale del Commercio Oleario – it is the most important organisation in the field of wholesale trade and in olive oil packaging. 200 industrial enterprises are members of Federolio; they represent the biggest share of olive oil sold in the Italian market.

1.3.5 Unions

UNAPROL - The Unaprol is the national union between the associations of the producers of olives. It was constituted in 1966 and recognized by the Ministry of Agriculture in compliance with Regulations the EEC n. 1360/78. It represents approximately 700.000 producers. Members of Unaprol are 71 provincial associations constituted by Coldiretti and Confagricoltura. The mission of UNAPROL is essentially the protection and the valorisation of the production; the promotion, the commercialization of the olives and the oil produced by the members.

CNO - Consorzio Nazionale degli Olivicoltori is a National Union of Producers' Associations

It was constituted in 1966 and recognized by the Ministry of Agriculture in compliance with Regulations the EEC n. 1360/78. It represents approximately 350.000 producers. Members CNO are 32 provincial associations constituted by Coldiretti and Confagricoltura and 120 cooperatives.

UNAPOL - It represents approximately 130000 producers. Members of UNAPOL are 32 provincial associations in 45 provinces distributed on 7 regions

AIPOUN - Members of UNAPOL are 22 provincial associations.

UNASCO, was constituted in December 1978. It has been recognized under the regulation 2261/84 and in 2003 under reg. 1334/02. Members of UNASCO are 30 provincial associations representing about 190000 associates and about 90000 tons of olive oil.

1.3.6 The Macro Commercial Organisations (MOC)

"Program of participation for the valorisation of the southern agricultural productions" of Objective 1 of structural funds has given life to the Macro Commercial Organisations (MOC). MOC is proposed as "innovative supply chain instruments", where agricultural producers, transformers, distributors and services companies are represented. Unfortunately, the program has suffered in excessive way from the delays endured in the phase of predisposition and performance (report ISMEA 2001).

The most important MOCs are:

- MOC-Olimer s.r.l.
- Oliveti d'Italia
- Oligar
- Proliva

1.3.7 Research and technical institutes

INEA	Istituto nazionale Economia Agraria	Is the Ministry of Agricultural Policies' research body for analysis in the field of policies
ISMEA	Istituto di Servizi per il Mercato Agricolo Alimentare	Provide data on markets per each sector
CRA	Consiglio per la ricerca e la sperimentazione in agricoltura	It is the Ministry of Agricultural Policies' body which governs the applied research in Agriculture.
CNR	Consiglio Nazionale per le ricerche	Governs all applied research in Italy. Several laboratories are dedicated to agriculture
University		There are 21 Agricultural Universities in Italy

1.4 CMO implementation context in country

1.4.1 *The contents of the national level organisations of producers actions in relation with the environmental actions normally included in their operational programs*

A series of environmental measures arising from “the quality strategy for olive oil” were also introduced (Reg. CE 528/99, Reg. CE 2407/01 and Reg. CE 2136/02. For instance, most programs include the following actions:

- defence, including control, alarm and evaluation systems, against olive fly (*Dacus oleae*) and against other harmful insects;
- improvement of cultivation and pest management of olive groves, improvement of olive harvest, processing and oil storage;
- technical assistance to producers with the aim to improve the quality of the olive oil;
- improvement of waste management methods of the olive milling with the aim to reduce its negative environmental impact;
- training, divulgation and demonstration projects aimed at diffusion information regarding olive oil quality and environmental impact of olive growing;
- setting up of laboratories of analysis for olive oil;
- collaboration with specialised organisms in the implementation of research programs on the qualitative improvement of virgin olive oil.

It can be said that the operational plans have been very important to spread a culture of low inputs techniques. For example, in Tuscany, where the olive groves area is about 80.000 ha (70.000 farms), 1.400 ha have been concerned in the implementation of the ‘mass trapping’ practice, with 329 monitoring sites (ARSIA, www.arsia.toscana.it).

With reference to the implementation of Reg. (UE) n. 1638/98, Reg. (EU) 1331/2004 and Reg. (UE) n. 1334/2002, OPs are submitted to the Ministry of Agricultural Policies or to the Regional Governments. The **National decree 16/5/2003** have set up the guidelines for the definition of Operational plans. Regarding environmental measures, the guidelines include the following actions:

- technical assistance to olive groves with high environmental and landscape values and under the risks to be abandoned; according this actions producers’ associations can realise local projects aimed at making olive groves’ restoration, including terraces, walls and extraordinary pruning;
- definition of codes of good practices based on environmental criteria which should fit to the local specificities;
- implementation of demonstrative projects aimed at the diffusion of low impact practices and organic farming;
- update of the environmental database (GIS), according to the Reg. (CE) 1638/98;

1.4.2 *Importance of implementation of eligible environmental measures within OP*

As said before, according to the National Decree 24/9/2004 in compliance with the Reg (EU) 1334/2002 and Reg. (EU) 1331/2004 the measures within OPs which are specifically addressed to environmental issues are the following (sector n.2):

- a. technical assistance aimed at preserving old olive groves with high environmental values or under abandonment risk; these activities should be realised in concordance with the following criteria:
 - realisation of collective programs aimed at preserving old olive groves (in particular by re-building the terraces or strong pruning activities);
 - olive groves should have the following features: age > 50 years; irregular rows; olive varieties on risk of extinction and presence of particular water drainage systems;
 - the area interested by the project should be minimum 10 ha, and the olive growers involved should be minimum 10.
- b. elaboration of *Good Agriculture Practices* for olive groves, based on environmental criteria which fit with the local environmental features and involvement of olive growers to the fine-tuning and implementation of the collective codes of practices;

- c. realisation of demonstrative projects (*pilot schemes*) with the main purpose of landscape preservation; in particular, these pilot schemes should have the following tasks:
- to spread the use of low impacts production systems (i.e. integrated or organic farming);
 - to valorise olive oil processing by-products by finding out alternative and sustainable uses

Table 16 : Planned allocation of aids/year for measures b)* and c) (Reg CE 1638/98) by Region.**

Region	Total amount (EUR)
Abruzzo	383.747,64
Basilicata	296.513,11
Calabria	1.607.306,73
Campania	625.728,64
Emilia Romagna	115.975,57
Friuli Venezia Giulia	106.872,83
Lazio	562.768,07
Liguria	188.797,43
Lombardia	116.734,13
Marche	153.145,06
Molise	180.453,26
Puglia	2.777.007,98
Sardegna	294.237,43
Sicilia	976.183,88
Toscana	568.077,99
Trentino Alto Adige	291.203,19
Umbria	107.631,39
Veneto	129.629,67
Total	9.482.014,00

Source: Ministry of Agricultural Policies, 2003

*b) Elaboration of *Good Agriculture Practices*

**c) Realisation of demonstrative projects (*pilot schemes*)

As the table shows, in 2003 the environmental measures were mainly implemented in Puglia, Calabria, Sicilia, followed by Campania and Toscana.

1.4.3 Detail of the Good Agriculture Practices for olive groves in the RDR measures

Each Regional Government has the task to define regional codes of practice. Operational Plans (which are elaborated directly by the producers' organisations) refer to Regional codes of practice to implement their environmental measures. In the following table we have reported a comparative table of the good practices for four regions.

		LIGURIA	TOSCANA	PUGLIA	CALABRIA
soil management	ploughing depth when planting				
	superficial soil workings	10-15 cm	Superficial soil working as alternative to the permanent gross working (see later)	15-20 cm (first harrowing) 5-10 cm (milling) no tillage and 1 intervention with weed killer, as alternative option	10-15 cm (3 millings/year)
	inerbimento-permanent gross-cover systems	permanent gross-cover systems suggested	After 4 years from the planting permanent gross-cover suggested (especially for the soil with a gradient >5%)	-	
	Management of the slopes	Ordinary maintenance of the terraces (where the olive trees are planted)			
Varieties	use of certified varieties		no OGM varieties		X
Fertilisation	Nitrogen maximum levels kg/ha Potassium maximum levels kg/ha Phosphorus maximum levels kg/ha	The optimum level of applications is suggested by the technical assistance (no fertilisation plans or soil analysis)	N: 100 K ₂ O: 50 P ₂ O ₅ :50	N: 140 K ₂ O: 100 P ₂ O ₅ :120	N: 100 K ₂ O: 150 P ₂ O ₅ :60
Irrigation	water max levels	No limitations (period: from June to September)	No limitations (period: from June to September)	No limitations	Drip irrigation systems
Pest management (<i>Bactrocera olea</i>)	list of tolerated pesticides	No limitations (all authorized pesticides)	No limitations (all authorized pesticides)	Only no residual (water-soluble) (dimetoato, fosfamidone, formotione)	
	pest management strategy	Monitoring activities	pre-emptive calendar cure		
	number of applications	1-2 interventions/year	no limitations	1-2 interventions/year	
plant workings		no limitations	no limitations	no limitations	no limitations
harvesting	Harvest techniques	Manual (from the plant suggested)	Manual or shakers as long as the olives will be processed in 24 hours	Manual or shakers	Manual or shakers as long as the olives will be processed in few days

1.4.4 Level of implementation of the Reg. (CE) 2078/92 and Agro-environmental measures of Reg. CE 1257/99

A comparative analysis of the Rural Regional Development Plans shows a common framework, based on three strategic axes:

- ❖ Improving competitiveness of farms, where product quality is the major objective;
- ❖ Improving the agro-environment preservation, where a big share of the resources is destined to low inputs and organic farming and to forestry measures;
- ❖ Improving the quality of life in rural areas, where rural tourism and rural infrastructures are the most common targets.

As a result, also thanks to the growing attention to the environment and landscape maintenance, and to the need of keeping traditions and cultures, there is a growing demand from the lower Authorities levels (Municipalities, Mountainous Municipalities Associated, Provinces, and Regional Administrations) of redefining competencies and degree of autonomy between different territorial levels, coupled to the request for new policy tools.

The agro-environmental measures of the RDR (measure 6; art.22, 23, 24) are the following.

According to **EC Reg. 2078/92**, the agro-environmental measures that have a potential link with the olive groves are the following:

- A1 Pesticides reduction
- A2 Organic agriculture
- D1³ Protection of the countryside and the landscape;

According to **EC Reg. 1257/99**, the agro-environmental measures are interested by the *measure f*:

- (6)F11a Organic farming: this is a defined approach to farming which incorporates a wider range of measures e.g. input reduction.
- (6)F2 b Input reduction: this category includes reduction in fertilisers and plant products reduction.
- (6)F3 Restoring and/or maintenance of the traditional rural landscape, of natural and semi-natural areas: this measure refers to maintaining farming systems which lead to characteristics landscapes.
- (6)F4 Genetic diversity: this measure concerns the preservation of plant genetic resources naturally adapted to the local and regional conditions and under threat of genetic erosion.

Table 17 presents the overall expenditure for the agro-environmental actions from 1997 until 2002 provided by the RDPs and the number of involved holdings.

Table 17: Level of funding (number of holdings supported and funding)

	holdings		Funding	
	n.	% on farms total	000 EUR	Average subsidy per farm (eur/ha)
1997	122	n.a	n.a	n.a
1998	175	43,5	649.520	n.a
2000	195	8,6	774.018	278
2001	182	7	701.641	273
2002	156	6	607.361	n.a

Source: Inea, elaboration on AGEA data

According to INEA (2003), during the period 2000-2006 the higher percentage of the overall expenditure of the RDPs is paid to the agro-environmental measures, since they represent almost the 50% of the total public funding, and these funding addressed to the agro-environmental measures include also the expenditure required by accompanying measures of the previous planning (2078/92). The following tables show the expenditure and the surface involved which are specifically related to the agro-environmental measures.

Table 18: RDPs – Planned funding for AEM measures 2000-2006 (000.000 EUR)

	Total	Public funding	Public funding %	EAGGF funding	EAGGF %
Agro-environmental measures	3.815,4	3.815,4	43,4	2.256,3	50
• Reg. 2078/92	2.172,0	2172,0	24,7	1369,8	30,4

Source: Inea, elaboration on RDPs data

³ *The measure D1 (protection of the countryside and the landscape) of the previous AEP pointed towards preservation of the traditional landscape as well as to prevent the soil from erosion. The measure was targeted to the permanent crops located on terraces, pushing the farmers to restore old pathways and soil protection structures; the use of herbicides was banned.

Table 19: Level of funding received by AEM action (1997-2002) 000. EUR

	1997		1998		2000		2001		2002	
Low impact production systems	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR
-low chemical input	646.704	209.77	966.917	n.a.	1.144.172	344.695	971.252	269.240	802.742	232.444
- organic farming	313.917	104.52	498.617	n.a.	697.591	226.780	700.849	221.950	591.826	187.831
Biodiversity conservation	0	0	0	0	343	98	3.315	635	388	153
- vegetal organisms under the threat of genetic erosion										

Source: Inea, elaboration on AGEA data

2. ANSWER TO EVALUATION QUESTION

2.1 Vertical questions

2.1.1 Olive – Theme 1: production based subsidies

Question 1(O1) : *Does the production based subsidies of the CMO for olive oil provide an incentive for intensification and irrigated production and if so: what are the environmental impacts in terms of soil erosion, run-off to water bodies, degradation of habitats and landscapes and exploitation of scarce water resources ?*

Detailed answer

2.1.1.1 The context

The Reg. 1683/98 grants a subsidy of 135 EUR per 100 kg oil. However, this subsidy is reduced in proportion for overshooting the NGQ, established on 543.164 tons.

During the last four years, NGQ has been overshoot three times, and therefore, the subsidy paid to farmers has been the following:

Table 20 : Subsidy per 100 kg oil 1999/2000 – 2002-2003

Year	Reduction	Actual subsidy
1999/2000	-21,9	105,44
2000/2001	0	135,00
2001/2002	-23,00	103,95
2002/2003	-20,00	108,00

Source: Agecontrol

As said before, the total CMO expenditure for the sector (about 848 mio EUR, in 2001) is based on two main measures: the direct aids, which are about 99% of the total expenditure and the Operational plans funding. On average, the aid was in 2001 about 628 EUR per farm and 972 EUR per ha (INEA, 2004). A study of INEA (2004) shows that the average weight of direct aid to Gross Product Value of olive growing is about 32%, but in some regions, such as in Puglia the weight of the premium reaches 41%.

2.1.1.2 Is there an intensification of the production?

Analysis of qualitative answers of the national interviews:

The university researchers, the leaders of producers' associations and the leader of the biggest national Union⁴ underline the strong effort required by the existing patterns of Italian olive grove cultivation to turn into intensive cultivation systems, since the excessive fragmented land structures and the scarce availability of financial support.

Focusing more in depth on the different development olive groves trajectories, the interviews state that in the Centre-Northern regions no significant intensification phenomenon has occurred: the only strong adjustment of the olive sector has been right after the hard frost of the 1985, which destroyed many olives plantations; therefore, in the period 1985-1989, the replanting of the olive groves followed more modern and rational farming systems.

Actually, according to all the interviews, the intensification process has taken place mainly in the southern regions, in terms of:

- improving density of plantations: in Puglia, the density of *intensive* plantations is about 80-100 plants/ha; whereas the density of the oldest olive groves is only about 40-50 plants/ha;

⁴ Regarding the first question, opinions are stressed by University researchers (University of Pisa and University of Bari); research centres (INEA, ISMEA and the CNR of Perugia); the CMO institutional responsible of Liguria Region; the producers' association leaders (representatives of the Centre-North Italy and of the South Italy).

- improving the rationalisation of the production structures: substantial investments in changing the harvest systems from the traditional hand harvesting to mechanised systems, which allow to reduce the production costs and at the same time, to obtain higher quality olive oil;
- investments in introducing irrigation systems (above all, in Puglia and Calabria).

A recent survey carried out by the University of Bari on the *Salento* area (in the North part of Puglia) shows a relevant growth in the intensive olive grove pattern, mainly by introducing mechanisation for harvesting and drip irrigation systems.

Analysis of the evolution of the areas of the different types of olive groves:

In order to respond to this question, the following aspects are taken into account:

- ❖ Starting conditions
- ❖ Evolution of cultivated area
- ❖ Evolution of holding size
- ❖ Evolution of yields
- ❖ Evolution of production systems
- ❖ Weight of CAP subsidy over income generated from the production
- ❖ Input utilisation rate

• *Starting conditions*

In Italy at least three production systems can be identified:

- ❑ **Low-input traditional systems** and scattered trees, often with old trees, typically planted on terraces, which are managed with few or no chemical inputs, but with a high labour input: this situation is very common in Liguria where the 57% of the farms have olive planted on terraces, but also in Lombardia (Garda), in Toscana (13,4%) and in Campania (13%); only 14% of these farms are managed with irrigation systems (Source: ISMEA)
- ❑ **Intensified traditional systems** which to some extent follow traditional patterns but are under more intensive management making systematic use of artificial fertilisers and pesticides and with more intensive weed control and soil management. There is a tendency to intensify by means of increasing irrigation systems and mechanical harvesting: this is occurred mainly in the South Italy, where the 63% of the farms in Puglia, the 43% of the farms in Sardegna and the 40% of the farms in Sicilia are managed with irrigation (Source: ISMEA).
- ❑ **Intensive modern system** of smaller tree varieties planted at high densities and managed under an intensive and highly mechanised system, usually with irrigation. A second type of modern plantation uses “bushes” in dense rows, which are almost totally mechanised. Anyway, these patterns are not spread, but there are few examples of this kind of plantations in Italy. One significant example of this kind of plantation is the *Traversagna* farm, located in Tuscany, which represents the biggest olive plantation in Italy (45.000 trees): it is realized according to the CNR model of intensive mechanized farming, using water-drainage systems, drip irrigation system and the olive trees are raised as *monocono* (Fontanazza) in very dense rows (3 per 6).

In order to estimate the **evolution of the density of plantations**, we can join the Census data on number of holdings and surface, (1990-2000) with Agecontrol data on number of trees for subsidies as proxies the real number of plants⁵. In the following table we have articulated geographically the different plantation densities in relation with the national average.

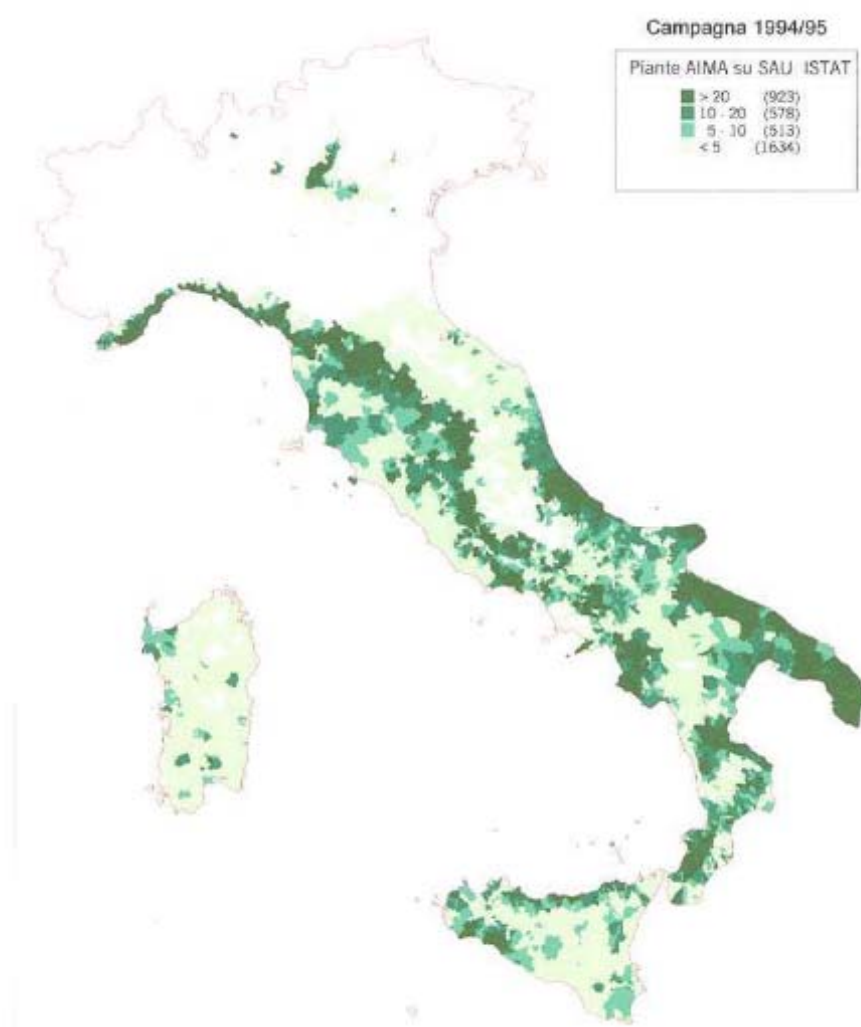
⁵ GIS data are not available

Table 21 : Density (trees per ha) of olive plants in 1990 and in 2000

	1990	2000
Puglia	111	175
Calabria	111	136
Toscana	118	183
Lazio	130	140
Umbria	137	199
Liguria	205	215
Italy	121	166

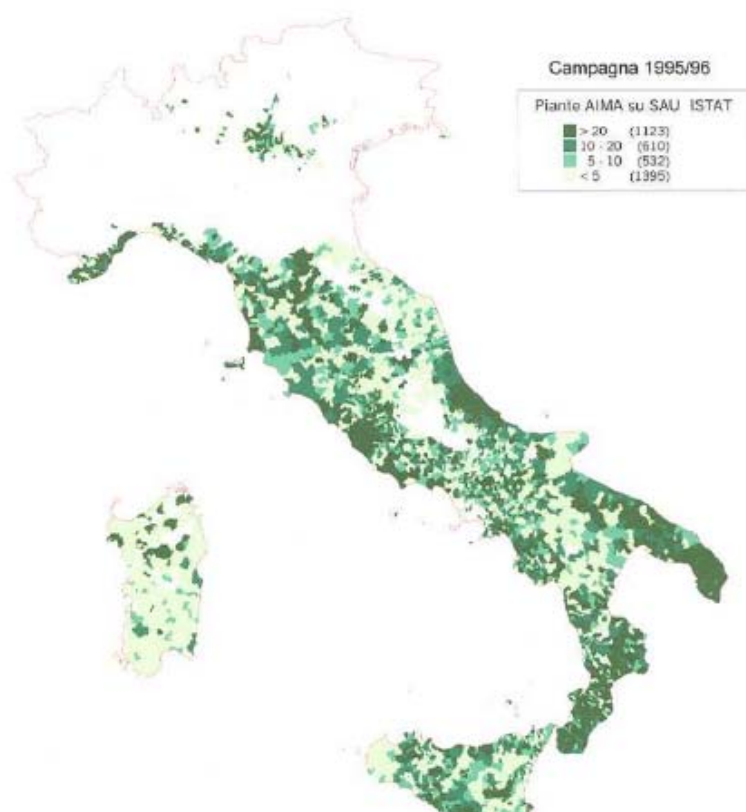
Source: elaboration on Agecontrol and census data

Data show that the density of plantations has increased over the time.

Chart 5 : Plants/ha in 1994-95

Source : Casini *et al.*

Chart 6 : Plants/ha in 1995-96

Source : Casini *et al.*

An important criterion of distinction between systems of cultivation is based on the position of the soils where olive groves are located. In this regard, it is evident that in the southern regions the concentration of plantations sited on plain areas is much more higher (48%) than in the northern regions (11.9%).

Table 22: Allocation of the olive systems according to the position of the soils, by regions (2003)

	Plain	Light slopes	Strong slopes (15-25%)	Very strong slopes (>25%)	Terraces
Regions	%	%	%	%	%
Liguria	1.8	32.1	8.2	0	57.9
Marche	1.9	78	19.4	0.7	0
Toscana	11.8	64.6	9.9	0.3	13.4
Umbria	4.8	76	17.9	0	1.4
Campania	11.6	61.1	13	1.3	13
Abruzzo	23.5	53.2	22.8	0.5	0
Molise	45.8	45.8	8.4	0	0
Puglia	83	15.2	1.2	0.3	0.4
Basilicata	40.4	55.8	3.7	0.1	0
Calabria	39.7	45.4	9.4	0.7	4.8
Sicilia	34.1	52.7	6.7	0.5	6.1
Sardegna	68.3	29.3	2.3	0	0
Other regions	17.4	43.7	7.4	0	7.2
Total Italy	38.0	44.9	9.5	0.4	7.2
Centro North	11.8	56.9	15.1	0.3	16.0
South	48.4	40.2	7.3	0.5	3.7

Source: ISMEA

- *Evolution of irrigated areas*

In Italy, official data on irrigated area of olive groves are not available (ISTAT has not put a specific question into its census questionnaire). However, from the analysis of specialised farms in olive growing, it emerges a very strong increase in the number and in the area of irrigated farms between 1990 and 2000.

Table 23: Number of specialised olive groves holdings with irrigation systems and irrigated areas (a comparison between 1990-2000)- by relevant Region

REGIONS	Holdings		Irrigated areas	
	number	Var. % 2000/1990	ha	% 2000/1990
Lombardia	108	0	486,00	3,4
Liguria	8.255	7,3	900,36	58,9
Emilia-Romagna	15	200	7,96	1668,9
Toscana	5.030	300,2	1.491,99	412,9
Lazio	9.080	297,2	977,74	261,9
Basilicata	4.202	98,6	1.500,14	289,4
Puglia	54.548	87,8	65.050,36	79,1
Calabria	17.452	9,5	8.049,51	14,3
Sicilia	17.973	236,7	6.977,11	137,1
Sardegna	7.165	111,5	1.987,46	268,9
Italy	143.308	91,4	89.824,01	81,5

Source: Istat (census 2000)

An ISMEA study of 2003 shows that the irrigation systems in the southern regions have a greater incidence (39.9%) than in northern regions (14.8%).

