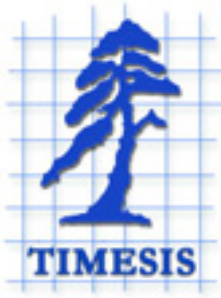




**EVALUATION DE L'IMPACT ENVIRONNEMENTAL
DE L'ORGANISATION COMMUNE DE MARCHÉ
DES CULTURES PERMANENTES**

**ANNEXE 10 : OCM FRUITS
ETUDE NATIONALE ITALIE et
ETUDE DE CAS SICILIA**

Novembre 2005



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

Novembre 2005

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GLOSSARY

AEM Agro-Environmental Measures

AFDRS Agriculture and Forests Department of Region Sicilia

AGEA National Paying Agency for Agriculture

ARPA Regional agency for the environmental protection of Emilia Romagna

ARPAT Regional agency for the environmental protection of Tuscany

CAP Common Agriculture Politics

CEE Economic European Commission

CMO Common market organisations

CORERAS Consorzio regionale per la ricerca applicata e la sperimentazione (Sicilia)

EAGGF European Agricultural Guidance and Guarantee Fund

EM: environmental measures

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

ESA Environmental Sensitive Areas (north East part of Italy)

GPV. Gross product value

IFOAM, International Federation of Organic Agricultural Movements

INEA Istituto Nazionale Economia Agraria

IPM Integrated Pest Management

ISMEA Istituto per i Servizi per il Mercato Agricolo Alimentare

ISTAT: National Statistic Institute

OP: Operational Program

MiPAF- Ministry of Agriculture and Forestry

PO: Producers Organisation

RDP: Rural Development Plan

SIAN- Sistema Informativo Agricolo Nazionale

SINAB- Sistema di informazione nazionale sull'agricoltura biologica

TA: technical assistance

UIACOA Unione Italiana Associazione Produttori Ortofrutticoli e Agrumari

VOG-VIPT and VIP L Producers' organisations in Alto Adige

1. CONTEXT OF FRUIT PRODUCTION IN ITALY

1.1 Main characteristics of fruit production in Italy

1.1.1 Evolution of the orchards of different fruits concerned (apples, pears, nectarines, citrus fruits and nuts) -1990 to 2003

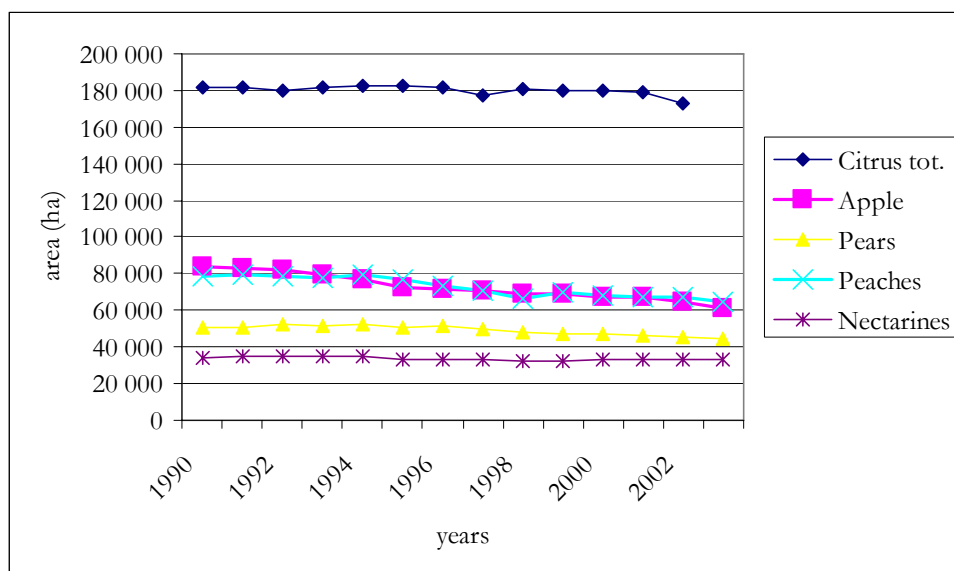
Tab. 1 Evolution of the orchards area– 1990 to 2003 (ha)

	1990	1991	1992	1993	1994	1995	1996
Citrus tot.	n.a.	184.278	182.181	183.152	184.051	184.823	183.590
Apple	84.232	83.065	81.665	79.135	76.561	72.687	71.597
Pears	50.582	50.746	52.087	51.755	52.722	51.574	51.767
Peaches	79.011	78.167	78.785	77.379	78.486	77.360	73.001
Nectarines	33.920	35.131	34.826	34.686	34.815	33.846	33.623
Total Italy	247.745	431.387	429.544	426.107	426.635	420.290	413.578

	1997	1998	1999	2000	2001	2002	2003
Citrus tot.	183.810	182.897	182.087	181.755	181.164	179.470	172.838
Apple	71.106	69.699	68.971	67.415	66.642	64.447	61.290
Pears	50.092	48.819	47.369	47.334	46.061	45.826	44.884
Peaches	71.277	69.387	68.859	68.290	67.351	67.458	64.553
Nectarines	33.856	32.482	32.745	32.861	32.962	32.965	32.865
Total Italy	410.141	403.284	400.031	397.655	394.180	390.166	376.430

Source: EUROSTAT data;

Graph. 1 Evolution of the orchards areas (ha)



Source: EUROSTAT data;

The data put in evidence that no orchard areas increase. The trend of the last years is a decrease in the whole fruit sector.

1.1.2 Evolution of the orchards Yield (100kg/ha) -1990 to 2003

Tab. 2 Evolution of the orchards yields (100kg/ha) –1990 to 2003

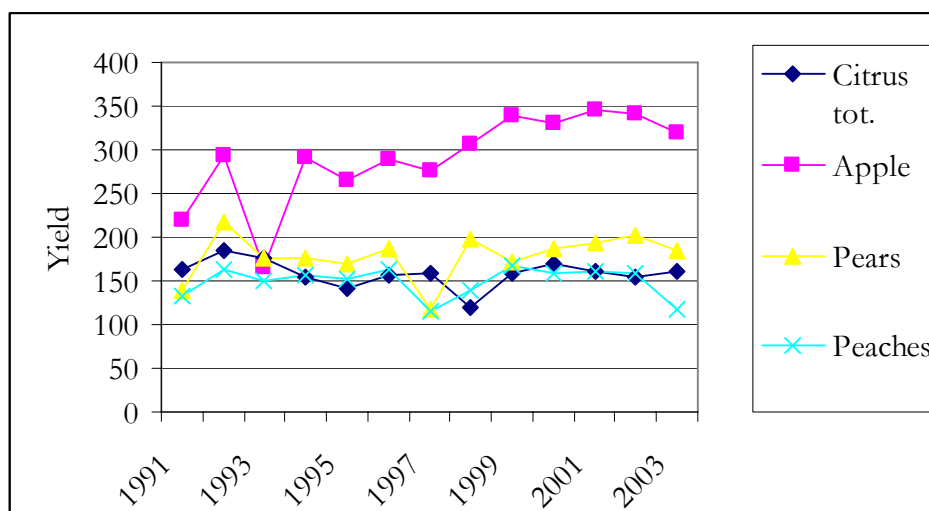
	1990	1991	1992	1993	1994	1995	1996
Citrus tot.	n.a.	162,09	184,600	175,993	153,388	141,106	156,039
Apple	243,400	220,300	293,200	166,000	291,624	265,797	289,294
Pears	191,446	139,085	218,387	176,960	176,207	169,465	186,688
Peaches	153,637	132,665	163,631	150,945	155,951	152,404	163,680
Nectarines	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

	1997	1998	1999	2000	2001	2002	2003
Citrus tot.	158,706	119,809	159,458	170,569	159,823	155,414	160,912
Apple	276,555	307,506	339,769	331,079	344,994	341,245	318,772
Pears	117,578	197,582	170,870	187,990	194,435	201,340	184,035
Peaches	115,083	139,877	167,566	158,922	160,175	157,932	116,704
Nectarines	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: EUROSTAT data

Starting from 2000, the data on the fruit yields show a tendency towards a decreasing, as the following graph shows:

Graph. 2 Evolution of the orchards yield (100kg/ha) -1991 to 2003



Source: EUROSTAT data

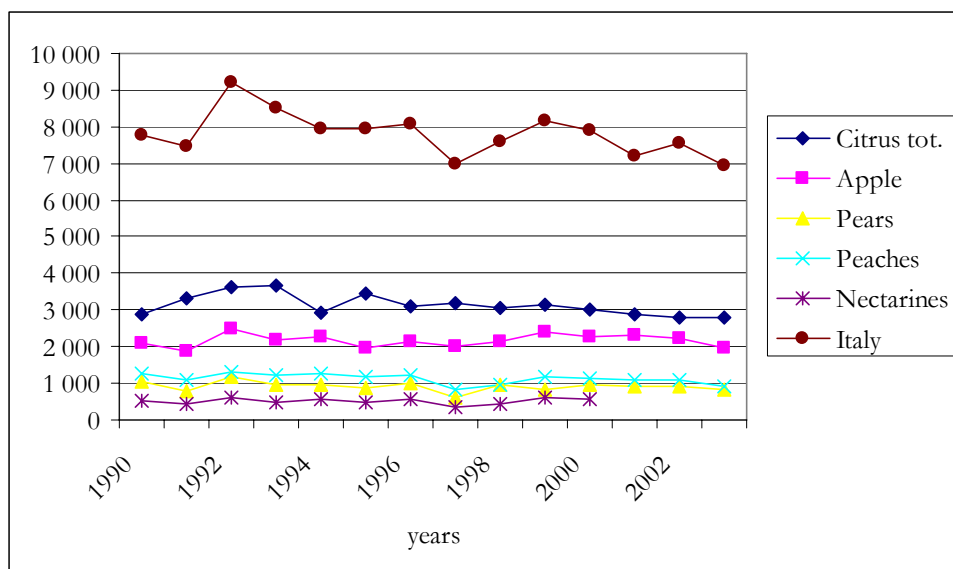
1.1.3 Evolution of production of (fresh) fruits -1990 to 2003

Tab. 3 Evolution of fresh fruits production (1.000 tons) –1990 to 2003

	1990	1991	1992	1993	1994	1995	1996
Citrus tot.	2.873	3.300	3.609	3.678	2.914	3.428	3.108
Apple	2.102	1.869	2.469	2.183	2.274	1.960	2.125
Pears	1.031	771	1.190	942	958	888	1.024
Peaches	1.250	1.106	1.323	1.208	1.248	1.193	1.239
Nectarines	517	425	616	497	575	494	571
Italy	7.773	7.471	9.207	8.508	7.969	7.963	8.067

	1997	1998	1999	2000	2001	2002	2003*
Citrus tot.	3.186	3.068	3.131	2.996	2.895	2.789	2.781
Apple	2.016	2.149	2.384	2.283	2.299	2.221	1.963
Pears	627	958	825	942	915	922	826
Peaches	832	950	1.191	1.115	1.078	1.097	926
Nectarines	346	457	624	578	n.a.	532	462
Italy	7.007	7.582	8.155	7.914	7.187	7.561	6.958

Sources ISMEA on ISTAT data; * EUROSTAT data

Graph. 3 Evolution of fresh fruits production (1.000 tons) –1990 to 2003

Sources ISMEA on ISTAT data;

The data on the fresh fruit production show a negative trend confirming the previous considerations.

1.1.4 Evolution of nut areas, yields and production 1990-2003

The general decrease in the nut surfaces is linked to the widespread phenomenon of abandonment, due to the competition of the extra-European countries.

With respect to each sector the hazelnuts, which represent the most important Italian crop, the trend is rather constant. With respect to the walnuts a reduction both in the area and the total production occurred till 2001 (Eurostat data from 1999 to 2003 are not available but we refer to publications on scientific magazines, in particular “*Informatore Agrario*”), due to the not adequate quality standards. However, in the last three years a phase of strong growth is underway, thanks to the use of new clones and production techniques, especially in some Northern regions, such as Emilia-Romagna and Veneto. On the contrary, the almond sector is constantly falling. Finally the other nuts had a rather inconstant trend in the period 1990-2003.

Tab. 4 Evolution of walnuts’ surfaces, yields and production

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Area(1000 ha)	6,692	6,563	6,518	5,712	5,069	5,2	5,1	5,1	5,1
Yield (100 kg/ha)	22,714	22,094	24,218	22,778	20,393	20,358	22,745	25,098	23,529
Production (1000 tons)	15,2	14,5	15,785	13,011	10,337	10,586	11,6	12,8	12

Source Eurostat (Eurostat data from 1999 to 2003 are not available)

Tab. 5 Evolution of hazelnuts' surfaces, yields and production

	1990	1991	1992	1993	1994	1995	1996
Area(1000 ha)	69,228	69,500	68,263	71,611	67,62	68,348	72
Yield (100 kg/ha)	14,643	17,186	13,111	11,055	16,562	16,061	14,425
Production (1000 t)	101,37	119,44	89,5	79,165	111,992	109,771	103,86
Following years→	1997	1998	1999	2000	2001	2002	2003
Area(1000 ha)	70,479	69,844	69,813	69,643	69,852	69,561	69,275
Yield (100 kg/ha)	12,777	16,705	16,958	14,149	16,705	17,173	12,024
Production (1000 t)	90,054	116,671	118,389	98,54	116,689	119,458	83,293

Source Eurostat

Tab. 6 Evolution of almonds' surfaces, yields and production

	1990	1991	1992	1993	1994	1995	1996
Area (1000 ha)	122,974	121,3	116,883	113,769	103,428	95,182	94,195
Yield (100 kg/ha)	7,723	10,42	8,472	8,728	8,723	9,485	9,665
Production (1000 t)	94,97	126,4	99,02	99,3	90,219	90,284	91,042
Following years→	1997	1998	1999	2000	2001	2002	2003
Area(1000 ha)	91,901	90,181	90,003	88,95	87,65	86,406	86,142
Yield (100 kg/ha)	11,37	9,758	11,453	11,777	11,898	12,139	10,608
Production (1000 t)	104,494	87,998	103,084	104,755	104,285	104,891	91,381

Source Eurostat

Tab. 7 Evolution of other nuts surfaces, yields and production

	1990	1991	1992	1993	1994	1995	1996
Area (1000 ha)	3,75	3,68	3,641	3,568	3,597	3,6	3,6
Yield (100 kg/ha)	0,587	6,549	0,426	0,378	0,342	3,333	3,611
Production (1000 t)	0,22	2,41	0,155	0,135	0,123	1,2	1,3
Following years→	1997	1998	1999	2000	2001	2002	2003
Area(1000 ha)	3,6	3,642	3,643	3,643	3,642	3,643	3,62
Yield (100 kg/ha)	4,444	1,406	7,271	7,598	4,838	0,516	5,506
Production (1000 t)	1,6	0,512	2,649	2,768	1,762	0,188	1,993

Source Eurostat

1.1.5 Evolution of citrus fruit areas, yields and production in Sicily (1990-2003)**Tab. 8 Evolution of citrus area in Sicily per species (hectares)**

	1991	1996	1997	1998	1999	2000	2001	2002	Δ % 02/91
Oranges	65.241	65.694	64.921	64.342	64.061	64.393	64.011	58.881	-9,7
Tangerines	7.802	7.581	7.448	7.355	7.144	7.150	7.029	7.035	-9,8
Clementines	4.422	4.454	4.426	4.232	4.247	4.241	4.235	4.177	-5,5
Lemons	34.446	33.604	31.921	31.769	31.246	30.860	30.756	30.666	-11,0

Source : ISTAT/CORERAS 2003

Tab. 9 Evolution of the citrus production area in the Sicilian provinces (ha) – Data not available for years 1994 and 1995.

Province	1990	1991	1992	1993
Agrigento	4.155,00	4.173,00	4.187,00	4.192,00
Caltanissetta	701,00	679,00	679,00	661,00
Catania	39.711,00	39.924,00	40.053,00	40.027,00
Enna	6.388,00	6.405,00	6.400,00	6.396,00
Messina	13.067,00	13.067,00	13.065,00	13.057,00
Palermo	13.283,00	13.283,00	13.220,00	13.676,00
Ragusa	4.979,00	4.979,00	6.409,00	6.409,00
Siracusa	25.026,00	25.378,00	25.378,00	25.378,00
Trapani	2.378,00	2.389,00	2.256,00	2.159,00
Sicily	109.688,00	110.277,00	111.647,00	111.955,00
Province	1996	1997	1998	1999
Agrigento	4.159,00	4.172,00	4.181,00	4.184,00
Caltanissetta	635,00	659,00	659,00	659,00
Catania	39.977,00	39.977,00	39.977,00	39.980,00
Enna	6.410,00	6.401,00	6.389,00	6.389,00
Messina	13.061,00	13.061,00	13.061,00	12.310,00
Palermo	13.618,00	11.895,00	11.760,00	11.468,00
Ragusa	5.450,00	5.550,00	5.400,00	5.400,00
Siracusa	25.307,00	23.280,00	23.630,00	23.610,00
Trapani	2.102,00	2.102,00	2.075,00	2.075,00
Sicily	110.719,00	107.097,00	107.132,00	106.075,00
Province	2000	2001	2002	2003
Agrigento	4.404,00	4.456,00	4.490,00	4.463,00
Caltanissetta	659,00	659,00	659,00	565,00
Catania	40.140,00	40.199,00	39.523,00	39.018,00
Enna	6.389,00	6.326,00	6.276,00	6.315,00
Messina	12.310,00	12.310,00	12.310,00	12.310,00
Palermo	10.900,00	10.910,00	10.450,00	10.100,00
Ragusa	5.400,00	5.400,00	5.100,00	5.100,00
Siracusa	23.390,00	23.489,00	23.421,00	23.189,00
Trapani	2.075,00	2.075,00	2.075,00	2.075,00
Sicily	105.667,00	105.824,00	104.300,00	103.135,00

Source: Istat/CORERAS 2003

Tab. 10 Evolution of the total citrus area in the Sicilian provinces (ha)

Province	2003	2002	2001	2000	1999	1998	1997
Agrigento	4.503,00	4.523,00	4.510,00	4.506,00	4.204,00	4.211,00	4.198,00
Caltanissetta	565,00	659,00	659,00	659,00	659,00	659,00	659,00
Catania	39.018,00	39.591,00	40.267,00	40.267,00	40.267,00	40.267,00	40.267,00
Enna	6.331,00	6.280,00	6.340,00	6.403,00	6.403,00	6.406,00	6.404,00
Messina	12.310,00	12.335,00	12.310,00	12.310,00	12.310,00	13.061,00	13.061,00
Palermo	10.100,00	10.450,00	10.910,00	10.910,00	11.470,00	11.769,00	11.895,00
Ragusa	5.100,00	5.300,00	5.400,00	5.400,00	5.400,00	5.400,00	5.550,00
Siracusa	23.420,00	23.795,00	23.859,00	23.910,00	24.210,00	23.950,00	24.580,00
Trapani	2.075,00	2.075,00	2.075,00	2.075,00	2.075,00	2.075,00	2.102,00
Sicily	103.422,00	105.008,00	106.330,00	106.440,00	106.998,00	107.798,00	108.716,00

Province	1996	1995	1994	1993	1992	1991	1990
Agrigento	4.186,00	n.d.	n.d.	4.214,00	4.217,00	4.211,00	4.201,00
Caltanissetta	635,00	n.d.	n.d.	661,00	681,00	689,00	701,00
Catania	40.340,00	n.d.	n.d.	40.490,00	40.842,00	40.801,00	40.730,00
Enna	6.439,00	n.d.	n.d.	6.453,00	6.465,00	6.480,00	6.480,00
Messina	13.061,00	n.d.	n.d.	13.057,00	13.065,00	13.067,00	13.067,00
Palermo	13.618,00	n.d.	n.d.	13.676,00	13.676,00	13.734,00	13.739,00
Ragusa	5.450,00	n.d.	n.d.	6.409,00	6.409,00	4.979,00	4.979,00
Siracusa	25.502,00	n.d.	n.d.	25.614,00	25.614,00	25.614,00	25.378,00
Trapani	2.102,00	n.d.	n.d.	2.165,00	2.275,00	2.420,00	2.420,00
Sicily	111.333,00	n.d.	n.d.	112.739,00	113.244,00	111.995,00	111.695,00

Source: Istat/CORERAS 2003

Tab. 11 Productive vs. total citrus area in Sicily

Area	2003	2002	2001	2000	1999	1998	1997	1996
productive	103.135,00	104.300,00	105.824,00	105.667,00	106.075,00	107.132,00	107.097,00	110.719,00
total	103.422,00	105.008,00	106.330,00	106.440,00	106.998,00	107.798,00	108.716,00	111.333,00
Δ %	- 0,28	- 0,67	- 0,48	- 0,73	- 0,86	- 0,62	- 1,49	- 0,55

Area	1995	1994	1993	1992	1991	1990
productive	n.d.	n.d.	111.955,00	111.647,00	110.277,00	109.688,00
total	n.d.	n.d.	112.739,00	113.244,00	111.995,00	111.695,00
Δ %	-	-	- 0,70	- 1,41	- 1,53	- 1,80

Elaboration on ISMEA data

Tab. 12 Harvested citrus production (x 100 kg)

Province	2003	2002	2001	2000	1999	1998
Agrigento	940.665,00	880.127,00	753.800,00	787.260,00	825.009,00	787.842,00
Caltanissetta	39.288,00	32.315,00	28.140,00	41.403,00	27.342,00	48.982,00
Catania	7.421.000,00	5.387.900,00	5.851.330,00	6.734.600,00	5.160.090,00	3.596.538,00
Enna	716.923,00	555.800,00	689.980,00	714.215,00	766.310,00	536.695,00
Messina	1.698.600,00	1.772.120,00	1.709.100,00	1.800.030,00	2.017.300,00	1.653.228,00
Palermo	1.493.500,00	1.347.000,00	2.037.600,00	1.486.250,00	1.506.225,00	1.462.487,00
Ragusa	1.270.000,00	308.000,00	642.000,00	1.650.000,00	510.000,00	527.000,00
Siracusa	3.803.535,00	3.273.180,00	2.713.430,00	3.370.020,00	3.388.260,00	2.067.050,00
Trapani	329.400,00	205.600,00	383.550,00	383.550,00	399.850,00	383.550,00
Sicily	17.712.911,00	13.762.042,00	14.808.930,00	19.967.328,00	14.600.386,00	11.063.372,00

Province	1997	1996	1995	1994	1993	1992	1991	1990
Agrigento	873.177,00	716.324,00	n.d.	n.d.	806.110,00	953.181,00	720.113,00	633.408,00
Caltanissetta	45.224,00	42.620,00	n.d.	n.d.	29.409,00	31.104,00	43.845,00	24.102,00
Catania	5.500.282,00	6.428.920,00	n.d.	n.d.	7.701.001,00	8.902.030,00	7.679.556,00	7.369.350,00
Enna	647.580,00	1.313.583,00	n.d.	n.d.	950.220,00	817.336,00	725.737,00	414.758,00
Messina	1.283.591,00	1.578.584,00	n.d.	n.d.	1.835.547,00	2.018.744,00	2.217.709,00	1.631.630,00
Palermo	2.131.373,00	2.331.156,00	n.d.	n.d.	2.377.155,00	2.374.933,00	2.492.684,00	1.666.870,00
Ragusa	1.074.000,00	603.000,00	n.d.	n.d.	1.348.490,00	1.163.210,00	960.770,00	412.550,00
Siracusa	3.811.472,00	3.771.948,00	n.d.	n.d.	5.644.153,00	5.204.762,00	3.454.448,00	5.447.037,00
Trapani	401.860,00	488.440,00	n.d.	n.d.	510.960,00	453.260,00	323.930,00	272.700,00
Sicily	15.768.559,00	17.274.575,00	n.d.	n.d.	21.203.045,00	21.918.560,00	18.618.792,00	17.872.405,00

Source: Istat/CORERAS 2003

Tab. 13 Yield per hectare (x 100 kg)

Province	2003	2002	2001	2000	1999	1998
Agrigento	210,80	206,30	169,20	178,80	207,60	198,40
Caltanissetta	87,70	91,50	106,80	91,60	83,00	83,10
Catania	190,20	136,30	145,60	167,80	145,00	108,40
Enna	121,50	109,40	109,10	118,90	119,90	88,40
Messina	138,00	150,90	138,80	153,90	163,90	133,20
Palermo	147,90	147,70	186,80	143,70	138,00	129,20
Ragusa	249,00	151,00	118,90	305,60	94,40	97,60
Siracusa	178,00	146,90	147,10	160,00	186,10	112,60
Trapani	158,70	182,70	184,80	184,80	192,70	184,80
Sicily	175,50	144,30	147,30	166,40	154,50	117,70

Province	1997	1996	1995	1994	1993	1992	1991	1990
Agrigento	217,90	179,50	n.d.	n.d.	203,39	237,75	177,83	155,43
Caltanissetta	76,80	67,10	n.d.	n.d.	63,68	65,03	63,63	35,97
Catania	159,80	176,00	n.d.	n.d.	200,49	229,89	195,66	188,14
Enna	168,60	218,00	n.d.	n.d.	156,64	137,54	117,90	66,68
Messina	104,80	124,30	n.d.	n.d.	165,31	169,69	176,22	124,86
Palermo	183,20	176,50	n.d.	n.d.	179,64	178,40	186,57	124,74
Ragusa	205,90	110,60	n.d.	n.d.	210,40	181,49	192,96	82,85
Siracusa	219,40	193,30	n.d.	n.d.	286,13	245,23	224,77	223,56
Trapani	191,20	232,40	n.d.	n.d.	236,00	200,95	133,97	114,84
Sicily	173,90	173,70	n.d.	n.d.	211,38	210,91	191,50	165,47

Source: Istat/CORERAS 2003

1.1.6 Evolution of processed citrus fruits production 1990-2003

ISMEA has published data provided by ASSITRAPA, which represents 95% of citrus processing firms in Italy and about 90% of total processed citrus volumes.