Table 24: Irrigation systems (% of olive farms adopting irrigation systems on the total farms)

	Farms adopting irrigation systems	Not irrigated farms
Regions	%	%
Liguria	20	80.0
Marche	16.5	83.5
Toscana	13.4	86.6
Umbria	9.0	91.0
Campania	21.8	78.2
Lazio	11.4	88.6
Abruzzo	19.9	80.1
Molise	1.3	98.7
Basilicata	36.7	63.3
Puglia	63.3	36.7
Calabria	26.3	73.7
Sicilia	39.7	60.3
Sardegna	42.8	57.2
Other Regions	27.4	72.6
Total Italy	32.4	67.6
Centre-North Italy	14.8	85.2
South Italy	39.4	60.6

Source: ISMEA (2003)

- *Evolution of cultivating techniques:*

With respect to the cultivation practices, in the southern regions the mechanisation level is higher.

Table 25: Harvest techniques

	Shakers	Facilitators	Manual
Total Italy	21.8	32.4	45.8
Centre North	10.2	26.7	63.1
South	26.5	34.7	38.9

Source: ISMEA

Table 26: Pruning techniques

	Mechanised	Manual
Italy	17.4	82.6
Centre – North	13.1	86.9
South	19.2	80.8

Source: ISMEA

By combining all the previous data on cultivation techniques with density of plantation data (ISTAT), we have defined the main Italian olive production systems. We have not taken into account the *intensive modern plantations* classification, because of its irrelevance at national level, as we can found only few examples of this kind of plantations (Tuscany, Calabria, Campania, Puglia, and Sicilia).

Table 27 : Distribution of different systems of olive grove cultivation (2000)

	Density of plantation	Position of the soil %		Irrigation systems %		Harvest techniques %		Pruning techniques %	
		Plain	Slopes	Present	No present	Manual	shakers	Manual	mechanised
Low input traditional plantations and terraces									
Liguria	High	40		20	80	63		87	13
Toscana	High	64 light slopes		13	87	63		87	13
Umbria	High	90 slopes		9	91	63		87	13
Marche	Low	> 90 slopes		16,5	83,5	63		87	13
Intensified traditional plantations									
Puglia	High	40,4 plain 60 light slopes		63			>50		80,8
Calabria	Medium	40% plain 60% strong slopes		26,3	73,7		>50		80,8
Sicilia	Low	34,1 plain > 50% slopes		42,8	57,2		>50		80,8

Source: elaboration on ISMEA (2004) and ISTAT data

The broad categories presented here reflect different environmental considerations associated with olive production.

As a result of their particular plantation characteristics and farming practices, the low-input traditional plantations have potentially the highest natural value (biodiversity and landscape value) and most positive effects (such as water management in upland areas) as well as the least negative effects on the environment. These systems are also the least viable in economic terms and hence most vulnerable to abandonment.

On the contrary, negative environmental impact has to be looked for in intensive specialised large farms.

However, from the data above, it emerges that intensification has not been homogeneous in Italy. If there is some trend to intensification, it has therefore to be found in localised area and targeted farms, and namely specialized farms in southern Italy. In these areas, intensive systems have been developed mainly due to availability of irrigation water, such as in Puglia. If we look at irrigation systems as an indicator of intensification, we can see that Puglia and Sardinia show the highest percentage of irrigated surface: 63% and 42% respectively. (INEA, 1997).

- **Evolution of holding specialisation (OTE)**

According to ISTAT census, specialised holdings in olive growing in Italy are 643.539, of which more than 65% have a surface below 1 ha.

Table 28 : Number of specialised holdings in olive growing by size

Less than 1	1 - 2	2 - 5	5 - 10	10 – 20	20 - 30	30 – 50	50 – 100	100 and more	Total
416.186	122.508	76.512	18.487	6.376	1.612	997	608	253	643.539

Source: ISTAT census

There is an increase in number of specialised holdings, as in the examined period they have grown by 51,9%, with an increase of farmed land area and labour days.

Table 29 : Change of specialised holdings, related surface and labour days 1990-2000

Farms		Utilised land area		Labour days	
Number	Var. %	Ha	Var. %	number	Var. %
643.539	51,9	954.907,96	32,2	40.268.234	28,5

Source: ISTAT census

Specialised holdings show a consistent trend to turn into irrigation systems (91%).

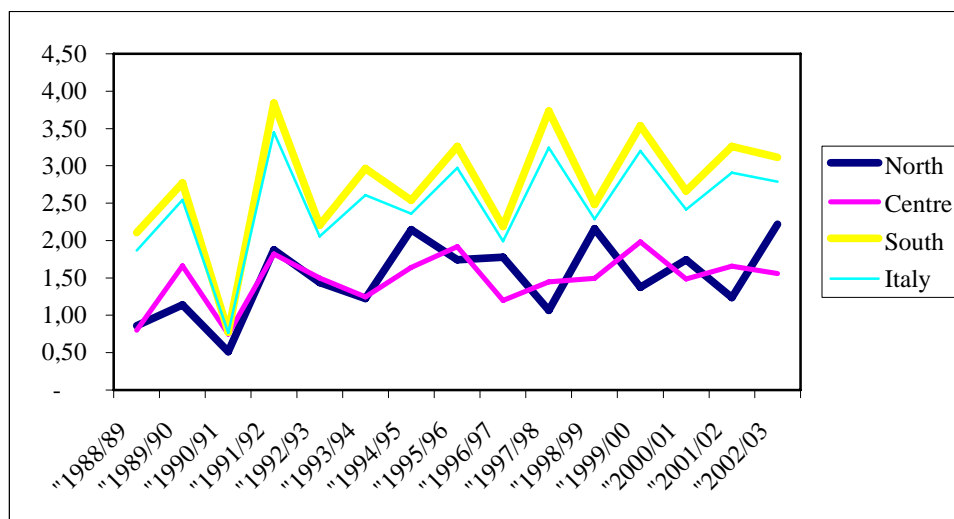
Table 30 : Change of irrigation in specialised holdings and related land surface 1990-2000

	Farms	Var %	Irrigated land	Var %
Specialised holdings	143.308	91,4	89.824,01	81,5

Source: ISTAT census

- Evolution of yields**

As we said above, there is a significant diversity in cultivation systems between macroregions: southern regions show more intensive cultivation systems, which turns in yields which are sometimes double than the northern regions.

Chart 7 : Olive yields (tons/ha) by macroregion

Source : Agecontrol (2002)

In general, data put into evidence a trend to average yields increase, and in particular, a reduction in the annual variations in production. As the experts confirm, this trend is related to the improvement of cultivation practices (mainly depending on the adoption of irrigation systems).

2.1.1.3 Role of CMO

All the interviewed people agree that the CMO olive regime has not promoted olive groves intensification. The interviews make clear that, although intensification has occurred in specific areas, this phenomenon was not linked with the *premia*: the level of production-based subsidies is considered too low as an incentive for intensification, rather it could represent a “tool” to compensate a part of production costs (in particular, it could be an help to cover the costs of processing olives).

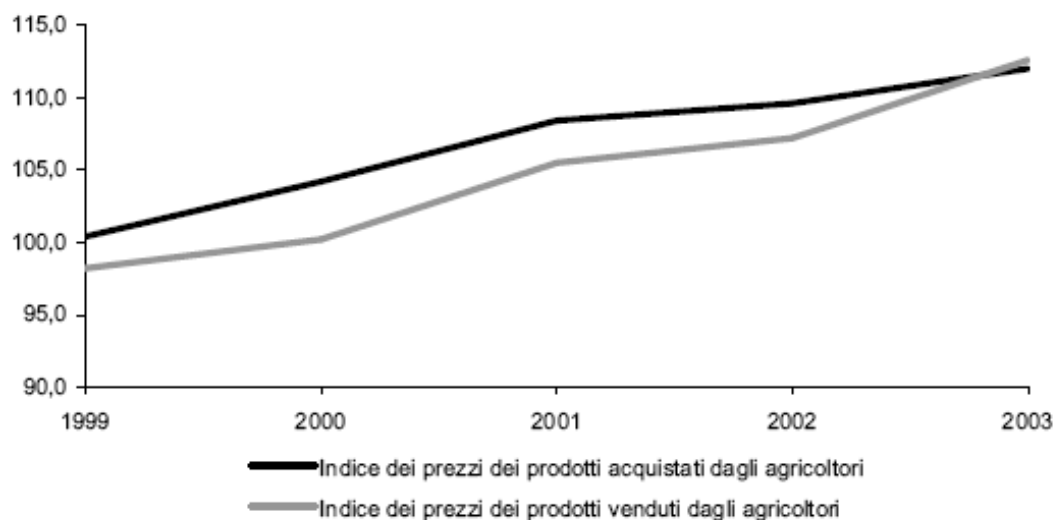
This answers contrast a bit with our own perception. In general, in fact, there is a large consensus in the literature over the fact that coupled subsidies incentives intensification, provided that:

- ❖ The level of subsidies is enough to incentives producers to intensify;
- ❖ Costs don't grow at the same rate of production;
- ❖ Prices are steady or growing;

If we look at the data below we can see that these conditions are met only in part. The following data show that:

- ❖ olive growing has undergone the same phenomenon of price-costs squeeze that other sectors have experienced (Ploeg et al. 2000).

Chart 8 : Prices index (level) of inputs and prices level of products sold. (1995=100) 1990-2003



Source: ISTAT – Annuario statistico 2004

- ❖ Production costs have increased. The following table reports the cost index (1995=100) for some categories:

Table 31: Cost index (1995=100) by category

Description	Cost index – February 2004 (1995=100)
Fertilisers	108,24
Pesticides	103,77
Energy costs	112,99
Others material	108,32
Other costs	122,43
Salaries	122,78
Total index costs oliviculture	117,38

Source: ISMEA, RICA-INEA

- ❖ On the contrary, index of prices of olive oil has fallen. (1995=100) (source: Ismea). In 2005, average price of extra virgin olive oil to producers can range from 5,5 euro/kg to 2,9 euro/kg, while lower quality oil can be priced far less in Calabria, 2,4 euro/kg.
- ❖ Level of the subsidy over the gross product value (RICA) changes very much from the northern to the southern regions. If we compare average prices with the subsidy allowed by the CMO (for the moment we don't consider the abatement derived from the application of MGQ), the weight of subsidy over Gross product value ranges between 27% (for an average of northern producers) and 45% (for an average of southern producer).

Table 32: Weight of subsidies over Gross product value by macroregion

	South	North
Average price for 100 kg oil	300	500
Average production 1 ha olive grove (100 kg per ha)	5,8	3,2
Gross product value 1 ha olive grove	1740	1600
Subsidy per 100 kg oil	135	135
Subsidy per ha	783	432
Weight subsidy / gross product value	45,00	27,00

Source: ISMEA, RICA-INEA

Therefore, the level of incentive is much greater in southern farms than in northern ones. Furthermore, in areas where the quality level of oil is very low, the subsidy can have even a higher economic weight.

If we take into account another aspect of the farm size, it is possible to say that larger farms are far more benefited by direct aid than small farms. This conclusion is also supported by a recent study of INEA (2004), which shows the following data:

Table 33: Weight of subsidies on different size farms

Small		Medium		Large	
Aid/GPV (%)	Aid/ha	Aid/GPV (%)	Aid/ha	Aid/GPV (%)	Aid/ha
32	872	37	978	41	1003

Source: INEA, 2004

As the subsidy is related to production, it is a weak incentive for small farmers not only to intensify, but also to carry out olive growing at all. It implies that the coupled subsidy doesn't prevent from the abandonment of traditional plantations, especially those sited on sloping land, which are considered to have a high landscape value.

There is a further aspect to be considered. Given the present production structure, with a large share of small farms with traditional cultivation systems, coupled subsidies generate an uneven distribution of costs and benefits. In particular, they don't sustain positive externalities and encourage negative externalities (Casini et al, 2003). Indeed, traditional low-input plantations are barely viable under the present support system and many do not produce a positive net income. For instance, on sloping sites, traditional plantations are often laid out in terraces, thus leading high labour costs (maintenance of terraces, difficulties of mechanisation, etc.).

2.1.1.4 Results from the case study in Sicilia.

The case study has confirmed this divergence between small on one side and middle and large farms on another.

For *small farmers*, it is quite hard to significantly increase the yield in that kind of orchards, where the trees are usually old and grown in a traditional pattern (high distance between the trees; big canopy development; difficult to be sprayed; etc.), especially when positioned on sloping land. Moreover, in such kind of orchards the labour incidence on the total production cost is typically very high (60,8%), where the manual harvest alone represents the 40% of the cost (CORERAS, 2003): as a consequence, further investments are not cost-effective. The most common factor of intensification is represented by the introduction of drip irrigation, which is usually practiced in emergency situations, in order to mitigate alternate bearing.

The general statement of the entire group was that the level of the premium is too low to provoke intensification: it may help, at most, to cover part of the production costs.

Medium-large capitalistic holdings - that instead have generally intensified the groves over the last 15 years, by introducing mechanisation for the harvest, drip irrigation systems and productive cultivars that require higher inputs of fertilisers and agro-chemicals - reported that the improvements were purposely done to enhance the overall farm efficiency, with the aim to empower the company's

position within the (high quality) extra-virgin olive oil international market. In fact, the expectations of higher subsidies did not play a determining role in the choice: as a matter of fact, the major part of the respondents considers the level of the premium not fully satisfying.

Still, only two of the respondents (the biggest holdings indeed) stated that the premium has been crucial to carry out a certain intensification – namely it was the means but not the cause -, e.g. to increase the orchard density or introduction of irrigation; in addition to that, the CMO aid helped them to keep on farming during times of market crisis.

Some respondents, among the entrepreneurs of large holdings, admitted that the intensive orchard management resulted sometimes in (serious) environmental drawbacks, e.g. increase of soil erosion on sloping land; possible reduction of biodiversity due to herbicides and pesticides, etc.. It has been also reported that some groves on slopes were abandoned in the past, since no more suitable for mechanization: the abandonment caused the “re-naturalization” of the grove, with wild shrubs growing between the trees, making the grove prone to fire and changing the original landscape.

Water resources were not depleted, according to the respondents, since the major part of the farms has its own water reservoir, fed by rain water. To this regard, all the farmers stated that irrigation is carried out only in drought periods, being an emergency intervention.

Finally, the respondents stated that environmental problems do not straight originate from the CMO policies: to some extent, they are the consequence of a more market-oriented strategy for high quality oil production.

In the case study of Sicily, both the categories of producers did not give emphasis to a direct link between the CMO subsidising policy and intensification trend in their holdings. Rather, they do consider the possible negative impacts on the agro-environment as result of the crop management per se. Of course, for small producers the premium has a negligible incidence on their budget, given the low volumes of production. For the medium-big producers, instead, the amount of the production-based premium may significantly affect their economical performance, but it is rather perceived as a sort of “shock absorber”, rather than a primary factor in itself to intensify production.

2.1.1.5 Environmental impact of intensification

Soil erosion

One of the most negative environmental impact of intensive olive groves is due to the spraying of residual herbicides to control weeds, especially in the Southern regions, such as Puglia, where olives are traditionally harvested from the ground (INEA, 1997). Such systematic clearance of vegetation by chemical mean has an adverse effect on the loss of organic matter from the soil. On the other hand, in Tuscany and in the other regions of the Centre Italy, the practice of *permanent* grass-cover, with crops such as, barley or vetch or spontaneous vegetations, is becoming widespread. This system allows reducing the risk of soil erosion (Benedetti *et al.*; Mari *et al.*; Gucci).

Exploitation of scarce water resources:

Although drip irrigation is the most widespread system of irrigation in the new olive plantations, (UNPROL) irrigated olive plantations cover an increasingly large area in some southern regions with a considerable impact on water resources (INEA, 1997). As matter of fact, according to the researches of the Bari University, the main crucial environmental impact linked to the intensification process of the olive grove cultivations is the excessive exploitation of the water resources, which is very relevant in Puglia, as a region with serious water deficit and salinisation problems. Nevertheless, the interlocutors state that, where the cultivation systems are more intensive (in the North part of Puglia) the strong introduction of irrigation systems has started before the implementation of the CMO subsidies.

The researches of the Bari University do not give emphasis on other environmental impacts linked to intensification: the impacts on the erosion of soil is considered not relevant as the intensive pattern has been followed mainly in the olive growing farms sited on plains lands, and regarding the degradation of habitats, they judge not relevant as well.

Degradation of habitats and landscapes:

In general, olive growing has a positive impact on landscape. Intensification can cause degradation as irrigation equipment and pruning techniques can limit the aesthetic potential of olive groves. As for habitats, the impact should be looked for mainly in the use of agrochemicals.

Casini et al. (2003) have proposed a set of indicators for the evaluation of the environmental value of olive groves. The analysis has been carried out by joining the relevance of the olive cultivation together with the whole farmed land (and so, with the other agricultural activities) and the position of the soils (plain or slopes). However, the emphasis of the study is on the positive environmental impact of olive growing (mainly traditional systems) and on their multifunctional value. In general, the debate on olive growing in Italy is related to its positive impact (especially on landscape).

Pollution

Increase in pollution linked to intensification is mainly related to the increase use of external inputs. Apart from that, even it is not strictly related to the olive production systems, according to our respondents ⁶that the second processing phase for the low quality olive oils (“lamp oil”) is responsible for the most important negative environmental impacts within the olive oil supply chain, in terms of chemical contaminations of soils and ground water, due to the outputs of the refining process (Fontanazza).

It can also be said that the negative effects of intensification could be reduced with the improvement of fertilisation techniques and pest management. The greatest part of research activity is nowadays addressed to sustainable techniques and to the rationalisation of external inputs.

Synthetic answer

There is a large agreement over the fact that CMO olive regime in Italy has promoted intensification in an uneven way. These conclusions can be drawn from the following facts:

Starting conditions	Prevalence of traditional and intensified cultivation systems
Evolution of cultivated area	A slight increase in surface (from 1,02 millions ha to 1,08 millions ha).
Evolution of holding size	Decreased from 0,94 ha to 0,89 ha
Evolution of yields	A tendency to decrease, more marked in centre-north than in the southern regions
Evolution of production systems	Trend towards quality rather than quantity, also related to the implementation of operational plans
Weight of CAP subsidy over income generated from the production	Between 27% in the northern regions and 45% in the southern regions
Evolution of irrigated areas	Great increase of irrigated areas in all Italian territory; strong incidence of the irrigation in the southern regions

However, this conclusion should be articulated geographically, as we can put into evidence different starting conditions and somewhat different trends.

Starting conditions	Prevalence of intensified systems in southern Italy
Evolution of cultivated area	Decrease in northern Italy, increase in southern Italy
Evolution of holding size	
Evolution of yields	Decrease in northern Italy, increase and then, trend to decrease in southern Italy (sign that a quality policy is starting to be implemented)
Evolution of production systems	Turn to quality in Northern Italy, modernisation in southern Italy, but some hints of turn to quality production in southern Italy
Weight of CMO subsidy over income	Less relevant in northern Italy Relevant, but decreasing, in southern Italy

Where intensification has occurred, it has implied the introduction of specialised cultivars (in some plain areas, old olive trees have been grubbed out, especially at the end of the 1980s, and new, easier

⁶ CNR Perugia

and more productive cultivars were planted), specific farming techniques, irrigation, and a heavy mechanisation.

Given the present production structure, with a large share of small farms with traditional cultivation systems, coupled subsidies represent a weak incentive for small farmers not only to intensify, but also to carry out olive growing at all, because of the increasing trend of production costs, while their yields are extremely low. It implies that the coupled subsidy doesn't prevent from abandonment of traditional cultivation systems, especially those sited on sloping land, which are considered to have a high landscape value.

Data show that intensification process has occurred mainly in southern regions of Italy, where the incidence of large specialised intensive irrigated farms is high. Given that, the impact of intensification can be assessed as follows:

On soil erosion: the impact can be negative, if intensification is not counterbalanced by environmentally friendly practices implementation;

On habitats and landscape: there is a moderate impact on landscapes and a stronger impact on micro fauna, due to the use of chemical inputs.

On pollution: there is an impact on soil and ground water, due to the increase in the use of agrochemicals.

On scarce water resources: it is considered the most relevant negative environmental effect linked to intensive olive groves, although in new plantations drip irrigation systems are adopted.

Question 2(O1). Do the production based subsidies of the CMO lead to extra inputs of agrochemicals as an insurance premium for the related income support and if so: what are the impacts of this on flora and fauna (biodiversity) and pollution, especially of soil and water?

Detailed answer

From the answers of our respondents a large variety of fertilisers and pesticides use rate emerges. A synthetic table shows the main characteristics of different cultivation systems:

Table 34 : Uses of chemicals inputs –by different olive groves cultivation systems

	Toscana traditional	Calabria semi-intensive	Puglia intensive
Yield (tons/ha)	3	4	5
Nitrogen (Kg /ha)	50-70	70-80	80-100
Dimethoate (kg /ha)	3	4	4

Source: Interviewed experts

According to the interviews⁷, the intensification of olive growing in the southern regions is accompanied by increased use of extra-input, especially fertilisers and pesticides (in the Mediterranean regions, the most harmful insect for olive productions is *Bactrocera olea*). The combination of systematic use of pesticides together with mechanised harvesting provides to enhance both productivity and quality of the olive oil. Other common risk linked to these intensive production systems which has been taken into account by interlocutors is the diffusion of complex fertilizers use (N;P;K): as matter of fact, researchers state that sometimes the use of these inputs occurs without any analysis of the effective plant needs, with consequently pollution effects on the soils and on the ground waters.

On the contrary, the producers' associations representatives (belonging both to the Centre-Northern and to the Southern Regions) underline the CMO implementation has provided a more rational use of agrochemical inputs. As matter of fact, at the moment, the main role played by the producers' association should be to offer an appropriate technical assistance to the farmers, in order to suggest them the optimum level of the chemical inputs, by continuously monitoring activities and adopting pre-emptive calendar cure in the case of pest control.

The implementation of Good Practice Codes has been a useful occasion to align academic knowledge with daily practices. The most relevant good practices are the following:

⁷ Regarding the second question, opinions are stressed by University researchers (University of Pisa and University of Bari); research centres (CNR of Perugia); the CMO institutional responsible of Liguria Region; the producers' association leaders (representatives of the Centre-North Italy and of the South Italy).

- ❖ use, as much as possible, of manure and of green manure;
- ❖ fertilisation, if possible, combined with irrigation (this limits the leaking of nutrients);
- ❖ localised irrigation;
- ❖ annual pruning (a common practice, especially in southern Italy, is pruning every two years);
- ❖ weed control through grass growing and cutting;
- ❖ adoption of the 'economic threshold' principle to pest control (that is, intervening only when there is a determined threshold of attack by pests). It is very rare that more than 3 interventions are suggested, depending on the areas and on climatic conditions;
- ❖ harvesting on the tree rather than on the ground, possibly with facilitating machines. In many cases it is strongly recommended that, in order to improve quality, the harvest has to be done as soon as possible.

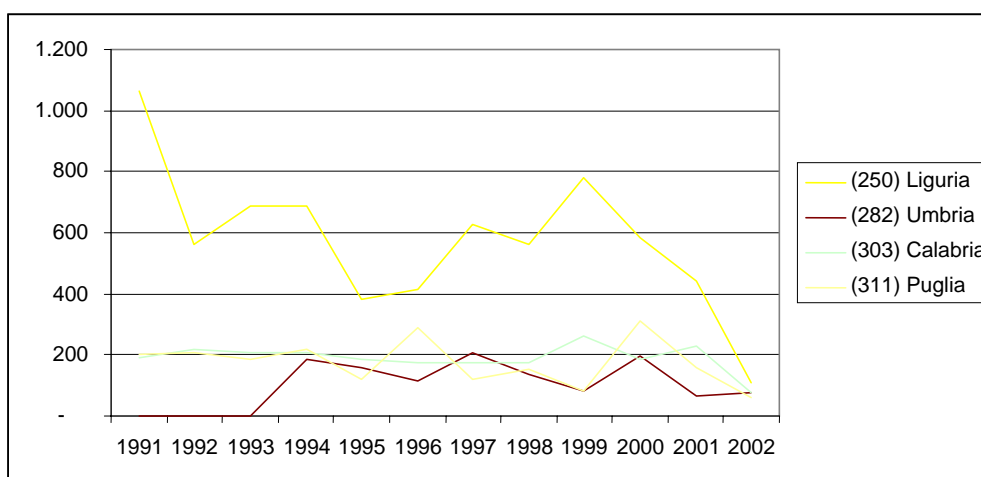
These practices are strongly recommended, as they provide a positive economic impact as well, in terms of:

- allowing saving on input costs;
- reducing the yearly yield fluctuation;
- improving quality production and therefore, the product price.

In general, it can be said that olive growing is much less input demanding than other permanent crops. For example, a hectare of intensive olive growing requires at most 3 pesticide applications, whereas specialised fruit cultivations (for example, apples) require at least 7 pesticide application [Dipartimento di coltura e difesa delle specie legnose, Pisa].

According to the literature, coupled support shifts the convenience towards quantity vs. quality. If the level of support per unit of production is sufficiently high, farmers are fostered to raise the level of inputs. But when we look at farm data, it emerges clearly a tendency to reduce the use of chemical inputs. As matter of fact, RICA data for some relevant regions show that the total expenditure of specialised farms per ha (considering the prices adjusted to the annual indexes) does not increase. Yet, in the northern regions such as in Liguria, the expenditure per hectare has significantly decreased over the last years.

Chart 9: Pesticides' and fertilisers' average expenditure per ha in specialised farms in oliviculture; by regions (1991-2002). Constant prices



Source: RICA data

When we look at farm data, it emerges clearly a tendency to a reduction of the weight of fertilisers' and pesticides' costs on the total output. If we consider these data as proxies of the use of chemical inputs, we can affirm that a rationalisation of external input use has happened.

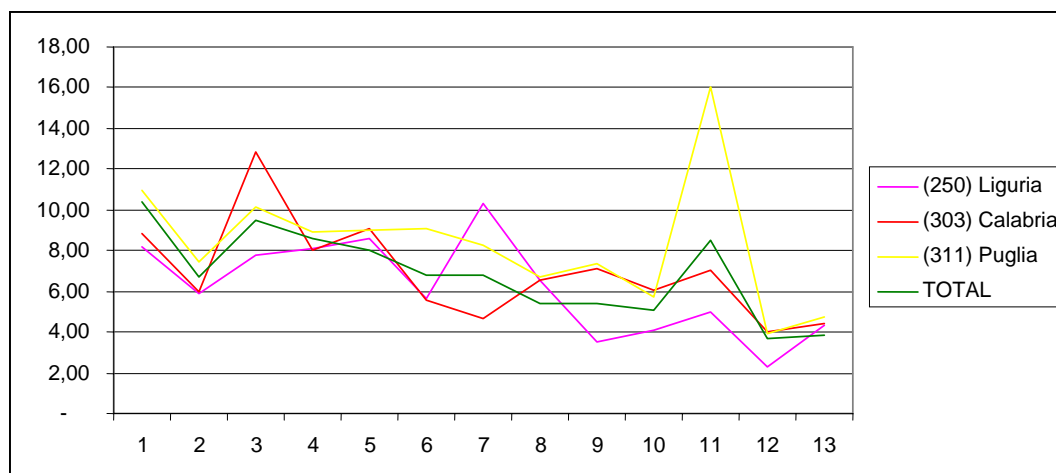
Chart 10: Weight of pesticides' and fertilisers' costs over total output (%) for specialised farms in oliviculture; by economic size of farm



Source: RICA data

Larger farms present a higher level of use of fertilisers and pesticides than smaller farms. In addition, if we look at some regions in which RICA data have a complete series, we can see that in southern regions fertilisers' and pesticides' costs have a higher impact on total output. However, the same decreasing trend can be recorded in all regions.

Chart 11: Weight of pesticides' and fertilisers' costs over total output for specialised farms in oliviculture; by significant regions



Source: RICA data

Synthetic answer

In general, it can be said that olive growing is much less input demanding than other permanent crops. For example, an ha of intensive oliviculture requires an average rate of 100 kg of Nitrogen, whereas a fruit orchard requires not less than 250-300 kg. It is for this reason that in Italy olive growing has been one of the crops with the highest implementation of the agri-environment measures.

It cannot be excluded that a higher level of input is used in the hope to gain an insurance premium, but given the limited range of pests affecting olive trees, this does not turn into a very high level of pesticide and fertiliser use. However, according to the literature, coupled support biases the attitude towards quantity vs. quality. For instance, if the level of support per unit of production is sufficiently high, farmers are fostered to raise the level of inputs. Data show that this happens mainly in the largest professional olive growing farms in the southern regions.

2.1.2 Olive – Theme 2: farming practices

Question 1(O2): Does the CMO support sustainable farming practices that are beneficial to the environment such as organic and integrated production systems?

Detailed answer

2.1.2.1 Context

A national overview of organic olive oil production trends

In Italy the organic olive-oil production has increased until 2001: at the end of the 1980s, the olive-groves organic area was only 200 ha, whereas in 1996 it raised 6.200 ha, plus 15.200 ha under conversion (Santucci, 1997). In the last two years there has been a reduction in the area certified as organic.

In 2002 the organic olive oil production was mainly concentrated in the southern regions (64%), especially, in Calabria (31,6%), Puglia (22,6%) and Sicilia, followed by Tuscany (9,5%) (ISMEA, 2004).

Table 35: Area of organic olive groves (organic and in conversion) ha and % on the total olive groves area-by Region

	1994		1998		1999		2000		2002*		% 1994-2000
	ha	%	ha	%	ha	%	ha	%	ha	%	%
Piemonte	1	0,0	1	0,0	571	1,0	1	0,0	1	0,0	0,0
Lombardia	11	0,2	34	0,1	239	0,4	86	0,1	108	0,68	681,8
Trentino A.A.	0	0,0	6	0,0	92	0,2	5	0,0	6	0,04	n.a.
Veneto	101	1,9	73	0,2	534	0,9	82	0,1	176	1,11	-18,8
Liguria	18	0,3	124	0,3	165	0,3	143	0,2	180	1,14	694,4
Emilia R.	11	0,2	46	0,1	159	0,3	176	0,2	304	1,92	1500,0
North Italy	142	2,6	284	0,7	1760	2,9	493	0,6	775	0,76	n.a.
Toscana	1336	24,5	2.433	5,4	1.877	3,1	6.418	7,2	8.720	8,54	380,4
Umbria	399	7,3	712	1,6	1.479	2,5	1.619	1,8	4.394	4,31	305,8
Marche	61	1,1	227	0,5	305	0,5	462	0,5	818	0,8	657,4
Lazio	96	1,8	3.032	6,7	2.260	3,8	2.929	3,3	5.585	5,47	2.951,0
Centre Italy	1892	34,7	6.404	14,2	5.921	9,9	11.428	12,8	19.517	19,12	n.a.
Abruzzo	108	2,0	317	0,7	483	0,8	1.104	1,2	2.663	2,61	922,2
Molise	51	0,9	57	0,1	144	0,2	971	1,1	1.262	1,24	1.803,9
Campania	259	4,8	1.822	4,0	1.226	2,0	2.072	2,3	4.668	4,75	700,0
Puglia	396	7,3	21.707	48,2	18.575	31	24.174	27,3	23.092	22,63	6.004,5
Basilicata	16	0,3	103	0,2	457	0,8	237	0,3	-	-	1.381
Calabria	1.342	24,6	5.963	13,3	10.113	16,9	30.948	34,9	32.045	31,40	2.206,1
Sicilia	1.030	18,9	5.279	11,7	7.237	12,1	8.721	9,8	4.904	4,8	746,7
Sardegna	211	3,9	3.061	6,8	14.011	23,4	8.494	9,6	10.911	10,69	3.925,6
South Italy	7481	62,6	51685	85	67608	87,2	100563	86,5	120129	80,12	
Italy	5.447	100	44.999	100	59.933	100	88.644	100	102.05	100	1527

Source: Lunati, 2000 et 2001; *Fiao data, 2002

Integrated production

In order to assess the evolution of low inputs olive groves, we will refer to the level of implementation of the Reg 2078/92. More in depth, we will focus on the implementation of the measure A (agro-chemical input reduction; organic farming), the measure D (actions in areas of special biodiversity interest) and the measure B (maintenance of extensive systems).

Table 36: Implementation of the measures A, B and D (Reg.2078/92) in Italy in 1999

	Total area under integrated regulation (ha)	% on the total area			
		Italy	North	Centre	South and Islands
Olive groves	51.897	7,2	21,4	13,3	6,5
Total integrated crops	734.796	11,3	16,2	11	6,8

Source: Inea elaboration on ISTAT and regional and provincial data

The low inputs olive oil production is more concentrated in the northern regions (21,4% on the total area), whereas in the southern regions it represents only the 6,5% on the total area.

Furthermore, in Italy retailers capitalised on a perceived demand for environmental friendly production by launching own-label Integrated Production for fruit and vegetable.

The range of IP schemes (EurepGap) across the region of Italy is detailed in the following table:

Table 37: Integrated Olive Oil Production in Italy (ha) 2003

Region	Olives
Val d'Aosta	0
Piemonte	0
Lombardia	0
Trentino AltoAdige	0
Veneto	0
Friuli Venezia Giulia	0
Emilia Romagna	0
Toscana	8.330
Marche	0
Molise	1.015
Puglia	10.026
Basilicata	210
Sicilia	0
Sardegna	0
Total	19.581

Source: Eurep

According to the previous data, Puglia and Toscana are the regions where low inputs olive oil production has been more implemented.

Content of the POs programmes in relation with environmental issues

Within the OPs, the activities related to the environmental issues are the following:

- **Sector 2**- Improvement of the olive groves environmental impacts (in compliance with Reg. 1331/2002, art. 4, comma 2)
- **Sector 3** - Improvement of the quality of the olive oil and olives production (in compliance with Reg. 1334/2002, art. 4, comma 3).

In order to answer to the question we will refer to the activities carried out by the following producers associations, which are representative of different olive groves areas:

- APROL (Lecce- Puglia)
- ASSOPROLI (Cosenza-Calabria)
- Associazione olivicoltori toscani” (*Tuscan olive growers’ association*)

Table 38: Planned activities related to the sector n.2 carried out by APROL

Description	Indicators of implementation	Objectives
Measure a: Collective actions aimed at preserving the high environmental value olive groves	Elaboration of the Intervention Plan Technical assistance service	Area (ha): 100 Holdings (number): 50 People in charge of the measure: 1 technician (5 month/man)
Measure b: Elaboration of <i>Good Agriculture Practices</i> for olive groves, which should be based on environmental criteria which fit with the local environmental features (involvement of the olive growers into fine-tuning and application of the collective Code of Practices)	Definition of Code of Practices	1 Code of practices
	Technical assistance to the holdings involved	Holdings: 60 Area: 600 ha People in charge of the t.a: 7 (43 month/man)
	Technical assistance for reaching the environmental certifications (EMAS)	Holdings: 10 Area: 100 ha People in charge of the t.a: 1 (192 hours)
	Dissemination and formation activities.	Dissemination of brochures, Code of Practices, web sites, lessons to farmers, workshops, Cd rom/DVD, tv programs
Measure c: activation of demonstrative projects (<i>pilot schemes</i>) aimed at environmental protection and landscape preservation ⁸	2 typologies of experimental fields: • Multifunctional olive groves • Organic olive groves	3 organic olive grove fields

Table 39: Planned activities related to the sector n.3 carried out by APROL (focus only on those with environmental relevance)

Description	Indicators of implementation	Objectives
Measure a: Improvement of the cultivation conditions (by focusing on low impact pest management)	Technical assistance	Holdings: 80 Area: ? ha People in charge of the t.a: 4 (6 months/man)
	Improvement of harvesting methods (by introducing machineries)	n. 30
Measure b: Valorisation of processing by-products	Use of specific barrel carts	n. 5

- **ASSOPROLI** (Cosenza, Calabria)

Asso.Pr.Oli (Associazione Provinciale Produttori Olivicoli di Cosenza) is the biggest olive growers' association of the Calabria: it was set up in 1978, belonging to UNAPROL, and it represents approximately 21.000 producers with an olive grove area of 210.000 ha and 2.400.000 olive plants.

⁸ The "pilot" schemes are aimed mainly at the diffusion of low input techniques, especially those based on integrated pest management: mass trapping, no tillage.

There are also several initiatives in order to follow the conversion of the olive growers to organic farming.

Table 40: Planned activities related to the sector n.2 carried out by ASSOPROLI

Description	Indicators of implementation	Objectives
Measure b: Elaboration of <i>Good Agriculture Practices</i> for olive groves, which should be based on environmental criteria which fit with the local environmental features (involvement of the olive growers into fine-tuning and application of the collective Code of Practices)	Definition of Code of Practices	1 Code of practices
	Technical assistance to the holdings involved	Holdings (number): 150 Area (ha): 20.000
	Activities of dissemination and formation	Dissemination of brochures, Code of Practices, web sites, lessons to farmers, workshops, Cd rom/DVD...
Measure c: activation of demonstrative projects (<i>pilot schemes</i>) aimed to environmental protection and landscape preservation	Organic olive groves	Holdings (number): 20

Table 41: Planned activities related to the sector n.3 carried out by ASSOPROLI (focus only on those with environmental relevance)

Description	Indicators of implementation	Objectives
Measure a: improvement of the cultivation conditions (by focusing on low impact pest management)	Technical assistance	Holdings: Area: ? ha People in charge of the t.a: 4 (6 month/man)
Measure b: valorisation of processing by-products		The measure is still under evaluation

- **Associazione olivicoltori toscani** (*Tuscan olive growers' association*)

In Tuscany, the “Associazione olivicoltori toscani” (*Tuscan olive growers' association*, which was set up in 1982 and it represents approximately 25.000 producers) has carried out 3 demonstrative projects starting from the marketing year 2003-2004 (in compliance with Reg. UE 528/99 and Reg. UE 1334/02):

The following table shows a partial evaluation (after 2 years from the beginning of the projects) of the impact of the measures on the Tuscan territory:

Table 42: Activities related to the sector n.2 carried out by Associazione olivicoltori toscani

Description	Indicators of implementation	Objectives
Measure b: Elaboration of <i>Good Agriculture Practices</i> for olive groves, which should be based on environmental criteria which fit with the local environmental features (involvement of the olive growers into fine-tuning and application of the collective Code of Practices)	Definition of Code of Practices	1 Code of practices
	Technical assistance to the holdings involved	Holdings (number): 135 Area (ha): ? (all the holdings are located in Grosseto Province) Number of plants: 16.000 People in charge of t.a.: 1-2
Measure c: activation of demonstrative projects (<i>pilot schemes</i>) aimed at environmental protection and landscape preservation	Organic olive groves: all the farms involved in this project receive agronomic assistance during the period June- October	Holdings (number): 39 Area (ha): ? (all the holdings are located in Siena Province) People in charge of t.a.: 1

Table 43: Activities related to the sector n.3 carried out by Associazione Olivicoltori Toscani (focus only on those with environmental relevance)

Description	Indicators of implementation	Objectives
Measure a: improvement of the cultivation conditions (by focusing on low impact pest management)	Technical assistance (monitoring activities by setting <i>Bactrocera olea</i> traps): this project has been aimed at the rational pest management by using 1-2 « dicotrap » per farm (chrome traps) and each week the technicians should check the level of infestation. The setting of the traps are funded for the 75% by the Association	<ul style="list-style-type: none"> • Holdings: 343 • Area: ? ha (Grosseto, Florence, Pisa, Lucca, Livorno) • Number of plants: 116.335 • People in charge of the t.a: 1-2 per Province

2.1.2.2 Level of implementation

From the analysis of the distribution of the subsidies received by the producers' associations, an overall assessment of the operational programs level of implementation emerges. With this respect, we will refer to the **measure b** (*Collective actions aimed to preserve high environmental value olive groves*) and to the **measure c** (*Definition of Good Agriculture Practices for olive groves*), which are related to the **sector 2** (*Improvement of the olive groves environmental impacts*).

Table 44: Distribution of aid for measure b)* and c) (Reg CE 1638/98) by Region.**

region	total amount (EUR)
Abruzzo	383.747,64
Basilicata	296.513,11
Calabria	1.607.306,73
Campania	625.728,64
Emilia Romagna	115.975,57
Friuli Venezia Giulia	106.872,83
Lazio	562.768,07
Liguria	188.797,43
Lombardia	116.734,13
Marche	153.145,06
Molise	180.453,26
Puglia	2.777.007,98
Sardegna	294.237,43
Sicilia	976.183,88
Toscana	568.077,99
Trentino Alto Adige	291.203,19
Umbria	107.631,39
Veneto	129.629,67
Total	9.482.014,00

* Collective actions aimed to preserve high environmental value olive groves

**Definition of Good Agriculture Practices for olive groves

Source: Ministry of Agricultural Policies (2003)

According to the data, Calabria, Puglia and Sicilia⁹ are the regions which present the higher level of implementation of the environmental measures.

In order to analysis more in depth the level of implementation in these regions, we will refer to some operational programs evaluations of the most representatives producers' associations in terms of number of members involved.

Regarding the APROL OP evaluation, the following table shows its level of implementation:

Table 45: Financial plan of the Aprot OP (EUR)

Sector of activity	National funding	European funding	Members quota	Total funding
SECTOR 2: Improvement of environmental impact	0	326.756,75	0	326.756,75
SECTOR 3: Improvement of the olive oil quality	12.551,57	337.716	12.551,27	362.819,05
Total	12.551,57	664.473,26	12.551,27	689.575,80

The evaluation of the environmental performance could be realised by taking into account the effective level of implementation of each measure, in terms of number of holdings and area involved in the projects:

⁹ See the case-study analysis for the evaluation of the operational programs level of implementation in Sicily

Table 46 : Level of implementation of the activities related to the sector n.2* carried out by APROL

Activity	Results
Measure a: Collective actions aimed at preserving high environmental value olive groves	Area (ha): 100 Holdings (number): 50 People in charge of the measure: 1 technician (5 months/man)
Measure b: Elaboration of <i>Good Agriculture Practices</i> for olive groves, which should be based on environmental criteria which fit with the local environmental features (involvement of the olive growers into fine-tuning and application of the collective Code of Practices)	Holdings (number): 60 + 10 which have received the environmental certification (EMAS) Area: 600 ha + 100 ha with EMAS certification People in charge of the t.a: 6 (42 months/man)
Measure c: activation of demonstrative projects (<i>pilot schemes</i>) aimed to environmental protection and landscape preservation ¹⁰	3 experimental organic olive grove fields

* Improvement of the olive groves environmental impacts

Overall assessment

If we consider the fact that in Puglia there are 269.000 olive growing holdings and among them, the organic holdings are only about 23.092 (Fiao data, 2002), we can conclude that there the impact of the implementation of operational programs has not been so relevant. The same could be said for Tuscany, where olive growing farms are about 78.000, of which more than 8720 are organic. On the other hand, in other regions, such as in Calabria, the OP implementation has been more relevant, as the organic area represents more than 12%(32.000 ha) of the total olive groves area (162.213,57 ha) (ISTAT, 2000).

Anyway, OPs should be evaluated together with the effects of the Reg (UE) 2078/92 and the Reg (UE) 1259/99, as olive growing is one of the sectors which have most benefited from the AEM.

Table 47: Implementation of agri-environmental measures 2000-2006 in Tuscany. Weight of permanent crops on contracts and ha under contract

	n. of contracts	new contracts	number of ha	
			Under contract	of which new contracts
permanent crops	2.332	1.875	9.592	6.426
total	5.009	3.816	41.530	36.726
% on total	46,6	49,1	23,1	17,5

Source: Tuscany RDP evaluation report

2.1.2.3 Results from the case-study

Similar data for Sicilia show that during the period 2000-2006 about 16.000 hectares (10% of total olive groves surface) have been interested by agri-environmental measures.

¹⁰ The "pilot" schemes are aims mainly at the diffusion of low input techniques, especially those based on integrated pest management: mass trapping, no tillage.

There are also several initiatives in order to follow the conversion of the olive growers to organic farming.

Table 48 : Situation of EC Reg. 2078/92 implementation , 1997

Crop	UAA concerned by AEM (ha)	Total UAA of Sicily per crop (ha)	Share of the concerned areas per crop (%)	% of the regional UAA involved by the AEM
Olive	16.837	155.163	10,02%	10,85%

Source: Region Sicilia

After five years, the surface of olive groves covered by agri-environmental measures has reduced. However, this does not imply that farms having a premium would turn into conventional techniques once the agri-environmental contract has expired.

Table 49: Implementation of agri-environmental measures 2002 in Sicily to the olive sector.

	n. farms	Surface (ha)	Payments
Ex 2078/92	2038	3940	642.613
Ex 1257/99	273	1111	545.637

Synthetic answer

According to the producers' association leaders¹¹ CMO regime supports sustainable farming practices that are beneficial to the environment such as organic and integrated production systems.

However, if we analyse the effective impacts of OPs implementation on the territory, it emerges that the limited amount of resources allocated to these measure do not allow covering a large share of olive growers.

2.1.3 Olive – Theme3: specific measures**Question 1(O3): What is the environmental impact of restriction on imports from outside the EU?**

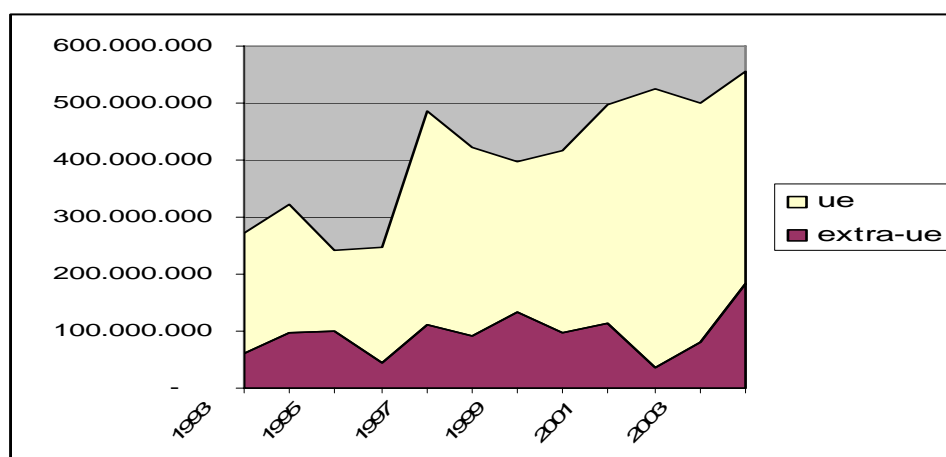
Italy imports about 500.000 tons of olive oil, of which about one third from extra-EU25 countries. Most of the extra-UE imports come from Tunisia, that benefits from a zero tariff contingent of about 53.000 tons. As the data can show, during these years there is no sign of limitation of imports.

We tend to consider the impact of import restrictions as not relevant from the environmental point of view.

Table 50: Italian imports of olive oil 1993-2004 – (Kg) source: ISMEA

	World		Extra UE-25		UE-25	
	Virgin olive oil	Refined olive oil	Virgin olive oil	Refined olive oil	Virgin olive oil	Refined olive oil
1993	270.937.733	29.025.882	60.110.067	3.191.367	210.827.666	25.834.515
1994	321.327.595	12.263.942	98.333.886	4.717.678	222.993.709	7.546.264
1995	240.751.048	9.728.750	99.588.839	4.897.660	141.162.209	4.831.090
1996	248.394.418	7.692.369	45.723.364	2.136.109	202.671.054	5.556.260
1997	485.774.689	33.541.400	111.880.455	7.549.370	373.894.234	25.992.030
1998	422.944.296	20.349.381	91.939.336	2.416.049	331.004.960	17.933.332
1999	398.159.691	23.356.483	134.143.168	9.417.850	264.016.523	13.938.633
2000	415.747.471	22.707.304	96.429.659	2.994.036	319.317.812	19.713.268
2001	497.565.372	22.256.995	115.183.890	1.742.230	382.381.482	20.514.765
2002	525.871.038	34.289.190	35.268.881	130.001	490.602.157	34.159.189
2003	498.895.540	33.543.420	81.272.490	36	417.623.050	33.543.384
2004	556.470.949	22.244.197	183.385.081	5.462.994	373.085.868	16.781.203

¹¹ Unaproa Union, Apròl (Puglia); Assoproli (Bari); Assoproli (Calabria) and Associazione olivicoltori toscani

Chart 12: Imports of olive oil 1993-2003 (Kg)**Table 51: Italian Imports of olive oil by country (1000 t.)**

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00
EU	174	161,5	182,5	182,5	165	220	227	209	253
Jordan	1	1	1	0,5	0,5	0,5	0	1	0
Lebanon	0	0,5	0	0,5	2	1,5	0,5	1,5	0
Morocco	5	0,5	0	5	11,5	35	7,5	15,5	15
Palestine		11	1	4,5	3,5	4	5	2	0
Syria	0	0	0	5	11	6	3	4	6
Tunisia	96,5	110	178	104	26,5	115	117	175	140
Turkey	10,5	5,5	9	55	19	40,5	35	86	30
United States	9	2	2	7	9	8	4,5	6	6
Other countries	2,5	0	0,5	0	3	0	0	0,5	0

Source: ISMEA (2000)

Question 2 (O3): What are the environmental impacts of increased maximum guaranteed quantities per member state?

Detailed answer

2.1.3.1 Context

Before 1998, the CMO had set an upper limit to aid, named Maximum Guaranteed Quantity, to 1.208.537 tons of olive oil. The interim reform had raised the MGQ to 1.777.261 tons, and at the same time it has introduced national guaranteed quantities (NGQ) in order to induce self discipline by member states.

For Italy NGQ was set to 543.164 tons, that was above the average yearly production (515 million tons) from 1988/89 to 1997/98.

Table 52: NGQ by EM

EM	NGQ (t of olive oil)
Spani	760 027
Italy	543 164
Greece	419 529
Portugal	51 244
France	3 297
TOTAL EU	1 777 261

Source: European Commission

In the meanwhile, the coupled premium had reduced from 142,2 eur/100 kg oil to 132,25 eur/ 100 kg oil.

2.1.3.2 Environmental effects

Most of the interviewed researchers and producers' association leaders agree that the increase of NGQ caused by the "interim reform" has not induced any intensification phenomena, since the production threshold has been overcome very soon after 1998, and the resulting reduction of the premium amount does not represent an incentive for further intensification processes. As we will see, our conclusions are not far from this evaluation, though they are a bit more articulated.