Tab. 14 Evolution of the processed citrus fruits production (tons)

	1990/91	1991/92	1992/93	1993/94
Citrus tot (tons)	1.095.300	1.165.000	1.273.400	1.273.400

Sources: RAISA data

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
Citrus tot (tons)	1.404.091	913.960	1.359.505	1.341.661	1.175.184	1.276.547

Sources: ISMEA on ASSITRAPA data;

1.1.7 Evolution of irrigated areas

The trend of irrigated areas at national level is characterised by a strong decrease of the irrigated areas.

Tab. 15 Evolution of irrigated area

	Irrigated area (ha) 1990	Irrigated area (ha) 2000
Citrus fruits	153.814,58	113.650,66
Fruits	296.676,10	245.054,49

Source: Elaboration on ISTAT Census data (1982-1990-2000)

1.1.8 Evolution of the number of producers (holdings) -1990-2003

According to the Census data, the numbers of farms had a rather constant trend during the period 1982-2000.

Tab. 16 Evolution of the number of holdings –1982-1990-2000

	1982			1990			2000		
	Number of farms	Total area (Ha)	Average area (ha)	Number of farms	Total area (Ha)	Average area (ha)	Number of farms	Total area (Ha)	Average area (ha)
Citrus fruits	156.540	169.879	1,05	173.018	172.178	1,00	154.643	132.567	0,86
Fruits	495.852	486.756	1,05	544.590	520.910	1,01	501.215	498.406	0,99

Source: Elaboration on ISTAT Census data (1982-1990-2000)

1.1.9 Evolution of withdrawals -1990-2003

During the period 1990-2003, the withdrawals volumes underwent a process of intense reduction, going from 534.470 tons in 1989-90 to 11.867 tons in 2003-04.

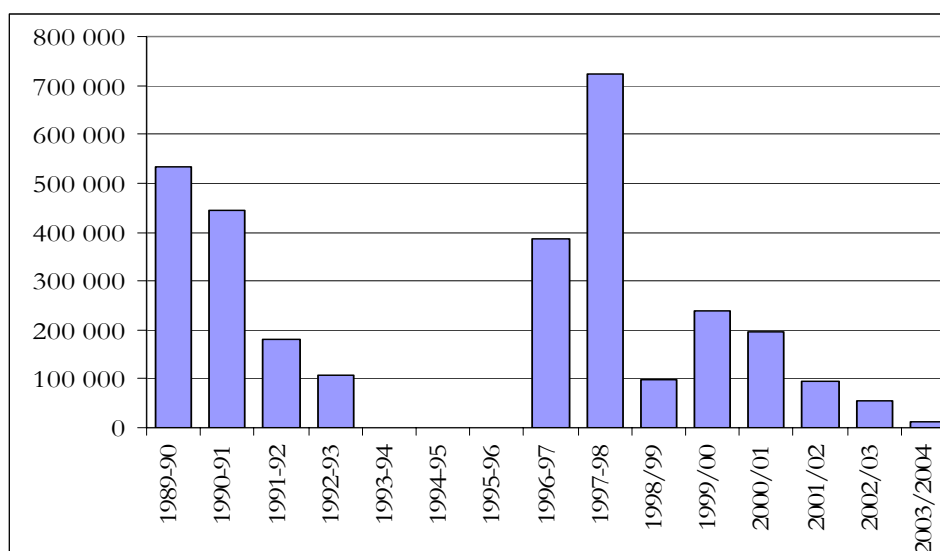
During the period between 1996-98 a strong increase in withdrawals has occurred in comparison with the previous years, as a consequence of the significantly growth in production in the whole fruit sector. Starting from 1999, the productive surplus started to become less important.

Tab. 17 Evolution of fresh fruit withdrawals 1990-1993 (tons) –

	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97*
FRUITS Tot	534.470	445.940	181.960	106.090	n.a.	n.a.	n.a.	385.454

	1997/98*	1998/99*	1999/00*	2000/01*	2001/02*	2002/03*	2003/04*
FRUITS Tot	722.539	98.834	239.522	197.056,3	94.013,2	55.903,1	11.867,7

Source: AGEA ; * DG Agri 2005

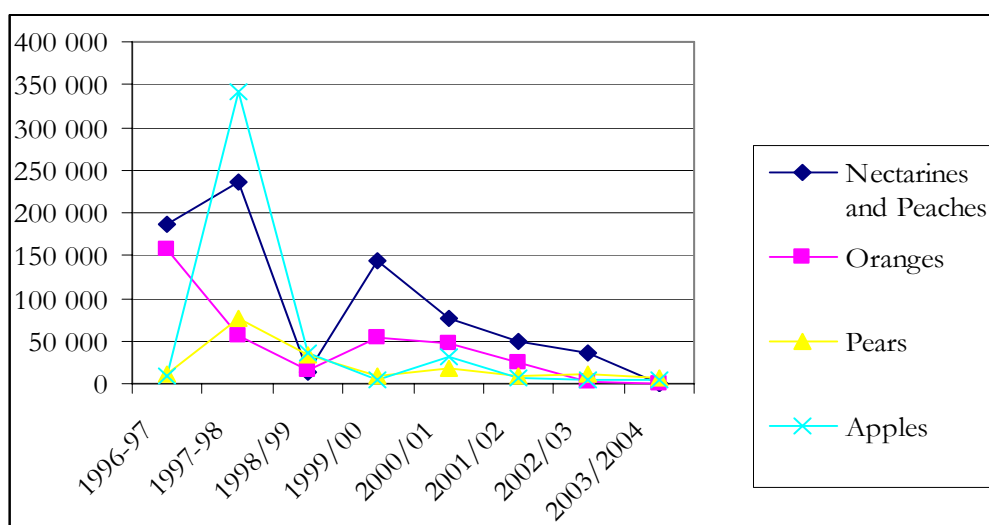
Graph. 4 Evolution of fresh fruit withdrawals 1990-1993 (tons) –

Source: AGEA; * DG Agri 2005

Tab. 18 Evolution of fresh fruit withdrawals by fruit category 1998-2004 (tons)

	1996-97	1997-98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/2004
Nectarines	n.a	n.a	8.907,92	91.128,72	50.163,27	35.980,33	26.335,99	454,41
Peaches	n.a	n.a	4.423,65	51.913,42	26.019,37	12.862,99	10.523,26	0,00
Nectarines and Peaches	186.434,00	235.831,00	13.331,57	143.042,14	76.182,64	48.843,32	36.859,25	454,41
Mandarines	6.457,00	472,00	332,58	2.033,53	1.103,58	512,12	0,00	0,00
Clementines	13.990,00	12.248,00	n.a	28.159,67	24.757,44	3.510,74	n.a	n.a.
Oranges	157.242,00	55.420,00	15.238,13	52.861,69	46.556,57	24.928,68	2.937,47	738,74
Pears	11.760,00	76.634,00	33.151,50	9.289,32	18.069,62	9.937,07	11.608,17	5.817,69
Apples	9.571,00	341.934,00	36.779,77	4.136,03	30.386,48	6.281,29	4.498,24	4.856,92
Total	385.454,00	722.539,00	98.833,55	239.522,38	197.056,33	94.013,22	55.903,13	11.867,76

Source: DG Agri 2005

Graph. 5 Evolution of fresh fruit withdrawals 1998-2004 (tons)

Source: DG Agri 2005

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

Between 1990 and 1995, European commission recognizes Producers associations (Reg.C.E. n.159/66):

Tab. 19 Evolution of the producers' associations' number 1990-1992

	1990	1991	1992
Number of producers' associations	154	158	162

Sources: Unaproa

With Reg (CE) 412/97 European Union recognizes POs. Italian regulations 128/98 sets stricter criteria for recognition then the European ones. Later, the national Law 25/99 establishes that in regions where production is less organized, possibilities of application of the European criteria (the value of marketed production of the POs should be < 35% of the regional gross net value). The consequence of this institutional framework has been that the national criteria have been implemented only in Emilia Romagna and in Trentino Alto Adige.

Groups of producers that do not meet all criteria of PO can have access to support for a 5-year transitional period for which a recognition plan is agreed.

Tab. 20 Evolution of the number of producers' organisations 1997-2003

	1997	1998	1999	2000	2001	2003
Producers' organisations (including vegetable production)	70 (57 with OPs)	118	149		196 (74 with OPs)	203

Sources: Unaproa; *Source: European Commission - Directorate General for Agriculture

70-75 % of producers' organisation trade fruit and vegetable in general. Only the remaining producers' organisations are specialised.

Tab. 21 Evolution of the number of the specialised producers' organisations

	1997	1998
Citrus	7	7
Other fruits	1	1
Processed fruits	3	6
Nuts	4	6

Sources: Unaproa; INEA

Geographical distribution of the subsidies received by the producers' organisations shows that there is a growing concentration in the Northern regions, especially in three regions (Trentino Alto Adige, Veneto and Emilia Romagna) where there were already established organisations operating on the market. In the Southern regions, producers' organisations have in most of the cases grown up around the task of withdrawals management, and therefore have shown a structural lack of capacity to respond to the imperatives of the new regulations.

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

1.2.1 Level of fruit production under the CMO regime 1998-2003

In Italy, the reduction of the total level of fruit production under the CMO regime is strongly linked to the reduction of the withdrawals measure implementation (especially for the orange, nectarines, peaches and pears), whereas the PO's funding increased.

Tab. 22 Level of fruit production under the CMO regime (tons)

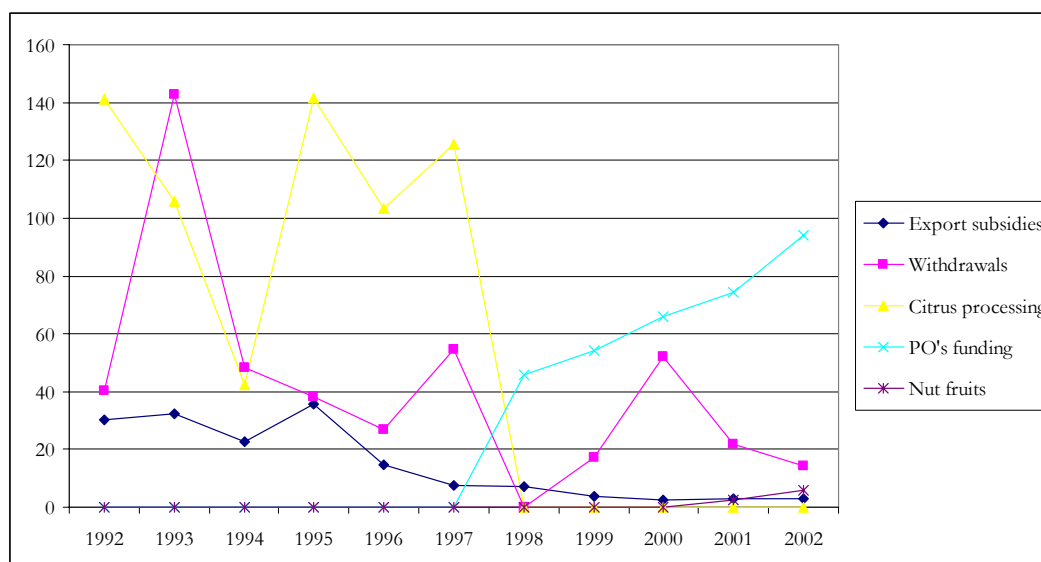
	1998/99	1999/00	2000/01	2001/02	2002/03
Nectarines	8.550	91.129	50.163	35.980	26.367
Peaches	3.952	51.913	26.019	12.863	9.939
Pears	32.495	9.289	18.070	9.937	10.708
Apples	39.609	4.136	30.387	6.281	3.927
Mandarins	332	2.034	1.104	512	0
Clemetines	n.a.	28.160	24.757	3.511	0
Oranges	15.240	52.862	46.557	24.929	2.535
Total	100.178	239.523	197.057	94.013	53.476

Source: INEA

1.2.2 Level of implementation of each measure (1990-2003)**Tab. 23 EAGGF expenses for fruits sector – mio ECU/euro**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Export subsidies	30,2	32,5	22,7	35,9	14,8	7,7	7,1	3,6	2,6	2,9	3,0
Withdrawals	40,4	142,7	48,5	38,1	27	54,8	21,4	17,2	52,2	21,9	14,4
Citrus processing¹	141,3	106	42,4	141,4	103,4	125,5	0	0	0	0	0
Producers' organisations funding	0	0	0	0	0	0	45,8	54,1	66,0	74,5	94,0
Nut fruits	0	0	0	0	0	0	0	0	0	2,5	5,7

Source: INEA on European Commission data

Graph. 6 EAGGF expenses for fruits – mio ECU/euro

Source: INEA on European Commission data

1.2.3 Level of implementation of CMO measures in Sicily (1990-2003)

On 2002/2003 the POs in Sicily, as recognised in compliance with the EC Reg. 2200/96, were 52. POs mainly operate in the product categories of fruit and vegetables, vegetables and citrus fruit. POs are present in all the provinces, except Ragusa, Trapani and Agrigento (Table 16).

¹ See Sicily case study

Tab. 24 Distribution of the POs in Sicily per product category (EC Reg. 2200/96)

Product category								
Province	Fruit and vegetables	Fruit	Vegetables	Products intended for processing	Citrus fruit	Nuts	Mushrooms	Total
Agrigento	0	0	0	0	0	0	0	0
Caltanissetta	0	0	1	0	0	0	0	1
Catania	7	0	0	0	6	0	0	13
Enna	0	0	0	0	0	0	0	0
Messina	1	0	0	0	4	0	0	5
Palermo	11	0	0	1	1	0	0	13
Ragusa	9	0	1	0	0	0	0	10
Siracusa	9	0	0	0	1	0	0	10
Trapani	0	0	0	0	0	0	0	0
Sicily	37	0	2	1	12	0	0	52

Source: CORERAS 2003

The citrus production is therefore managed by the 37 “fruit and vegetables” POs plus the 12 “citrus fruit” POs. On 2002-2003, these POs had 12.957 members, being the 17,5% of the total citrus holdings (CORERAS, 2003). From this data, it may be therefore observed how the “joining capacity” of the Sicilian POs is rather poor.

The membership to the PO quite often occurs through the already existing cooperatives of producers. In fact, holdings - “single member” are just 1.292, whereas the remainder 11.655 are members of 190 cooperatives.

Table 25 shows the membership composition of the “fruit and vegetables” and “citrus fruit” POs per province, on 2003.

Tab. 25 Citrus producers associated to the POs (EC Reg. 2200/96)

	Cooperatives	Members of cooperative	Single members	Total members
Catania	88	2.856	338	3.194
Messina	34	3.879	249	4.128
Palermo	49	3.001	332	3.333
Ragusa	7	814	58	872
Siracusa	12	1.115	315	1.430
Sicily	190	11.665	1.292	12.957

Source: CORERAS 2003

According to CORERAS, on 2003 the regional citrus area within the provisions of the EC Reg. 2200/96 has reached 37.000 hectares (Table 26), representing the 35,8% of the total regional citrus area. From 2000 to 2003, the total citrus area concerned by the CMO has dropped of 17,7%, mainly due to the diminution of lemon and mandarine: the drop is directly linked to the AGEA controls that have induced the operators to declare a surface “more pertinent to reality”, in order to prevent sanctions or aid reductions. From Table 13 however it emerges that the declared orange area has increased.

Tab. 26 Regional citrus area within the provisions of EC Reg. 2200/96 (hectares)

Year	Orange	Lemon	Tangerine	Clementine	Other citrus fruit	Total
2002/03	21.028	13.519	2.074	503	113	37.237
2001/02	18.391	14.844	1.524	478	97	35.334
2000/01	18.958	20.508	5.129	665	n.d	45.260

Source: CORERAS 2003

Table 27 presents the citrus productions concerned with the CMO on years 2000-2003 (762.551,3 tons), compared with the harvested citrus regional productions on 2003 (1.771.291,1 tons).

The 2003 overall citrus production concerned with the CMO represents the 43% of the citrus harvested production in Sicily.

Tab. 27 Citrus productions concerned by EC Reg. 2200/96 (x 100 kg)

Year	Orange	Lemon	Tangerine	Clementine	Other citrus fruit	Total	% of the harvested reg. citrus fruit product.
2002/03	3.758.362,3	3.311.144,4	482.898,5	42.543,0	30.564,3	7.625.513	43%
2001/02	3.013.864,0	2.945.034,0	326.361,0	26.840,0	33.800,0	6.345.899	-
2000/01	2.738.334,0	3.934.568,0	756.909,0	29.672,9	n.a	7.459.484	-

Source: CORERAS 2003

So far the improvement of the quality standards of citrus fruit production and its better market positioning, as meant by the EC Reg. 2200/96, were not the main activities of the Sicilian POs. On the contrary, POs have been mainly playing the role of intermediation, by subscribing contracts with the processing industry to get the CMO aid, prescribed by the EC Regulation as alternative support for the product not having access to market outlets.

On the other hand, market and processing are the only alternative destinations of the POs product from the end of the 90's, since withdrawals have never been carried out over this period. Data about withdrawals on previous years were not available from the Regional administration.

Table 21 shows the destination of the citrus fruit production of the POs per species, from 2001 to 2003. In 2003, the 72% of the total POs citrus production has been processed. Only the remaining 28% therefore has been marketed as fresh product. On 2001 the processed share was around 80%; on 2002, around the 77%.

Table 29 shows the market outlets of the product managed by the POs. As it may be observed, the largest quantity is marketed for domestic consumption.

Tab. 28 Market destinations of POs fresh product (2002/2003)

	Destination		Total	Italy/Total	Abroad/Total
	Italy	Abroad		%	%
Orange	1.243.841,0	29.113,2	1.272.954,2	97,7	2,3
Lemon	562.155,9	103.641,2	665.797,1	84,4	15,6
Tangerine	218.860,6	1.772,5	220.633,1	99,2	0,8
Clementine	28.423,0	164,3	28.587,3	99,4	0,6
Grapefruit	4.893,0	738,2	5.631,2	86,9	13,1
Other citrus fruit	22.142,3	1.427,0	23.569,3	93,9	6,1
Total	2.080.315,8	136.856,4	2.217.172,2	93,8	6,2

Source: CORERAS 2003

Tab. 29 Destination of citrus production by OPs per species and per destination from 2001 to 2003 (%)

		Oranges		Lemons		Tangerines		Clementines		Grapefruits		Tot Sicily	
		Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed
	Province												
	Catania	46,5	53,5	38,1	61,9	72,7	27,3	90,4	9,6	n.a.	n.a.	45,2	54,8
	Messina	12,7	87,3	14,9	85,1	13,2	86,8	71,0	29,0	n.a.	n.a.	14,0	86
2000/2001	Palermo	10,6	89,4	10,0	90,0	13,9	86,1	12,4	87,6	n.a.	n.a.	10,9	89,1
	Ragusa	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Siracusa	24,7	75,3	36,2	63,8	100,0	0,0	100,0	0,0	n.a.	n.a.	33,2	66,8
	Sicily	27,0	73,0	17,5	82,5	14,9	85,1	58,1	41,9	n.a.	n.a.	20,09	79,91
	Catania	34,2	65,8	3,7	96,3	55,0	45,0	60,0	40,0	80,2	19,8	32,2	67,8
	Messina	10,6	89,4	19,5	80,5	3,2	96,8	45,5	54,5	100,0	0,0	14,8	85,2
2001/2002	Palermo	8,1	91,9	17,1	82,9	30,4	63,6	100,0	0,0	14,1	85,9	17,6	82,4
	Ragusa	25,4	74,6	14,0	86,0	0,0	0,0	0,0	0,0	0,0	0,0	17,1	82,9

	Siracusa	43,8	56,2	25,8	74,2	100,0	0,0	100,0	0,0	100,0	0,0	34,1	65,9
	Sicily	25,7	74,3	18,6	81,4	30,2	69,8	63,3	36,7	36,5	63,5	23,2	76,8
	Catania	41,8	58,2	17,0	83,0	84,1	15,9	81,1	18,9	66,8	33,2	40,9	59,1
	Messina	16,5	83,5	12,0	88,0	22,7	77,3	22,7	77,3	100,0	0,0	14,4	85,6
2002/2003	Palermo	9,7	90,3	17,4	82,6	34,0	66,0	18,4	81,6	100,0	0,0	17,5	82,5
	Ragusa	17,2	82,8	20,9	79,1	0,0	0,0	0,0	0,0	0,0	0,0	19,7	80,3
	Siracusa	43,3	56,7	38,3	61,7	100,0	0,0	100,0	0,0	100,0	0,0	40,3	59,7
	Sicily	31,9	68,1	19,8	80,2	46,2	53,8	65,1	34,9	80,5	19,5	27,9	72,1

Source: CORERAS on AFDRS data 2003)

1.3 Institutional framework of the fruits production in country

1.3.1 Institutional framework of the fruits production in Italy

Before 1996, according with the Reg. 1035/72 the recognition of the “producers associations” was a task of the Ministry of Agricultural policies; at the moment the Ministry is responsible for the recognition of the A.O.P and POs and it defines their Operative Program guidelines.