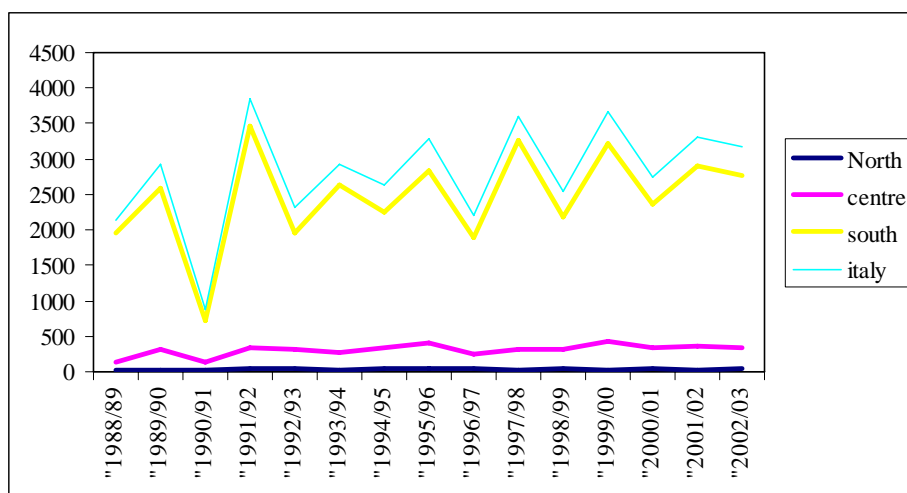
An analysis of the joint effect of the increase of MQG together with the reduction of the premium show that Italian olive growers have been benefited by the reform. In fact, before the interim reform the overshooting of the MGQ had caused a reduction of the aid to production to respectively 8,9% on 1995/96, 30% on 1996/97 and 37% on 1997/98 (INEA, 2002); on the contrary, if the reform had already been in force, it would have caused a much less reduction of the aid (INEA 2002). We can conclude that, initially, the interim reform may have been perceived as an incentive to intensify by farmers. If we look at the production data after 1998, the average production per year has grown to about 550 million tons.

Table 53 : Evolution of oil production (000 tons) by macroregions

Year	North	Centre	South	Italy
"1988/89	5,2	27,6	397,9	430,7
"1989/90	6,9	60,8	510,5	578,2
"1990/91	2,5	25,5	135,3	163,3
"1991/92	10,2	61,3	696,7	768,2
"1992/93	6,8	51,2	376,5	434,5
"1993/94	5,8	48,1	511,5	565,4
"1994/95	8,7	61,2	416,5	486,4
"1995/96	7,3	79,2	544,5	631
"1996/97	8,1	43,3	390,1	441,5
"1997/98	4,5	54	593,6	652
"1998/99	10,6	55,2	405,6	471,3
"1999/00	5,3	73,5	632,2	711,1
"2000/01	6,9	55	445,2	507,1
"2001/02	5,1	62,8	571,4	639,4
"2002/03	9,7	55,7	509,5	574,9

Source: Agecontrol

Very soon it has appeared quite clear that the new NGQ (543.164 ha) was not sufficiently high to contain the trend of production growth. As a consequence, the coupled aids to producers fell by 21,9% during the marketing year 1999/00, 23% during the marketing year 2001/02, and above 20% during the marketing year 2002/03 (Agecontrol, 2004).

Chart 13: Evolution of olive production by macroregion

Source : Agecontrol.

At the end of this period, it seems rather clear that the initial optimism by farmers is strongly tempered by the evidence of a reduction in the amount of subsidies.

2.1.3.3 Evidence from the case study

The interviewed producers in Sicily, both big and small, did not know about the increase in MGQ and NGQ, caused by the “interim CMO reform”. Neither they were aware about the getting over of the fixed NGQ, occurred in Italy over the last years. Therefore, such question could not be properly addressed by the respondents, in order to link their farming behaviour with possible environmental impacts, due to the increase in Italy (and then in Sicily) of the NGQ.

According to sector leaders, the major transformation actually happened after 1987, when the MGQ tool was introduced by the OCM.

Prior to this time, there was a general tendency to increase the yield of the olive orchards in order to maximize the amount of the premium. After the introduction of the QMG, the fixed quotas influenced the intensification of farming, bringing somewhat to reduce - or not to increase - the use of agrochemicals, soil tillage intensity, etc. This was particular evident after 1998, with the introduction of the NGQ, that clearly showed to the producers that exceeding the yearly quota resulted in a lower amount of the premium.

However, it is not pointed out a direct correlation between the NGQ increase on 1998 (and the 6% reduction of the aid amount) and a diverse environmental impact.

In conclusion, according to the respondents, the implementation of the QMG/NGQ led to a minor environmental impact, in terms of soil erosion, water pollution and impoverishment of insect and weed populations. Unfortunately, scientific evidence of such a statement was not found during the survey.

Synthetic answer

The increased MGQ fostered a growth in production at least on the beginning. But as the production threshold has overshoot, this incentive effect has lost its strength very soon.

Question 3 (O3): What is the environmental effect of the removal of the production aid in terms of payment per tree meant for smaller producers?

Detailed answer

2.1.3.4 Context

Until the interim reform, in Italy more than one third of producers were regarded as “small producers”. Production aids for small producers was granted on a flat-basis, calculated according to the number of olive trees and the average yields in the production area over the last four years, which gave certain stability to their incomes in the face of the weather conditions. AGEA data, related to the marketing year 1995-96 elaborated by Casini et al. show that over a number of eligible plants of about 137 millions, of which 54 millions were owned by small producers.

Table 54: Number of eligible plants by categories of olive producers

Categories of olive growers	Total quantity of eligible oil (tons)	n. of eligible plants
A	447.167	82.946.267
B “small producers”	174.663	54.977.813
Total	614.421	137.924.080

Source: Casini *et al.* Elaboration on AIMA data

Data provided by Casini *et al.* show also that the productivity of the largest producers is higher (on average, 5,45kg per tree compared to 3,2 kg of the small producers). This means that, if we have to look to intensification processes, we should look mainly to this category.

Since the “interim reform” the “small producers” scheme had to be abolished: the support provided for olive growers has been a subsidy paid in direct proportion to the production of olive oil or table olives. A simulation of the situation for small producers of Tuscany before and after the interim reform shows that, when productivity increases, net income can be higher also with a reduction of aid. In any case, the net income for a small farm (about 1.000 EUR) is very little if we consider an average income in the farming sector.

Table 55: Number of eligible plants by a small producer in Tuscany

	before	after
olive grove surface	1	1
density per plant	250	250
production	250 (*)	300
price	5	5
GPV	1250	2500
subsidy	757	661,5
total costs	1500	2000
net income	507	1161,5

(*average calculated for ‘per tree’ aid)

ISMEA has made a study to analyse the economic impact on small producers, and from the study it results that, apart from 1996/97, small farmers have benefited from the reform.

The following table shows a simulation of the situation of producers before and after the interim reform:

- Pre-existing situation: according the previous subsidies systems (aids to small producers = number of plants* yields of 4 years) small producers would have received 194.000 ECU/campaign as the average of direct payments;
- Post reform situation: according to the application of coupled aids, the reference is the quantities which are actually used for oil processing. For the multiplication of those quantities for 132,25 ECu (amount of the aids) is obtained 214.000 EUR as an average of subsidies, which are higher then the previous ones.

Table 56 : Total level of expenditure of coupled aid regime for small producers (1000 ECU)

	Regime Reg. 136/66	Regime Reg. 1638/98	Delta	Delta%
1992/93	165	185	20	12.1
1993/94	168	201	33	19.9
1994/95	203	224	21	10.5
1995/96	252	296	44	17.05
1996/97	174	136	-38	-21.6
1998/99	201	239	38	18.7
Average	194	214	20	10.2

Source: ISMEA 2000

2.1.3.5 Environmental impacts

In interviews carried out, some respondents¹² commented that a more environmentally-positive influence of the CMO olive regime is that it probably has represented an incentive to maintain the olive groves and so, it has allowed to reduce the abandonment of small, traditional plantations in many marginal regions, thus preventing the loss of certain environmental and social benefits.

Another thing to take into consideration is that a significant proportion of the small farmers' production is for home consumption. The incentive granted from the reform may have helped firmest in carry on cultivation.

2.1.3.6 Evidence from the case study

In Sicily, most of the olive holdings are extremely small, though a limited number of holdings (504) are of big size (over 100 ha) (ISTAT, 5th Census of Agriculture, 2000). More than 66,6% of the olive holdings are smaller than 2 hectares (47,5%, smaller than 1 ha and 19,1%, between 1 and 2 ha). By dividing the average total oil production by the average total olive area, the average oil production per ha is obtained, equal to 307 kg. Therefore, at least the 47,5% of the total olive holdings in Sicily can be estimated "small producers", according to the former CMO definition; in fact there are more, since holdings of 1,5 ha still remain under the threshold of 500 kg/ha of oil produced.

More accurate data on the number of small producers in Sicily before 1998 could not be obtained by AGEA, which refused to provide the data to the consulting team.

The interviewed small producers stated that little olive farms are typically managed in a traditional way, with a moderate use of agro-chemicals and, occasionally, with emergency irrigation; most of the orchards are characterized by a low plantation density, equal to 220-250 trees per hectare; often the orchard is intercropped with arable crops. Moreover, in many cases the olive orchard is managed by a part-time farmer, who carries out just the basic farming operations.

Due to above reasons, the removal of the payment per tree, introduced by the EC Reg. 1638/98, did not really change the producer's attitude toward the orchard management. Basically, the low amount of the premium continued to be irrelevant in driving the small farmer's choices.

In conclusion, there are not significant differences between the before and the after of the CMO reform in terms of environmental impact from the farming activity.

Synthetic answer

Small farmers' behaviour has not much affected by the measure. From the interviews, it results that their awareness of the change is very low. The evolution report could not assess the contribution of small producers to the increase of production after the interim reform (AGEA data were not available). RICA data show that there is an economic incentive to small farmers. Though the strength of the incentive is limited, given the contribution of oliviculture to small farmers' income, the incentive could help motivate farmers to carry on cultivation instead of abandoning it.

2.1.4 *Olive – Theme 4: structural and accompanying measures*

Question 1 (O4): What are the environmental impacts of the grants for grubbing up old groves, replanting and irrigation?

Detailed answer

2.1.4.1 Context

According to the Regional Rural Development Plans, the structural measures can be basically grouped in three main themes:

1. investments in order to enhance the farm buildings and facilities;
2. investments in order to improve the environmental impact;
3. investments to obtain more value added and to protect the quality of the farm products.

2.1.4.2 Results from the case study

In many regions Rural development Plans or Regional Operating Plans for Objective 1 structural funds have included measures aimed at restructuring olive groves.

¹² University researchers (University of Pisa and University of Bari) and the leader of producers' association

ROP Sicily 2000-2006 supports investments in the holdings to renovate the olive orchards, with the objective of enhancing the farm efficiency, with the restriction to not increase productivity. Thus, new olive plantations are not funded.

In particular, the ROP measure 4.06 “Farm investments to strengthen the agricultural and zoo technical chain”, Action 1 “Investments in holdings for plant crops”, provides grants for restructuring and modernization of the holdings. Supported investments for the olive sector are:

- 1) replacement of old trees with new ones for the rationalization of farm management and quality purposes: however, only very old and sick trees can be grubbed up, after getting the authorization from the competent Authority. The investment plan must always provide replanting the uprooted trees;
- 2) new irrigation schemes and/or modernization of the existing ones with the aim to save water and energy.

According to the CORERAS study (2003), on 2001 the total requests made by the olive holdings were 80, for an overall expenditure of 11.700.865,12 Euro. Table 5 shows details.

Table 57: Grants for investments in olive holdings through structural funds

Number of requests	Objective	Amount (Eur)
22	production of olives for oil	4.915.346,47
58	production of table olives	6.785.518,65

CORERAS study, 2003

Details on the implemented investment plans are not available (i.e. what exactly has been done). The interviewed AFDRS officials did not have cumulative data on this subject. On the other hand, scientific evidence/dedicated studies about the environmental impact of the above-mentioned investments in the olive groves are not available: in fact, the interviewed research institutions could not give an appropriate answer to this question.

The RDP exclusively concerns the AEM implementation (see Chapter 0.4.2), therefore it does not support structural investments.

Actually, no one among the interviewed farmers uprooted olive trees: usually, when a tree is too old to be properly managed it is drastically pruned, in order to rejuvenate and revitalize it. The olive physiology in fact is such that a new productive plant can be obtained by this technique after 3-4 years.

This statement has also been confirmed by the interviewed sector leaders: the practice of uprooting olive trees has been - and in fact it is - extremely rare in Sicily.

A number of farmers actually have planted new olive groves in their farms, since 1993: however, this happened without any financing support by structural EU funds, for the reasons explained above. Plantation densities of the recent orchards consisted in about 330-400 trees/ha.

In several cases, new productive trees have been obtained by grafting old trees with new cultivars; in other cases, the density of the initial old grove has been increased by planting new trees between the lines of the old ones.

Similar measures have been enacted by other regions, as for example Puglia and Toscana.

POR Puglia 2000-2006 supports:

- investments to renovate the olive groves, but only by replanting old trees with the same number of trees. High quality breeds have priority over others;
- investments to replace old irrigation systems with water saving ones.
- Purchase of machines for mechanical pruning and harvesting;

RDP Toscana 2000-2006 supports:

- investments to renovate the olive groves, but only by replanting old trees with the same number of trees. High quality breeds have priority over others;
- investments to replace old irrigation systems with water saving ones.

In the intermediate recently published evaluation there are no data about the level of implementation of these measures.

Synthetic answer

Structural funds within the RDPs have fostered modernisation of olive growing, especially in the Southern regions. So that, the effect of the structural measure implementation has been the following:

- adoption of drip irrigation systems
- higher level of mechanisation
- no incentives to extend the production potential (surfaces and trees);
- increase in the quality production, which is negatively correlated to quantity.

Question 2 (O4): What are the environmental impacts of the LFA aid for olive farmers?

Detailed answer

In Italy, LFA cover about 61% of total national surface, with a large range of incidence: from 39% of Puglia to 100% of Valle d'Aosta (INEA, 2004).

Most part of traditional cultivation systems in Italy are located in these areas, so LFAs measures could be an helpful measure to sustain traditional systems. The potential abandonment of olive plantations in the more marginal regions is a particular environmental problem in Italy. This has lead to an increased incidence of wild fires and subsequent risk of soil erosion.

However, the dimension of LFAs in Italy make difficult to concentrate intervention in order to solve specific problems.

In its survey on regional evaluation reports of rural development plans, INEA (2005) shows that regions evaluate positively the measures targeted to LFAs, saying that they have contributed to ensure continuity to land use, though the incidence of compensation over the assessed disadvantage ranges from 2% (Emilia Romagna) to 90% (Piemonte). There are no data regarding specifically olive growing, but average data reported by INEA (99 euro/ha for Umbria and Valle d'Aosta) show that its incidence is very low with reference to Olive Gross Product Value (about 2.000-3.000 eur).

Table 58: Holdings receiving compensatory allowances by pre-dominant LFA type

Number of holdings supported				Number of ha receiving compensatory allowances (1000 ha)		Amount of public expenditures committed (000 EUR)		Average payment (EUR)	
Mountain areas	Other LFAs	Total	Of which Natura 2000 areas	Total	Of which Natura 2000 areas	Total	Of which EAGGF	Per holdings	Per ha
41 097	2 548	0	43 645	2 963	747	78	73 218	32 272	1 678

Source. European Commission. Agricultural report 2004

According to the RDP of Sicilia 2000-2006, the Less Favoured Areas (LFA) in Sicily, zoned according to the EC Dir 268/75, represent the 54,8 % of the total regional area. The LFA are in all 1.417.256 hectares, the 60,4% of which represented by mountainous areas. The olive is quite spread in LFA, in small patches for familiar use, but in most of the cases very well treated, being a traditional crop.

In the period 1992-1999, 14.000 applications/year were presented on the average, part of which were paid through the structural funds at that time. Other previous applications were paid by State funds. The total expenditure for support of LFA in the period 1990-1999 counts 205.775 millions of lire.

On the above period of observation, payments for the LFA compensatory indemnity were not linked to any eco-conditionality rules.

Specific statistics about the implementation of the LFA grant on olive orchards are not available, for the period 1990-1999; moreover, environmental impacts of the LFA aid in olive groves have never been investigated by research institutes.

Only the RDP of Liguria 2000-2006 provides specific funding in order to support and to preserve olive groves in the LFAs. The level of aids granted to olive growers, whose holdings are located in

these areas is 200 EUR/ha/year; during that time, producers should cultivate the olive grove following the *usual agriculture practices*.

Interviewed farmers, who live in LFA, stated they did not receive any specific grant: some of them declared that when they made the application higher priority was given to farms with livestock. Olive orchards had a secondary importance.

In the RDP 2000-2006, the payment for the applicants to the E Measure, targeted to support the traditional agricultural activity in the LFA of Sicily, is instead linked to eco-conditionality rules. Namely, the GAP standards represent the minimum farming standards that have to be respected by the farmer-beneficiary of the measure (see Chapter 0.4.2.1 for GAP technical guidelines for olive).

However, due to lack of financial resources, the E Measure has never been activated so far.

In the RDP Tuscany 2000-2006 farmers getting compensatory allowance should maintain Good agricultural practices, but these are not differentiated from non - LFAs.

Synthetic answer

LFA measure implementation has been characterised by:

- lack of territorial concentration;
- scarce incidence on gross product value of farms.

To sumup this measure, which could have a great potentiality, has a scarce environmental impact.

2.2 Horizontal questions

2.2.1 Horizontal – Theme 1

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.]

Detailed answer

During the considered period, we have not assisted to relevant changes in total surface dedicated to olive groves.

Table 59: Olive groves surface (000 ha)

year	north	centre	south	Italy
"1988/89	29	180	932	1.141
"1989/90	29	192	932	1.153
"1990/91	27	189	918	1.134
"1991/92	26	189	900	1.115
"1992/93	26	209	891	1.126
"1993/94	24	209	886	1.119
"1994/95	24	211	884	1.119
"1995/96	23	212	872	1.107
"1996/97	24	212	868	1.103
"1997/98	23	212	873	1.108
"1998/99	24	214	877	1.115
"1999/00	23	217	908	1.149
"2000/01	24	222	891	1.137
"2001/02	24	219	893	1.136
"2002/03	25	222	891	1.138

Source: ISTAT

However, according to our respondents¹³, under this appeared unchanging trend, at least three processes have been happening:

- Tendency to abandonment of traditional cultivation systems in the hilly areas, not any more profitable, with a progressive replacement by shrubs or by forests; this trend has been contrasted, especially in recent years, by an increasing interest by non professional land users who cultivate olive oil for their own consumption;
- Restructuring of old groves, especially after the freeze of 1984, and replacement with more intensive systems in the North;
- Restructuring of old groves, and replacement with more intensive systems, linked to the availability of new irrigation infrastructures in the South.

Olive groves are only occasionally uprooted, since olive is considered a “protected” species by the law in force and due to the customary affection for this crop. This is also in line with the CMO contents, which in fact do not present specific measures encouraging the abandonment of the groves.

According to *Corine Land Cover* data, all the regions that we have considered show a slight reduction in olive groves areas.

Table 60: Variation in land use. By relevant region

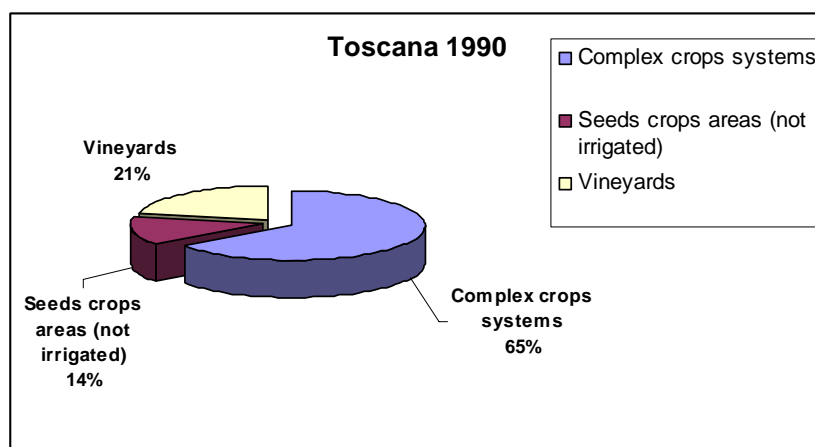
<i>Region</i>	<i>Olive groves area (ha) 1990</i>	<i>Olive groves area (ha) 2000</i>	<i>Variation % 2000 - 1990</i>
LIGURIA	14.517,43	14.517,43	0,0
LOMBARDIA	466,06	466,06	0,0
TOSCANA	82.105,80	80.597,44	-1,8
UMBRIA	29.560,55	29.083,84	-1,6
PUGLIA	404.581,34	404.550,42	0,0
CALABRIA	205.960,77	200.365,91	-2,7

Source: Corine land cover data

More in depth, if we look into the variation in land use, the following graphs show the trend in those regions where an increase in olive groves areas has occurred.

In Toscana, the olive groves area has increased of 296,8 ha and in Calabria of 1427,28 ha; in Toscana, new plantations have replaced not irrigated seeds crops (36,87 ha), mix crops systems (176,3736 ha) and vineyards (57,57992 ha), whereas in Calabria olive groves plantations have replaces mainly seeds crops systems (331,556 ha), annual crops associated with permanent crops (109,5461 ha) and permanent grass (43,89129 ha).

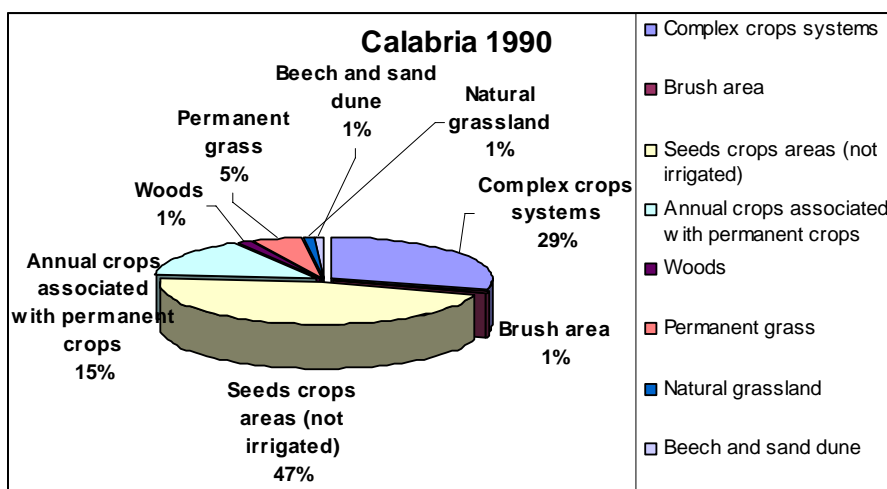
Chart 14: Variation in land use in Toscana (previous land use before new olive plantation) in 1990



Source: Corine land cover data

¹³ University of Pisa

Chart 15: Variation in land use in Toscana (previous land use before new olive plantation) in 1990



Source: Corine land cover data

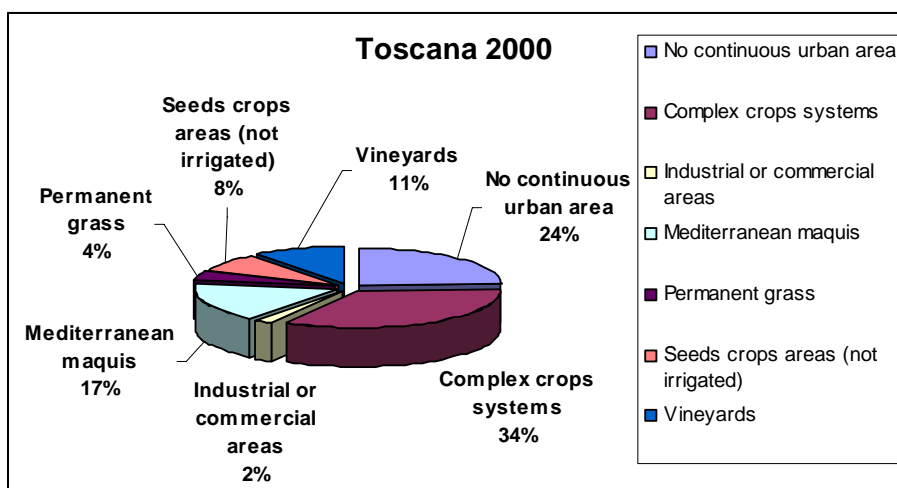
On the other hand, the phenomenon of abandonment represented the most common situation.

In particular, the main changes in land use after the olive groves grubbed up have been the following:

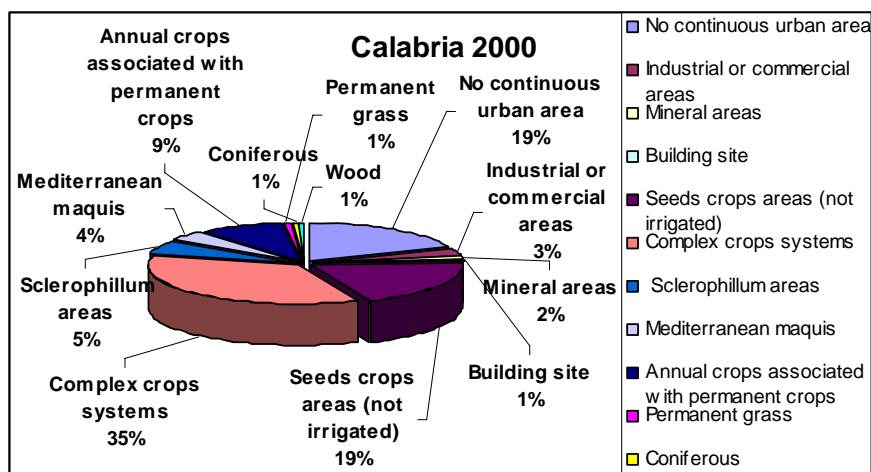
- In Tuscany, the ex olive groves (1805,15 ha) became urban areas (438,26 ha), seeds crops (143,88 ha), and mix crops 615,68, Mediterranean maquis (301,66 ha), and vineyards (192,83 ha)
- In Calabria, the olive groves areas (6273,05 ha) were replaced mainly by complex crops systems (2231,22 ha) urban areas (1160,92 ha) and seeds crops (1192 ha).
- In Puglia and Umbria where the total grubbed area was replaced only by urban areas and seeds crops.