These guidelines are articulated in the following parts:

1. Presentation of Producers’ organisations and of Associations of Producers’ Organisations
2. Data on A.O.P
3. Structural analysis of production
4. Regulations of the access of members to the benefits of Operational Programs
5. General objectives of the OPs
6. Actions
7. Synthetic scheme of actions and expenses
8. Parameters for determination of some expenses
9. Financial management

The OPs are submitted to the **Regional Governments** and Autonomous Provinces (description of initial situation, objectives, description of measures, duration, and budget)

According to the Reg. 2200/96 and to the national laws 128/98 and 25/99, and the Ministry Document 6/97, the Regional Governments and the Autonomous Provinces are responsible for the recognition of the POs, which should be as joint-stock company (national law 128/98).

1.3.2 Institutions in charge of the management and payment of premiums

Payments for the funding of the above mentioned OPs are managed by the national agency for payments, **AGEA**, or by Regional Agencies. AGEA or Regional agencies communicate the total amount of funding allocated to the OPs to the Ministry of Agricultural policies

1.3.3 Institutions in charge of the controls

The Regional Governments and Autonomous Provinces carry out control activities as well, in order to check the effective implementation of the PO.

1.3.4 Interbranch organisations

Farmers' unions: There are three main organisations, which in the past represented very different typologies of farms, interests, social and ideological positions: Coldiretti, until the middle of the '90s narrowly linked to the centre-catholic party and to the big economic-political power of Federconsorzi, and representing the small family farms; Confagricoltura, linked to the Right and representing the large capitalistic farms; Confederazione Italiana Agricoltori, linked to the Left and representing farm labourers and small farms.

1.3.5 Producers organisations at national level

AGCI Associazione generale cooperative italiane (General association of Italian cooperatives)

ANCALEGACOOOP Associazione Nazionale delle Cooperative Agroalimentari aderente alla Lega delle Cooperative (cooperatives associated to Lega delle Cooperative)

ANEIOA Associazione Nazionale Esportatori Importatori Ortofrutticoli e Agrumari (National association of fruit, vegetable and fruit exporters)

ANICAV Associazione Nazionale Industriali Conserve Alimentari Vegetali (National Association of processed food vegetables)

ASSOTRAPA Associazione Italiana Trasformatori Prodotti Agrumari

1.3.6 Unions

UNAPROA (Unione Nazionale delle Organizzazioni dei Produttori Ortofrutticoli, Agrumari e di frutta in guscio, recognised with the MIPAF Decree n. 555 23rd May 2003) involves 120 Producers' Organisations operating on the whole national territory. They represent about 70.000 producers, with about 7 millions of tons of produce and a fruit and vegetable surface of 220.000 ha. The gross product value of the production is about 2.200 mio Euro, which is about 22% of Italian GPV.

UIAPOA – (Unione Italiana Associazioni Produttori Ortofrutticoli e Agrumari recognised by MIPAF decree of 05/08/2003) associates 72 producers' organisations and 2 AOPs, in the whole national territory. It represents 36100 producers, of which 28767 adhere to cooperatives members of the Union and 7333 individual members. They control 321.000 tons of fruits, 670000 tons citrus and 1.263.000 vegetables, for a GPV of about 930 mio EURO.

UNACOA (Unione Nazionale Associazioni Coltivatori Ortofrutticoli e Agrumari) associates 38 Producers Organisations, 33 of which are already recognised and 5 under recognition. They represent 320 cooperatives, 26.000 producers and 1.5 millions tons of produce.

UNAGRO – (Unione Nazionale di Organizzazioni di produttori ortofrutticoli e agrumari (recognised on 2003, active from 2004). UNAGRO associates 16 POs (800000 tons of produce) in four regions, but it extends its operations to 8 regions.

1.3.7 The co-operation system

According to the recent INEA data (2001), the number of co-operatives is more than 1300, with a turnover of 5.000 millions of euros, which represents more than 50% of the total Italian GPV.

The territorial distribution of the co-operatives is not homogeneous, as more than 60% of the production managed by cooperatives is concentrated in Northern Italy

Co-operatives' members are small farms, and therefore they have a high number of members.

Regulations 2200/96 and Italian regulation n. 128/98 have changed the structural framework of cooperative enterprises in this industry. A survey made by Confcooperative (2001) shows that most of Italian cooperatives were not ready to be integrated in the system envisaged by the new CMO. Several POs and cooperatives have started strategies with alliances, mergers and restructuring to be able to enlarge their activity scope and increase their market power.

1.3.8 The Macro Commercial Organisations (MOC)

The structural funds 1994-99 for Objective I regions have started the so called Macro commercial Organisation (MOC s). They are interprofessional bodies composed of producers, processors, distributors and service companies. Up to now MOCs have not reached an adequate financial and managerial dimension, as they are characterised by low turnover, high costs of operations and a low productivity.

1.3.9 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
CIHEAM	Istituto Mediterraneo Agronomico di Bari	

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

List of actions related to environmental measures within an operational program:

- Technical assistance for the application of Low impact and organic production techniques;
- Training courses for technicians and producers;
- Incentives to farmers to the application of techniques of low environmental impact pest management;
- Laboratory analyses to search residuals of pesticides into the products, soil analyses, analyses for waste management;
- Optimisation of pesticide spraying devices;
- Waste management, studies for the reduction of environmental impact and energy costs, management of pesticide packages;
- Certification of organic farms for the first five years, including the conversion period
- Facilities for organic processing and packaging

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

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

- Improving competitiveness of farms, where quality is a major objective;
- Improving the agro-environment, where a big share of the resources is destined to integrated 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, and to the need of keeping traditions and cultures, there is a growing demand from the lower 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) relating to orchards are the following:

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

- A1 Pesticides reduction
- A2 Organic agriculture
- D1² Protection of the countryside and the landscape;

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

² *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.

- F1a Methods of low input farming
- F1b Introduction and maintenance of the methods of organic agriculture
- F3 Restoring and/or maintenance of the traditional rural landscape, of natural and semi-natural areas

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

Tab. 30 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.

Tab. 31 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

Regarding the structural measures within the RDPs (irrigation, grubbing up, etc.), their planned funding represent more than 11% of the total public funding (above 7, 5% of the EAGGF expenditure).

Tab. 32 RDPs – Planned funding for structural measures 2000-2006 (000.000 EUR)

	Total	Public funding	Public funding %	EAGGF funding	EAGGF %
Structural investments	2.479,1	1046,7	11,9	338,3	7,5

Source: Inea, elaboration on RDPs data

1.4.3 Detail of the Good Agriculture Practices for orchards in the RDR measures

Each Regional Governments has the task to define regional codes of practice. Operational Plans 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 three regions.

		CALABRIA	PUGLIA	TOSCANA
soil management	ploughing depth when planting	50-60 cm d	-	-
	ploughing depth	10-15 cm	-	-
	superficial soil workings	3	2-4	-
Varieties	use of certified varieties	Yes	-	no OGM varieties
Fertilisation	Nitrogen maximum levels kg/ha	100-150	100-150	140 kg/ha; if > 60 then 2-3 applications
Irrigation	water max levels	800-1200 mc/ha	drip irrigation suggested	impianti sottochioma
Pest management	list of tolerated pesticides	residuals	residuals	residuals during the non-vegetative period, non residuals during the vegetative period
	pest management strategy	pre-emptive calendar cure	intervention only when necessary suggested; biological pest management suggested	intervention only when necessary suggested; biological pest management suggested
	number of applications	no limitations	no limitations	-
plant workings	-	yearly pruning; residuals to be removed from the ground	no limitations	-
harvesting	-	no limitations	no limitations	-

1.4.4 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 level.

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.

2. ANSWER TO EVALUATION QUESTIONS

2.1 Vertical questions

2.1.1 Fruits - Thème 1: Market measures

Question 1+4(F1): *What has been the environmental effect of the market measures (notably support for organisations of producers and their operational funds, intervention, destruction/biodegradation) for the following categories: a. citrus b. apples and pears c. peaches and nectarines? [a specific attention will be paid to the impact of the CMO promoting the grouping of supply]*

2.1.1.1 General impact of CMO measures

Implementation

With respect to the data on each single measure they are not available in Italy, where every region is in charge of providing its own data related to each measure. Therefore, we will refer to the Emilia Romagna, for its leading position within the fruit sector.

The following table shows the evolution of the regional budget for each OP action.

Tab. 33 Evolution of the regional budget for each OP action (EUR and % on the total budget)

Action	1999	%	2000	%	2001	%	2002	%	2003	%
1	21.317.234,31	54,04	25.835.767,73	47,96	33.143.971,15	50,63	32.950.862,84	46,87	39.349.979,47	55,59
2	5.588.579,20	14,17	7.270.385,04	13,50	7.366.071,18	11,25	9.013.471,39	12,82	10.169.295,10	14,36
3	3.678.149,18	9,32	5.165.988,12	9,59	7.745.355,76	11,83	10.065.147,69	14,32	1.476.432,19	2,08
4	8.865.627,40	22,47	15.592.157,72	28,95	17.211.594,29	26,29	18.274.520,82	25,99	19.789.735,61	27,95
Total	39.449.590,09	100,00	53.864.298,61	100,00	65.466.992,38	100,00	70.304.002,74	100,00	70.785.442,37	100,00

Source: Emilia Romagna Region

In Emilia Romagna, the organisation, planning and rationalisation of production has been the most important implemented measure over the time, whereas the implementation of the environmental measures represents the second budget item.

Practices evolution from 1990 to 2003

The main outcome of the interviews is that a general trend of intensification has occurred. Nevertheless the Italian context is characterised by three main development trajectories:

- The first pattern, mainly located in Trentino Alto-Adige (North-East of Italy), is represented by a system of holdings which are highly specialised in the apple production (*apple district*) and the cultivation system of which is based, since many years, on a strong attention to the use of low impact practices, above all fertilisation and pesticides management. Yet these systems are extremely intensive in terms of density of plantation and yields.
- The second pattern, mainly located in Emilia Romagna, is characterised by a relevant number of intensive holdings specialised in pears peach and nectarines and apples, where low impact cultivation systems are starting to be more and more implemented.
- The Centre and Southern Italy is characterised by a quite considerable number of farms which adopt modern techniques. In Campania and Basilicata peach and nectarine orchards are becoming intensive. In Sicilia the citrus holdings represent the 20, 22% of the holdings of the whole Regional agriculture sector and they mainly adopt strategies based on intensification of production techniques.

The evolution of the varieties shows a general trend to the prolongation of the “ripening period” (Regarding apple orchards, we observe in fact the increasing trend to grow *Gala* -25 days/*Golden delicious*; *Fuji* +25 days/*Golden delicious*; *Stayman* +20 gg days/*Golden delicious*.).

The majority of POs adopt low input systems which allow a more rational use of chemical inputs.

In order to give an objective overview of the general trend of the **orchards practices evolution**, and to give an assessment if intensification phenomenon has occurred, the following aspects are taken into consideration:

- *Evolution of the orchard areas by fruit typology and by relevant region*
- *Evolution of the yields*
- *Evolution of the orchards areas by class of age*
- *Evolution of the orchards areas by density of plantation*
- *Evolution of the agrochemical inputs use by specialised holdings*

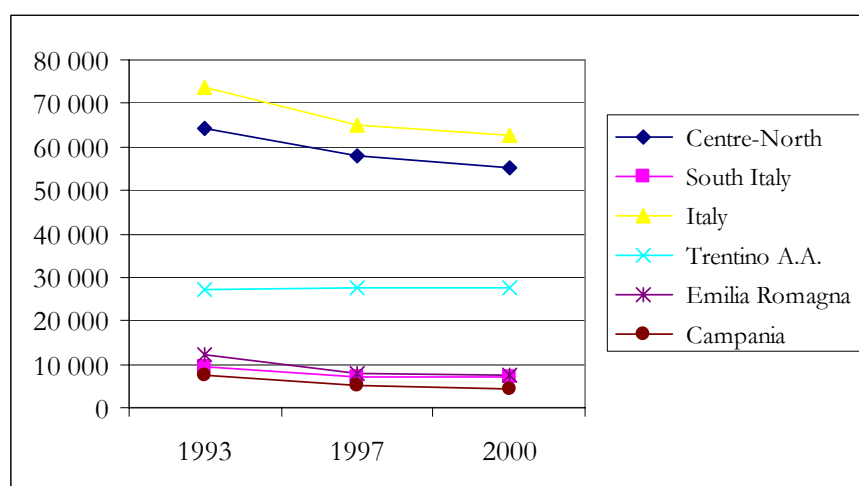
- ***Evolution of the orchard areas by fruit typology and by relevant region***

Data put in evidence that no orchard areas increased.

With respect to the apple sector, it is evident the strong relevance of Trentino Alto Adige, followed by Lombardia and Emilia Romagna.

The decreasing trend in surface is more marked in the plain regions (Emilia-Romagna), which are not competitive with specialised areas (Trentino-Alto Adige), especially for what concerns the production costs.

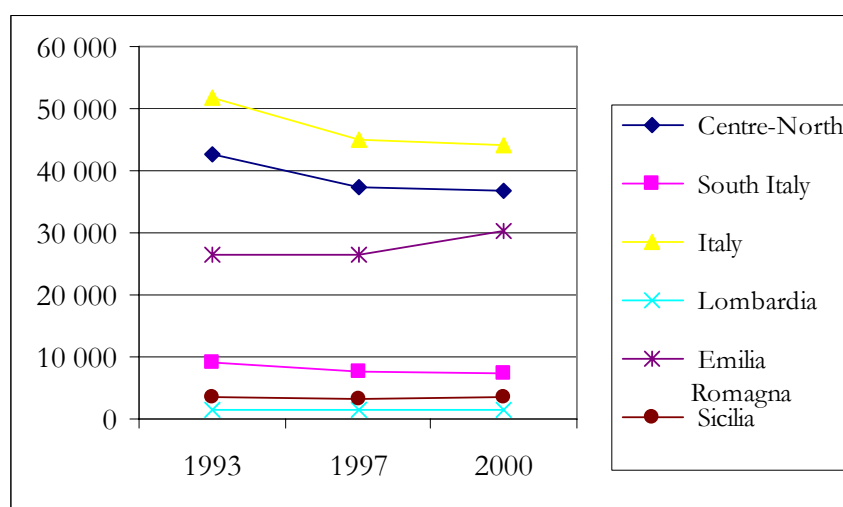
Graph. 7 Evolution of apple orchards areas (Ha)



Source: EUROSTAT data

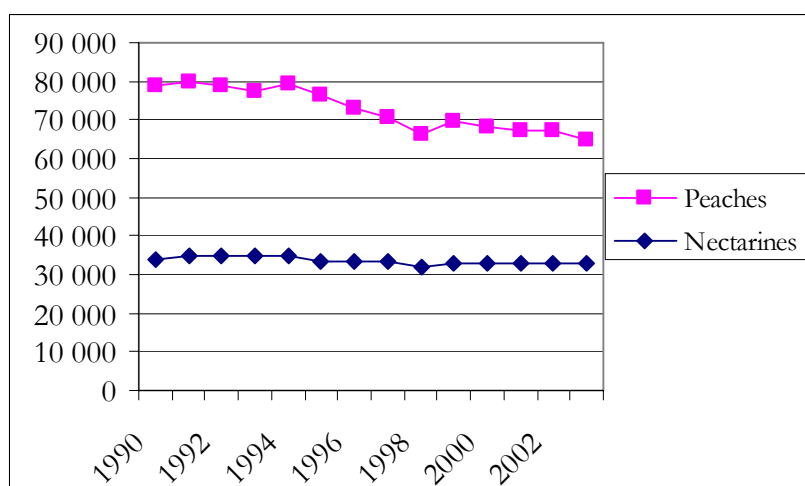
Regarding the pear sector, at national level the data show a slight decrease of the orchards area, only Emilia Romagna presents a positive trend.

Graph. 8 Evolution of pear orchards areas (ha)



Source: EUROSTAT data

Regarding the peach sector, at national level the data show a decrease in the orchards area.

Graph. 9 Evolution of peaches and nectarines orchard areas (ha)

Source: EUROSTAT data

Citrus cultivation in Sicily mainly concentrates on the eastern part of the island, in the provinces of Catania (35% of the regional citrus production), Siracusa (23,1%) and Messina (12,2%).

Tab. 34 Evolution of citrus area in Sicily per species (hectares)

	1991	1996	1997	1998	1999	2000	2001	2002	Δ % 02/91
Oranges	65.241	65.694	64.921	64.342	64.061	64.393	64.011	58.881	-9,7
Tangerines	7.802	7.581	7.448	7.355	7.144	7.150	7.029	7.035	-9,8
Clementines	4.422	4.454	4.426	4.232	4.247	4.241	4.235	4.177	-5,5
Lemons	34.446	33.604	31.921	31.769	31.246	30.860	30.756	30.666	-11,0

Source : ISTAT/CORERAS 2003

Among the species, orange is the most represented and it is predominantly present in the provinces of Catania (38,4% of the regional orange area), Siracusa (29,2%), Enna (10,5%) and Agrigento (7,2%).

The lemon follows the orange, in terms of importance: the most important provinces are Catania (26,7% of the regional lemon area) and Messina (26,4 %), followed by Palermo (24,5%) and Siracusa (17%).

Clementines are principally cultivated in the provinces of Catania (50,1% of the regional clementine area), Ragusa (23,9 %) and Siracusa (15,8%).

Tangerines are mostly grown in the province of Palermo (34,1% of the regional mandarine area) and Catania (33,8%). Third and fourth position are taken by the provinces of Messina (14,9%) and Ragusa (10%).

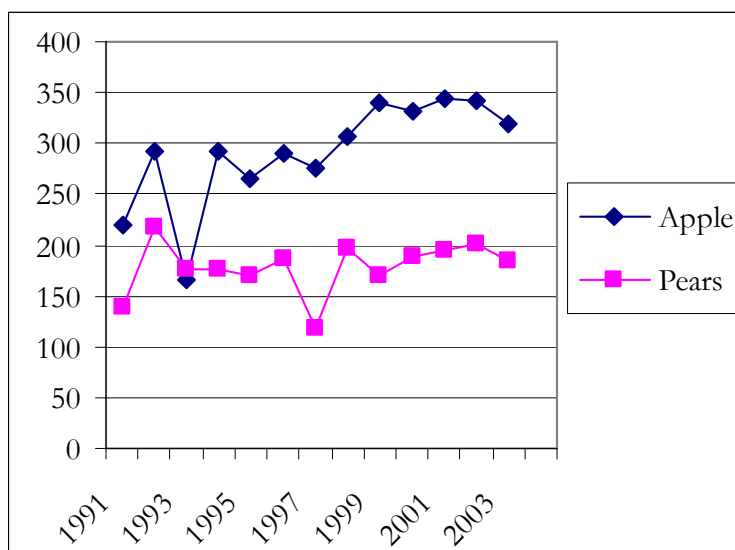
On countertendency, grapefruit has recorded a positive trend (+ 301%) from 1991 to 2002; the crop is presently solely grown in the Siracusa province and presently takes around 223 hectares (CORERAS, 2003).

The productive citrus area has passed from 109.688 hectares (1990) to 103.135 hectares (2003), marking a reduction of 6% (ISMEA, AGRUMINET) (Table 2). The diminution concerned all the species, particularly lemons (- 11%) (CORERAS, 2003) (Table 1).

The total citrus area has passed from 111.695 hectares (1990) to 103.422 (2003), marking a reduction of 7,4 %.

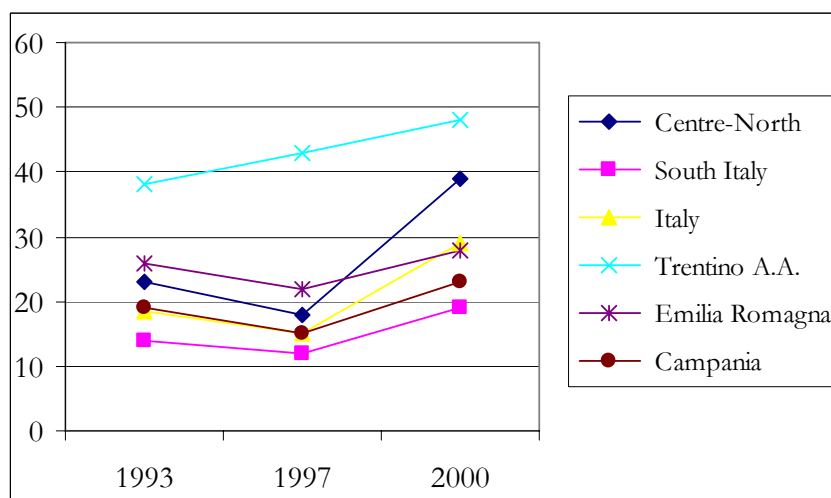
- Evolution of yields (tons/ha)

The data on the apple and pear yields show a tendency towards an increase, until 2001; on the contrary starting from 2002 the sector has undergone a process of decreasing in yields.

Graph. 10 Evolution of apple and pear orchards yields (tons/ha)

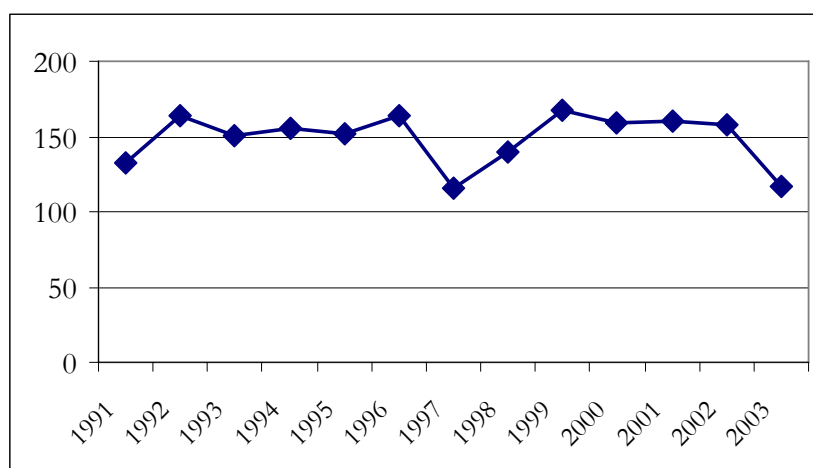
Source: EUROSTAT data

Data on apple yields put in evidence the consistent diversity in cultivation systems between regions: Trentino Alto Adige shows double yields than in the southern regions, due both to the environmental conditions, which perfectly fit to the apple production and to the more intensive cultivation systems.

Graph. 11 Evolution of apple yields by relevant region (tons/ha)

Source: EUROSTAT data

Regarding the peach sector, the trend of yields is extremely changeable, as it is strongly influenced by the climatic conditions.

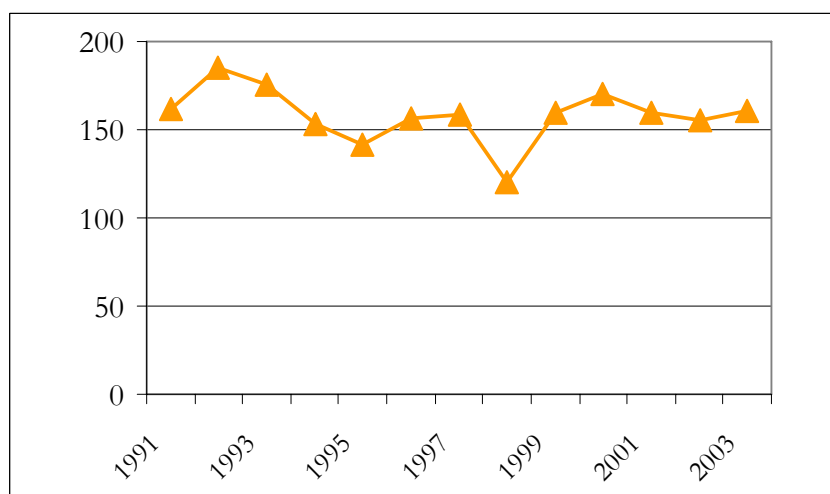
Graph. 12 Evolution of peach yields (tons/ha)

Source: EUROSTAT data

Citrus production has decreased in Sicily over the last 13 years. Actually, the total citrus production has gone from the 2.191.164,99 tons of the four-years time 1990-1993 to the 1.657.995 tons of the four-years time 2000-2003 (- 24,3 %); the harvested production, for the same studied intervals, has passed from 1.990.320 tons to 1.656.280,2 tons (- 16,8 %) (see case study).

The drop of production concerned all the species, however the most significant loss, for the period 1991-2002, concerned the clementines (-34,4%), lemons (- 22,5%), oranges (- 21,9%) and tangerines (-12,2%).

(evidence from the case study).

Graph. 13 Evolution of citrus fruit yields (tons/ha)

Source: EUROSTAT data

According to INEA (2002; 2003), there are two main reasons for the recent decreasing trend in the whole fruit production: the first is related to the negative climate conditions and the second one is linked to the general contraction of the orchard areas.

- ***Evolution of irrigated areas***

In order to assess the trend of the orchard irrigated areas, we refer to the ISTAT data on the evolution of the specialised fruit holdings adopting irrigation systems and their irrigated areas. The Italian trend of the last ten years is characterised by a strong decrease of the irrigated areas (-17,3%). The majority of the Italian regions follow this negative trend, with the exception of Trentino Alto Adige, Toscana, and above all, Puglia and Basilicata, where a relevant increase has occurred. Actually this trend is the result of a reduction in the number of specialised farms in the less suitable areas, where the use of irrigation would be the necessary precondition for obtaining adequate yields.

Tab. 35 Number of the specialised fruit holdings adopting irrigation systems and the irrigated areas in 1990

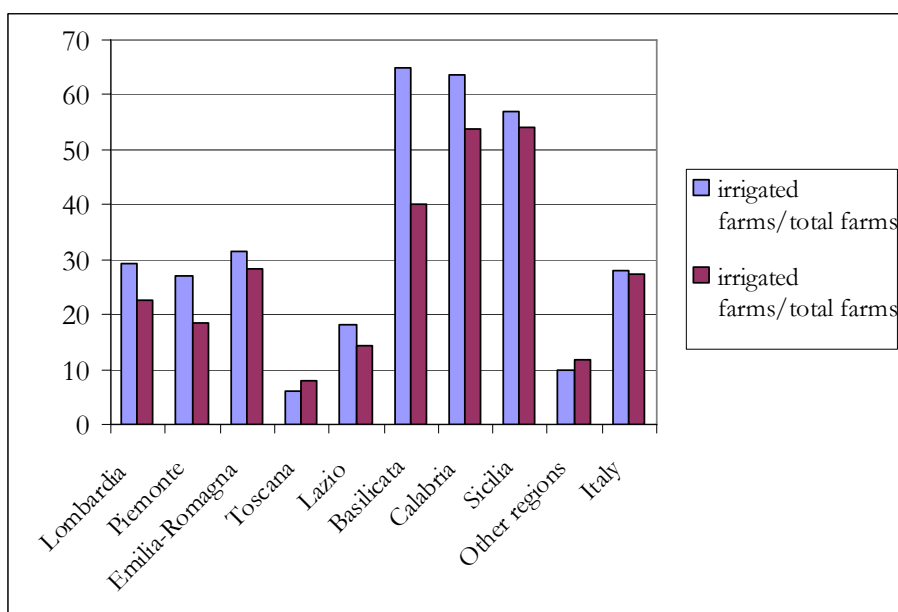
Regions	Holdings (Number)			Irrigated Areas		
	Irrigated farms	Total farms	Irrigated farms/total farms (%)	Irrigated area (ha)	Total area (ha)	irrigated area/total area (%)
Prov. Di Trento	6.720	n.a	n.a	10.786,54	n.a	n.a
Prov. Di Bolzano	6.164	n.a	n.a	17.962,01	n.a	n.a
Lombardia	2.239	8.216	27,25	2.876,35	5.454,84	52,73
Piemonte	8.705	34.647	25,12	18.135,75	39.720,61	45,66
Emilia-Romagna	15.775	41.108	38,37	59.301,31	108.758,82	54,53
Toscana	1.898	28.357	6,69	3.701,78	28.945,15	12,79
Lazio	6.990	54.796	12,76	13.061,70	46.727,73	27,95
Basilicata	3.037	9.159	33,16	6.323,44	10.850,29	58,28
Calabria	4.990	37.472	13,32	4.808,74	30.858,91	15,58
Sicilia	15.784	94.913	16,63	10.710,69	81.525,10	13,14
Other regions	89.910	236.131	38,08	140.376,72	217.031,89	64,68
Italy	166.648	544.799	30,59	296.676,10	569.873,3	52,06

Source: ISTAT census data 2000

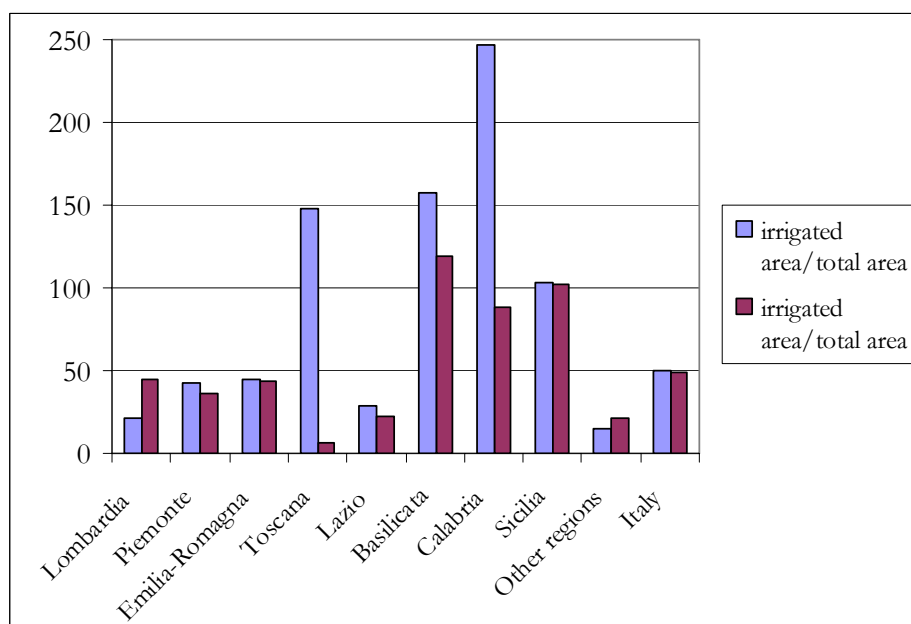
Tab. 36 Evolution of the specialised fruit holdings adopting irrigation systems and the irrigated areas in 2000

Regions	Holdings (N)				Irrigated Areas (Ha)			
	Irrigated farms	Total farms	Irrigated farms/total farms (%)	VAR.% 2000/1990 irrigated farms	Irrigated area (Ha)	Total area ha	Irrigated area/total area (%)	Var.% 2000/1990 irrigated area
Prov. Di Trento	6.810	n.a	n.a	0,90	11.166,54	n.a	n.a	3,80
Prov. Di Bolzano	6.454	n.a	n.a	2,90	18.122,01	n.a	n.a	1,60
Lombardia	1.986	5.649	35,16	-11,30	3.273,29	5.629,38	58,15	13,80
Piemonte	5.745	32.262	17,81	-34,00	15.052,67	42.134,50	35,73	-17,00
Emilia-Romagna	13.330	30.500	43,70	-15,50	52.007,25	85.973,86	60,49	-12,30
Toscana	2.038	24.084	8,46	7,40	2.472,79	22.744,37	10,87	-33,20
Lazio	5.592	42.551	13,14	-20,00	9.286,87	38.782,41	23,95	-28,90
Basilicata	3.271	9.306	35,15	7,70	7.303,57	10.176,33	71,77	15,50
Calabria	4.541	28.284	16,06	-9,00	4.318,25	24.056,11	17,95	-10,20
Sicilia	11.270	87.439	12,89	-28,60	7.433,22	62.903,24	11,82	-30,60
Other regions	70.393	241.140	29,19	n.a.	105.365,53	206.005,80	51,15	n.a
Italy	137.818	501.215	27,50	-17,30	245.054,49	498.406,00	49,17	-17,40

Source: ISTAT census data 2000

Graph. 14 Evolution of the rate of holdings adopting irrigation systems -1990-2000 (%)

Source: ISTAT census data 2000

Graph. 15 Evolution of the irrigation areas rate -1990-2000 (%)

Source: ISTAT census data 2000

- Evolution of cultivation systems typologies**

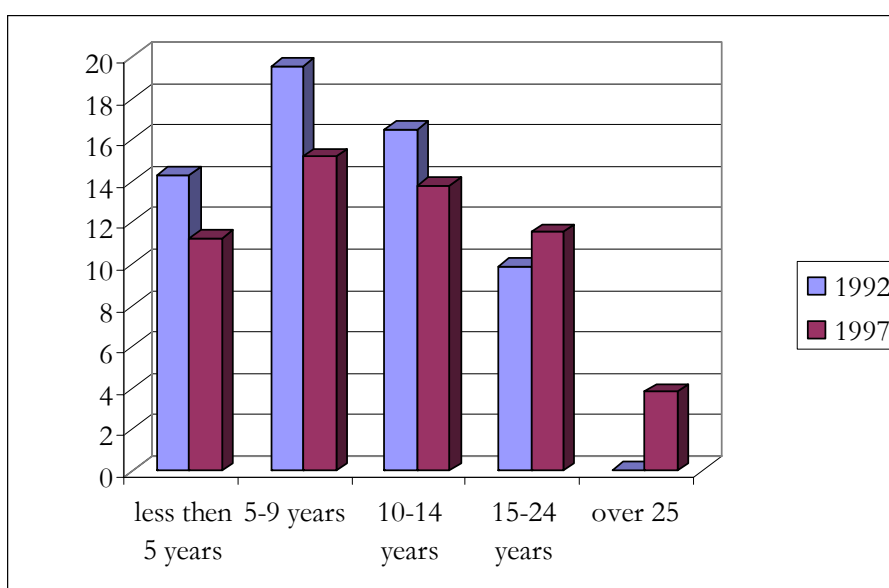
The data on the evolution of the class of plantation point out that there is a trend of ageing of the majority of the fruit orchards: in 1992, the rate of orchards with less than 10 years in relation with the total Italian area was higher than in 1997, whereas in 1997 the area with more than 15 years was higher than in 1992.

According to INEA (2000, 2003), the long life of the orchards could be a reason for the general crises of the Italian fruit sector in the last years.

Tab. 37 Evolution of class of fruit orchards age (ha) – by relevant region

(Ha)	less then 5 years		5-9 years		10 and 14 years		15 and 24 years		over 25	
	1992	1997	1992	1997	1992	1997	1992	1997	1992	1997
Val Padana	7.013	3.829	9.354	5.071	7.119	6.421	4.278	4.178	1.511	928
Piemonte	1.272	1.379	1.971	2.402	2.307	1.236	1.120	1.194	501	416
North	8.285	5.208	11.325	7.473	9.426	7.657	5.398	5.372	2.012	1.344
Centre	1.118	1.101	1.337	1.376	1.432	686	638	705	363	287
South	2.481	1.773	3.572	2.053	2.836	1.528	2.191	2.202	1.198	1.110
Italy	11.884	8.082	16.234	10.902	13.694	9.871	8.227	8.279	3.573	2.741

Source EUROSTAT data

Graph. 16 Evolution of class of age of apple orchards in Italy (%)

Source: EUROSTAT data

Another important criterion of characterisation of different orchards typologies is based on the density of plantation. To this respect the data showed above highlight that while in the northern regions the evolution of orchards systems is driven by a tendency towards intensification (in 2000, the most relevant class of density is between 800-1600 plants/ha, with a significant area of over 4000 plants/ha), in the centre and southern regions the density of plantations is significantly lower. According to several researchers³ the only intensification trend, which is underway, involves the apple and pear sector in the Northern regions, while the citrus production style, which is typical of the Southern regions, is still based on extensive systems.

³ University of Pisa

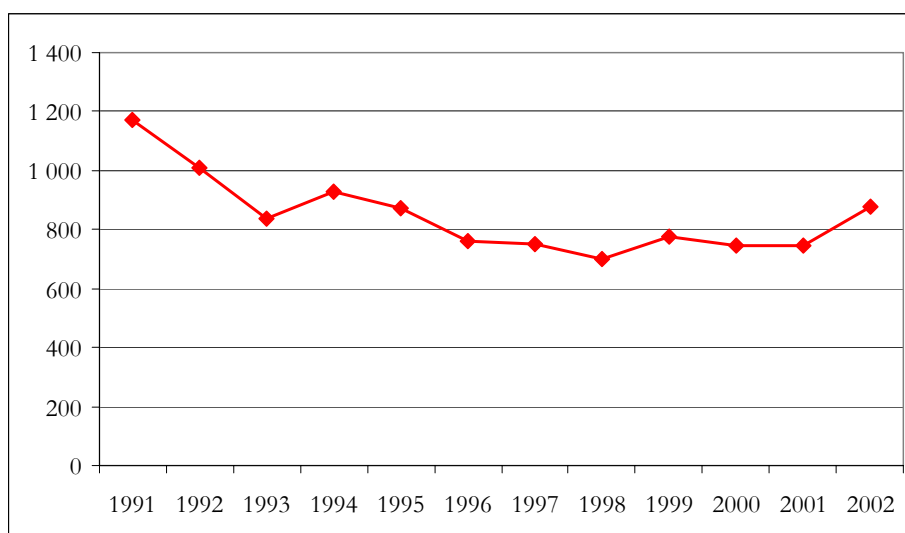
Tab. 38 Evolution of the orchard surfaces (ha) by class of density (plants/ha)

	1992				1997				2000			
Plants/Ha	North	Centre	South	Total	North	Centre	South	Total	North	Centre	South	Total
< 400	9.988,80	1.925,61	6.359,21	18.273,62	3.400,87	1.504,16	3.955,76	8.860,79	265.467	31.300	107.006	403.773
400-799	5.329,10	1.128,00	3.820,20	10.277,30	4.860,19	1.170,00	3.185,00	9.215,19	400.263	47.041	202.937	650.241
800-1599	14.127,85	1.360,73	1.973,49	17.462,07	1.147,10	1.176,87	1.239,00	3.562,97	1.069.794	78.163	131.866	1.279.823
1600-2399	4.610,00	474,81	128,15	5.212,96	6.078,00	474,81	288,73	6.841,54	1.027.656	37.906	61.467	1.127.029
2400-3199	0	0	0	0	0	0	0	0	1.043.056	24.312	2.137	1.069.505
3200-3999	0	0	0	0	0	0	0	0	439.875	216	432	440.523
>4000	0	0	0	0	0	0	0	0	298.011	1.232	10	299.253

Source EUROSTAT data

- **Evolution of agro-chemical inputs use**

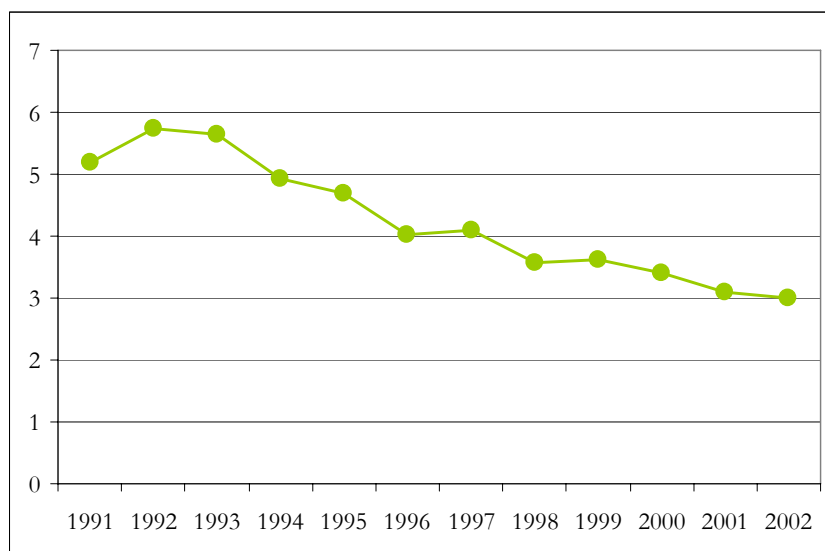
RICA data show that the total expenditure of specialised farms per ha (considering the prices adjusted to the annual indexes) does not increase. As matter of fact, the expenditure per hectare has decreased in the last years, with a light increase between 2001 and 2002.

Graph. 17 Fertilisers' average expenditure per ha in specialised farms in the fruit sector; (1991-2002). Constant prices (EUR)

Source: RICA data

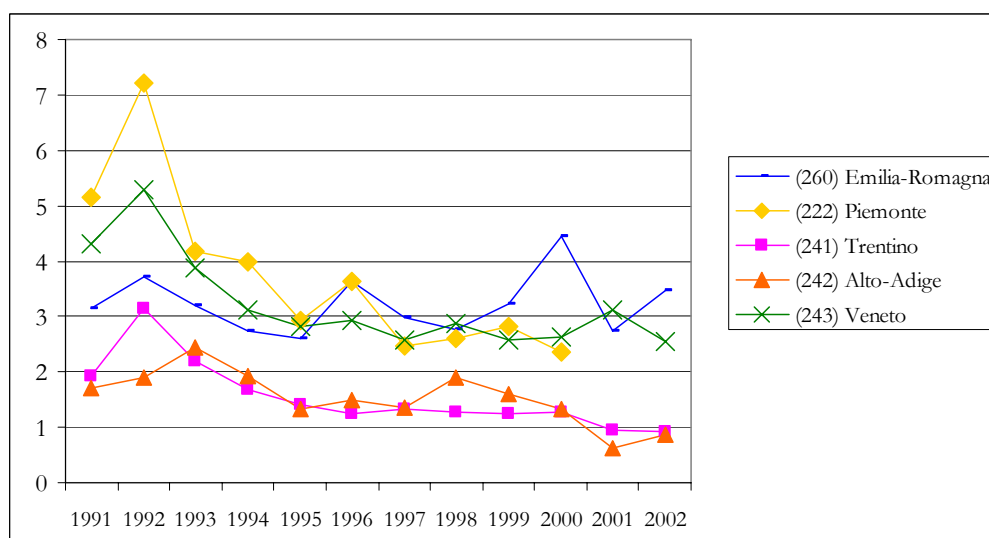
When we look at farm data, it emerges clearly a tendency to a reduction of the weight of fertilisers' costs on total output. If we consider these data as proxies of the use of chemical inputs, we can affirm that a rationalisation of input use has happened.

Graph. 18 Weight of pesticides' and fertilisers' costs over total output for specialised farms in fruit sector (% weigh)



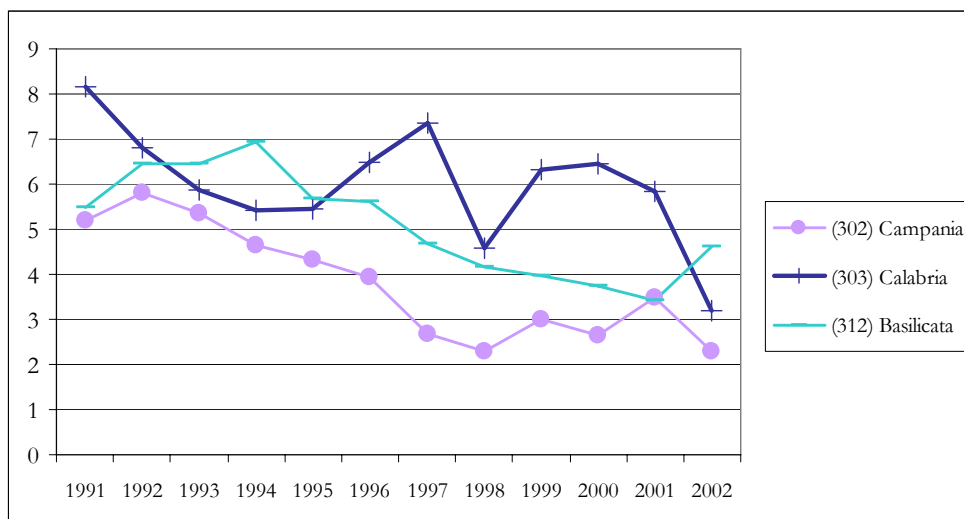
Source: RICA data

Graph. 19 Weight of pesticides' and fertilisers' costs over total output for specialised farms in fruit sector- by relevant region for apple production (% weigh)



Source: RICA data

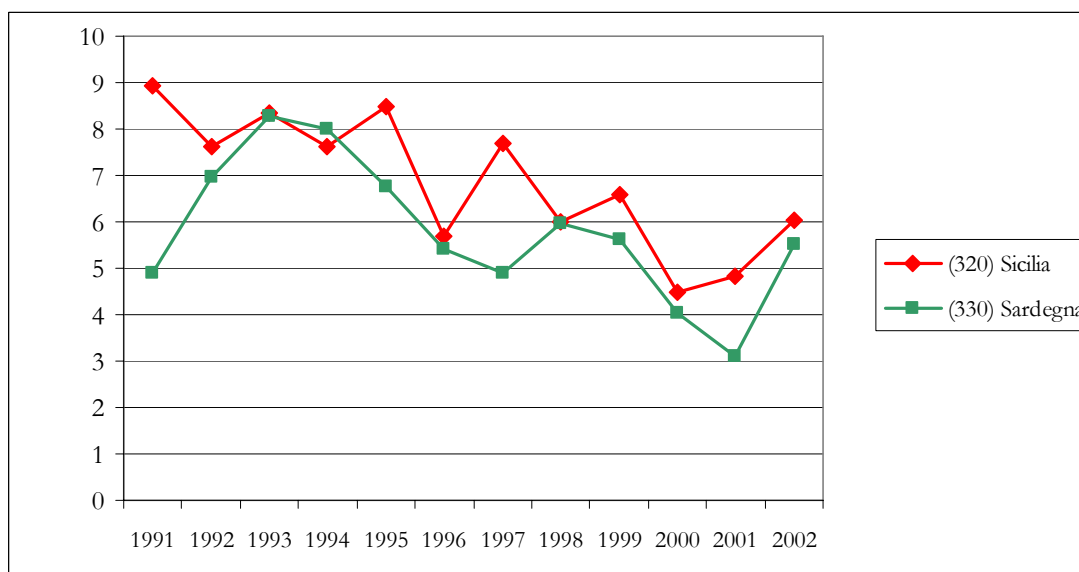
Graph. 20 Weight of pesticides' and fertilisers' costs over total output for specialised farms in fruit sector- by relevant region for the peach production (% weigh)



Source: RICA data

A relevant exception to the general trend can be observed for the citrus fruits. In Sicily and Sardinia indeed the weight of fertilisers' costs has increased starting from 2000. According to our interviews this trend could be related only to the negative climatic conditions of the last years.