When such olive groves are abandoned, they are mainly replaced with urban areas or gradually turn into a kind of scrub (Mediterranean maquis) and if not maintained, the scrub is at risk from summer fires, which represents one of the main environmental hazards of the Mediterranean regions.

Chart 16: Variation in land use in Toscana (new land use after olive groves grubbed up) in 2000



Source: Corine land cover data

Chart 17: Variation in land use in Calabria (new land use after olive groves grubbed up) in 2000

Source: Corine land cover data

In relation to Olive oil CMO, it is possible to say that CMO:

- has encouraged to restructuring, especially in southern Italy (e.g. Calabria). In Northern Italy, where there has been a much more accentuated focus on quality, the strength of the economic incentive coming from the CMO has been low
- has not stopped the tendency to abandon olive groves in the marginal areas, nor have LFA measures been effective enough;

In counterfactual terms, it is possible to say that without the level of subsidy of CMO oliviculture could not be viable in Italy (and mainly in southern Italy), and therefore the trend to replacement or to abandonment would have been much more intense.

Synthetic answer

The CMO has limited the trend to abandonment of olive growing, and to a certain extent has induced restructuring in the southern regions, such as Calabria. With respect, to the changes in land use, the environmental effects of which are extremely negative as the consequence of the increase in urban or industrial areas, or in some cases with irrigated seeds crops systems.

2.2.2 Horizontal – Theme 2

Question 1 (H2): *Are there indications that a change in total spending on the CMO in its present form 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.]*

As shown above, the relevant measures of the CMO are the following:

Table 61: CMO measures and level of expenditure in 2002 (millions of ECU/eur)

	2002
Export refunds	0.1
Direct aid to producers	715.8
Stocks	0.0
Other measures (funding to producers' associations finalised to quality improvement)	7.5

Source: INEA

We will take into account the most important two measures:

1. The direct aids to producers have been an economic incentive to increase the productivity. To analyse the environmental impact we will refer to the intensification process fostered by the direct aids.

From the data above, (see Q1H1) it emerges that the intensification process has not been homogeneous in Italy. As matter of fact, the incentive has been more relevant for large farms oriented to quantity,

weaker for the small farms oriented to quality production. Furthermore, the trend of intensification has been more remarkable in the specialized farms in the southern regions, such as in Puglia, where intensive systems have been developed mainly due to availability of irrigation water. As said before, from the analysis of the specialised farms in olive growing it emerges a very high increase in the number and in the area of irrigated farms between 1990 and 2000 (ISTAT), with a strong incidence of the irrigation in the southern regions. A recent survey in the north part of Puglia, carried out by the University of Bari shows a relevant growth in intensive olive groves pattern, by introducing mechanisation for harvesting and drip irrigation systems.

The following tables, filled by our interviewees¹⁴, show the relationships between the direct aids and their effects on the local/regional ecosystem in the middle term: according to our interviews¹⁵, where the intensification process has occurred, it brought to a higher use of chemical inputs and water use; furthermore, the increase of production led to the problems of recycling waste from the olive processing. As far as, the experts¹⁶, state, this is one of the most relevant environmental impact of the whole olive oil supply chain. The environmental problems associated with mills relate mainly to water consumption in the southern regions where supplies are limited and to the elimination of the waste from the oil extraction process: residue (remains of the ground olives) and liquid extracts (mixture of the vegetable water from the olives and water added during the kneading of the paste).

These products are significant polluting agents because they contain a high level of organic substances. In addition, in Italy where the olive oil is generally extracted by pressure or by centrifugation using a three phase process (oils, liquid extracts and residue), the environmental problems lie in the large volume of water which has to be added and the evacuation of the substantial quantity of liquid extracts. It is also possible to spread liquid extracts on fields as a fertiliser. Furthermore, it emerges that CMO regulation has not helped in a sufficient way to stop the phenomenon of the abandonment of local olive varieties (genetic erosion), especially in the southern regions where the tendency is to adopt olive varieties autochthonous of the Centre part of Italy (e.g. Tuscany) which are the more demanded by the market.

¹⁴ CNR Perugia; University of Pisa and University of Bari

¹⁵ University of Pisa and University of Bari

¹⁶ CNR Perugia

Table 62: Evaluation grid of the impact induced by direct aid

Nature of the impact	Depletion of scarce water resources due to irrigation systems		
Spatial scope	Local	Regional	National-Planetary
Level	Primary	Secondary	Tertiary
Lasting	Short term	Middle term	Long term
Intensity	Moderate	Average	Strong
Reversibility	Reversible	More or less reversible	Irreversible
Sensitiveness	Low sensitive	Average sensitive	Very sensitive
Synthetic evaluation of the impact	Average negative		
Nature of the impact	Pollution of soils and ground water		
Spatial scope	Local	Regional	National-Planetary
Level	Primary	Secondary	Tertiary
Lasting	Short term	Middle term	Long term
Intensity	Moderate	Average	Strong
Reversibility	Reversible	More or less reversible	Irreversible
Sensitiveness	Low sensitive	Average sensitive	Very sensitive
Synthetic evaluation of the impact	Moderately negative, especially for what concern oil processing waste		
Nature of the impact	Impact on habitats and landscape		
Spatial scope	Local	Regional	National-Planetary
Level	Primary	Secondary	Tertiary
Lasting	Short term	Middle term	Long term
Intensity	Moderate	Average	Strong
Reversibility	Reversible	More or less reversible	Irreversible
Sensitiveness	Low sensitive	Average sensitive	Very sensitive
Synthetic evaluation of the impact	CMO does not help in a sufficient way to stop abandonment of traditional systems of cultivation, with a loss of habitats and landscape		

With respect to the relationships between the “other measures” and their implementation, our respondents state that the single environmental and olive oil quality measures, implemented by the producers’ associations, have positive effects on the local/regional ecosystem in the average term. As matter of fact, the adoption of low input and organic systems together with the development of technical assistance in order to improve the quality characteristics of the oil play a crucial role in reducing the use of fertilisers, pesticides, as well as water and energy resources.

More in depth, the impact of aid to improvement of quality is positive as this measure fosters farmers:

- to rationalise the use of chemical inputs;
- to get a higher price and therefore to reduce their dependence on the subsidies;
- to reduce quantities produced in order to improve quality and get better prices.

Unfortunately, the amount of resources spent in this measure is not sufficient to reach all farmers.

According to the producers’ association leaders¹⁷ the single environmental measures (in compliance with Reg. 1334/2002, art. 4, comma 2) implemented by the POs, have positive effects on the local/regional ecosystem in the average term. As matter of fact, the adoption of low input and organic systems together with the development of technical assistance play a crucial role in reducing the use of fertilisers, pesticides, as well as water and energy resources

However, if we analyse the effective impacts of operative programs implementation on the territory, it emerges that the limited amount of resources allocated to these measure do not allow to cover a large share of olive growers (see Q1 O2).

¹⁷ Unaproa Union, Apröl (Puglia); Assoproli (Bari); Assoproli (Calabria) and Associazione olivicoltori toscani

Table 63: Evaluation grid of the impact induced by other measures (funding to producers' associations)

Measure b Low input practices: definition of a code of practices and technical assistance for low input systems

Evaluation parameters	Type of notation		
Nature of impact	Enhancement of soil quality, preservation of water quality, and biodiversity enhancement.		
Target	AGRO-ECOSYSTEM		
Geographical effect	Local	Regional	National - Planetary
Level	Primary sector	Secondary sector	Tertiary sector
Duration	Short term	Average term	Long term
Intensity	Low	Average	Strong
Reversibility	Reversible	Plus or minus reversible	Irreversible
Sensitivity	A bit sensible	Fairly sensible	Very sensible
Characterisation of the range and seriousness of the impact through combination of the different factors	Positive		

Measure c Demonstrative projects enhancing the use of environmental friendly techniques

Evaluation parameters	Type of notation		
Nature of impact	Enhancement of soil quality, preservation of water quality, and biodiversity enhancement.		
Target	AGRO-ECOSYSTEM		
Geographical effect	Local	Regional	National - Planetary
Level	Primary sector	Secondary sector	Tertiary sector
Duration	Short term	Average term	Long term
Intensity	Low	Average	Strong
Reversibility	Reversible	Plus or minus reversible	Irreversible
Sensitivity	A bit sensible	Fairly sensible	Very sensible
Characterisation of the range and seriousness of the impact through combination of the different factors	Positive		

Synthetic answer

We can say that relevant changes in the CMO could have the following impact:

	Small farms	Large farms
Reduction of direct aid	Very low impact	Strong impact -> tendency to abandon
Increase of direct aid	Moderate impact on intensification	Strong impact → further intensification and pressure to increase olive groves area
Reduction of aid to quality improvement	Low impact	Moderate impact → Stop to the tendency to quality
Increase of aid to quality improvement	Moderate impact on quality production	Moderate to discrete impact → rationalisation of chemical inputs, improvement of quality, trend to reduce quantity

According to our interviews, the most implemented measure, direct aids to producers has led to intensification of olive growing especially in the larger farms of the southern regions. This phenomenon is accompanied by increased use of inputs such as fertilisers and plant-protection products (according to RICA data in southern regions fertilisers' and pesticides' costs have a higher impact on total output, than in the northern regions), but above all, irrigation water, which can aggravate the water shortages in certain producing regions. Excessive intensification is therefore a source of environmental deterioration and erosion, or even desertification.

Cultivation techniques aimed at protecting the environment, such as organic production and strategies for greening and managing ground cover, are being applied more and more to olive growing, but are still used by a minority. Although the operative programmes for olive production areas incorporate agri-environmental measures for olive trees, much progress has still to be achieved in this area, particularly as regards the rate of use of the budgets available.

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

2.2.2.1 Context

Historically, the olive oil CMO has been coupled with the production (*production aid*), the aim of which was to help producers secure a fair income by supplementing the income obtained from the sale of their products. The introduction of a maximum guaranteed quantity (MGQ) (from the marketing year 1987/88) together with a proportional reduction in unit aid (mechanism of cumulative reductions overshooting the MGQ triggered, up to 3% per marketing year), it was considered a sufficiently dissuasive mechanism to prevent an increase in production out of line with market signals in the intervention price.

The 1998 reform has increased in the MGQ and at the same time, it has reduced the unit amount of aid.

With respects, to *production aid for small producers*, before 1998 it was a decoupled measure, granted on a flat-rate basis, calculated according to the number of olive trees and the average yields in the production area over the last four years, which gave a certain stability to their incomes in the face of the weather variations. The amount of unit aid also incorporated an extra premium in comparison to large producers and they were not penalised in the event of the MGQ being overshot. The interim reform has abolished the "small producers" scheme. Since then, small producers, and particularly those in marginal areas, have seen their profitability gradually affected by low prices, resulting from the pressure of a constantly increasing supply.

2.2.2.2 Discussion

An analysis of the joint effect of increase of MQG and reduction of the premium show that Italian olive growers have been benefited by the reform. In fact, initially, the interim reform may have been perceived as an incentive to intensify by farmers. However, most of the interviewed researchers and producers' association leaders agree that the increase of NGQ has not induced any intensification phenomena, since the production threshold has been overcome very soon after 1998, and the resulting reduction of the premium amount does not represent an incentive for further intensification processes. Furthermore, all the interviewed people agree that this phenomenon was not linked with the *premia*, as the level of production-based subsidies is considered too low as an incentive for intensification, rather it could represent a "tool" to compensate a part of production costs (in particular, it could be an help to cover the costs of processing olives).

On the other hand, the MGQ succeeded in penalising more heavily olive-growing holdings and regions where profitability is low or which are unable to increase their productivity. Over the years, this has meant that the most economically successful holdings have increased their share in the distribution of aid at the expense of the more marginal holdings and regions.

2.2.2.3 Potential environmental effects of decoupling of spending

The main negative environmental effect of the totally coupled level of spending could related to the potential penalisation of small producers: the low profitability of traditional olive groves, which are sited on poor soil, could foster the phenomenon of olive groves abandonment.

However, from the above data (see Q303) the Reg. 1638/98 did not really change the producer's behaviour toward the olive grove management. Basically, the low amount of the premium continued to be irrelevant in driving the small farmer's choices. Therefore, we can state that there are not significant differences between the before and the after of the CMO reform in terms of environmental impact from the farming activity.

According to our evaluation, a decoupled subsidy would force large farms to accelerate their integration with the markets and to improve quality. At the same time, there would be a greater convenience to turn into cultivation techniques aimed at protecting the environment, such as organic

or integrated production. Olive oil production would decrease, and therefore also the problem of spreading the waste water of olive processing would be reduced.

2.2.3 Horizontal – Theme 3

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?

CMO direct aid farmers receive is not linked to any agro-environmental restrictions. Only the producers benefiting by RDP AEM grants must comply with the regional GAP standard.

AEM funds have been fundamental to favour the transition to integrated pest management and to organic olive cultivation. As for LFAs payments, they have not been enough concentrated, so that their effectiveness on traditional cultivation systems has been scarce.

2.2.3.1 Inventory of AEM and of the measures taken by MS and regions relating to the cross compliance of the aids to the production by CMO

The agro-environmental measures of the RDR (measure 6; art.22, 23, 24) are the following.

According to **EC Reg. 2078/92**, the agro-environmental measures that have a potential link with the olive groves are the following:

- A1 Pesticides reduction
- A2 Organic agriculture
- D1¹⁸ Protection of the countryside and the landscape;

According to **EC Reg. 1257/99**, the agro-environmental measures relating to the olive oil sector are interested by the *measure f*:

- (6)F1 Organic farming: this is a defined approach to farming which incorporates a wider range of measures e.g. input reduction.
- (6)F2 Input reduction: this category includes reduction in fertilisers and plant products reduction.
- (6)F3 Restoring and/or maintenance of the traditional rural landscape, of natural and semi-natural areas: this measure refers to maintaining farming systems which lead to characteristics landscapes.
- (6)F4 Genetic diversity: this measure concerns the preservation of plant genetic resources naturally adapted to the local and regional conditions and under threat of genetic erosion.

The calculation of premia is based on costs incurred and income lost by the farmers for participating in the agro-environmental measures.

For examples, according to the RDP of Tuscany, the payment level is the following:

- F1 Organic farming: 450 EUR/ ha of olive groves
- F2 Input reduction: 360 EUR/ ha of olive groves
- F4 Genetic diversity: 5 EUR per plant (min. 10 trees; max 500 trees)

2.2.3.2 Implementation

According to INEA (2003), during the period 2000-2006 the higher percentage of the overall expenditure of the RDPs has been paid to the agro-environmental measures, since they have represented almost the 50% of the total public funding, including also the expenditure required by the accompanying measures of the previous planning (Reg. 2078/92).

¹⁸ *The measure D1 (protection of the countryside and the landscape) of the previous AEP pointed towards preservation of the traditional landscape as well as to prevent the soil from erosion. The measure was targeted to the permanent crops located on terraces, pushing the farmers to restore old pathways and soil protection structures; the use of herbicides was banned.

Table 64: Level of funding received by AEM action (1997-2002) 000. EUR

	1997		1998		2000		2001		2002	
Low impact production systems	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR	Area ha	Funding 000. EUR
-low chemical input	646.704	209.77	966.917	n.a.	1.144.172	344.695	971.252	269.240	802.742	232.444
- organic farming	313.917	104.52	498.617	n.a.	697.591	226.780	700.849	221.950	591.826	187.831
Biodiversity conservation	0	0	0	0	343	98	3.315	635	388	153
- vegetal organisms under the threat of genetic erosion										

Source: Inea, elaboration on AGEA data

2.2.3.3 Eco-conditionality

With respect to compulsory eco-conditionality (Council Regulation N. 1782/03), the National Decree 13/12/04 annex 2 measure 4.3 has set out the following environmental standards related to the maintenance of the olive growing through appropriate farming practices:

- maintenance of the traditional farming systems which lead to a balance growth of the plants;
- in the absence of specific conditions defined by Regional governments or Autonomous Provinces, the pruning should be done every 5 year; this rule has to be implemented in both specialised and no-specialised olive growing farms.

With regards this measure, the Regional governments do not indicate any more specific conditions.

AGEA is appointed as the institutional body in charge of setting the checking lists of the beneficiaries of direct payments, who will be sanctioned in case of non-compliance (partial or entire reduction of direct support).

2.2.3.4 Environmental impacts

Some general comments can be made by way of looking into the information in the middle terms evaluation reports¹⁹.

Input reduction: the impacts include securing water quality; enhanced biodiversity and soil quality. According to the Liguria report the reduction in pesticides and fertilisers has been of the 20% in comparison with the use in the conventional farms. In Umbria the average reduction of 54 kg/N/year has been calculated.

Organic farming: impacts include: enhanced soil quality, preserving water quality, and biodiversity enhancement. According to the Liguria report the reduction in pesticides and fertilisers has been of the 50% in comparison with the use in the conventional farms

Genetic diversity: The impact is on genetic diversity but there can be positive impacts on landscape as well. In Tuscany several traditional and autochthonous varieties are included in the plan, some of them are: *Americano Arancino, Ciliegino, Colombino, Correggiolo di Pallese, Cuoricino, Olivastra di Popolonia, Da Cuccare, Filare, Frantoiano di Montemurlo, Finestrino, Giogolino, Grappolo, Gremigno di Faglia, Gremigna Tonda, Gremigno di Montecatini, Gremignolo, Gremignolo di Bolgheri, Grossaio, Grossolana, Larcianese, Lastrino, Lazzero, Lazzero delle Guadalupe, Lazzero di Prata, Leccone, Madremignola, Mansino, Maremmano, Marzio, Melaiolo, Mignolo, Mignolo Cerretano, Morcaio, Morchiaio, Olivastra di Suvereto, Olivo Bufalo, Olivo del Mulino, Ornellaia, Pendagliolo, Pesciatino, Razzio, Razzo, Rosino, Rossellino, San Francesco, San Lazzero, Santa Caterina.*

Maintenance of existing extensive systems: The positive impacts which can be expected are on biodiversity, landscape, and in certain cases water and soil quality.

¹⁹ Middle terms evaluation report of Tuscany and Liguria

Farmed landscape: Such measures generally have positive impacts on biodiversity. This reflects the fact that much farmland biodiversity is dependent on features which are essential to the particular style of farming in that area, which features also give rise to the traditional landscape.

Water use reduction measures: these are designed to preserve water resources by reducing irrigation and/or reducing water loss from the soil e.g. by growing ground.

Besides these general considerations, from the analysis of the mid term reports it is no always possible to estimate environmental effects provided directly from the implementation of the agro-environmental measures by the olive growing farms.

APPENDICES

Annex 1: List of people met or contacted

Annex 2: Main bibliography identified (used or not) in relation with the study

Annex 1: List of people met

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Luigi Caricato, giornalista settore olio, direttore rivista on-line *Teatro Naturale*

Stefano Olivieri, esperto GIS (elaboration of Corine land cover data)- University of Milano

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OCM OLIVE ETUDE DE CAS SICILIA

Novembre 2005

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GLOSSARY

AEM: agro-environmental measures

AEP: agro-environmental programme

AFDRS: Agriculture and Forests Department of Regione Sicilia

AGEA: National Paying Agency for Agriculture

ISTAT: National Statistic Institute

LFA: Less favoured areas

MGQ: Maximum guaranteed quantities

NGQ: National guaranteed quantities

RDP: Rural Development Plan

UAA: Utilised Agricultural Area

1. CONTEXT OF OLIVE OIL AND TABLE OLIVES PRODUCTION IN SICILY

1.1 Mains characteristics of the olive oil production in Sicily

1.1.1 Evolution of the holdings and area

Sicily is the third Italian region in terms of level of production and amount of area of olive orchards. Presently, there are around 18 millions of olive trees (Agecontrol) that largely characterize the traditional landscape of Sicily, both in the inner and coastal areas.

The holdings that grow olives are around 198.000, nowadays, engaging an area of more than 138.000 ha (more than 9% of the regional UAA). The several census from ISTAT clearly highlight the evolution of the sector along the last 30 years (Table 1).

Annual production of olives ranges nowadays between 220.000 and 240.000 tons, 40.000 of which are usually processed as table olives, ranking the first position in Italy (AFDRS, 2004).

As it can be observed, the olive cultivation is spread throughout Sicily; in particular, the provinces of Agrigento, Messina, Palermo and Trapani cover around the 65% of the total regional area as well as production.

Chart 1: Provinces of Sicily



Table 1: Evolution of olive holdings and olive area

Provinces	1970				1982		
	Nr. of holdings	Area (ha)	Average holding area		Nr. of holdings	Area (ha)	Average holding area
Agrigento	13.973	15.489,10	1,11		18.297	14.885,48	0,81
Caltanissetta	2.945	3.317,15	1,13		7.230	5.189,37	0,72
Catania	9.885	11.888,55	1,20		18.124	11.464,87	0,63
Enna	6.274	4.837,11	0,77		12.303	7.070,01	0,57
Messina	42.792	31.550,53	0,74		40.417	26.594,67	0,66
Palermo	26.447	22.465,18	0,85		28.494	20.334,81	0,71
Ragusa	6.054	12.546,46	2,07		10.370	10.089,51	0,97
Siracusa	6.491	11.646,47	1,79		9.964	10.640,03	1,07
Trapani	14.160	11.797,50	0,83		15.529	12.328,08	0,79
Sicily	129,021	125.538,05	0,97		160.728	118.596,83	0,74

Provinces	1990			2000		
	Nr. of holdings	Area (ha)	Average holding area	Nr. of holdings	Area (ha)	Average holding area
Agrigento	23.333	19.654,15	0,84	28.411	24.423,88	0,86
Caltanissetta	8.424	6.214,80	0,74	14.238	8.373,13	0,59
Catania	16.005	9.480,00	0,59	18.656	13.511,75	0,72
Enna	15.053	8.573,61	0,57	15.890	16.437,00	1,03
Messina	40.647	26.084,68	0,64	41.051	35.121,88	0,86
Palermo	29.130	20.582,51	0,71	34.186	22.909,00	0,67
Ragusa	10.937	8.217,32	0,75	13.979	7.000,00	0,50
Siracusa	9.370	9.003,76	0,96	11.234	11.105,63	0,99
Trapani	17.713	13.072,55	0,74	20.851	18.240,63	0,87
Sicily	170.612	120.883,38	0,71	198.496	157.122,88*	0,79

*data differing from that reported on the 5th ISTAT Census

Source : CORERAS on ISTAT data, 2003

An uninterrupted increase of the number of olive holdings may be observed along the last thirty-year period; with respect to 1990, the holdings have increased of above 27.000 units in all the provinces. However the olive area has grown as well over the last 20 years, thus the average holding size has remained more or less the same.

Table 2: Olive holdings per provinces and classes of area in Sicily

	Total Olive orchards (table olives + oil olives)																Total holdings
	Classes of area (ha)																
	< 1	%	1 - 2	%	2 - 5	%	5 - 10	%	10 - 20	%	20 - 50	%	50-100	%	> 100	%	
Agrigento	9.950	35,0	6.012	21,2	7.331	25,8	3.166	11,1	1.295	4,6	515	1,8	110	0,4	32	0,1	28.411
Caltanissetta	6.394	44,9	2.727	19,2	2.813	19,8	1.236	8,7	582	4,1	346	2,4	86	0,6	54	0,4	14.238
Catania	9.695	52,0	3.805	20,4	3.119	16,7	1.126	6,0	507	2,7	279	1,5	87	0,5	38	0,2	18.656
Enna	7.137	44,9	2.807	17,7	2.855	18,0	1.406	8,8	828	5,2	583	3,7	201	1,3	73	0,5	15.890
Messina	26.112	63,6	7.228	17,6	5.068	12,3	1.453	3,5	618	1,5	349	0,9	141	0,3	82	0,2	41.051
Palermo	16.710	48,9	6.265	18,3	5.957	17,4	2.721	8,0	1.420	4,2	773	2,3	217	0,6	123	0,4	34.186
Ragusa	5.952	42,6	2.678	19,2	2.799	20,0	1.154	8,3	710	5,1	529	3,8	126	0,9	31	0,2	13.979
Siracusa	4.534	40,4	2.314	20,6	2.241	19,9	980	8,7	596	5,3	420	3,7	103	0,9	46	0,4	11.234
Trapani	7.735	37,1	4.031	19,3	5.070	24,3	2.382	11,4	1.077	5,2	449	2,2	82	0,4	25	0,1	20.851
Sicilia	94.219	47,5	37.867	19,1	37.253	18,8	15.624	7,9	7.633	3,8	4.243	2,1	1.153	0,5	504	0,3	198.496

Source : 5th ISTAT Census on Agriculture, 2000, adapted after CORERAS

When the holdings are ranked according to the classes of size (Table 2), it emerges that most of the regional olive orchards are extremely small, though a limited number of holdings (504) are of big size (over 100 ha).