Graph. 21 Weight of pesticides' and fertilisers' costs over total output for specialised farms in fruit sector- by relevant region for citrus production



Source: RICA data

Tab. 39 Apples – Use of chemical inputs 1999-2000 (kg/year)

	Total of the treatments	%	Treatments /ha
Pesticides	350.000	56,5	5,69
Insecticides	191.000	30,7	3,10
Herbicides	25.000	4,0	0,41
Mixed treatments	55.000	8,8	0,89
Total	621.000	100	10,09

Source: ISTAT 2000

With respect to the use of fertilizers and pesticides an important datum refers to a general decrease in quantities, due partly to the interventions, which are localised only along the row, and partly to the implementation of low-impact systems, which enables to manage the orchard with a new approach, taking into account different aspects related to the environmental impact of the agriculture practices. As an example the following table shows the decrease in the content of chemical residues of the fruit products in Tuscany. The data refers to the chemical products which are allowed by the Ministry Decree 27th of August 2004, setting their maximum limit in food products, both of animal and vegetable origin. The unit is the number of samples.

Tab. 40 Evolution of the content of chemical residuals allowed by the Ministry Decree 27th of August 2004) in fruits (% of samples)

	1997	1998	1999	2000	2001	2002	2003	2004
Irregular samples	1	0,6	0,4	0	0,2	0,9	1,4	0,9
Regular samples with residues	33,6	34,7	39,4	32,5	30,3	40,2	32,5	40,9
Samples without residues	65,4	64,7	60,2	67,5	69,5	58,9	66	58,2

Source: Arpat 2004

According to researchers⁴ two different reasons could explain the reduction in the use of chemical inputs. On one hand the adoption of low-input codes of practice in some regions, such as Trentino, could have played an important role in the reduction of chemical products' use, on the other hand more and more specialised fruit farms are adopting localised fertilisation systems, which allow to use lower product quantities.

- **Indicators of qualitative evolution of farmers behaviour: evidence from the case-study**

As the statistics show in Sicily on 2002/2003 the citrus fruit area dealing with the CMO represents the 35,8% of the total one; the citrus production dealing with the CMO represents the 43% of the total one; and the citrus holdings getting benefits by the CMO represent the 17,5% of the total regional citrus holdings.

Such figures highlight the weak role of the CMO in Sicily in driving the citrus sector.

Moreover, the chapters above explain how negative was the development trend of the citrus sector in the period 1990-2003, with an average reduction of the citrus area of about 6,5% and a diminution of the harvested production of about the 17%.

It has to be further observed that production dropped down more drastically than the area, confirming the opinions of the interviewed sector leaders and producers on a progressive reduction of the amounts of the utilised inputs plus a reduction in the intensity of the farming practices (e.g. pruning, irrigation, thinning, etc.).

According to a part of the farmers, the gradual diminution of farming intensification was due to the frequent market crisis, all along the period under study, that forced the operators to lessen production costs.

However, some POs leaders stated that the market competition pushed the producers to improve the quality of their products, in a such a way to maximize the product share able to fulfill the highest EC quality standards (fruit size, color, appropriate food safety, etc.).

This effort has been quite well carried out through the POs, that could release the needed technical assistance and adequate equipment to its members, by driving the change and introducing innovation. In fact, "producing quality" led to farm in a more sustainable way, by reducing inputs, adopting IPM (or organic methods), making new investments, as cultivars reconversion (re-grafting of the old groves with new demanded cultivars), upgrading of the irrigation schemes, etc.

Two different scenarios may be therefore distinguished in Sicily nowadays, as result of the sector evolution of the last 15 years.

⁴ University of Pisa

One group of holdings (around the two thirds of the total, often organised in POs) - that is highly suffering the market crisis but is not prone to make new investments – that is practising extensive farming methods just to minimize production costs. An overwhelming majority of the product goes to the processing industry, thanks also to the certainty of the CMO aid when applicable, and on the local market at very low prices.

Another group of holdings, the remaining one third - represented by those POs that aim at positioning their products on the national/European market - that reduce inputs and apply more sustainable farming methods (integrated or organic agriculture) with the double purpose of saving production costs and maximise quality. This second group, is principally represented by the POs of the eastern Sicily (the Catania plain; the provinces of Siracusa and Messina). This group carries out careful planning of the production together with its customers; standardization of the field techniques; innovation to enhance the efficiency of the farm management, as introduction of drip vs. sprinkle irrigation, etc.

Summarising, the direct environmental effects due to the market measures provided by the CMO are likely to be positive, since linked to yields reduction in favour of better quality.

As reported by three professionals and one AFDRS official, not very market-oriented POs, however motivated by the CMO premium for processing, have been encouraged to apply the slightest farming techniques to save costs, so alleviating the environmental impact as well.

The CMO impact in promoting the grouping of the supply has been so far rather moderate in Sicily. Although the totality of the interviewed producers and sector leaders considered the role of CMO very strategic in favouring the grouping of the supply, still on 2003 the 52 Sicilian POs (only 12 belonging to the specific category “citrus fruit”) gathered just the 17,5% of the total citrus holdings; the 35,8% of the regional citrus area (-17,7%, compared to year 2000) and the 43% of the citrus harvested production, as possible consequence of the lack of operators’ confidence in the PO mechanisms.

The 40% of the interviewed producers, members of POs, answered that they increased the variety of the supply, by re-grafting or planting new citrus cultivars, under indication of the PO management; the other 60% however successfully grow the typical CV “Arancia Rossa” (red pigmented orange) only, so they have been maintaining such variety over the years.

The standardization of the farming practices, toward one more sustainable farming model (as integrated or organic agriculture), has been implemented by the 75% of the respondents members of POs, as consequence of the necessity to uniform the product quality under the EU quality norms.

However, as reported by two POs technical managers, sometimes market-driven POs encouraged their members to abandon citrus groves that are not suitable anymore for quality production, since this would make it difficult to standardize the required quality. In addition, a certain decrease of biodiversity could have occurred due to the replacement of old cultivars with new ones.

Scientific studies about the subject of this question are not available; specific evidences on number of lost cultivars or areas of abandoned citrus groves and its fate are not available.

All the interviewed producers stated that grouping the supply facilitated the control of pesticide residues on the products, before being marketed: periodical collective controls were possible through the monitoring structures/laboratories co-financed by the OP.

The following table summarizes the answers of the Sicilian citrus fruit producers, interviewed for the case study. The qualitative evolution of farmers’ behaviour, as influenced by the CMO measures implementation in Sicily, may therefore be deduced.

Tab. 41 Answers of the Sicilian citrus fruit producers

Questions	Nombre de producteurs concernés	Réponse
0.9. Principales évolutions sur l’exploitation depuis 1996 ?	20	<ul style="list-style-type: none"> - 3 producers have started their activity after 1996 - 10 producers have enlarged their orchards, with new cultivars - 5 producers were under integrated/organic agriculture before 1996

Thème 1 : Mesures de soutien du marché		
1+4(F1).2. La nouvelle réglementation de l'OCM en place depuis 1996 (passage de la quasi totalité des aides par les OP) vous a-t-elle incitée à adhérer à cette (ces) OP ?	18	In general, all the producers agreed on the fact that joining the PO allowed them to improve the quality of their production through standardization that, in turn, facilitated the achievement of new market outlet, as supermarket chains, as well as innovative production standards (as EUREPGAP). Actually, anyone was aware of the differences between the CMO policy before and after 1996: they just underlined the advantage to work in a PO.
1+4(F1).3. Pensez-vous que cette nouvelle réglementation vous a conduit à une modification de vos pratiques, avec par exemple : - augmentation des surfaces cultivées ? - augmentation des intrants : pesticides, engrais, herbicides ? - passage à l'irrigation ? - augmentation des surfaces irriguées ? - augmentation des doses d'irrigation ? - élimination de vieux vergers ? - arrêt de production de variétés traditionnelles ou peu productives ? - autres modifications de pratiques	18	13 producers stated that the CMO regulation has not brought about intensification. On the contrary, the quality standardization introduced by the technical assistance service of the PO helped in reducing the farming inputs, introduced IPM, improved irrigation schemes, etc. 3 producers stated that the market (not the CMO policy) pushed to re-graft the trees with new cultivars 2 did not know how to reply
1+4(F1).4. Au vu de ces évolutions, pensez-vous que cette nouvelle réglementation vous a conduit à intensifier vos productions ?	18	Any producer linked the CMO regulation with intensification of production: in fact, any producers stated that production was increased
1+4(F1).5. Si oui, quelles conséquences environnementales ayant pu être favorisées par cette intensification avez-vous observées ?	18	Not relevant. All the producers did not record intensification
1+4(F1).6. Quelle est selon vous l'importance du regroupement de l'offre au sein des OP dans ces évolutions ?	18	7 producers did not know how to reply to this question 11 producers declared that the concentration of the supply was the main reason why they joined the PO, among those 2 added that supply concentration resulted in mainly standardization, which enhanced the sale of the citrus fruits
1+4(F1).7. Diriez-vous que sous l'incitation de cette réglementation, vous êtes passé de pratiques traditionnelles à des pratiques intensives ?	18	16 producers stressed to have improved the farming practices after technical innovation and efficiency enhancement, but without intensifying production 2 producers replied that standardization of quality (EU categories) required a higher number of sprayings of agrochemicals, but this was due to the market demand and NOT directly to the new CMO policy
1+4(F1).8. Le regroupement de l'offre dans votre région est-il selon vous une tendance : - lourde ou marginale ? - souhaitable ou regrettable ?	20	6 producers replied that concentration of supply is a major trend in Sicily 9 producers stated it is still marginal, since the major part of the citrus producers are very individualistic and the wholesalers sometimes offer better prices 5 producers did not know how to reply All the producers stated that concentration of supply is highly desirable, since they themselves could expire the positive effects of it and competition with other EU countries and north-african countries has become quite strong The 2 citrus producers out of PO in fact belong to a small association of producers that could not fulfill the PO requirements to be recognised by the Region
1+4(F1).9. Afin de préciser l'effet du regroupement de l'offre au travers des OP, a-t-il selon vous une incidence faible ou nulle / moyenne / importante sur : a. l'augmentation de la variété de l'offre, par exemple : - couverture d'une période plus vaste (ex : pêcheurs précoces, moyens et tardifs) ? - diversification sur d'autres fruits pour contenter la clientèle acquise ? b. la tendance contraire : monoculture des espèces qui se vendent le mieux ? c. une tendance à l'uniformisation des pratiques culturales pour l'obtention de produits homogènes ? d. un effet de la concentration en un nombre de lieux limité, des tâches emballage, expédition ? e. les éventuels effets secondaires sur le transfert	18	a) 2 producers answered that the variety of the offer (diverse cultivars of citrus) has been widened, as a (direct or indirect) consequence of the CMO grant opportunities 16 did not see any link Diversification into other fruit species did not occur for any producers b) For all the producers the market (especially the EU quality categories) pushes to grow the same cultivars and NOT the CMO policy c) all the producers recognised that uniformity of cultural practices is the main feature of joining the PO d) 13 producers replied that packing and despatch operations have been concentrated in a limited number of places, as consequence of consolidating grant aid through the PO; the remainder 5 did not reply to this question e) all the producers did not see any link among CMO

de la production de certaines zones marginales vers les zones très productives, entraînant une désertification d'un côté et une monoculture de l'autre ? f. d'autres incidences?		consolidating grant and (possible) transfer of the production from marginal to more productive zone, which did not occur in their case f) any other direct incidence has been emphasized by the group
1+4(F1).10. Avez vous subi des contrôles (en particuliers relatifs aux résidus phytosanitaires)? Si oui, avez-vous été notifié pour infraction ?	20	All the 20 interviewed producers' product had been tested for pesticides residue (the 18 within POs do it every year through internal monitoring) in the last two years, with no infringements

- **Evolution of area under TORs**

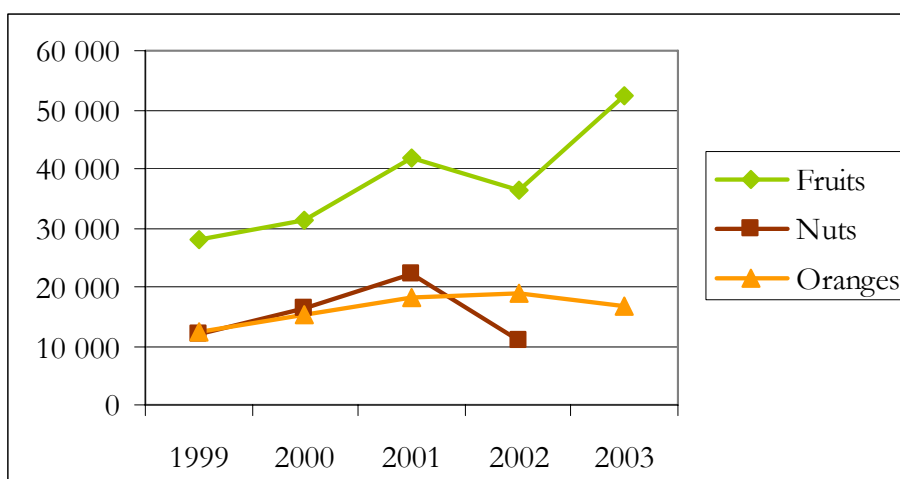
The organic fruit areas are significantly increasing, whereas the increase of the organic oranges is less marked. Indeed, it is difficult to evaluate the evolution of organic nuts areas, as the 2003 data are not available.

Tab. 42 Evolution of organic orchards areas (ha)

	1999	2000	2001	2002	2003
Fruits	28.147	31.364	41.827	36.394	52.214
Nuts	12.007	16.299	22.033	10.826	n.a.
Oranges	12.488	15.384	18.295	18.869	16.749
Total	52.642	63.047	82.155	66.089	68.963

Source: SINAB

Graph. 22 Evolution of organic orchards areas (ha)



Source: SINAB

Is there an intensification phenomenon?

Basically we could state that a general crisis has affected the fruit sector in the last ten years and it is still underway. The reasons have to be ascribed to the fragmented structure of the sector linked to the farms dimension, which is too small to meet the demand of the big retailers, based on large and constant supplies. Furthermore the Italian fruit sector, especially in certain regions such as Piemonte and Tuscany, is still linked to local commercial circuits.

However, in the context of the crisis of the fruit sector, the more specialised regions, basically Trentino-Alto Adige and Emilia-Romagna, together with some emerging Southern regions, mainly Puglia, Basilicata and part of Calabria, hold a privileged position in meeting the requirements of big retailers, thanks to more adequate farm dimensions, which allow gaining access to longer commercial circuits.

With specific respect to the citrus sector the severe crisis is linked to the lack in the varieties renewal, which would have been the necessary precondition in order to compete with European countries, above all Spain. As a consequence more and more specialised citrus farms are dismissed.

To conclude two opposite paths of development can be identified in the Italian fruit sector:

1. the path of the specialised and emerging regions, the distinctive traits of which are the increase in yields, plantation densities and irrigated surfaces, the reduction in the class of age and the increase in the use of localised fertilisation resulting in lower quantities of fertilizers.
2. the path of the less suitable areas based on a strong link with the local market, due to the incapacity of meeting the requirements of the big retailers.

Furthermore, the organic fruit areas is significantly increasing

In the citrus sector, the progressive diminution of farming intensification was due to the frequent market crisis, all along the last 13 years, that forced the operators to lessen production costs (*evidence from the case study*). However, some POs leaders stated that the market competition pushed the producers to turn into quality productions, by reducing agro-chemical inputs, adopting integrated or organic methods and upgrading of the irrigation schemes (*evidence from the Sicily case study*).

Two different scenarios may be therefore distinguished in Sicily nowadays, as result of the citrus sector evolution of the last years. One group of holdings (the largest one, often organised in POs) - that is highly suffering the market crisis but it does not make new investments – that is practising extensive farming methods just to minimize production costs. An overwhelming majority of the product goes to the processing industry, thanks also to the certainty of the CMO aid when applicable, and on the local market with very low prices.

Another group of holdings - represented by those POs that aim at positioning their products on the national/European market - that reduce inputs and apply more sustainable farming methods (integrated or organic agriculture) with the double purpose of saving production costs and maximise quality. These groups carry out careful planning of the production together with its customers; standardization of the field techniques; innovation to enhance the efficiency of the farm management, as introduction of drip vs. sprinkle irrigation, etc.

Environmental effects

With respect to the environmental risks related to the implementation of fruit-growing practices the following point are the most relevant:

1. **Soil erosion**, mainly in the hilly areas, due the use of heavy machineries in the lane, which brings to soil compressing and the loss of humus, which bring to the deterioration of soil structure. At the moment, however, the permanent-grass cover system of the inter-row is a rather common practice especially in Northern Italy and it is becoming more and more diffused in the Centre and South. This practice has a positive effect on the maintenance of soil structure and biodiversity, since the soil is treated with mechanical operations only along the lane (Giulivo, 2003)
2. **Water use** is a factor of risk especially in some regions of Southern Italy such as Sicily, Puglia and Basilicata for peach-growing. As a matter of fact intensive fruit systems require large quantities of water, which in the South is a scarce resource. The consequence is the use of low quality water, which is a common practice in South of Italy and to which several environmental risks are related. For instance, in Puglia and Basilicata some commentators reported that the use of water with a high content in salt is responsible for the deterioration of soil structure, biological, chemical and physical. (Xiloyannis *et al*, 2002, Ravalli and Rota, 2004). Furthermore, an improper use of water could have a negative effect in term of superficial and underground water pollution due to the water content in nitrates, pesticides and other polluting substances (Xiloyannis, 2003). Fortunately, the use of localised and drip irrigation is more and more spreading both in the North and Centre-South with a positive effect on water and energy conservation (Nuzzo, 2001).
3. **Landscape changes**, mainly due to the crop specialisation of fruit-growing in certain regions. Basically the increase in intensive production has had different effects in different regions, bringing somehow to the geographic concentration of the industrial fruit production. As a matter of fact the more suitable areas have had a privileged position in the implementation of single-crop farming resulting in the loss of diversity at different levels, mainly genetic stocks, agriculture techniques as well as richness in different ecosystems. On the other hand those areas which are less suitable to intensive fruit production have

undergone a process of marginalisation, becoming ex-agriculture landscape, semi-natural or turned into grazing land (Barbera, 2003):

4. **Biodiversity erosion**, due to the use of only a few varieties, which are the most demanded from the market. However, in spite of growing genetic erosion, especially in the plain regions, the Italian stock of fruit varieties is still quite large, thanks to the existence of fruit areas with different features (Barbera, 2003).

With respect to the use of fertilizers and pesticides an important datum refers to a general decrease in quantities, due partly to the interventions, which are localised only along the row, and partly to the implementation of low-impact systems, which enables to manage the orchard with a new approach, taking into account different aspects related to the environmental impact of the agriculture practices.

Role of the CMO

According to our interviews⁵ there is no evidence that this trend is only related to the implementation of the CMO, but it rather depends on the enhancement of the cultivation practices from an environmental point of view.

However, the POs could have a positive environmental impact in the areas where they are better developed (Emilia-Romagna and Trentino-Alto Adige). As a matter of fact, the single environmental measures, implemented by the POs, have positive effects on the local/regional ecosystem in the average term (as showed in the grids of question 1 H2).

According to our interviews⁶, the increasing organic fruit areas could be linked to the implementation of the environmental measures within the OPs.

From the analysis of the case study it emerges that the direct environmental effects due to the market measures provided by the CMO are likely to be positive, since they are linked to a yields reduction in favour of a better quality.

Conclusion

The following table is a summary of the main changes in the agricultural practices within the Italian fruit sector:

Evolution of orchard surfaces	No relevant changes; Trentino Alto Adige results to be the leading region for the apple production, Emilia-Romagna for the pear production, whereas the citrus production is mainly located in the southern regions, especially in Sicily. With respect to the peach sector, the leading region is Emilia Romagna followed by Campania and Basilicata
Evolution of orchard yields	Decreasing trend starting from 2001-2002 (Trentino Alto Adige is an exception)
Evolution of irrigated areas	Decreasing trend. On the contrary, the trend in Campania and Basilicata is increasing.
Evolution of class of age	The ageing tendency is rather strong, aside from the Northern regions.
Evolution of density of plantation	Increasing intensification in the Northern Italy; no relevant changes in the other Italian regions
Evolution of agro-chemical use	Decreasing trend in the use of fertilisers Slight increase in Sicily and Sardinia starting from 2001.
Evolution of organic areas	Increasing trend at national level

The main environmental negative impacts linked to the changes in the fruit production practices are the following:

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- the high use of water is a factor of risk especially in some regions of Southern Italy such as Puglia and Basilicata, where the orchard irrigated areas are increasing, especially in the peach sector.
- a loss in old varieties which are water stress resistant, due to the increasing implementation of irrigation systems in the Southern regions (Xiloyannis, 2003).
- a decrease in biodiversity, both of the agricultural landscape and agro-ecosystem, mainly due to the crop specialisation of the fruit sector in certain regions. Trentino Alto Adige is the most remarkable example of this phenomenon. On the other hand those areas that are less suitable to the intensive system underwent a process of marginalisation, becoming ex-agricultural landscape, semi-natural or they turned into grazing land (Barbera, 2003).

On the other hand, as stated above, the environmental measures implemented by the POs, hold the potential of having a positive impact, especially on the maintenance of the soil and water resources, in the regions where they are better developed and widespread. As a matter of fact the adoption of low input and organic systems can reduce the risks linked to the intensification within the fruit sector.

2.1.1.2 Impact of the grouping supply

Context

The national decree **128/98 and 25/99**, in compliance to the Reg. (EU) 2200/96, defines the criteria for the producers 'associations' recognition, which should be as joint-stock company (national law 128/98).

Furthermore, the national decree 128/98 defines the guidelines for the operative programmes elaboration.

These guidelines are articulated in the following parts:

4. Presentation of Producers' organisations and of Associations of Producers' Organisations
5. Data on A.O.P
6. Structural analysis of production
7. Regulations of the access of members to the benefits of Operational Programs
8. General objectives of the OPs
9. Actions
10. Synthetic scheme of actions and expenses
11. Parameters for determination of some expenses
12. Financial management

The OPs (description of initial situation, objectives, description of measures, duration, and budget) are submitted to the Regional Governments and Autonomous Provinces, which are responsible for their acceptance.

Implementation

• Evolution of number of POs at national level

In 2004 the total producers' associations are 248, and fruit marketed under POs is about 33%, (UIACOA). During the period 1998-2000, the number of operative POs is substantially stable (118, 121, 119); due to the fact that the conversion of producers' association to POs has been already occurred; on the other hand the actual POs have not been able to improve their potential social basis by activating new and relevant aggregation processes.

Regarding the specialisation, at the moment, 70-75 % of producers' organisation trade fruit and vegetable in general. (Cherubini, 2000). Only the remaining producers' organisations are specialised in fruits or citrus.

Tab. 43 Evolution of the number members and marketed production (000 EUR)

Year	POs number	POs members	Production quantity budget marketed by POs (000 EUR)
1996	120	n.a.	n.a.
1997	n.a.	n.a.	n.a.
1998	118	119.345	2.161,59
1999	n.a.	111.298	2.315,31
2000	149	115.000	2.500,00

Source: INEA

- **Evolution of number of members involved**

This evidence of the quite scarce importance of the organised and grouped production, above all in some Italian regions, is confirmed also by the evolution of the number of members. The number of members has fallen from 119.000 in 1998 to 115.000 in 2000 (source, INEA), with a minimum peak of 111.000 in 1999.

- **Evolution of value of market production**

In 1999 the value of production marketed by POs was only the 24% of the total marketed production of the Italian sector. Starting from 2000 there has been a slight increase, due to the less strict criteria for POs recognition, in compliance with the national regulation 25/99. In 2000, the value rises 2, 5 million EUR, with a growth of 4% compared to 1999 and of the 45% compared to 1998 (INEA). However, as the statistics show (INEA), the value of the production marketed by the POs is still low.

- **Evolution of POs by macroregion**

The evolution and the importance of the POs are not homogeneous at national level, but it is strictly linked to the presence of different production fruits patterns.

- 1.1 The first pattern, mainly located in Emilia Romagna and Trentino Alto-Adige, is represented by a system of enterprises well integrated with the market.
- 1.2 The second pattern, mainly located in the central-southern regions, is characterised by a weak integration with the market. In these regions there are a quite considerable number of farms which interact individually within the market. They mainly adopt a strategy based on intensification of production techniques.
- 1.3 The third pattern, mainly located in the islands, is highly fragmented and characterised by not very clear strategies.

Tab. 44 Number of POs 1999- by macroregion (><35% of the market production of the region)

Macroregion	1998	1999	2000	2001	2003	2004
North Italy<35%	10	13	13	n.a	n.a	n.a
North Italy>35%	21	24	23	n.a	n.a	n.a
Centre Italy	10	13	17	n.a	n.a	n.a
South Italy	15	24	29	n.a	n.a	n.a
Islands	13	14	20	n.a	n.a	n.a
Without financial statement	4	2	9	n.a	n.a	n.a
Without OPs	45	31	8	n.a	n.a	
Total Italy	118	121	119	196	203	248

Source MIPAF

Tab. 45 Activity of POs

Region	Number of POs		value of marketed production (000 EUR)		number of members	
	1998	1999	1998	1999	1998	1999
A.P. Bolzano	4	4	304,24	319,91	15.235	7.826
A.P.Trento	4	4	158,04	212,71	10.452	9.543
Emilia-R.	14	16	669,52	762,51	28.093	30.165
Total North Italy	32	37	1.324,23	1.541,78	61672	57447
Centre Italy	13	13	123,68	124,36	8468	10445
South Italy	73	66	713,68	649,17	49295	43406
Italy	118	116	2.161,59	2.315,31	119.435	111.298

Source MIPAF

Environmental effects :

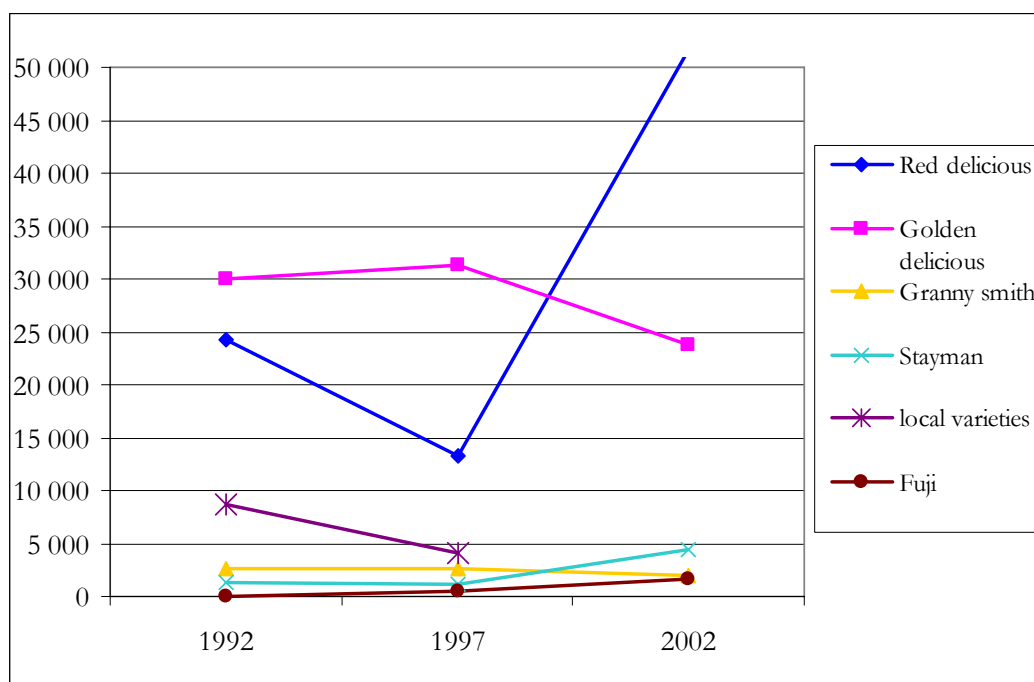
- **Genetic erosion:** on the basis of our interviews⁷ the main negative effect of grouping supply is the loss of genetic biodiversity, since the POs have fostered the adoption of only a low number of varieties, which are the most demanded by the market. Due to the lack of available data related to the evolution of the varieties marketed by POs, we will refer to the national trend in order to give evidence of the phenomenon mentioned above. The following table is an analysis of the apple sector, which is characterised by the increase in areas destined to a low number of varieties (*Braeburn, Fuji, Red Delicious and Granny Smith*) which are the most demanded by the big retailers. On the contrary the number of local and less popular varieties has halved, between 1992 and 1997.

Tab. 46 Evolution of apple varieties (ha)

Apple varieties	1992	1997	2002
	Ha	Ha	Ha
Jonathan	431,6	170,9	n.a.
Red delicious	24.239,2	13.207,0	51.591,2
Golden delicious	29.982,8	31.241,2	23.818,95
Spartan	1.835,3	1.369,9	n.a.
Rome beauty	4.615,2	4.374,9	2.927,06
Granny smith	2.667,8	2.584,8	1.920,37
Reinette du mans	5.343,9	4.786,2	n.a.
Stayman	1.347,1	1.190,7	4.416,6
Abbondanza	354,4	115,7	n.a.
Melrose	92,6	58,6	n.a.
Braeburn	n.a.	677,8	1.237,68
Prima	n.a.	35,2	861
Delicious arkane	n.a.	12,3	n.a.
Autres	n.a.	314,0	n.a.
Fuji	n.a.	523,0	1.637,61
Renetta grigia	57,9	0,0	224,01
Jonathan	n.a.	n.a.	3.023
Other not specified varieties (local varieties)	8.611,4	4.180,0	n.a.

Source: Eurostat data

⁷ University of Pisa

Graph. 23 Evolution of some apple varieties (ha)

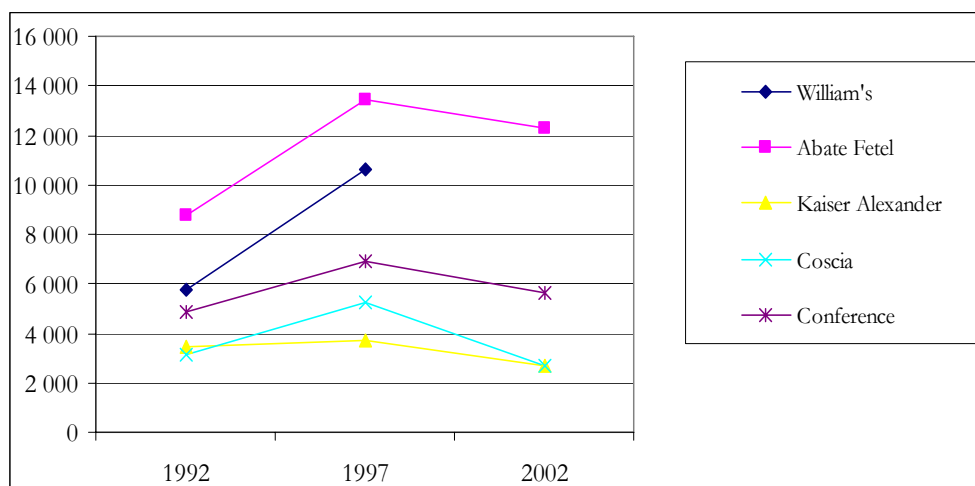
Source: Eurostat data

The following table shows the evolution of the pear varieties, which is characterised by a strong increase of some varieties, (which are the most demanded by the big retailers) between 1992 and 1997, followed by a stabilisation.

Tab. 47 Evolution of pear varieties (ha)

Varieties	Italy		Italy	Emilia-Romagna
	1992	1997	2002	2002
All varieties of table pears	51.338,1	51.457,7	38.419,73	25.830,94
Gentile Bianca	82,3	159,3	429	62,80
Coscia	3.146,6	5.253,4	2.682,17	4.651,0
Butirra Precoce Morettini	252,9	147,1	177,44	118,81
Spadoncina	70,2	153,6	420,90	105,0
William's	5.733,2	10.599,9	n.a.	4.431,21
Abate Fetel	8.761,4	13.411,8	12.317,77	9.835,41
Conference	4.837,1	6.904,6	5.600,15	414.539,0
Kaiser Alexander	3.475,9	3.699,7	2.713,46	1.998,72
Passe Crassane	1.269,6	963,9	6.454,10	5.381,6,
Butirra d'Estate	212,2	375,9	283,02	7,0
Cure	973,6	49,9	233,00	51,0
Max Red Bartlett	n.a.	883,7	1.053,24	7.855
Varieties of table pears not specified	2.285,1	2.527,0	n.a	n.a.

Source: Eurostat data

Graph. 24 Evolution of some pear varieties (ha)

Source: Eurostat data

Tab. 48 Evolution of orange varieties (ha)

	1997	2002
All orange varieties	286661,12	7604220
Blood, all varieties	55081,72	2985897
Blood, Sanguinello	3534,79	180235
Blood, Moro	7104,96	295118
Blood, Tarocco	42958,61	2449446
Blood, Sanguinello 'Cuscuna'	33,17	31233
Blood, Sanguina Comune	1378,76	n.a.
Blood, varieties not specified	71,43	29865
Sweet, all varieties	231579,4	4618323
Sweet, Ovale/Calabrese	4055,85	119562
Sweet, Belladonna	643	26791
Sweet, Shamotti or Jaffa	237,11	2127
Sweet, Salustiana	7665,08	8511
Sweet, De Setubal	623,46	1866
Sweet, Valencia Late	34260,45	276976
Sweet, Bionda Comune	20779,21	507694
Sweet, Spera da Vidigueira	404,6	19091
Sweet, D.Maria	29,81	21211
Sweet, De Vale de Besteiros	22,91	2207
Sweet, Bionda Apirena	283,29	2577033
Sweet, Vaniglia Apirena	81,54	803064
Sweet, Cadenera	923,8	1601754
Sweet, Verna	1823,95	36243
Sweet, Koina	5156	14114
Sweet, Navels Group, total	140646,17	48570
Sweet, Navels Group, Merlin or Washinton Navel	58080,86	1732
Sweet, Navels Group, Navelina or Dalmau	48948,47	71556
Sweet, Navels Group, Navel New Hall	14057,99	1026696
Sweet, Navels Group, Thonson Navel	1653,57	28558
Sweet, varieties not specified	11397,08	n.a.

Source: Eurostat data

With respect to the citrus varieties, in the mid-eastern part of Sicily the red-pigmented cultivars, like “Tarocco”, are prevailing; in the Agrigento province, the “blonde pulp” cultivars are instead dominant, belonging to the “Navel” group: the “Washington Navel” being the most represented.

- **Reduction in external input:** according to our interviews⁸ the POs fostered the implementation of low input systems, through the adoption of the operational programs. As a consequence the use of external inputs, especially fertilizers and pesticides, significantly decreased with positive effects on the environment. Besides, the POs played an important role in encouraging the adoption of drip irrigation systems, with a positive effect on water and energy conservation (Nuzzo, 2001).

Conclusion

With respect to the environmental impact of the grouping of supply, we should consider that any potential environmental impact should be ascribed to the regions where the development of the POs effectively occurred.

As a matter of fact, in Italy, the evolution of POs has been strongly related to the patterns of production mentioned above:

→ in the northern regions, the number of POs is lower (26% of the total), but the production marketed by POs is the 67% of the national marketed production. This is due to the presence of pre-existing and well organised fruit supply chains.

→ on the contrary, in the southern regions, in spite of the large number of POs (74% of the national number), their economical weight (in terms of value of marketed production) represents only the 12% of the national production (INEA).

A further aspect should be stressed: in the southern regions the main activity of POs is related to sell the members’ products, whereas in the Northern-Eastern Italy, the POs activities is also addressed to promote and valorise the products (many examples of collective brands, such as *Melinda* brand, which is the most popular apple brand at national level)

The grouping of supply encouraged by the CMO induces:

- 1.4 Homogenisation of production techniques and rationalisation of cultivation systems, through the adoption of the operational programs.
- 1.5 Reduction of number of cultivated varieties. As in the apple case, there are nowadays only a few cultivated varieties, and a trend to abandon local varieties.

2.1.1.3 The environmental impacts of intervention (withdrawals)

Context

The Ministry Decree 1204/04 sets the national framework regulating the withdrawals. More specifically in the article number six AGEA is appointed as the institutional body in charge of setting the conditions for the public auction, which involves all those operators who want to obtain and transform the withdrawals. Furthermore, it is established that the withdrawals have to be process into alcohols, animal feeds or other non-food products (compost or biodegradation). However, the Ministry Decree does not indicate directly how to process these products.

Level of implementation

In order to evaluate the level of implementation of the intervention on the withdrawals we will refer to Emilia Romagna and Alto Adige, as they hold the leading position within the fruit sector.

With respect the environmental-friendly withdrawals methods, the option can be either the compost or the biodegradation. However, according to our interviews⁹, neither the compost nor the biodegradation are the privileged destination for withdrawals. As a matter of fact, as set by the Reg. EU 2200/96, they are the last destination of withdrawals, and secondly their management implies some technical problems in order to avoid any contamination of other crops.

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⁹ Person in charge of the monitoring withdrawals activity in Emilia Romagna

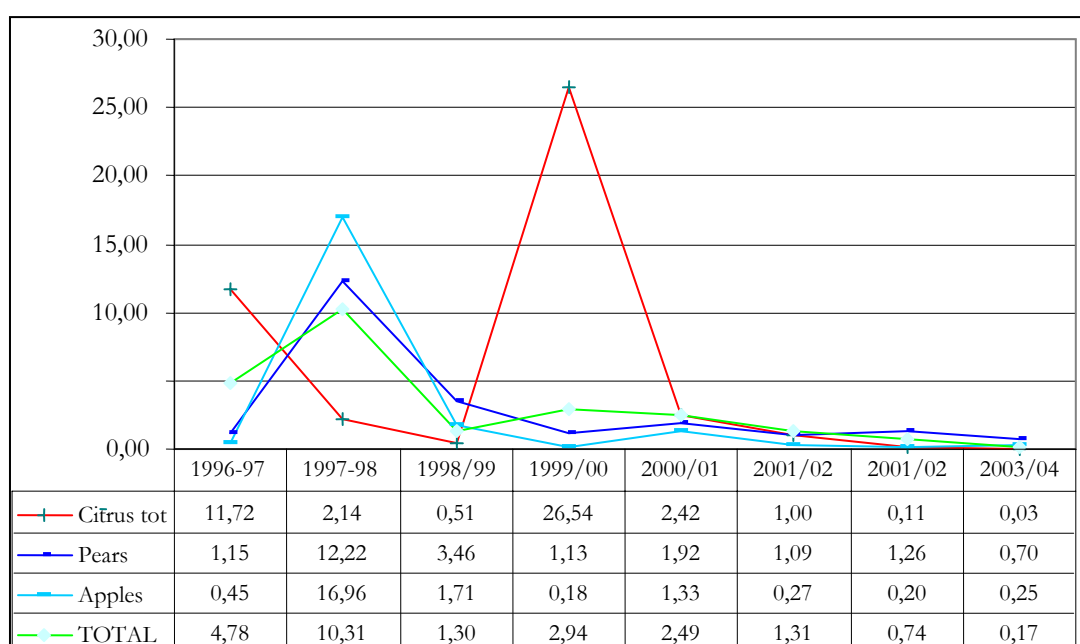
The choice of Emilia Romagna for instance is the use of the biodegradation instead of the compost, as it is characterised by an easier management, especially for what concerns the environmental risks. With respect to the Province of Alto Adige, a specific framework for environmental-friendly withdrawals methods is missing, since they are not considered as a useful instrument.

Evolution of the practices

As showed in the following tables, the Reg. (CE) 2200/96 led to a significant reduction in the withdrawals quantities.

As a matter of fact during the period 1990-2003 the withdrawals volumes underwent a process of intense reduction, going from 534.470 tons in 1989-90 to 11.867 tons in 2003-04 (see graph 5). More in detail, during the period 1996-98 a strong increase in withdrawals occurred, as a result of the speeding up of production in the whole fruit sector, whereas starting from 1999, the productive surplus became less and less important.

Graph. 25 Evolution of fresh fruit withdrawals 1996-2004 (% of withdrawals on total production)



Source: DG Agri 2005

According to AGEA data, the rate of withdrawals addressed to the compost/biodegradation processing underwent a process of intense reduction going from the 49,9% in 2000-2001 to only 5, and 29% in 2003-2004.

Environmental effect

Scientific and technical publications about the link between the reduction in withdrawals quantities and the reduction in environmental impacts are not available so far within the Italian context. However, according to our interviews¹⁰, the reduction in the withdrawals quantities is not the result of a decrease in the fruit systems' intensification but it depends on the choice of producers, who decide to renounce to the harvest when they know that they would not receive any grant for the surplus. In the peach and citrus sector for instance it is common to leave on the trees that part of production which is not possible to market.

Conclusions

To conclude it is evident that the Reg. (CE) 2200/96 led to a significant reduction in the withdrawals quantities. However, the link between the reduction in the withdrawals quantities and the reduction in environmental impacts is difficult to assess, first of all for the lack of scientific literature and secondly for the lack of studies about the choice of those producers who decide to leave part of the production on the trees instead of harvesting.

¹⁰ University of Pisa

Question 2 (F1): What is the environmental effect of transferring price support from fruit processors to producer groups? [Please note that in the CMO for fruit and vegetables the main measure is the support for organisations of producers and their operational funds].

Context

The previous regime guaranteed on one side a minimum price to producers and on the other side a subsidy to the fruit processors. The direct consequence used to be an incentive to produce higher quantities of products.

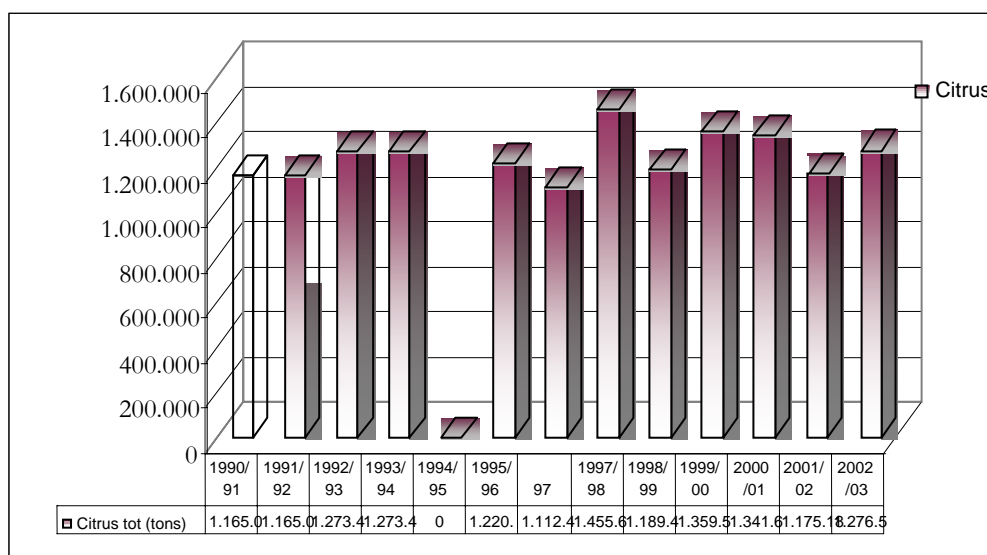
According to the Reg. (EU) 2699/2000, the price support is transferred from fruit processors to producers groups; and as a consequence the producers became the final beneficiaries of the aids' system. Furthermore, the prices for those products which are addressed to processing is negotiated between producer's associations and fruit processors, with the suppression of the minimum guaranteed price.

This means that producers are encouraged to improve the level of quality of their production, with the consequence that they will tend to pursue productivity to the highest levels.

Practices evolution from 1990-2003

- Evolution of the quantities of processing citrus fruits before and after transferring price support from fruit processors to producers' groups

Graph. 26 Evolution of the processed citrus fruits production (tons) in Italy



Sources: Raisa (elaboration on three years period: 1990-1993); ISMEA on ASSITRAPA data (from 1995-2003); 1994-95 not available

Product amounts given to the processing industry vary every year according to: a) the harvested production (tied in its turn to the climatic conditions); b) the operators' ability to reach with the fresh product the right market outlets; c) the market trend of the fresh and processed products, etc.

The amount of Sicilian citrus fruit given to the processing industry has remarkably grown over the last twelve years, passing from 445,5 thousands of tonnes of the three-year period 1991/92-1993-94 to 667,4 thousands of tonnes of the three-year period 2000/01-2002/03 (marking an increase of around 50%) (table 49). This growth interested all the regional citrus fruit productions (oranges, lemons, clementines, tangerines and grapefruits).