From Table 2 it becomes apparent how serious is land fragmentation in Sicily, where more than 47% of the olive holdings are smaller than 1 hectare. Classes between 1 and 2 hectares and between 2 and 5 hectares represent each one fifth of the total; the class between 5 and 10 hectares represents the 7,9 % only. Pulverization of olive areas is particularly marked in the provinces of Messina, Catania and Palermo. Summarising, the major part of the Sicilian olive orchards (93%) is managed by medium small-sized holdings (less than 10 ha).

It is also interesting to note that more than 95% of the holdings is managed directly by the owner, whereas the capitalist holdings (with hired labour) represent just the 8,9%, being concentrated mainly in the provinces of Agrigento, Messina and Palermo (5th ISTAT Census on Agriculture, 2000)

Approximately, today the 65% of the Sicilian olive orchards are localised on hilly areas, whereas olive groves on plains and on mountainous areas represent the 17% and 18%, respectively (CORERAS on the 5th ISTAT Census on Agriculture, 2003).

1.1.2 Olive groves with irrigation

A 2001 study (INEA) has showed that in Sicily the main irrigation schemes, namely the man-made reservoirs managed by the several “Consortia for land reclamation”, is capable to water 21.148 hectares of olive orchards, the 15,3 % of the total regional olive area. It is important to note that the irrigation water is coming from accumulated rainwater and from diverted water streams through dams, so not depleting the underground water reserves. However, a large part of the irrigation carried out by the private sector is based on pumping underground water (INEA, 1993).

Table 3 shows the distribution of the irrigated olive groves among the Sicilian provinces and their % incidence on the total olive area: on 2000, the incidence of the irrigated olive groves was the 13,4% of the total regional olive area.

Drip irrigation is the most used technique, characterized by high efficiency and low water volumes. In general, irrigation is practiced under “emergency” conditions, when the water balance becomes negative; intensive orchards get not more than 400/500 m³ of water per ha/year (source: interviews to producers as well as researchers).

Table 3: Area of irrigated olive orchards on 2000

Provinces	Irrigated olive area (ha)	Regional olive area (ha)	Irrigated vs. total olive area %
Agrigento	9.053	25.300	35,8
Caltanissetta	522	8.857	5,9
Catania	860	13.513	6,4
Enna	162	16.260	1,0
Messina	404	35.122	1,2
Palermo	2.128	22.800	9,3
Ragusa	448	7.200	6,2
Siracusa	1.202	11.200	10,7
Trapani	6.369	18.000	35,4
Sicily	21.148	158.252	13,4

Source : CORERAS on INEA data, 2003

The INEA study has also showed that, when watered, the olive holding has an average gross revenue 76% higher than without irrigation (Table 4). However, olives grown in rainfed conditions are paid more due to its higher yield in oil.

Table 4 clearly indicates the relevant share represented by the CMO aid in the overall gross revenue, in both the options, although its relative weight does not differ so much between the two (43,26 % vs, 39,15 %).

Table 4: Production outcome and gross revenue of olives in Sicily, under irrigation and rainfed conditions

	a irrigation		b no irrigation		c difference a-b	increase c/b*100
		%		%		
Yield (q/ha)	60,10		30,80		29,30	95,13
Price (£/q)	62.624		74.230		-11.606,00	-15,64
Gross revenue from olive production (000 £/ha)	3.764,00	56,74	2.286,28	60,85	1.477,00	64,62
Gross revenue from CMO aid (000 £/ha)	2.869,00	43,26	1.471,00	39,15	1.398,00	95,04
Overall gross revenue (000 £/ha)	6.633,00	100,00	3.757,00	100,00	2.875,00	76,53

Source : CORERAS on INEA data, 2000

1.1.3 Olives and oil production in the Sicilian provinces

The total production of olives in Sicily presents alternating phases: in the time frame considered in Table 6, the production goes from a minimum of 154.000 tons ('96-'97) to a maximum of 313.000 tons ('95-'96). These fluctuations are mainly due to the phenomenon of alternate bearing, that is typical of the olive tree. Oil production follows the same pattern.

Table 5 shows the evolution of table olives production (principally represented by the CV "Nocellara del Belice") for which it has been requested aid by the producers.

The provinces of Agrigento, Messina, Palermo and Trapani cover the 65% of the regional olive area and oil production.

In the province of Agrigento the olive is the driving crop, in terms of economic performance: from its 24.000 hectares around 39.000 tons of olives are yearly produced on the average, which in turn result in 7.000 tons of valuable extra-virgin olive oil.

On the plain, the practice of irrigation has become quite spread for those holdings provided with autonomous water resources or served by the Consortium for land reclamation "Basso Belice Carboj". On the low hills olives are also abundantly cultivated, but without irrigation facilities; on the steep slopes olive trees can still be found, sometimes on terraces and characterized by low productivity, however maintaining the traditional landscape as well as the soil cover.

The native cultivar "Cerasuola" represents the 70% of the whole olive orchard of the province; other important cultivars are "Biancolilla" and "Nocellara del Belice".

The province of Trapani shows an average area of 17.000 hectares resulting in a production of around 36.000 tons of olives and more than 7.000 tons of high-quality extra-virgin oil. The yield of olives per hectare is higher than in Agrigento (2,1 vs. 1,6 tons/ha), due the higher plant density and better management.

The most represented cultivars are "Cerasuola" and "Nocellara del Belice": the latter is used both for making oil and as table fruit. It is the only cultivar that has so far obtained the recognition as POD for table olive, named "Nocellara del Belice".

Irrigation is commonly practiced, especially to grow the Nocellara as table fruit, in order to get the required size.

The province of Palermo is the third of importance in terms of olive extension, after Agrigento and Messina; however, it shows the highest number of big olive holdings (> 100 ha) and, together with Messina, it holds the record of the highest oil production in Sicily (over 8.700 tons).

Olive growing is, together with the arable crops, the main agricultural enterprise in the province. The major part of the orchards is on the hilly areas: as a consequence, irrigation is not a common practice.

Many orchards are characterized by old trees, scarcely productive and planted according to an irregular pattern; however in the province there are also modern orchards, that allow valuable productions. The native cultivars “Biancolilla”, “Nocellara del Belice”, “Cerasuola”, “Oglialora Messinese” are the most common.

The province of Messina shows the highest extension of olive orchards in Sicily, with an average area of more than 35.000 hectares; however, it is the province with the highest number of holdings with a size less than one hectare.

Olive orchards are mainly located on the low and medium hilly areas, with no irrigation. Most of the trees are grown under marginal conditions, nearly in state of agronomic abandonment: consequently, the phenomenon of alternate bearing is quite strong with a yield reduction of 50%, on alternate years.

The most important cultivars are the “Santagatese”, “Oglialora Messinese” and “Minuta”, all native.

The provinces of Catania, Ragusa and Siracusa together cover the 26% of the regional production. The most important cultivars are “Tonda Iblea”, “Moresca” and “Nocellara Etnea”, characterized by the production of high quality extra virgin oil. The province of Catania shows the highest yield of olives/ha, due to the modern plantations and use of irrigation.

The provinces of Enna and Caltanissetta present the 8,8% of the regional oil production; the most important cultivars are “Moresca” “Nocellara Etnea”, “Giarraffa” and “Cerasuola”.

Table 5: Production of table olives in Sicily

Year	Nr of claims	Olives delivered (t)
2000-2001	886	57,4
2001-2002	837	89
2002-2003	796	80,7
2003-2004	1.210	79,4
Total	3.729	306,50

Source : AFDRS

Table 6: Olives and oil production in the Sicilian provinces

	Province	Production year								Mean
		1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03**	
Total area (ha)	Agrigento	23.141	23.200	24.100	24.600	24.900	25.300	24.950	25.200	24.424
	Caltanissetta	7.630	7.831	7.732	8.361	8.857	8.857	8.860	8.690	8.352
	Catania	13.540	13.514	13.509	13.483	13.509	13.513	13.513	13.513	13.512
	Enna	17.050	17.050	16.223	16.233	16.200	16.260	16.245	16.235	16.437
	Messina	35.122	35.122	35.121	35.122	35.122	35.122	35.122	35.122	35.122
	Palermo	23.822	23.822	22.308	22.120	22.800	22.800	22.800	22.800	22.909
	Ragusa	7.200	7.200	7.200	7.200	7.200	7.200	6.400	6.400	7.000
	Siracusa	11.345	11.300	11.500	10.000	11.000	11.200	11.200	11.200	11.093
	Trapani	16.124	16.124	16.177	17.500	18.000	18.000	22.000	18.000	17.741
	Sicily	154.974	155.163	153.870	154.619	157.588*	158.252	161.090	157.160	156.590
Production of olives for oil (q)	Agrigento	462.308	220.000	480.208	309.250	361.700	300.600	381.445	658.450	396.745
	Caltanissetta	95.919	50.799	118.628	134.530	99.145	107.461	131.627	90.478	103.573
	Catania	422.411	227.000	383.300	255.800	420.000	360.000	290.000	310.000	333.564
	Enna	106.571	117.400	206.000	92.000	130.350	140.000	80.000	67.000	117.415
	Messina	500.000	282.488	260.968	500.000	530.000	625.000	190.000	190.000	384.807
	Palermo	496.680	320.111	460.000	502.160	391.000	538.000	172.000	473.080	419.129
	Ragusa	216.000	42.496	229.500	60.000	208.000	220.000	84.500	114.959	146.932
	Siracusa	261.655	115.798	215.000	140.000	188.750	209.855	150.000	193.583	184.330
	Trapani	575.026	165.615	440.859	296.600	500.000	299.200	300.000	299.200	359.563
	Sicily	3.136.570	1.541.707	2.794.463	2.290.340	2.828.945	2.800.116	1.779.572	2.396.750	2.446.058
Yield of olives per hectare (q)	Agrigento	20	9	20	13	15	12	15	26	16
	Caltanissetta	13	6	15	16	11	12	15	10	12
	Catania	31	17	28	19	31	27	21	23	25
	Enna	6	7	13	6	8	9	5	4	7
	Messina	14	8	7	14	15	18	5	5	11
	Palermo	21	13	21	23	17	24	8	21	18
	Ragusa	30	6	32	8	29	31	13	18	21
	Siracusa	23	10	19	14	17	19	13	17	17
	Trapani	36	10	27	17	28	17	14	17	21
	Sicily	20	10	18	15	18	18	11	15	16

Source : CORERAS, 2003

(continued) Table 6: Olives and oil production in the Sicilian provinces

		Production year								Mean
	Province	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03**	
Oil production (q)	Agrigento	93.850	45.000	88.840	58.760	79.500	57.000	78.200	116.670	77.228
	Caltanissetta	18.711	9.825	21.765	24.640	18.154	19.677	24.238	16.566	19.197
	Catania	80.000	42.940	67.000	51.250	80.000	67.000	67.000	58.000	64.149
	Enna	21.112	21.897	35.570	17.364	18.603	25.200	16.000	12.900	21.081
	Messina	110.000	59.322	52.196	110.000	132.500	112.500	36.018	38.000	81.317
	Palermo	105.847	68.049	92.000	101.560	85.800	112.980	39.500	94.616	87.544
	Ragusa	39.960	7.350	39.015	10.601	38.578	38.500	14.800	21.108	26.239
	Siracusa	49.716	23.159	34.500	25.200	36.712	36.408	22.575	33.296	32.696
	Trapani	114.500	32.800	84.531	57.813	104.500	59.840	60.000	59.840	71.728
	Sicily	633.696	310.342	515.417	457.188	594.347	529.105	358.331	450.996	481.178

*data differing from that reported on the 5th ISTAT Census; ** provisional data

CORERAS, 2003

1.1.4 Olives from organic agriculture in Sicily

The evolution of the total number of organic holdings and organic UAA in Sicily is presented in Table 7. The official source of data about organic agriculture is the Regional List of Organic Operators, under responsibility of one specific AFDRS Office: in this list data are presented exclusively in aggregate form, so the incidence of the single crop type crop cannot be evaluated.

Table 7: Evolution of organic farming in Sicily 1998-2003

	1998	1999	2000	2001	2002	2003
Nr. of holdings	7.200	9.679	10.312	12.355	9.722	8.410
Total UAA (ha)	88.000	142.967	162.486	207.287	206.102	188.380

Source: Regional List of Organic Operators in Sicily, AFDRS, EC Reg. 2092/91

The reasons of the drop of organic holdings from 2001 to 2002 was principally due to the lack of financial resources of the RDP (EC Reg. 1257/99) with respect to the previous AEP (EC Reg. 2078/92), as explained in the following chapters. However, the total organic area has not undergone the same drop, since the RDP obliged to convert the whole farm area, not allowing mixed farming (i.e. part of the farm remains under conventional agriculture).

According to the intermediate evaluation of the AEM/RDP measures (Agriconsulting, 2003), holdings growing organic plant crops are mainly in the provinces of Catania, Siracusa and Enna; organic livestock are more in the provinces of Messina, Enna and Ragusa (Table 8).

Table 8: Holdings and organic area for plant and animal productions, year 2000

<i>Province</i>	<i>plant crops</i>			<i>livestock</i>		
	<i>Holdings</i>	<i>Total Agricultural Area (ha)</i>	<i>UAA (ha)</i>	<i>Holdings</i>	<i>Total Agricultural Area (ha)</i>	<i>UAA (ha)</i>
Trapani	736	8.005,88	7.695,02	11	53,38	52,13
Palermo	884	9.106,11	7.927,29	22	538,74	437,36
Messina	804	15.464,43	13.454,99	100	1.882,98	1.640,44
Agrigento	263	2.332,73	2.106,39	28	185,9	178,98
Caltanissetta	367	4.932,56	4.456,75	5	250,49	249,22
Enna	992	22.608,24	21.411,23	71	2.873,26	2.699,27
Catania	1.164	12.279,35	11.090,45	23	594,03	566,3
Ragusa	654	14.833,43	14.185,45	61	1.845,86	1.758,24
Siracusa	1.013	11.716,35	10.921,50	55	1.795,20	1.716,54
Sicily	6.877	101.279,08	93.249,07	376	10.019,84	9.298,48

Source : Agriconsulting, 2003

About the organic olive sector in Sicily, two studies present data on it for year 2002 (ISMEA, 2004) and for year 2001 (CORERAS, 2003) (Table 9).

Table 9: Evolution of the organic olive sector 2001-2002

	2001*	2002**	%
Total UAA (ha)	6.624	10.911	+ 39,3
Production (t)	15.235	27.277,65	+ 44,2
Yield (t/ha)	2,3	2,5	+ 8
Incidence on national organic olive area (%)	8,67	10,7	+ 19
Incidence on national production of organic olives (%)	2,99	9,16	+ 67,4

Sources : *ISMEA, 2004; **CORERAS, 2003

The sharp increase of organic olive productions in a such short time might be in part explained by the fact that large olive areas completed the conversion from 2001 to 2002.

1.1.5 The Sicilian PDOs for olive oil

In Sicily there are nowadays four PDOs about olive oil: “Monti Iblei”, “Valli Trapanesi”, “Val di Mazara” and “Monte Etna”. There is also one PDO for table olives, the “Nocellara del Belice”. All the PDOs have been recognised between 1997 and 2002. Other five olive areas are waiting for the recognition. Figure 1 depict the PDO areas in the region.

Each PDO has its own “production and processing standards”, the implementation of which is controlled and certified by private bodies. By analysing the standards, it emerges that there are not specific provisions about environmental-compatible agricultural practices, as IPM, conservative soil tillage, cover crops, etc..

For instance, in the article 4 “Characteristics of cultivation” of the PDO standards “Val di Mazara”, the only provision of some environmental interest is the maximum allowed production, equal to 8.000 kg of olives/ha.

Summarizing, for the PDO olive oils the concept of “quality” is focussed on the kinds of olive cultivars, on the way of processing and on the chemical and sensorial characteristics of the resulting oil: any rule is provided for the (potential) environmental impact of the olive oil production.

Table 10 shows the evolution of the oil production from the Sicilian PDOs. The produced quantity on 2002-03 (230,78 tons) still represents a quite low share of the total olive oil produced in Sicily in that year (58.454 tons).

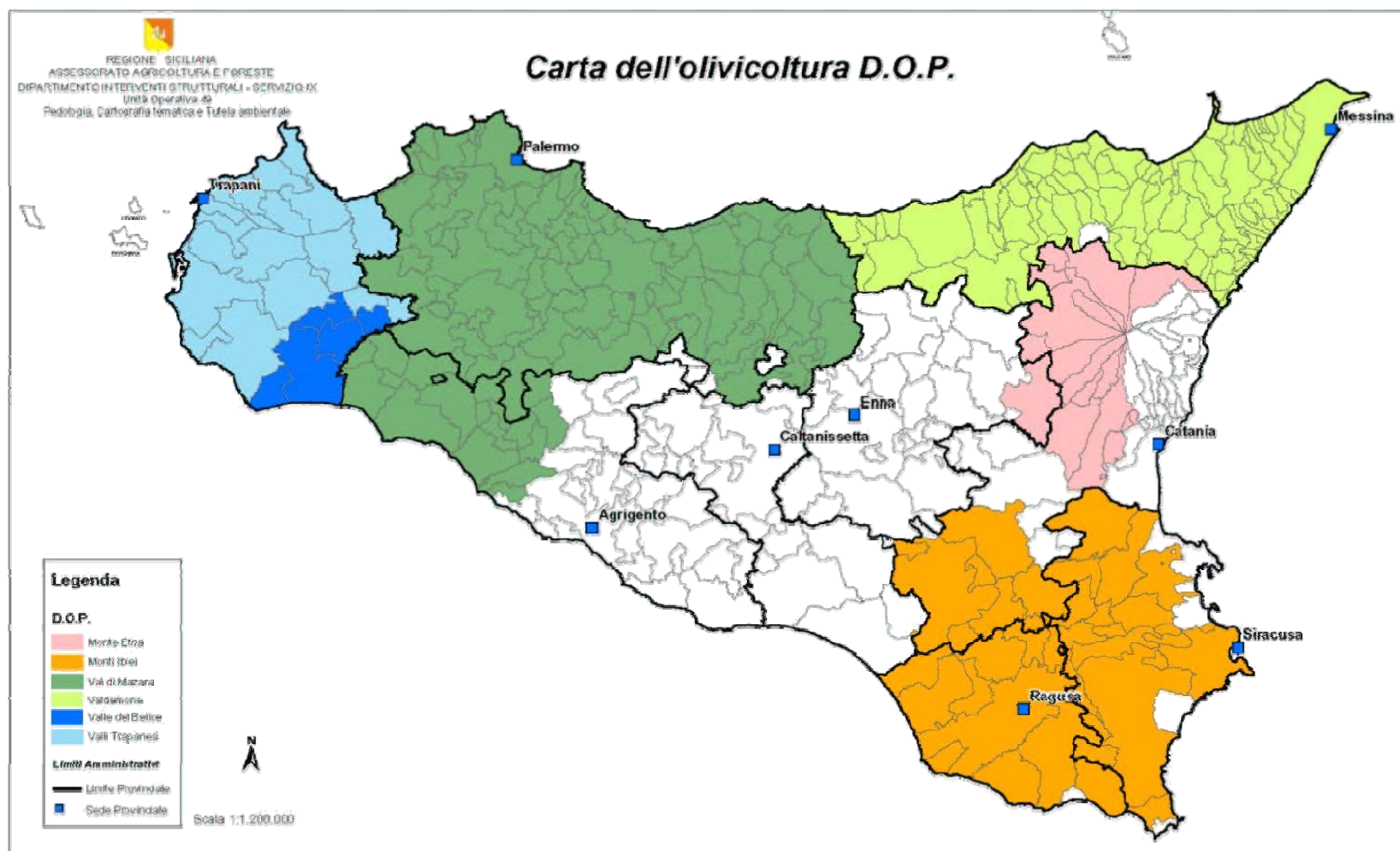
Table 10: Extra-virgin PDO certified olive oil production in Sicily

Year	PDO “Val di Mazara”		PDO “Monti Iblei”		PDO “Valli Trapanesi”		Total certified oil (t)
	Certified oil (t)	Nr. of producers	Certified oil (t)	Nr. of producers	Certified oil (t)	Nr. of producers	
2000-01	n.a.	n.a.	4,4	3	57,28	77	61,65
2001-02	n.a.	n.a.	69	90	160,85	86	229,85
2002-03	24,9	88	55,5	55	150,38	140	230,78

n.a: the PDO “Val di Mazara” started after 2002

Source CORERAS, 2003

Chart 2: Map of olive PDOs in Sicily



1.1.6 The processing

The mill industry in Sicily counted 676 mills on 2003/2004 (the major part of them are private). Around the 50% of the regional mills have a working capacity between 4 and 10 tons of olives/day (eight hours). These mills process the 38% of the total regional production.

The larger and most professional mills represent about the 12% of the total; their working capacity exceeds 10 t/day, being able to process around one third of the olives production (AFDRS, 2004).

The mills start their activity usually after October 10th and end it around on half of January.

The mills working by the “continuous cycle” technology represent nowadays the 70% of the total mills (CORERAS, 2003).

The evolution of the number of mills from 1984 to 2002 is shown on Table 11.

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

The Table 11 shows the evolution, over the period 1984-2004, of the number of the claims made; the number of trees concerned; the number of the recognised mills; the oil quantity as resulting from the applications and the oil quantity actually obtained in the mills, as resulting from the mill's register.

Table 11: Number of claims and oil produced/declared 1984-2004.

Year	Nr. of claims	Nr. of trees	Nr. of recognised mills	Oil quantity, as declared in the claims of aid (t)	Oil quantity, as declared in the mill's register (t)
1984/85	56.971	7.269.172	616	19.967	22.635
1985/86	106.629	11.136.876	847	53.401	72.448
1986/87	67.555	9.141.979	682	23.475	26.808
1987/88	103.812	11.811.508	837	53.507	66.917
1988/89	71.883	9.001.541	690	28.969	25.583
1989/90	87.327	10.996.096	691	38.270	47.514
1990/91	20.978	3.101.372	345	6.214	10.706
1991/92	99.429	10.196.916	724	58.674	73.313
1992/93	64.166	7.899.272	616	20.674	24.680
1993/94	103.361	11.355.237	747	67.789	61.367
1994/95	80.794	9.945.209	672	23.173	26.817
1995/96	120.663	13.420.060	685	54.583	62.150
1996/97	109.781	13.361.142	633	25.771	28.384
1997/98	146.494	16.610.827	693	51.540	57.298
1998/99	140.815	17.019.194	680	39.510	43.965
1999/2000	152.370	18.165.995	703	56.732	66.850
2000/2001	145.213	17.955.640	691	44.805	50.174
2001/2002	131.576	17.471.664	653	40.433	43.262
2002/2003	147.057	19.614.049	692	54.897	58.454

Source: Agecontrol

Data about the level of expenditure are not shown here because AGEA, that keeps all the statistical payment records and to whom the consulting team made a formal request, did not provide the data.

The expenditure relative to the project for the improvement of olive oil quality (EC Reg. 528/99) is explained on Table 23, in the Chapter 0.44.

1.3 Institutional framework of the olive oil production in Sicily

1.3.1 Institutions in charge of the management and payment of the premiums

The Agriculture and Forests Department of the Regione Sicilia (AFDRS) is the most important Institution in charge to manage the implementation of the CMO in the region. In particular, one specific Office (U.O.B. n.24: Comparto olivicolo) has the full responsibility to monitor the application of the EC and national norms on the regional olive sector; furthermore, the Office is in charge to plan and monitor the activities provided by the regional norms. Among others, this office designed and co-ordinated the Regional Programme on Quality improvement of Olive oil (EC Reg. 528/99; EC Reg. CE 2407/01; EC Reg. CE 2136/02).

Another office (U.O.B. n. 38: Credito agrario) is responsible for the mills recognition, inventory of regional olive processing capacity and applications of sanctions after fraud assessment.

The regional associations of olive producers (see below) play the role to facilitate their members to get the payment for oil production: actually, the associations are authorized by the National Paying Agency (AGEA) to collect and file the applications from the members and transmit them directly to AGEA, via an exclusive software. In some cases it is the national union, to which the regional association belongs, that collect the data and transmit it to AGEA.

Only a very few producers, in fact, arrange to send the application individually, without the intermediation of the association.

As mentioned above, the payments of the premiums are entirely managed by the AGEA, that is located in Rome. The starting of the regional Paying Agency in Sicily is forthcoming.

1.3.2 Institutions in charge of the controls

Control activities are carried out by the Agecontrol s.p.a.

Agecontrol has the task to ensure the compliance with European regulation in the industry through controls to:

- Producers' associations and their Unions;
- Producers;
- Recognised mills;
- Other enterprises of the industry such as refineries, packagers, traders, marc producers.

In addition, the U.O.B. n. 38 of the AFDRS carries out administrative controls on the mills activity also through cross-checkings with the Agecontrol's data.

1.3.3 Associations of producers at regional level

In Sicily there are not real producers' organisations (PO), as intended for the fruit sector.

In fact, there are the associations of producers (AP) (Table 12), the main task of which is to assist their members to abide by the administrative requirements of the CMO to get the premium (as explained above). Furthermore, the AP join the Region in implementing measures for oil quality improvement (EC Reg. 508/99 and subsequent modifications), with the producers and mills operators as final beneficiaries.

Usually, the AP do not manage and/or market the product, thus they do not have to respect any "operational programme" as basis for their activities.

Every association belongs to one main national Union. The Unions were born under the umbrella of the farmers' unions.