Tab. 49 Citrus fruit produced in Sicily and processed by the industry, within the frame of the CMO support (tonnes)

	1991/92	1992/93	1993/94	1994/95	1995/96	1999/2000	2000/2001	2001/2002	2002/2003
Oranges	190.800	192.100	148.400	119.600	212.400	274.146	264.924	283.427	279.123
Lemons	209.700	259.200	274.100	209.400	340.900	337.661	397.396	321.373	287.886
Tangerines	37.200	n.a.	24.500	16.800	19.500	72.366	83.993	41.891	33.174
Clementines	n.a.	n.a.	400	700	600	1.388	1.971	2.367	1.533
Grapefruit	n.a.	n.a.	n.a.	n.a.	n.a.	820	2.049	1.114	137
Total	437.700	451.300	447.400	346.500	573.400	686.381	750.333	650.172	601.853

Source: AFDRS and CORERAS elaboration on the three-year period 2000/01-2002/03.

- Indicators of the qualitative evolution of farmers behaviour : evidence from the case study
The following table summarizes the answers of the Sicilian citrus fruit producers, interviewed for the case study. The qualitative evolution of farmers behaviour, as influenced by the CMO measures implementation in Sicily, may therefore be deduced.

Tab. 50 Answers of the Sicilian citrus fruit producers

Questions	Nombre de producteurs concernés	Réponse
2 (F1). 1- Did you grow citrus before the transfer of support prices from the processors to the growers in 1996 (Y/N) ?	20	17 farmers were growing citrus fruits before the transfer 3 farmers started activity after 1996
2 (F1). 2 - If so, since this transfer of support prices from the processors to the growers, what changes have you made to your production, in terms of (describe if possible with quantitative examples): . quantities produced (state changes in tonnes for each category of processed products) ? . cultural practices (state which have changed, and how) ? . related beneficial environmental effects (state which) ? . related harmful environmental effects (state which) ?	17	all the 17 farmers stated they did not change anything in their production, nor they noted any harmful/beneficial effect linked to the transfer
2 (F1). 3- To what extent (%) do you think these changes are attributable to this transfer of support of prices from processors to growers ?	17	see above
2 (F1). 4- If this transfer had not taken place, do you think that the environmental effects would generally have been less or more harmful ? Explain.	17	all the 17 farmers stated that no correlation occurred between (possible) environmental effects (positive or negative) and the transfer of the aid from processors to growers

All the interviewed persons (namely producers, POs managers, regional authorities, researchers and professionals) stated that there were no significant operational consequences when the price support was transferred from fruit processors directly to the producers. Rather, producers were pushed to join themselves in POs, in order to get the premium.

Of course, receiving themselves the payment gave the chance to have a certain negotiation with the processors to get a better price: however, only one interviewed PO's representative answered that nowadays the industry recognizes two different prices, linked to best or less quality. On the contrary, all the other POs leaders and producers answered that still there are no chances to bargain a price linked to the quality of the conferred product: when the contract is subscribed, the price that is offered is then fixed for all the campaign.

About the time of cashing the payment, seven producers complained that, before the reform, they could get paid sooner. At present, due to internal (Region) administrative reasons, the aid reaches the producers after several months from the product delivery.

It has to be underlined, however, that any respondents stated that the above considerations had or have to do with their farming behaviour. Therefore, there are not evidences that transferring price support from fruit processors to producer groups resulted in some kind of environmental effect.

Environnemental effects

Results from the case-studies:

There are not evidences that transferring price support from fruit processors to producer groups resulted in any positive or negative environmental effects.

Conclusion

As stated by Schimmenti (2003), the increment of the processed quantities occurred, on one hand, because of the specific CMO support and the growing consumers' demand for some citrus derivatives (e.g. the drinkable juices, especially those from red oranges); on the other hand, the increment has been also the consequence of the growing difficulties to place in the market the fresh products.

However, from the interviews carried out it emerge that there are no changes in farming practices after the transferring of price support from fruit processors to producer groups.

Question 3(F1) What is the environmental impact of the requirements laid down in the market standards?

Context

According to the European Regulation 2200/96 (art.2-art.10) and the single regulations for the commercialisation of each fruit class the quality standards apply only to certain features such as the quality (some minimum safety standards are established together with three product categories), the fruit size (diameter), the external aspect of the fruit, the colour of which has to be as much homogeneous as possible.

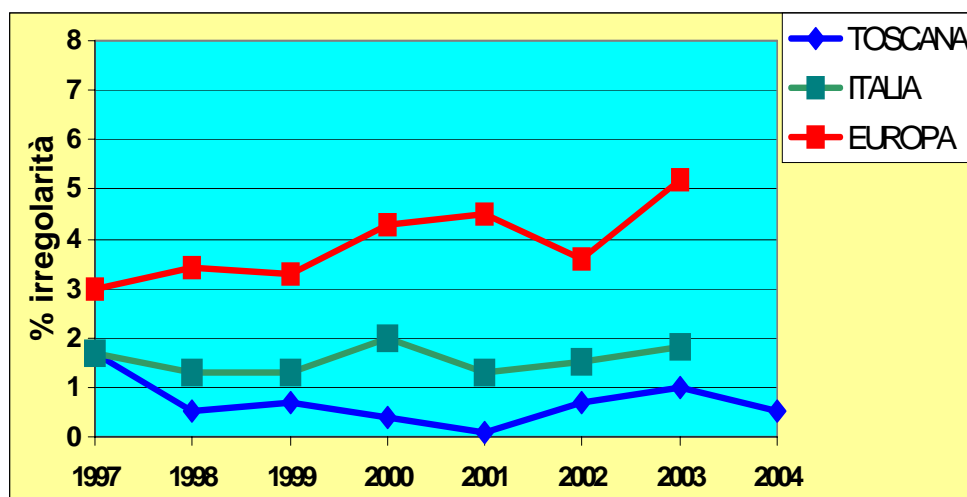
With respect to the compliance controls the Ministry Decree n.306/2002 represents the Italian implementation of the European Regulation n.1148/2001.

Concerning the existence of rules required from big retailers three levels of quality standards can be identified:

1. the European quality standards mentioned above;
2. the national safety standards, which establish the maximum chemical products limits which are allowed for fruit products (attachment 2 of the Ministry Decree 27 August 2004);
3. other quality standards, which are established by big retailers chains and apply to the production systems, in order to give to consumers more safety guarantees.

The first two settings of rules are compulsory, in particular the Italian safety standards are stricter than the European ones, as shown by the results of the controls carried out by Arpat (regional agency for the environmental protection of Tuscany) in 2004, referring to the percentages of irregular samples.

Graph. 27 Rate of irregular fruit products (%)



Source: Arpat 2004

With respect to the third level, which is voluntary, some big supermarket chains have their own brand together with its production disciplinary, setting the basic rules of low-input production systems. As an example we could mention the programs “Qualità sicura” of Coop Italia or “Naturama” of Esselunga, aiming at providing consumers with safe and high quality fruit products, which are the result of natural and environmental friendly production systems combined with safety standards, which are stricter than the national ones. Regarding the implementation of these programs 99 different types of fruit are involved in the program “Qualità sicura”.

Implementation

With respect to the implementation of the market standards, the Agriculture Ministry Document “*Manuale operativo delle procedure dei controlli di conformità alle norme comuni di qualità dei prodotti ortofrutticoli*”, adopted with the Ministry Decree 3rd of December 2003, is an operating manual which sets the rules for the compliance controls. More specifically is made of four sections:

- the first section clarifies some aspects related to the products’ quality, the compliance with the European Regulation, the body in charge of executing the controls, which is AGEA, and the list of the operators’ obligations;
- the second section sets the rules for the training of technicians, who are in charge of executing the quality controls (art. 4-5, Reg.2200/96);
- the third section sets the rules for the controls’ execution and where they are supposed to take place;
- the fourth section refers to the implementation of a national data base, starting from the 2nd of January 2002, which is supposed to collect information about all the fruit operators subject to the compliance with the market standards. Finally this last section sets the rules for the management of the sanctions in case of non-fulfilment.

Practices evolution from 1990 to 2003

- Evolution in terms of intensification/extensification

With respect to the evolution in term of intensification/extensification, the fruit sector, especially in the most specialised regions, underwent a process of intensification of those practices which aim to increase the size of the fruit and to obtain a low level of imperfections of the skin.

- Treatments evolution

With respect to the treatment evolution a higher level of chemical inputs and irrigation is the necessary precondition in order to improve the fruit size. In addition the thinning out of some fruits, through the use of chemical products, plays a crucial role in obtaining big and homogeneous fruits.

Environmental effects

The quality standards are basically related to the size of the fruit and to a low level of imperfections of the skin. As a consequence some technical arrangements are necessary in order to reach these objectives. According to researchers¹¹ the increase in the fruit size requires a higher level of chemical inputs and irrigation. Besides, the thinning out of some fruits plays a crucial role so that chemical products are favoured to the hand methods as they allow reducing the intervention costs.

On the contrary, the POs¹² leaders agree that, in order to fulfil the high quality standards, especially those required by the large distribution, a big effort of rationalisation of the cropping system has been done both through the reduction in the use of fertilisers and the adoption of low impacts farming methods. Furthermore, some POs functionaries¹³ state that, the need to obtain a bigger fruit size could be realised by increasing the number of interventions of manual thinning out, without increasing the level of chemical inputs. Therefore, the effort of the producers to fulfil the quality fruit standards could provide a positive indirect impact, meaning that through this operation the tree can benefit of a better air circulation reducing the sensitivity to pest diseases.

On the other hand, the POs leaders point out a negative environmental effect related to the quality standards requirements, which is the risk of genetic erosion due to the exclusion of varieties not responding to the quality standards.

¹¹ University of Pisa

¹² See case study

¹³ UIACOA leaders, UNAPROA learder

Evidences from the case study

From the case study analysis, it emerges that, in some cases, the POs were requested by the large distribution to abide by voluntary Europe GAP standards, which are more restrictive than the EC ones, above all, on the topic of environmental preservation.

Conclusion

In order to evaluate the environmental impacts of the market standards we should distinguish between two opposite orders of effects: the ones due to the European quality standards and the ones to the combination of the national safety standards and the quality standards established by big retailers' chains in order to give to consumers more safety guarantees.

As a matter of fact the fulfilment of the European safety standards results in the intensification of the agriculture practices, especially the use of chemical products, whereas the compliance with the attachment 2 of the Ministry Decree 27 August 2004 and the production codes established by big retailers result in a reduction in chemical inputs, which is also proved by the data about the fruit practices evolution (see Q1).

However, another aspect needs to be taken into account, that is the genetic erosion due choice of a low number of varieties which better fit to the quality market standards, excluding the use of local varieties with less demanded characteristics.

2.1.2 Fruits – Theme 2: Environmental measures

Question 1 (F2): What are the overall environmental impacts of the environmental cross-compliance provisions – on cultivation practices and waste management, for which the framework was specified by the Member States - in the CMO [Council Regulation 2200/96]?

2.1.2.1 Cross-compliance relative to the obligation to insert environmental measures in OPs

Context

The potential agri-environmental measures of the OPs are the following:

- Technical assistance to the implementation of low input systems
- Inputs rationalisation and integration
- Definition of criteria and instruments for the implementation of low input code of practices
- Development of monitoring and control systems and data bases
- Application of the European organic and low input Regulations and mechanics
- Development of new technologies through demonstration activities

Implementation

The Italian framework for the environmental measures is the document of the Agriculture Ministry “*Disposizioni nazionali per la gestione dei fondi di esercizio e la stesura, valutazione e rendicontazione dei programmi operativi previsti dal Regolamento (ce) n° 2200/96.*”

In first place, particular attention is paid to the development of an adequate technical assistance service, aiming at:

- improving the knowledge of modern agriculture practices meeting the commercial demand of PO;
- ensuring PO's members meeting;
- organising demonstrative visits to the PO's farms and external farms, such as experimental farms

With specific respect to the implementation low input and organic systems, the low input pest management can benefit of additional funding in order to cover the higher costs of production.

The chemical residuals analysis is compulsory in order to test the correct application of the low input codes of practices.

Furthermore, regarding the environmental management an important action is the calibration of the sprayers, through a periodical maintenance.

According to the Italian framework, each environmental measure has to be described, as defined in the following scheme:

- description of the measure
- expected results
- technical resources
- human resources
- realisation schedule

In order to evaluate the proportion of the environmental measures in the OPs we refer to the data of Emilia Romagna and Alto-Adige regions.

The table 33 (see 1+4 F1) shows the evolution of the regional budget for each OP action in Emilia Romagna. In Emilia Romagna, the regional budget destined to the implementation of the environmental measures has increased in the period 1999-2003 and it represents the second budget item.

The following table shows the level of implementation of the environmental measures in Alto Adige, which is the leading area for the apple production in Italy.

Tab. 51 Environmental measures carried out by the three POs in Alto Adige (VIP, VOG-T e VOG-L) (funding EUR)

1999	7.439.354
2000	9.651.097
2001	9.715.100
2002	10.275.548
2003	11.380.215
2004	10.722.351
Total	59.183.665

Source: VIP, VOG-T e VOG-L data

In Alto Adige, the budget destined to the implementation of the environmental measures has increased in the period 1999-2003.

Evidence from the case-study

Among the EM, the most common operational interventions implemented by the Sicilian POs are the following (AFDRS):

- Engagement of free-lance agronomists, for specialised technical assistance and training to the producers in the subject of sustainable production (implementation of integrated and/or organic farming methods);
- Financial support to certification costs for organic production;
- Green pruning, for agronomic prevention of pests and diseases;
- Purchase and use of traps for pest monitoring within an IPM programme;
- Multi-residual analyses carried out by specialised laboratories;
- Recourse to specialised companies for the disposal of the containers/packaging of the agro-chemicals employed in the productive process.

In the specific case of the POs that practise organic farming, the certification costs for the first 5 years from the conversion are also included among the Environmental Measures, namely they are paid by the OF. Certification costs to convert the processing equipment (machinery for selection, packing, etc.) are covered as well.

All the OPs must basically incorporate the “Technical Norms on IPM” that had been devised by the AFDRS when EC Reg. 2078/92 came into force, for the Measure A1 (integrated farming).

The Norms, which focus only on IPM, have been updated on the occasion of the RDP issue (EC Reg. 1257/99) and nowadays they are going to be extended, to include concepts of sustainable soil use and agro ecological methods of farming.

POs practising organic agriculture refer to the production and processing standards provided by the EC Reg. 2092/91. In particular, one interviewed PO adopts private organic standards, internationally

recognised by IFOAM, that are more restrictive with respect to the 2092/91: the private organic label represents an opportunity to better place the product in the European market.

Environmental effects:

According to our interviews¹⁴, the implementation of the environmental measures of the OPs is bringing to a significant reduction in the use of fertilizers (above all, phosphoric fertilizers) and pesticides and to a rationalisation of the water use.

Conclusion

In general, what emerge from the interviews¹⁵ is that the implementation of the agro-environmental measures has been an efficient instrument in mitigating the environmental negative impact of the fruit sector, especially in the regions where it is better developed and intensive (Trentino Alto-Adige and Emilia Romagna).

2.1.2.2 Cross-compliance relative to the recognition of the Environment in the withdrawals methods

Implementation

- **National framework for the environmental friendly withdrawals methods**

The Ministry Decree 5/2/98, setting the conditions for the compost processing of “non dangerous wastes”, represents the national framework for the implementation of environmental friendly withdrawals methods.

The Decree sets some compulsory requirements for the treatment sites, which need to be completely closed during the management of the first steps of the process and equipped with a system for the smells’ treatment. On the contrary rules about the locations’ sizes and the evaluation of the system efficiency are missing.

In addition, some Italian Regions set regulations or guide-lines referring to the environmental standards for the management of the compost systems, as showed in the following table.

Tab. 52 National and Regional regulation on environmentally sound waste management

	First processing steps in closed rooms	Rules for the size of the smells’ treatment systems	Evaluation of the system efficiency
Lombardia (Regional Law VI/44263 16/7/99)	Yes	Yes (minimum values)	Yes
Veneto (Regional Law 766 10/3/2000)	Yes	Yes (minimum values)	No
Emilia Romagna (ARPA criteria)	No	Yes	No
Ministry Decree 5/2/98	Yes (but without any specification about the time)	Yes	No

Source: Guide lines for the management of the compost processing (ministry document)

- **Level of the Environment consideration in the choice by POs of the withdrawals destinations**

According to our interviews¹⁶, neither compost nor the biodegradation are the privileged withdrawals destination, in the first place as they are the last destination according to Reg. EU 2200/96 and secondly they require a difficult environmental management.

Furthermore, the AGEA data about withdrawals show that the quantity addressed to the environmental friendly processing underwent a process of intense reduction, going from the 54% in 2000-2001 to 41, and 19% in 2003-2004. This trend could give just an idea of the real situation, as

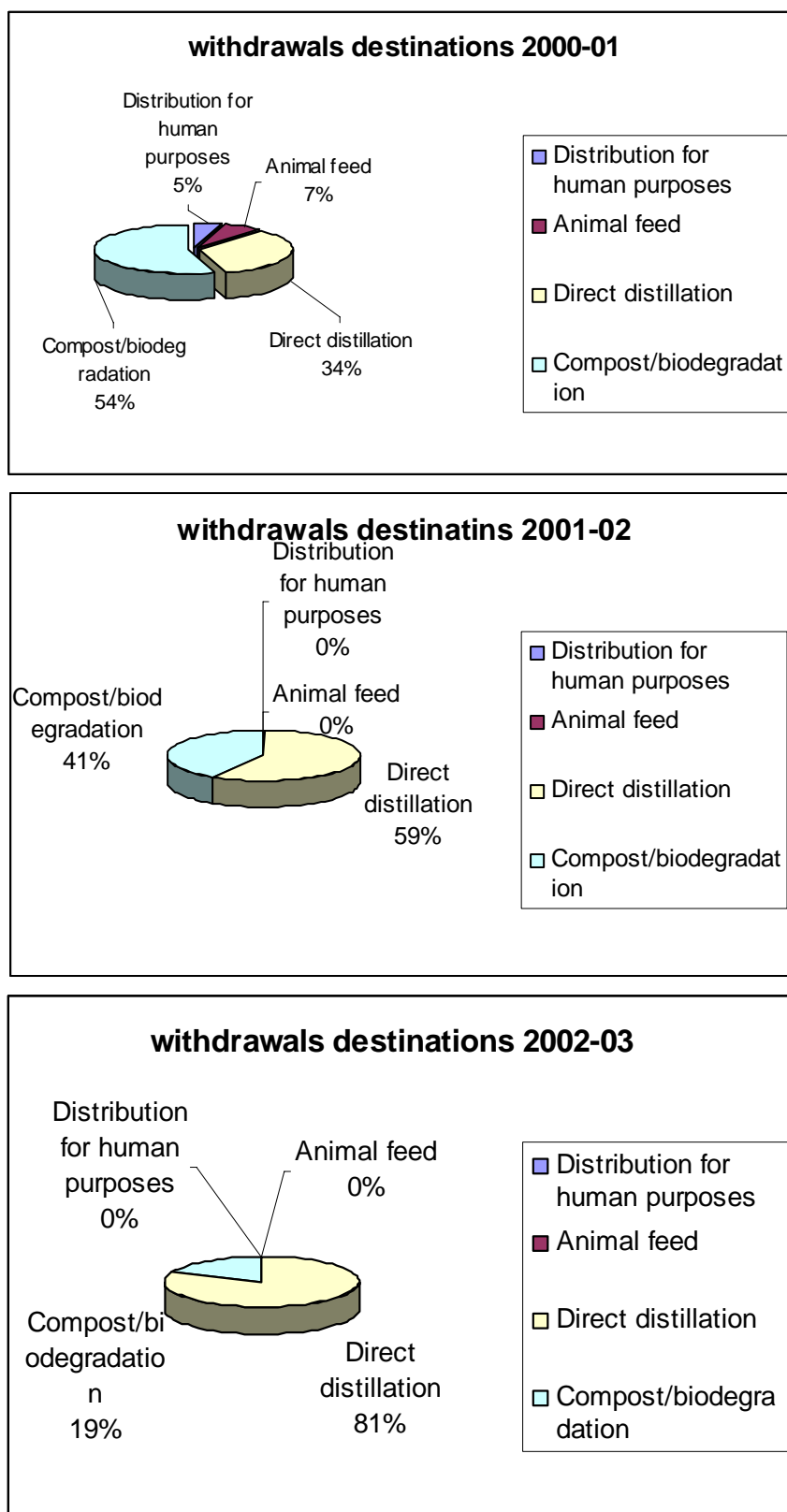
¹⁴ Responsible of the fruit CMO sector in Emilia Romagna and in Alto-Adige

¹⁵ See Sicily case study

¹⁶ Responsible of the fruit CMO sector in Emilia Romagna and in Alto-Adige

the available AGEA data do not take into consideration the citrus fruits withdrawals between 2001 and 2003.

Graph. 28 Evolution of the rate of peach and nectarine withdrawals addressed to several destinations (% of total withdrawals)



Source: AGEA

The following table shows more in detail the different withdrawals' destinations, highlighting that the compost/biodegradation destination is more and more decreasing over the time, even, as said

before, the available Agea data do not take into account the citrus fruits withdrawals from the 2001 years

Tab. 53 Evolution of peach and nectarine withdrawals by destination (tons)

2000-01

DESTINATIONS	Nectarines	Peaches	Citrons	Pears	Apples	Mandarins	Clementines	Oranges	TOTAL
Total withdrawals	50163,27	26019,37	1829,161	18069,62	30386,48	1103,58	24757,44	46556,57	198885,5
Distribution for human purposes	58,383	30,004	1829,161	356,809	2192,47	798,5	190,58	4742,475	10198,38
Animal feed	55,029	19,355	0	5782,228	7381,214	0	0	0	13237,83
0Direct distillation	29778,64	7330,17	0	11930,58	18098,98	0	0	0	67138,37
Compost/bio degradation	20271,22	18639,84	0	0	2713,82	305,08	24566,86	41814,1	108310,9

2001-02

DESTINATIONS	Nectarines	Peaches	TOTAL
Total withdrawals	35980,33	12862,99	48843,32
Distribution for human purposes	39,425	12,438	51,86
Animal feed	16,95	0	16,95
0Direct distillation	24943,02	3743,41	28.686,43
Compost/biodegradation	10980,93	9107,14	20.088,07

2002-03

DESTINATIONS	Nectarines	Peaches	TOTAL
Total withdrawals	24383,62	10079,67	34463,29
Distribution for human purposes	9,44	20,64	30,08
Animal feed	0	0	0
0Direct distillation	21.104,30	6.851,37	27.955,67
Compost/biodegradation	3.269,88	3.207,66	6.477,54

Source: AGEA

- **Presence/quality of the PO TORs for withdrawals**

With respect the presence of the PO TORs for withdrawals we will refer to Emilia Romagna, which set its own framework for the procedures regulating the market interventions in the fruit sector. More in detail the regional document contains the conditions for the implementation of the withdrawals environmental management:

- the biodegradation is the only process which is allowed;
- the biodegradation is forbidden if other crops are present at the same time on the farm;
- there are some special cases in which the biodegradation is not allowed, such as in case of rain or of other residuals' spreading on the farm;
- there are some limits for the quantities of fruit (ton/ha) subjected to biodegradation for each typology.