Table 12: Associations of producers of Sicily

Association	Union	Association	Union
Assolivo	UNAPOL	AIPO	UNAPROL
AIPOS	UNAPOL	APO	UNAPROL
APROS	UNAPOL	APOL	UNAPROL
APO Catania	UNASCO	ARO	UNAPROL
APOO Palermo	UNASCO	APOM	UNAPROL
APOR Ragusa	UNASCO	APOT	UNAPROL
APOA Agrigento	UNASCO	APROL	UNAPROL
APO Siracusa	UNASCO	ASPROL	UNAPROL
APOT Trapani	UNASCO	ASPROL Sicilia	UNAPROL
APO Caltanissetta	UNASCO	ASSAPROL	UNAPROL
UPO Palermo	AIPOUN	APO Catania	CNO
ASPO Catania	AIPOUN	APO Siracusa	CNO
APOC Catania	AIPOUN	APO Ragusa	CNO
		NAOM Messina	CNO
		AIPO Enna	CNO
		AIPO Caltanissetta	CNO
		AIPO Agrigento	CNO
		APOL Enna	CNO

Source : AFDRS

1.3.4 Farmers unions

The three main national organisations, Coldiretti, Confagricoltura and Confederazione Italiana Agricoltori, have their branch-offices in Sicily, joining together almost the whole of the producers.

1.3.5 Research and technical institutes, Institutes for statistics

- Istituto nazionale Economia Agraria (INEA), regional office
- Istituto Sperimentale per l'Olivicoltura, CRA Consiglio per la ricerca e la sperimentazione in agricoltura, branch office (main office is in Calabria)
- Department of Horticultural Crops (DCA), University of Palermo
- Department of Economy of the Agro-Silvicultural Systems (ESAF), University of Palermo
- Orto-Floro-Arboreicoltura e Tecnologia Agroalimentari, University of Catania
- Istituto Nazionale di Statistica (ISTAT), regional office

1.4 CMO implementation context in Sicily

1.4.1 Eco-conditionality

At the very early stage of the implementation of the principles of cross-compliance (eco-conditionality), according to the EC Reg. 1259/99, for the first time environmental requirements were introduced at national scale. Sicily too was concerned with this new approach.

Therefore, broad-spectrum measures were introduced, principally targeted 1) to prevent soil erosion in arable cropping systems and 2) to properly manage animal excreta and its recycling into the cultivated fields. Controls from the public authorities on the correct respect of such measures, however, have been rather mild and a very few number of infractions was pointed out.

Recently on 2004, Annex III and IV of the EC Reg. 1782/03 were the subject of the Decree 13/12/04, issued by the Italian Ministry of Agriculture. In the two annexes of the Decree, detailed norms to maintain the agricultural fields in good agronomic and environmental conditions were provided, to be implemented from the 1st of January 2005: when not properly applied, the concerned producer would undergo a per cent reduction of the CMO premium.

The Agriculture and Forestry Department of the Sicily Region, on February 2005, acknowledged the national Decree by issuing a regional Decree on eco-conditionality (D.D.G. 193 of 25/02/05) where the GAP norms provided by the national Decree were integrated with more site-adapted ones.

The additional details are in Annex 2 of the regional Decree (referring to Art. 5 EC Reg. 1782/03 and Annex IV) and concern Norm 1.1 (water management on sloping land); Norm 1.2 (crop residues management); Norm 4.1 (preservation of permanent pasture); Norm 4.2 (management of land put on set-aside).

The only reference to the olive crop by the regional Decree on eco-conditionality is in Norm 4.3 (Maintenance of olive groves) where it is provided to apply all the necessary cultural practices to the orchard, according to the local uses, in order to maintain it in a good shape and well balanced. Pruning is compulsory every 5 years.

1.4.2 Agro-environmental measures

The regional olive sector has been supported in the past through the Agro-environmental program (AEP, EC Reg. 2078/92), then by the Rural Development Plan (RDP, EC Reg. 1257/99). Structural support has been also given through the Regional Operational Plan (ROP) 2000-2006.

Finally, a specific project has been implemented for the improvement of the olive oil quality (EC Reg. 528/99).

1.4.2.1 The Agro-environmental programme (AEP, EC Reg. 2078/92)

The Agro-environmental Programme (AEP) devised by Regione Sicilia has been approved by the Commission with Decision C (94) 2494 of October, 10th 1994. Subsequent modifications to the programme were endorsed with decisions C (96) 008 of January 30th 1996, C (97) 097 of January 29th 1997 and C (97) 3089 of November 14th, 1997.

Table 13 lists the AEP measures and its objectives. The olive sector is essentially interested by the measures A1, A2, B2 and D1.

Table 13: AEP measures and objectives

Measure	Objective
A1	Pesticides reduction
A2	Organic agriculture
B1	Extensification
B2	Keeping low productivity
C	Reduction of livestock density
D1	Protection of the countryside and the landscape
D2	Preserving animal breeds under risk of extinction
E	Upkeep of abandoned farmland
F	Twenty-year set-aside of arable land
G	Land management for public access and leisure activities

Source: AFDRS

The measure B2 (keeping low productivity) has been implemented only in restricted areas with the aim to preserve particular autoctonous crops, usually grown extensively and located in vulnerable areas. Among the prescribed obligations there were the maintenance of the crop; limited nitrogen fertilisation, conservative practices, ban of herbicides, fire prevention.

The measure D1 (protection of the countryside and the landscape) pointed towards preservation of the traditional landscape as well as to prevent the soil from erosion. The measure was targeted to the permanent crops located on terraces, pushing the farmers to restore old pathways and soil protection structures; the use of herbicides was banned.

The activation of the several AEP measures has occurred gradually. In the period 1994-97, five distinct measures have been activated, concerning around 70.000 hectares. Other five measures have been implemented in the period 1998/2000, after the last approved amendment of the AEP.

In particular on the year 1993/94, the sole measure A2 (organic agriculture) had been started.

In the following year, the measures A1 (reduction of pesticides), B1 (extensification of crop farming), E (upkeep of abandoned farmland) and F (twenty-year set-aside of arable land) have been also started. It has to be underlined that the measure A1 has been purposely introduced due to the growing concern about the high use of pesticides as well as herbicides in the permanent and vegetable cropping systems. The measure was accompanied by a package of “technical norms”, namely the very first example of IPM formally applied in Sicily. Actually, the adoption of such production standards was compulsory for the beneficiaries of measure A1. Measure A1 was particularly successful for permanent crops, whereas vegetable crops played a minor role, due to the inadequate level of compensation.

On 1998, the measures B2 (maintenance of low productivity), D1 (protection of the countryside and the landscape), D2 (preserving animal breeds under risk of extinction) and C (reduction of livestock density of cattle, sheep and goats) have been also started. On 1999, the measure G (land management for public access and leisure activities) has been also activated.

In the following year, the measures A1 (reduction of pesticides), B1 (extensification of crop farming), E (upkeep of abandoned farmland) and F (twenty-year set-aside of arable land) have been also started. On 1998, the measures B2 (maintenance of low productivity), D1 (protection of the countryside and the landscape), D2 (preserving animal breeds under risk of extinction) and C (reduction of livestock density of cattle, sheep and goats) have been also started. On 1999, the measure G (land management for public access and leisure activities) has been activated as well.

Chart 1 and Table 14 depict the evolution of the AEP implementation in Sicily, up to 1998: as it may be observed, the measures A1 (reduction of pesticides) and A2 (organic agriculture) play the leading role.

Chart 3: Implementation of EC Reg. 2078/92: share of UAA per AEP measure, on 1998

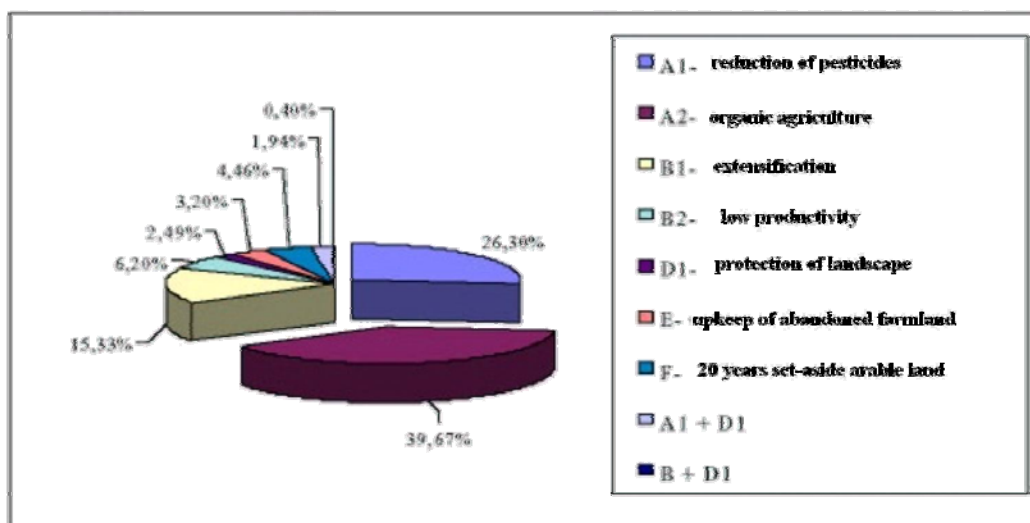


Table 14: Situation of EC Reg. 2078/92 implementation on year 1998

Measure/Action	Holdings	UAA (ha)	% UAA	Expenditure (lire x 10 ⁶)	% cost
A1- Pesticides reduction	13.550	58.394	26,30%	57.201,916	28,44%
A2- Organic agriculture	7.264	88.083	39,67%	77.933,556	38,75%
B1- Extensification	3.680	34.045	15,33%	20.432,038	10,16%
B2- Maintenance low productivity	5.925	13.774	6,20%	12.823,486	6,38%
D1- Protection of the countryside and the landscape	2.156	5.532	2,49%	5.894,674	2,93%
E- Upkeep of abandoned farmland	459	7.102	3,20%	3.999,752	1,99%
F- Twenty-year set-aside of arable land	1.331	9.910	4,46%	13.640,137	6,78%
A1 + D1	1.869	4.297	1,94%	7.756,559	3,86%
B + D1	341	888	0,40%	1.456,980	0,72%
C- Reduction of livestock density	1	7 UBA	-	3,639	0,00%
Total	36.576	222.025	100%	201.142,737	100%

Source : AFDRS

1.4.2.2 AEP impact on the regional farming system

When an analysis per kind of crop interested by AEP is made (Table 15), it clearly comes up that the incidence of the participation has been maximum for the citrus (almost the 36% of the total regional citrus area). However, the olive area concerned by the full package of the AEP counted on 1997 about the 11% of the total regional olive area.

Table 15: Situation of EC Reg. 2078/92 implementation per crop tipology, on 1997

Crop	UAA concerned by AEM (ha)	Total UAA of Sicily per crop (ha)	Share of the concerned areas per crop (%)	% of the regional UAA involved by the AEM
Cereals	22.794	476.602	13,56%	4,78%
Pulses	1.155	15.377	0,69%	7,51%
Fodder crops	26.186	130.214	15,58%	20,11%
Vegetables	821	37.378	0,49%	2,20%
Other arable crops	689	142.005	0,41%	0,49%
Grape	22.754	174.280	13,54%	13,06%
Olive	16.837	155.163	10,02%	10,85%
Citrus	36.498	101.847	21,72%	35,84%
Fruits	24.466	79.154	14,56%	30,91%
Other perm. crops	966	4.349	0,57%	22,21%
Grass- and perm. pastures	4.689	316.812	2,79%	1,48%
Woods	1.040	184.350	0,62%	0,56%
Other (uncult. land, natural areas, etc.)	9.174	130.590	5,46%	7,03%
TOTAL	168.069	1.948.121	100,00%	8,62%

Source : AFDRS

1.4.2.3 The Rural Development Plan (RDP, EC Reg. 1257/99: the Agro-environmental Measure "F")

The first release of the Sicilian Rural Development Plan (RDP) 2000-2006 has been approved by the Commission with Decision C (2001) 135 of January, 23th 2001.

The RDP has an overall financial budget of 560,8 millions of Euro. Nevertheless, the 77,8% of this amount (436,26 millions of Euro) was needed to pay the commitments taken by the past programming (AEP, EC Reg. 2078/92).

The measure concerned with the agro-environment is the “F” one. It has the general objective of spreading agricultural techniques and soil management methods that are ecologically compatible, by ensuring an acceptable income to the farmers. It is organised in six actions:

- F1a – Methods of integrated farming
- F1b – Introduction and maintenance of the methods of organic agriculture and livestock
- F2 – Extensive fodder systems, upkeep of the landscape and soil erosion prevention
- F3 – Restoring and/or maintenance of the traditional rural landscape, of natural and semi-natural areas
- F4a – Set-aside of arable crops for environmental purposes
- F4b- Breeding local animal breeds under risk of extinction.

The olive sector is essentially concerned by the actions F1a and F1b.

The initial budget for the F measure was 409,561 millions of Euro, including the costs of the previous AEM. On 2001, for the AEM 65.269.130 Euro have been spent in all, 53.008.968 of which for the past programming. On 2002, 43.611.591 and 34.653.689 Euro have been spent for the new and the past AEM, respectively.

Tables 16, 17, 18 and 19 show the evolution of old and new AEM applications, the paid amount and the concerned areas for the olive crop on 2001 and 2002.

Table 16: Year 2001. Payments for the olive sector relative to the past AEP (EC Reg. 2078/92). Money taken from the RDP budget 2000/2006

Measure	Nr. applications	Farm area (ha)	Paid amount (Euro)
A1	2.220	4.237,04	1.533.819,31
A1+D1	330	310,61	150.022,76
A2	975	2.231,65	1.076.654,54
B2	2	1,95	585,00
B2+D1	3	8,02	3.873,60
D1	154	141,55	51.282,72
TOTAL	3.684	6.931	2.816.238

Source : AFDRS

Table 17: Year 2001. Payments for the olive sector relative to the RDP – F Measure (EC Reg. 1257/99). Money taken from the RDP budget 2000/2006

Action	Nr. applications	Farm area (ha)	Paid amount (Euro)
F1A	85	422,73	164.731,56
F1B	328	1.037,85	783.868,10
TOTAL	413	1.461	948.600

Source : AFDRS

Table 18: Year 2002. Payments for the olive sector relative to the past AEP (EC Reg. 2078/92). Money taken from the RDP budget 2000/2006

Measure	Nr. applications	Farm area (ha)	Paid amount (Euro)
A1	1.205	2.364,96	856.818,20
A1+D1	129	95,79	46.264,92
A2	659	1.434,22	692.725,00
B2	1	1,41	423,00
D1	44	43,54	15.774,20
TOTAL	2.038	3.940	1.612.005

Source : AFDRS

Table 19: Year 2002. Payments for the olive sector relative to the RDP – F Measure (EC Reg. 1257/99). Money taken from the RDP budget 2000/2006

(source AFDRS)

Action	Nr. applications	Farm area (ha)	Paid amount (Euro)
F1A	66	331,64	129.338,24
F1B	207	779,74	598.178,12
TOTAL	273	1.111	727.516

Source : AFDRS

The tables highlight that the paid applications, relative to the old programming (1994-1999), are more than those relative to the new one (2000-2006). This has to be principally attributed to the low budget allocated in favour of the F measure, which led the regional administration to restrict the premiums exclusively to those holdings having the 50% (at least) of the farm area sited on “priority areas”, namely environmentally more vulnerable areas, as parks and protected areas, natural reserves, CIS (EC Dir. 438/92 “Habitat”), SPZ (EC Dir 409/79 “Birds”), highly vulnerable areas for water pollution (EC Dir 91/676), etc.

1.4.2.4 GAP and Technical Norms on IPM

According to the EC Reg. 1257/99 and 1750/99, the beneficiaries of the F measure have to go further the “usual good farming practices” (GAP), i.e. the “standard practice that a reasonable farmer would follow in the region concerned”.

The regional administration, in conjunction with the Italian Ministry of Agriculture, developed the GAP, tailored on the Sicilian farming systems, as technical annex to the RDP (Annex ?).

Besides general considerations, applicable to all the crops, a chapter of the GAP document is specifically dedicated to the olive crop, grown under rainfed and irrigated conditions.

For the sub-measure F1a (Methods of integrated farming) one way “to go further” the GAP is the mandatory application of the “Technical Norms on IPM”, where a section is dedicated to the olive tree (Annex ?). Such IPM Norms had been also used as technical reference for the measure A1 (see above). Here the Norms have been widened and updated: the latest release dates back to April 2005 (Gazzetta Ufficiale della Regione Siciliana, nr. 15 of April, 8th 2005). Moreover, cover crops and conservative soil tillage are also mandatory methods that go beyond the GAP.

For the sub-measure F1b (Introduction and maintenance of the methods of organic agriculture and livestock), the obligation to abide by the EC Reg. 2092/91 on organic agriculture, namely to undergo the control and certification system, certainly involves more than the mere application of GAP. However, there are not specific technical provisions for the olive crop.

1.4.3 The Regional Operational Programme ROP (2000-2006)

The Axis IV “Local systems of development” of the ROP Sicily provides three measures that concern, among others, the olive sector.

The measure 4.06, “Farm investments to strengthen the agricultural and zootechnical chain”, aims at improving the competitiveness of the agricultural and foodprocessing systems, through financing the

restructuring and modernization of the holdings. The share of public financing is the 40% of the total cost; 50% in LFA. For young entrepreneurs, the level of co-financing is 45% and 55%, respectively. The total amount available for the measure on 2001 was 73.053.713 Euro.

For the olive sector the only limitation is represented by the fact that the holdings producing olives for oil production are not allowed to increase the number of the trees; however, when table olives groves are concerned, production increase is allowed, provided that native olive cultivars are planted.

On 2001, the total requests admitted to the financing were 526. Of which, 80 requests were made by olive holdings, for an amount equal to 11.700.865,12 Euro. Table 20 shows details.

Table 20: Grants for investments in olive holdings through structural funds, year 2001

Number of requests	Objective	Amount (Euro)
22	production of olive for oil	4.915.346,47
58	production of table olives	6.785.518,65

Source: CORERAS, 2003

The measure 4.09, “Improvements of processing and marketing conditions”, aims at modernizing and empowering the regional food sector. Voluntary certification schemes for quality (ISO 9000) and environment (ISO 14000) are also financed by this measure.

In the olive sector the measure provides aids for improving the mills; the bottling, packaging and storing the oil. For table olives, the processing equipment could be enhanced through this measure.

The total amount available for the measure on 2001 was 69.970.588 Euro.

However, the number of applications to this measure from holdings of the olive sector has been very low so far.

The measure 4.13, “Marketing of quality agricultural products” aims at supporting the development of regional products of high quality. Therefore, the support to PDO, PGI, organic products and other kinds of quality initiatives are the target of the aid. Feasibility studies and consultancies to implement voluntary certification schemes for quality (ISO 9000/HACCP) and environment (ISO 14000) are also financed by this measure. The total amount available for the measure on 2001 was 30.000.000 Euro. As for the 4.09 measure, however, the participation to this measure by the holdings of the olive sector has been very low so far.

1.4.4 The Project to improve quality of olive oil (EC Reg. 528/99)

The implementation of the EC Reg. 528/99 resulted in a large and heterogeneous programme of training and demonstration activities, throughout the whole Sicily, targeted at improving the olive growing techniques as well as the processing methods to obtain high quality extra-virgin oil.

The project started on the year 1999/2000 and it is still running.

The attention for the environment was one of the foremost features of the project, both in the production and the processing phases.

The financial resources to support the project activities originated from a 1,4% deduction from the premium for oil production provided by the CMO to the producers.

In particular, the following actions were implemented:

- Control of the olive fly (*Bactrocera oleae*) and other harmful pests, including the field test of control devices, alarm and evaluation;
- Improvement of the olive groves management techniques; improvement of harvest, storage and processing of the olives as well as the oil storage;
- Technical assistance to the olive and oil producers with the aim to improve the agro-environment as well as the quality of olive and oil production;
- Waste management optimization to reduce its environmental impact;
- Training and demonstration actions to inform the producers and the mills operators about issues on olive oil quality and environmental impact of olive growing;
- Setting up laboratories for the sensorial and chemical analysis of olive oil;

- g) Collaboration with specialised bodies for the realisation of targeted research programs on qualitative improvement of virgin olive oil, linked to the improvement of the environment.

The actions were implemented in olive areas already characterized by homogeneous production of high quality extra virgin oil, but in need of further improvement. All the intervention areas (Table 21) are inside PDO areas, where the 750 pilot holdings were identified.

Table 21: Project intervention areas

Area	Name of the PDO zone	Area (ha)	Number of olive farms
AREA A	"VALLI TRAPANESI"	6.000	n.a.
AREA B	"VAL DI MAZARA"	35.000	30.000
AREA C	"MONTI ETNA"	7.000	12.500
AREA D	"MONTI IBLEI"	19.000	22.000
AREA E	"VALDEMONI"	35.000	n.a.
AREA F	"VALLE DEL BELICE"	12.000	n.a.

Source: AFDRS

Several associations of producers and mill operators were involved as implementing partners, as prescribed by the Regulation: at least one association per province was engaged. The agronomists of the associations worked closely with the technical staff of the regional branch offices, scattered throughout Sicily, namely the Operational Sections of Technical Assistance of the Agricultural and Forests Department of Sicily Region.

Table 22: Expenditure in the period 1999-2003

	1999/2000	2000/2001	2001/2002	2002/2003	Total x action	%
Action	Costs (€)	Costs (€)	Costs (€)	Costs (€)	Costs (€)	
a)	110.472,00	332.319,34	471.012,36	484.913,15	1.398.716,85	29,9
b)	158.917,00	178.071,13	326.882,49	144.271,40	808.142,02	17,3
c)	33.185,00	1.017.082,66	115.906,67	143.512,36	1.309.686,69	28,0
d)	2.102,00	5.345,85	21.322,30	20.880,71	49.650,86	1,1
e)	102.213,00	206.055,14	197.383,20	129.674,31	635.325,65	13,6
f)	42.015,00	103.936,70	111.417,34	150.958,11	408.327,15	8,7
g)	-	-	-	68.483,41	68.483,41	1,5
Total	448.904,00	1.842.810,82	1.243.924,36	1.142.693,45	4.678.332,63	100,0

Source: AFDRS

As shown in Table 22, it is evident that the highest priority has been given to the action a): in fact, the action was very successful in testing at field level the IPM methods applied to the most harmful pest of olive tree in the Mediterranean environment. Actually, the administration pushed the farmers to reduce the number of treatments with agro-chemicals, in favour of more sustainable methods, as integrated and/or organic farming.

2. THE CASE OF SICILY - VERTICAL QUESTIONS

2.1 Olive – Theme 1: production based subsidies

Question 1(O1): Do the production based subsidies of the CMO for olive oil provide an incentive for intensification and irrigated production and if so: what are the environmental impacts in terms of soil erosion, run-off to water bodies, degradation of habitats and landscapes and exploitation of scarce water resources ?

and

Question 2(O1). Do the production based subsidies of the CMO lead to extra inputs of agro-chemicals as an insurance premium for the related income support and if so: what are the impacts of this on flora and fauna (biodiversity) and pollution, especially of soil and water?

2.1.1 Assessing the trend of intensification (including agro-chemicals) of the regional olive orchards

Intensification in terms of planting density could not be directly assessed since it was not possible to access to the data of the Italian “olive cadastre”, managed by AGEA. The evolution of number of trees presented on Table 11 just refers to the claims made year by year, but it does not give information on the total variation of the number of trees. From the national study, Table 1 indicates that Sicily’s density of plantation was on 2000 classified as “low and very low”, i.e. equal to 75 trees/ha vs. the national average equal to 166,56 trees/ha. Unfortunately, variation of density along the time is not reported.

Data on yield evolution for the period 1996 - 2003, presented on Table 6, show that the yearly fluctuations of production were rather limited and not characterized by a defined growing trend; according to the interviewed experts, yield variations were mostly due to the phenomenon of alternate bearing. Therefore, it may be concluded that intensification through yield maximization did not occur.

Statistical data on amounts of agro-chemicals applied per single crop are not available. Therefore, overall agro-chemicals consumptions are here reported, for Sicily. This can give an idea on the general trend, but it does not provide specific information for the olive crop.

For the interval 1997-1999, the AEM/RDP intermediate evaluation reports the following variations:

- Fungicides: -24,5 %
- Insecticides/acaricides: - 7,4 %
- Herbicides: + 19,1 %
- Various: - 21,3 %

The trend is generally negative, except for the herbicides. However, even if the absolute amount of herbicides has increased, it is reported that the high toxicity active ingredients have been replaced by less noxious ones, so mitigating the environmental impact.

Table 23 shows the agro-chemicals consumption from 1999 to 2003, surveyed by ISTAT, from which it emerges a sharp augmentation of fungicides (ten times!) from the three-year period 1999-2001 to 2002; a rather steady use of insecticides/acaricides; and a growing trend of use of herbicides.

However, it is worthy to highlight that the technical means for pests and diseases control through sustainable methods (organic agriculture and traps) have also drastically increased along the five years.

Table 23: Evolution of agro-chemicals consumption in Sicily (kg), 1999-2003

Year	Fungicides	Insecticides/ acaricides	Herbicides	Various	Organic	Total	Traps (nr)
1999	4.002.065	2.892.533	1.613.668	3.675.698	4.921	12.188.885	68.591
2000	3.792.150	2.864.498	1.365.901	3.193.904	10.093	11.226.546	97.471
2001	3.026.872	2.998.598	1.210.467	2.943.946	10.099	10.189.982	78.712
2002	13.009.977	2.668.958	2.230.371	3.326.173	33.138	21.268.617	254.033
2003	11.644.501	2.635.775	2.713.287	3.033.662	34.611	20.061.836	262.749

Source: ISTAT

2.1.2 Answer from the interviews to the sector leaders

The CMO institutional responsables of the Regione Sicilia; university researchers and leaders of producers associations agree on the fact that the intensification that occurred in olive groves was not significantly linked to the premium.

According to the researchers, who have been testing during the last 5-7 years intensively-managed olive orchards together with innovative producers, the main target is to design cropping systems able to allow timely harvest by mechanical means, so to obtain high quality olive oil at low costs. Therefore intensification, also in terms of increased inputs (water, agro-chemicals, energy), chiefly occurs to accomplish this organisational-qualitative objective. Specific investigations on the subject “olive growing vs. its environmental positive or negative impacts” could not be found.

2.1.3 Answer from the interviews to the producers

The answers of the “small” producers (olive area from 0,5 to 3 hectares) and “medium-big” producers (higher than 3 to 67) are summarised below. In general, it emerges a very weak correlation between the production-based subsidies and the intensification of the cultivation, with different reactions from small and medium-big olive holdings.

2.1.3.1 Small producers

Table 1 shows that over the past forty years the average olive farm size did not exceed 0,8 hectares. In fact on 2000, the 66,6% of the holdings showed an utilised area not wider than 2 hectares.

The small farmers interviewed reported that generally no important intensification occurred in their farms over the last 15 years, and when it happened it was not linked to the opportunity to receive (more) production-based subsidies.

Actually, it is quite hard to significantly increase the yield in that kind of orchards, where the trees are usually old and grown in a traditional pattern (high distance between the trees; big canopy development; difficult to be sprayed; etc.), especially when positioned on sloping land. Moreover, in such kind of orchards the labour incidence on the total production cost is typically very high (60,8%), where the manual harvest alone represents the 40% of the cost (CORERAS, 2003): as a consequence, further investments are not cost-effective. The most common factor of intensification is represented by the introduction of drip irrigation, which is usually practiced in emergency situations, in order to mitigate alternate bearing.

Twelve respondents reported positive environmental effects linked to olive growing: in fact, such farmers grow olive trees often under marginal conditions (on steep slopes; on terraces; rainfed; etc.), preserving in this way the landscape as well as the integrity of the hill sides.

The general statement of all the group was that the level of the premium is too low to provoke intensification: it may help, at most, to cover part of the production costs.

2.1.3.2 Medium-big producers

Medium-large capitalistic holdings - that instead have generally intensified the groves over the last 15 years, by introducing mechanisation for the harvest, drip irrigation systems and productive cultivars that require higher inputs of fertilisers and agro-chemicals - reported that the improvements were purposely done to enhance the overall farm efficiency, with the aim to empower the company's position within the (high quality) extra-virgin olive oil international market. In fact, the expectations of

higher subsidies did not played a determining role in the choice: as a matter of fact, eighteen respondents consider the level of the premium not fully satisfying.

Still, only two of the respondents (the biggest holdings indeed) stated that the premium has been crucial to carry out a certain intensification – namely it was the *means* but not the *cause* -, e.g. to increase the orchard density or introduction of irrigation; in addition to that, the CMO aid helped them to keep on farming during times of market crisis.

Four respondents, among the entrepreneurs of large holdings, admitted that the intensive orchard management resulted sometimes in (serious) environmental drawbacks, e.g. increase of soil erosion on sloping land; possible reduction of biodiversity due to herbicides and pesticides, etc.. It has been also reported that some groves on slopes were abandoned in the past, since no more suitable for mechanization: the abandonment caused the “re-naturalization” of the grove, with wild shrubs growing between the trees, making the grove prone to fire and changing the original landscape.

Water resources were not depleted, according to the all the respondents, since the major part of the farms has its own water reservoir, fed by rain water. To this regard, all the farmers stated that irrigation is carried out only in drought periods, being an emergency intervention.

Finally, the respondents stated that environmental problems do not straight originate from the CMO policies: to some extent, they are the consequence of a more market-oriented strategy for high quality oil production.

2.1.4 Conclusions

Summarising, both the categories of producers did not give emphasis to a direct link between the CMO subsidising policy and intensification trend in their holdings. Rather, they do consider the possible negative impacts on the agro-environment as result of the crop management *per se*.

Of course, for small producers the premium has a negligible incidence on their budget, given the low volumes of production. For the medium-big producers, instead, the amount of the production-based premium may significantly affect their economical performance, but it is rather perceived as a sort of “shock absorber”, rather than a primary factor in itself to intensify production.

2.2 Olive – Theme 2: farming practices

Question 1 (O2): Does the CMO support sustainable farming practices that are beneficial to the environment such as organic and integrated production systems?

2.2.1 CMO direct support to sustainable farming practices that are beneficial to the environment

CMO direct support to sustainable farming practices has taken place through the implementation of the EC Reg. 528/99 resulted in a large and heterogeneous programme of training and demonstration activities, throughout the whole Sicily, targeted at improving the olive growing techniques as well as the processing methods to obtain high quality extra-virgin oil. The project started on the year 1999/2000 and it is still running.

The attention for the environment was one of the foremost features of the project, both in the production and the processing phases.

The financial resources to support the project activities originated from a 1,4% deduction from the premium for oil production provided by the CMO to the producers.

Details on the Project are reported in Chapter 0.4.4.

2.2.2 CMO links with sustainable methods of farming in Sicily

Any links between the activity of the associations of olive producers (AP) and the environmental agricultural performance of their members have to be absolutely excluded, in Sicily. As stated above, in Sicily there are not real producers organisations (PO), as intended for the fruit sector, rather there are the associations of producers (AP), the main task of which is to assist their members to abide by the administrative requirements of the CMO to get the premium (as explained in the above chapters). Furthermore, the APs join the regional administration in implementing measures for oil quality improvement (EC Reg. 508/99 and subsequent modifications), with the producers and mills operators as final beneficiaries.

Usually, APs do not manage and/or market the product, thus they do not have to respect any “operational programme” as basis for their activities. As a consequence of that, there are no environmental specifications that have to be respected either by the producers or by the mills operators.

Such a statement has been confirmed by the interviewed farmers, who all belong to APs: in fact, they stated that there are no production requirements that have to be observed in order to be member of an AP, and, consequently, to benefit by the CMO aid.

The interviewed leaders of the olive sector stated that integrated and organic olive growing have developed in Sicily independently from the CMO evolution.

2.2.2.1 Olives and oil from integrated agriculture

Integrated and organic olive growing has developed in Sicily starting from 1994, with the first implementation of the AEP (EC Reg. 2078/99). The evolution of the agro-environmental measures in Sicily, through the AEP and subsequently the RDR implementation, is described in the chapters 0.4.1 and 0.4.2. The incidence of the AEP on the olive sector is here repropounded, for year 1997, on Table 24. The concept of “integrated olive growing” in Sicily was, at its beginning, limited to the practice of “reduction of agro-chemicals”.

Afterwards, the RDP Action F1a (Methods of integrated farming) replaced the Measure A1 and introduced a wider concept, making it mandatory the sustainable soil management and other ecological practices. Specific “Technical Norms on IPM” have been developed from 1994, as mandatory production standards for the implementation of measure A1 (Pesticides reduction): these Norms have been updated along the years, being today the reference for those farmers implementing the Action F1a.

Nevertheless, it has to be stated that “integrated olive oil” has never had its own market channel, being not linked to internationally/nationally recognised production/processing standards.

Table 24: Situation of EC Reg. 2078/92 implementation per crop tipology, on 1997

Crop	UAA concerned by AEM (ha)	Total UAA of Sicily per crop (ha)	Share of the concerned areas per crop (%)	% of the regional UAA involved by the AEM
Cereals	22.794	476.602	13,56%	4,78%
Pulses	1.155	15.377	0,69%	7,51%
Fodder crops	26.186	130.214	15,58%	20,11%
Vegetables	821	37.378	0,49%	2,20%
Other arable crops	689	142.005	0,41%	0,49%
Grape	22.754	174.280	13,54%	13,06%
Olive	<u>16.837</u>	<u>155.163</u>	<u>10,02%</u>	<u>10,85%</u>
Citrus	36.498	101.847	21,72%	35,84%
Fruits	24.466	79.154	14,56%	30,91%
Other perm. crops	966	4.349	0,57%	22,21%
Grass- and perm. pastures	4.689	316.812	2,79%	1,48%
Woods	1.040	184.350	0,62%	0,56%
Other (uncult. land, natural areas, etc.)	9.174	130.590	5,46%	7,03%
TOTAL	168.069	1.948.121	100,00%	8,62%

Source: AFDRS

2.2.2.2 Olives and oil from organic agriculture

Organic olive growing has been supported in Sicily from 1994, with the implementation of the AEP, with the Measure A2 (Organic farming). Subsequently, the RDP introduced the equivalent Action F1b (Introduction and maintenance of the methods of organic agriculture and livestock). Chapter 0.1.4 presents the evolution of the organic olive sector as financed by the AEP and the RDP.

Unlike integrated olive growing, the organic olive sector could benefit, like all the organic food sector, by the EC Reg. 2092/91, namely by an internationally-recognised certification system, that allowed the organic Sicilian extra-virgin olive oil to reach new market outlets, by also giving more chances to

the sector to develop. Table 25 shows the evolution of the organic olive sector on 2001 and 2002.

Table 25: Evolution of the organic olive sector 2001-2002

	2001*	2002**	%
Total UAA (ha)	6.624	10.911	+ 39,3
Production (t)	15.235	27.277,65	+ 44,2
Yield (t/ha)	2,3	2,5	+ 8
Incidence on national organic olive area (%)	8,67	10,7	+ 19
Incidence on national production of organic olives (%)	2,99	9,16	+ 67,4

Sources : *ISMEA, 2004; **CORERAS, 2003

2.2.3 Conclusions

Summarising, the CMO does support in Sicily sustainable farming practices through some actions of the project to improve olive oil quality, that in turn promotes environmental friendly production and processing techniques, as biological control of the olive fly; waste management optimization; specialistic technical assistance and field research aiming at improving the environmental impact of olive growing and processing.

However, integrated and organic farming are not supported by the CMO and olive/oil producers who benefit by the CMO aid do not have to abide by specific norms about environmental constraints.

2.3 Olive – Theme 3: specific measures

Question 1 (O3): What is the environmental impact of restriction on imports from outside the EU?

Question 2 (O3): What are the environmental impacts of increased maximum guaranteed quantities per member state?

The interviewed producers, both big and small, did not know about the increase in MGQ and NGQ, caused by the “interim CMO reform”. Neither they were aware about the getting over of the fixed NGQ, occurred in Italy over the last years. Therefore, such question could not be properly addressed by the respondents, in order to link their farming behaviour with possible environmental impacts, due to the increase in Italy (and then in Sicily) of the NGQ.

According to sector leaders, the major transformation actually happened after 1987, when the MGQ tool was introduced by the OCM.

Prior to this time, there was a general tendency to increase the yield of the olive orchards in order to maximize the amount of the premium. After the introduction of the MGQ, the fixed quotas influenced the intensification of farming, bringing somewhat to reduce - or not to increase - the use of agro-chemicals, soil tillage intensity, etc. This was particular evident after 1998, with the introduction of the NGQ, that clearly showed to the producers that exceeding the yearly quota resulted in a lower amount of the premium.

However, it is not pointed out a direct correlation between the NGQ increase on 1998 (and the 6% reduction of the aid amount) and a diverse environmental impact.

In conclusion, according to the respondents, the implementation of the MGQ/NGQ led to a minor environmental impact, in terms of soil erosion, water pollution and impoverishment of insect and weed populations. Unfortunately, scientific evidence of such a statement were not found during the survey.

Question 3 (O3): What is the environmental effect of the removal of the production aid in terms of payment per tree meant for smaller producers?

In Sicily, most of the olive holdings are extremely small, though a limited number of holdings (504) are of big size (over 100 ha) (ISTAT, 5th Census of Agriculture, 2000).

Table 2 shows that more than 66,6% of the olive holdings are smaller than 2 hectares (47,5%, smaller than 1 ha and 19,1%, between 1 and 2 ha).

From Table 6, by dividing the average total oil production by the average total olive area, the average oil production per ha is obtained, equal to 307 kg.

Therefore, at least the 47,5% of the total olive holdings in Sicily can be estimated “small producers”, according to the former CMO definition; in fact there are more, since holdings of 1,5 ha still remain under the threshold of 500 kg/ha of oil produced.

More accurate data on the number of small producers in Sicily before 1998 could not be obtained by AGEA, that refused to provide the data to the consulting team.

The interviewed small producers stated that little olive farms are typically managed in a traditional way, with a moderate use of agro-chemicals and, occasionally, with emergency irrigation; most of the orchards are characterized by a low plantation density, equal to 220-250 trees per hectare; often the orchard is intercropped with arable crops. Moreover, in many cases the olive orchard is managed by a part-time farmer, who carries out just the basic farming operations.

Due to above reasons, the removal of the payment per tree, introduced by the EC Reg. 1638/98, did not really change the producer’s attitude toward the orchard management. Basically, the low amount of the premium continued to be irrelevant in driving the small farmer’s choices.

In conclusion, there are not significant differences between the before and the after of the CMO reform in terms of environmental impact from the farming activity.

2.4 Olive – Theme 4: structural and accompanying measures

Question 1 (O4): What are the environmental impacts of the grants for grubbing up old groves, replanting and irrigation [Rural development regulation 1638/1998]?

In general, grubbing up olive trees is prohibited by law in Sicily, unless it is authorized by the public Authority.

As explained in Chapter 0.4.3, the ROP Sicily 2000-2006 supports investments in the holdings to renovate the olive orchards, with the objective of enhancing the farm efficiency, with the restriction to not increase productivity. Thus, new olive plantations are not funded.

In particular, the ROP measure 4.06 “Farm investments to strengthen the agricultural and zootechnical chain”, Action 1 “Investments in holdings for plant crops”, provides grants for restructuring and modernization of the holdings. Supported investments for the olive sector are:

- 1) replacement of old trees with new ones for the rationalization of farm management and quality purposes: however, only very old and sick trees can be grubbed up, after getting the authorization from the competent Authority. The investment plan must always provide replanting the uprooted trees;
- 2) new irrigation schemes and/or modernization of the existing ones with the aim to save water and energy.

According to the CORERAS study (2003), on 2001 the total requests made by the olive holdings were 80, for an overall expenditure of 11.700.865,12 Euro. Table 26 shows details.

Table 26: Grants for investments in olive holdings through structural funds

Number of requests	Objective	Amount (Euro)
22	production of olives for oil	4.915.346,47
58	production of table olives	6.785.518,65

Source: CORERAS, 2003

Details on the implemented investment plans are not available (i.e. what exactly has been done). The interviewed AFDRS officials did not have cumulative data on this subject. On the other hand, scientific evidence/dedicated studies about the environmental impact of the above-mentioned investments in the olive groves are not available: in fact, the interviewed research institutions could not give an appropriate answer to this question.

The RDP exclusively concerns the AEM implementation (see Chapter 0.4.2), therefore it does not support structural investments.

Actually, no one among the interviewed farmers uprooted olive trees: usually, when a tree is too old to be properly managed it is drastically pruned, in order to rejuvenate and revitalize it. The olive physiology in fact is such that a new productive plant can be obtained by this technique after 3-4 years.

This statement has also been confirmed by the interviewed sector leaders: the practice of uprooting olive trees has been - and in fact it is - extremely rare in Sicily.

A number of farmers actually have planted new olive groves in their farms, since 1993: however, this happened without any financing support by structural EU funds, for the reasons explained above. Plantation densities of the recent orchards consisted in about 330-400 trees/ha.

In several cases, new productive trees have been obtained by grafting old trees with new cultivars; in other cases, the density of the initial old grove has been increased by planting new trees between the lines of the old ones.

Irrigation schemes, in the shape of drip irrigation, have been introduced during the last 10 years by the more market-oriented farms, that usually have specialised olive groves wider than 5 hectares. A couple of them tried to apply for the regional co-financing, but without success since on that time the selection list gave priority to table olives groves. All the farmers agreed on the fact that it is very hard to have access to the structural funds, because of too much bureaucratic procedures and long time prior to receive the payment: as a consequence, most of the producers preferred to make the whole investment on their own pockets.

According to the farmers, a potential negative impact on water resources might be correlated to the misuse of the irrigation practice. However, the major part of the respondents had a private reservoir, fed by rain water, so without mining the underground water. Other farmers, having a private well, stated that the use of irrigation is always limited to emergency intervention: in fact, in some years of good rain, they did not water the grove at all. This statement has also been confirmed by the interviewed researchers.

Question 2 (O4): What are the environmental impacts of the LFA aid for olive farmers?

According to the RDP, the Less Favoured Areas (LFA) in Sicily, zoned according to the EC Dir 268/75, represent the 54,8 % of the total regional area.

The LFA are in all 1.417.256 hectares, the 60,4% of which represented by mountainous areas.

The olive is quite spread in LFA, in small patches for familiar use, but in most of the cases very well considered, being a traditional crop belonging to the local culture.

In the period 1992-1999, 14.000 applications/year were presented on the average, part of which were paid through the structural funds at that time. Other previous applications were paid by State funds. The total expenditure for support of LFA in the period 1990-1999 counts 205.775 millions of lire (Table 27).

Table 27: Total expenditure 1990-1999 for the “compensatory indemnity” for LFA (x lire 000.000)

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
1.750	18.621	39.014	37.800	30.700	33.700	27.500	9.200	6.241	1.250	205.775

Source: Sicily RDP document

On the above period of observation, payments for the LFA compensatory indemnity were not linked to any eco-conditionality rules.

Specific statistics about the implementation of the LFA grant on olive orchards are not available, for the period 1990-1999; moreover, environmental impacts of the LFA aid in olive groves have never been investigated by research institutes.

Interviewed farmers, who live in LFA, stated they did not receive any specific grant: some of them declared that when they made the application higher priority was given to farms with livestock. Olive orchards had a secondary importance.

In the RDP 2000-2006, the payment for the applicants to the E Measure, targeted to support the traditional agricultural activity in the LFA of Sicily, is instead linked to eco-conditionality rules

(cross-compliance). Namely, the GAP standards represent the minimum farming standards that have to be respected by the farmer-beneficiary of the measure (see Chapter 0.4.2.1 for GAP technical guidelines for olive).

However, due to lack of financial resources, the E Measure has never been activated so far.

In conclusion, there is not specific information about LFA aid and its environmental effects on olive growers' farming activity, thus a complete answer cannot be given to this question. Moreover, LFA aid stopped on 1999 and the olive crop was not a priority.

However, it may be deduced that - being the olive very much spread in the Sicilian LFA - indisputably the aid helped the farmers to keep on looking after the olive groves, so preventing abandonment and all its related drawbacks (e.g. fire).

3. THE CASE OF SICILY - HORIZONTAL QUESTIONS

3.1 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.]

Statistics on land use over time are not available for Sicily, therefore the opinions of sector leaders and farmers interviewed are used here to address this question.

As stated by all the respondents, olive groves are rarely abandoned in Sicily, especially by the small farmers.

Partial abandonment of olive groves may principally occur in capitalistic holdings, market-oriented, that leave the most marginal (usually less productive and costly to be managed in a profitable way) parts of the groves.

Similarly, olive groves are occasionally uprooted since olive is considered a “protected” species by the law in force and due to the customary affection for this crop.

This is also in line with the CMO contents, that in fact do not present specific measures encouraging the abandonment of the groves.

Actually, the regional olive area has been continuously growing over the period 1998-2002 (Table 6), however the answer to questions 1 (O1) and 2 (O1) show that the expansion was mainly market-driven and not related to the CMO premium.

The new olive groves mainly took the place of uprooted vineyards or arable crops. In some cases, fallow land has been planted with olive orchards.

Sometimes old abandoned olive orchards or wild olive trees (*ogliastri* or *olivastri*) have been turned productive again, after grafting with new cultivars.

3.2 Horizontal – Thème 2 : adequate spending level and method

Question 1 (H2): Are there indications that a change in total spending on the CMO in its present form 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.]

Leaders of APs suggest that the aid for small producers (who represent almost the half of the Sicilian olive holdings) is useless, since it affects very weakly the producers' income. That money could be better used as incentives for environmental protection in olive orchards, plus for other purposes to promote production, processing and consumption of high quality olive oil.

Professionals and farmers unions' leaders agree on binding the payment of the premium to the implementation of concrete sustainable farming practices.

Farmers statements on this theme are the following:

- the aid for oil production should be increased in order to prevent olive groves abandonment;
- specific CMO incentives should be addressed to organic production;
- to provide higher premiums (a sort of eco-premium) for producers of marginal areas that commit themselves to maintain terraces on slopes; soil conservation measures; non use of herbicides; etc;
- to provide specific incentives for those farmers willing to plant new groves in marginal areas, so preserving the landscape and the soil;
- to provide specific incentives for those farmers willing to establish low inputs, not intensive, groves.

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

Market-oriented producers answered that the management of the orchard would remain basically the same, after decoupling the aid from the real production. Therefore, they stated that decoupling would not have environmental consequences, both positive and negative.

Small producers, however, feel that decoupling might result in a minor care for the orchard, i.e. in a less investment due to the fixed income guaranteed. Some others replied that the groves could even run the risk to be abandoned, discouraging the oil production.

Two professionals and one AP leader basically gave the same response as above, underlining that the market-oriented holdings as well as the small producers who manage their orchard on a familiar basis would keep on farming and looking after their grove, as before. However, in a large part of the holdings the olive cultivation would be probably reduced, since the new tipology of compensation perhaps would not be enough to balance the production costs (especially for harvest operations), as the current one, based on production.

The other interviewed sector leaders could not give an answer to this question.

3.3 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?

As written on paragraph 1.4.1, cross-compliance norms for permanent crops (olive included) have been (and still are) rather low incisive in Sicily. Namely there are no compulsory farming standards (to be observed for instance by the applicants to the ROP or CMO olive measures), that are specifically addressed to mitigate potential agro-environmental impact deriving from olive growing.

Instead, the AEMs (Reg. EC 2078/99 and Reg. EC 1257/99, see paragraph 1.4.2) – chiefly represented by integrated and organic farming - introduced for the first time production standards specifically targeted to the protection of the environment. Organic agriculture had already its own standards whereas integrated farming has been linked to certain IPM technical norms, devised by the AFDRS and compulsory for the beneficiaries of the measure.

It has to be noted that the second set of AEMs (Reg. EC 1257/99) was exclusively targeted to the more environmentally sensitive areas of the region (hotspots). In fact, only those holdings having the 50% (at least) of the farm area sited on “priority areas” - namely environmentally more vulnerable areas - as parks and protected areas, natural reserves, CIS (EC Dir. 438/92 “Habitat”), SPZ (EC Dir 409/79 “Birds”), highly vulnerable areas for water pollution (EC Dir 91/676), etc, had/have access to the benefits provided by the AEMs.

Furthermore, GAP standards, purposely created in occasion of the second set of AEMs, have to be implemented by all the AEMs beneficiaries (see paragraph 1.4.2.4) in their farms.

Tables from 15 to 19 present statistics on the implementation of AEMs for the olive sector, providing a picture of the impact on the regional agro-ecosystem.

APPENDICES

Annex 1: List of people met or contacted

Annex 2: Main bibliography identified (used or not) in relation with the study

Annex 1: List of people met

Sector leaders (professionals, AFRS officials, farmers unions leaders, certification bodies for organic agriculture leaders, AP leaders, researchers)

Tiziano Caruso, Professor of Horticulture, University of Palermo

Giuseppe Campisi, Phd., Researcher of Horticulture, University of Palermo

Giuseppe Dara Guccione, vice-President, APOL, Association of Olive Oil Producers, Palermo

Margherita Caracappa, CMO olive responsible AFDRS, U.O. n. 24, Palermo

Riccardo Saia, Olive mills responsible AFDRS, Palermo

Gianfranco Lombardo, agronomist

Antonino Scuderi, responsible of ICEA, certification body on organic agriculture, Catania

Salvatore Taranto, regional director of the farmer union Confagricoltura, Palermo

Giuseppe Greco, agronomist of the ESA (Agricultural Development regional body)

Donatella Manzo, Quality Improvement of Food Products, AFDRS, Palermo

Rosa De Gregorio, AEM-RDP responsible AFDRS, Palermo

Ida Agosta, INEA, Palermo

Ferdinando La Motta, responsible of the Agricultural Assistance Center (CAA) of the farmer union Coldiretti, Palermo

Tommaso La Mantia, Professor of Horticulture, University of Palermo

Lucio Gristina, Professor of Horticulture, University of Palermo

Annex 2 : Main bibliography identified in relation with the study
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Intermediate evaluation of the RDP 2000-2006 of the Sicily Region.

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ISMEA, 2004. *Lo Scenario Economico dell'Agricoltura Biologica*.

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Progetto Per Il Miglioramento Della Qualita' Della Produzione Dell'olio D'oliva - Relazione Finale. Ciclo 2003/2004. Regione Siciliana. Assessorato Agricoltura e Foreste. Dipartimento Interventi Strutturali. Servizio V – Produzione Vegetale Impianti Agro-Industriali – U.O. 24 – Comparto Olivicolo.

"Analisi della filiera olivicolo-olearia biologica nella Sicilia orientale", research project carried out by the Dipartimento di Scienze Economico-Agrarie ed Estimative of the Università degli Studi di Catania