Environmental effects

With respect to the effects of the implementation of environmental friendly withdrawals methods, the national framework provides only some general criteria, whereas the single regions have the possibility of setting their own rules, as in the case of Emilia Romagna.

Furthermore, according to our interviews¹⁷, the quantity of withdrawals addressed to compost or biodegradation is too low to assess their environmental effects and scientific publications about this issue are not available so far.

However, from the analysis of the scientific literature, it is evident that the use of the compost has a positive effect on the soil structure and biodiversity, especially in the so called *environmental sensitive areas (ESA)* of North-Eastern Italy, characterised by shallow and gravel soils (Parente *et al.*, 1999).

Conclusion

To conclude, neither compost nor biodegradation are the privileged withdrawals destination in the most important Italian regions for the fruit production.

As a consequence a possible link between these practices and their environmental effect is difficult to assess, especially when scientific publications are not available.

Furthermore the difficult environmental management of both the practices leads to choose other withdrawals destinations, which are less demanding for producers.

Question 2 (F2): Which kind of environmental measures [integrated production, organic production, plant production, fertilisers, energy management, water management, soil management, biodiversity/landscape and environmental management] paid by the operational fund for the producers organisations has turned out to be effective in terms of positive environmental impacts?

Context

The following table shows the agri-environmental measures of the OPs:

Tab. 54 Agro-environmental measures of the OPs

ACTION	SUB-ACTION	MEASURES	
		TECHNICAL RESOURCES	HUMAN RESOURCES
environmental measures	4.a environmental friendly production	-HW and SW -recyclable packaging -chemical residuals analysis -soil analysis -sprayers' calibration -technical instruments: useful insects, sexual traps -more rules for the implementation of environmental friendly methods -waste disposal -products' processing	-technicians giving assistance to farms -recyclable packaging management operator -environmental aspects operator

Source: Emilia Romagna Regional Government

Implementation

In order to evaluate the level of implementation of the agro-environmental measures we refer to the activities carried out by the association of POs, *Gruppo Mediterraneo*, including six POs located in different Italian regions: Emilia Romagna, Marche, Basilicata and Sicilia. *Gruppo Mediterraneo* covers about 20.000 ha, corresponding to a production 3.000.000 q of fruit and it involves 3.551 members.

¹⁷ Responsible of the fruit CMO sector in Emilia Romagna and in Alto-Adige

It is strongly oriented to the implementation to low input systems. As matter of fact, they aim at obtaining the 65% of the total production with low input systems and the 10% with organic systems (source: Gruppo Mediterraneo OP)

Tab. 55 Environmental measures carried out by Gruppo Mediterraneo (funding EUR)

OP environmental measures (measure 4)	2002	2003	2004	2005
Technical assistance for low input farming	721.490	723.039	774.685	748.862
Organic production certification costs	67.139,40	77.468,53	90.379,96	103.291,38
Technical instruments for the organic production	129.114,22	154.937,07	167.848,49	167.848,49
Laboratory Analysis	258.505,79	284.051,29	309.874,14	335.696,98
Sprayers calibration	15.493,71	12.911,42	12.911,42	12.911,42
Data bases	2.582,28	2.582,28	2.582,28	2.582,28

Source: Emilia Romagna Regional Government 2005

As the following table shows, in Alto Adige Region starting from 1999, the three POs (VIP, VOG-T e VOG-L) have strongly implemented the environmental measures:

Tab. 56 Environmental measures carried out by the three POs in Alto Adige (VIP, VOG-T e VOG-L) (funding EUR)

1999	7.439.354
2000	9.651.097
2001	9.715.100
2002	10.275.548
2003	11.380.215
2004	10.722.351
Total	59.183.665

Source: VIP, VOG-T e VOG-L data

- *APO CONERPO* Emilia Romagna: it is one of the biggest fruit orchards growers' association in Italy, and it is the European leader in the fresh fruit sector: it represents approximately 700 producers, belonging to 45 co-operatives, with a marketed fruit production of 850.000 tons per year and 92 processing structures ha and 2.400.000 plants.

Tab. 57 Environmental actions carried out by APO CONERPO 2004

OP environmental measures	Implementation parameters	Units	Funding EUR
Sustainable agricultural practices: definition of a Code of Practice and Technical assistance for integrated production	Number of farms involved	7.500	0
	Areas (ha)	26.617,50	0
	Number of technicians	126	2.265.000,00
	(months/man)	1512	0
Organic production	Number of farms involved	7.500	0
	Areas (ha)	26.617,50	2.300.000,00
	Number of technicians	126	0
	(months/man)	1512	0
activation of demonstrative projects aimed to use of new environmental friendly techniques	Number of farms involved	0	0
	Areas (ha)	0	0
	Number of technicians	0	0
	(months/man)	0	0
Plant protection (calibration of the spraying devices in order to optimise the use of pesticides)	Number of farms involved	773	58.000,00
	Areas (ha)	0	0
	Number of technicians	0	0

Source: APO CONERPO data

Environmental effects**Evidence from the Sicily case study**

All the OPs must basically incorporate the “Technical Norms on IPM” that had been devised by the AFDRS when EC Reg. 2078/92 came into force, for the Measure A1 (integrated farming).

The Norms, that focus on IPM only, have been updated on the occasion of the RDP issue (EC Reg. 1257/99) and nowadays they are going to be extended, to include concepts of sustainable soil use and agroecological methods of farming.

POs practising organic agriculture refer to the production and processing standards provided by the EC Reg. 2092/91. In particular, one interviewed PO adopts private organic standards, internationally recognised by IFOAM, that are more restrictive with respect to the 2092/91: the private organic label represents an opportunity to better place the product in the European market.

In general, from statistics analysis and from the respondents’ opinions it emerges that the implementation of IPM schemes together with the practice of organic farming (that has been in fact supported by the payment of certification costs plus specific TA) have been both the most effective EMs in mitigating the environmental impact of farming activity.

All the interviewed farmers, sector leaders and researchers agreed on the fact that such OPs, above all, led to a better management of the agro-chemicals, for plant protection and weed control, that often run the risk to be misused.

Scientific evidence on direct (or indirect) links between implementation of EM, as in the current OPs, and environmental impact is not available.

The following table summarizes the answers and the opinion of the Sicilian citrus fruit producers, interviewed for the case study, about whether the implementation of the AEMs linked to the CMO had positive environmental effects or otherwise.

Tab. 58 Answers and the opinion of the Sicilian citrus fruit producers.

2(F2).1 Parmi les mesures environnementales suivantes, financées par l’intermédiaire du FO en faveur des OP, préciser celles pour lesquelles vous avez touché une aide et quelle est selon-vous leur incidence environnementale positive (faible ou nulle/moyenne /importante) :	18	<ul style="list-style-type: none"> a. production intégrée? 13 producers got aid in the shape of technical assistance and traps for monitoring b. production biologique ? 5 producers got aid in the shape of technical assistance and traps for monitoring + financial contribution to certification costs c. production végétale ? 18 producers got technical assistance d. engrais ? 18 producers got technical assistance
a. production intégrée ?		

b. production biologique ? c. production végétale ? d. engrais ? e. gestion ? f. gestion de l'eau ? g. gestion des sols ? h. biodiversité/paysages ? i. gestion environnementale ? j. autres		e. gestion ? 18 producers got technical assistance f. gestion de l'eau ? 18 producers got technical assistance g. gestion des sols ? 18 producers got technical assistance h. biodiversité/paysages ? 14 producers answered no ; 4 producers did not know i. gestion environnementale ? 14 producers answered no ; 4 producers did not know j. autres no
2(F1).2. Quelles sont celles qui ont eu l'incidence positive sur l'environnement la plus forte et pourquoi ?	18	18 producers answered that the introduction of IPM allowed to reduce the number of treatments and to use less polluting active ingredients.

With respect to the relationships between the environmental measures and their implementation we could state that the single environmental measures, 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 played a crucial role in reducing the use of fertilisers, pesticides, as well as water and energy resources (as showed in the grids of question 1 H2). According to the literature, however, the management of low input fruit systems could imply some technical problems related to the weeds control (Bartolini, 2005).

Within the environmental measures, according to the literature, grass-covered soil in orchards has been the most implemented environmentally friendly system in the more fragile areas from an environmental point of view. As matter of fact, the soil management in low inputs or organic systems is based on two main practices: temporal grass cover and mechanical operations in spring, or permanent grass cover. The permanent grass cover with natural or artificial species may be used on the whole surface or only on inter- rows, weeding planting-rows. Legumes are used as a green manure, soil cover and living mulch to improve soil properties and to enrich the soil through their rhizobial N fixation ability (Parente and Frame, 1993). Sowing specific grasses of reduced size can result in many advantages, namely, soil cover, reduced sward-tree competition for water, weed growth inhibition, possibility to make pesticide treatments in every climatic condition, enhanced sward bearing, increased organic matter soil content, increased nutrient availability and reduced soil surface temperature in summer. While grasses may cause a yield decrease, fruit quality can be improved and ground water quality may be preserved in Environmentally Sensitive Areas (ESAs) characterised by shallow soils (Venerus et al., 1996).

Conclusion

A monitoring system of the level of implementation of the agro-environmental measures in Italy is not available so far. Therefore, we refer to the activities carried out in Emilia Romagna and Alto Adige.

The most implemented agro-environmental measures are in line with the national framework, within which the development of technical assistance services is conceived as the key instrument for the enhancement of low input practices, having positive environmental effects.

2.1.3 Fruits – Theme 3 : Structural measures

Question 1 (F3): What is the environmental impact of structural measures e.g. support for investment in irrigation?

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

In order to pursue these three objectives within the RDPs several interventions have been implemented in the different regions. In the first place grubbing-up grants to replace old varieties with new varieties, more suitable to the consumer' demands and to the market orientations and allowing to reduce the production costs.

Another intervention relates to the support for investments on irrigation with different purposes, since the Southern regions have to face the problem of the water deficiency whereas some Northern regions, such as Trentino-Alto Adige, need to implement anti-frost irrigation systems in order to save their fruit production.

Finally most of the Italian regions provide funding for those investments the aim of which is the environmental protection and the energy conservation.

Regarding the CMO implementation, the action 3 of the operative programmes ("*reduction or stabilisation of the production costs*") concerns some structural measures within the fruit sector.

Implementation

The level of implementation of the structural measures of RDPs is presented in the following table. Fruit sector is essentially concerned by the action 1a. It has the general objective of supporting farm investments in order to improve the renovation and modernisation of the holdings.

Statistics on expenditures for each typology of intervention are not available.

Tab. 59 Total funding for structural measures (measure 1a of RDP) 2000-2006 – by relevant region (000.000 EUR)

	European funding	National funding	Total funding
Emilia Romagna	169,86	83,62	424,13
Trentino	10.000	33.335	36.000
Bolzano	21,621	37,746	126,963

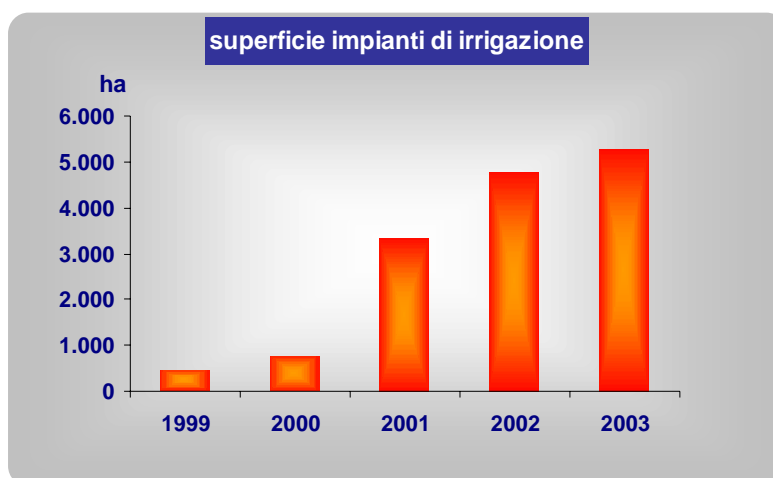
Source: INEA

With reference to the structural measures within the CMO regulation, in order to evaluate their level of implementation, we have take in consideration the activities carried out in Emilia Romagna, which is representative of the Italian trend (see question 2 F2).

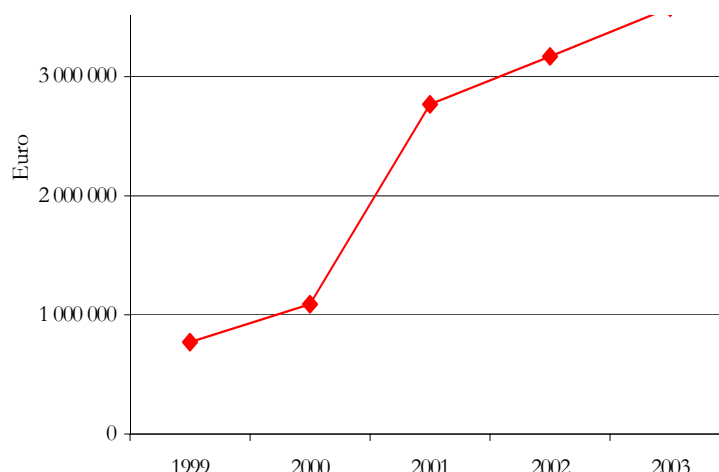
The action 3 of the OPs includes some structural measures, among them the support for adopting drip irrigation systems.

The following graphs show how this measure has been implemented in terms of expenditure and surface involved.

Graph. 29 Areas with new irrigation systems financed by OP in Emilia Romagna



Source: Emilia Romagna Regional government

Graph. 30 Budget of the OPs for irrigation systems in Emilia Romagna (EUR)

Source: Emilia Romagna Regional government

During the period 1999-2003, the rate of increase in adopting drip irrigation systems has been 1,064%, and a total expenditure of €11.374.702.

Results from the case study

In Sicily, the Action 1 of the measure provided, on 2001, support for holdings growing oranges, mandarins, clementines and lemons, with the ban to increase the production capacity. The objectives of the Action were: a) to increase the efficiency of the holdings; b) to lessen the costs and c) to increase quality for better market positioning. On 2002, 45 projects for the citrus sector were admitted for a total amount of 3.511.094 Euros. On 2003, no project was financed yet. In 2003, more than 151 projects were submitted, however after acceptance by the Region, the initiatives had not been financed yet.

Environmental effects

- Evolution of the cultivation practices after the installation of irrigation systems

According to our interviews¹⁸, structural measures have been applied to favour the adoption of drip irrigation systems. Therefore, the implementation of structural measures led to overall positive environmental impacts, reducing the consumption of water.

- Irrigated surface evolution:

See question 1+4(F1). The Italian trend of the last ten years is characterised by a strong decrease of the irrigated areas (-17, 4%). The majority of the Italian regions follow this negative trend, with the exception of Trentino Alto Adige, Toscana, and above all, Puglia and Basilicata, where a relevant increase has occurred. Actually this trend is the result of a reduction in the number of specialised farms in the less suitable areas, where the use of irrigation would be the necessary precondition for obtaining adequate yields.

In order to assess between the CMO implementation and the environmental effects, we focus on the evolution of irrigated surface evolution in Emilia Romagna.

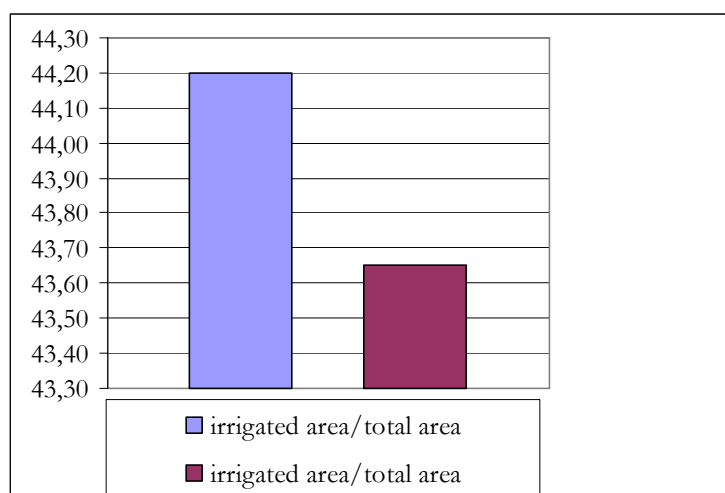
¹⁸ Leaders of POs

Tab. 60 Evolution of the specialised fruit holdings adopting irrigation systems and the irrigated areas

Regions	Holdings (N)			Irrigated Areas (Ha)			
	irrigated farms (number)	VAR.% 2000/1990 irrigated farms	irrigated farms/total farms (%)	irrigated area Ha	Var.% 2000/1990 irrigated area	Total area Ha	irrigated area/total area
Emilia-Romagna	8.620,00	-15,5	28,3	37511,35	-12,3	85931,39	43,7
Italy	137.818,00	-17,3	27,5	245054,49	-17,4	498406	49,2

Source: ISTAT census data 2000

As stated above, in Emilia Romagna the negative trend is the result of a reduction in the number of specialised farms in the less suitable areas, where the use of irrigation would be the necessary precondition for obtaining adequate yields. However, the rate of irrigated areas has slightly decreased over the time, as the following graph shows:

Graph. 31 Rate of irrigation area in Emilia Romagna 1990-2000

Source: ISTAT census data 2000

Our respondents¹⁹ argue that the new cultivation systems have not brought to an increase in fruit yields. Furthermore, scientific studies on irrigation give evidence for the positive environmental impacts of the use of localised and drip irrigation in terms of water and energy conservation (Xiloyannis and Massai, 1993). In particular, many experimentations and researches show that the drip irrigation systems allow to a better management of water rather than increasing the plant productivity. The new irrigation systems are characterised by higher supply efficiency (90-95%), by saving 80-90% of water in comparison with the other irrigation systems, during the first years of plantation (Nuzzo, 2001).

Conclusions

Our analysis has been focused mainly on the level of implementation of structural measures (within the RDPs and CMO regulation) in Emilia Romagna, which is one of the most representative areas for the fruit sector in Italy.

During the period 1999-2003, the CMO implementation has been an effective incentive for spreading the adoption of drip irrigation systems, which results in overall positive environmental effects in terms of water and energy conservation.

¹⁹ Responsible of fruit CMO sector of the Emilia Romagna Regional Government

Question 2 (F3): What are the environmental impacts, in particular in terms of soil, water and biodiversity of the grubbing-up grants for apple, pears, peach and nectarine trees?

Context

The action 1a. of the Regional Rural Development Plans (“*farm investments*”) concerns with the structural measures related to grubbing up for orchards (see question 1(F3)). As stated before, it aims at improving the competitiveness of the agriculture sector, by supporting the modernisation of the holdings.

The Regulation 2200/96 does not contain any article related to the grubbing up for the fruit sector. As matter of fact, the Regulation reserves to the Member States the faculty to use part of the funding to grubbing-up measures. Italy however did not sets any kind of measure related to the grubbing up, aside from the possibility to address part of the OP. funds to the substitution of old varieties with new varieties, which are more suitable to the market demand, in concordance with one of the objectives of Reg.EU 2200/96.

In particular, OPs include the following objectives:

- **Citrus:** improvement of variety choices, with certified varieties exempt from viruses; improvement of late cultivar;
- **Peaches and Nectarines:** need to development the sector, by introducing new varieties such as Amiga, Guerriera, Stark Red Gold, Silver Giant (among nectarines) and Flaminia, Kaweah, Royal Glory Rosa del West (among peaches);
- **Apple and pears:** replacement of the non competitive varieties (such as Red Delicious, Ozark Gold, Summer Red) with Pink Lady, Galaxy, Fuji, Granny Smith for apple and William, Abate Fetel, Conference and Kaiser for pear.

Implementation

With respect to the data on the level of implementation of the measures within the CMO regulation related to the support for replacing old varieties with new varieties measure we will refer to the Emilia Romagna results.

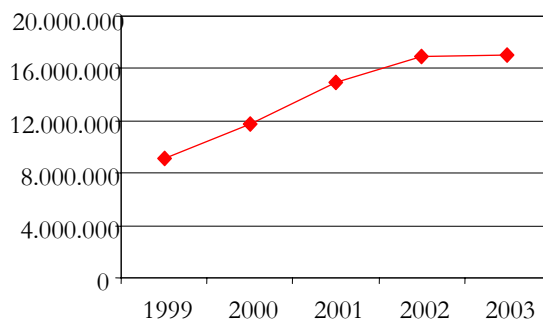
The following table shows the evolution of the grubbing-up grants implementation, in order to adequate the fruit varieties to the market demand.

Tab. 61 Orchards reconversion grants evolution in Emilia Romagna (EUR)

1999	9.079.500
2001	14.949.627
2003	17.051.032

Source: Emilia Romagna Regional Government, 2005

Graph. 32 Orchards reconversion grants evolution in Emilia Romagna (EUR)



Source: Emilia Romagna Regional Government, 2005

Environmental effects

- Evolution of the plantation renovation surfaces

At national level, data on grubbed up surfaces are available only for two years:

Tab. 62 Evolution of grubbed up surfaces (ha)

	1997	1998
Apples and pears	3500 ha	2389 ha
Peaches and nectarines	3000 ha	2937 ha

Source: INEA, 1998

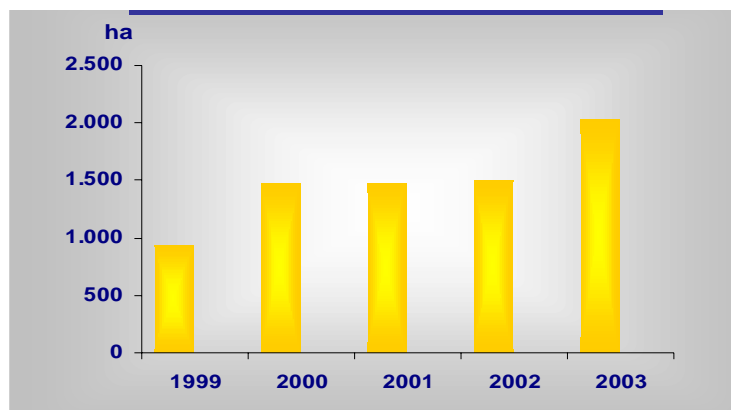
In order to evaluate the plantation renovation areas we refer to *Corine Land Cover - Lucas* data base.

Tab. 69 shows the variation at regional level of the orchard areas

According to Corine data, in Italy the overall trend is characterised by a light reduction in orchards areas. An increase in orchards areas has occurred only in few regions: in Lazio (+48,91ha), in Campania (+50, 46 ha), in Calabria (+1.300, 7 ha), in Sicilia (+223, 13 ha).

The following graph presents the evolution of the plantation renovation surfaces (new orchards) in Emilia Romagna.

Graph. 33 Orchards reconversion areas evolution in Emilia Romagna (ha)



Source: Emilia Romagna Regional Government, 2005

- Evolution of cultural practices after grubbing up

According to our interviews²⁰ the new “re-structured” orchards are generally characterized by higher efficiency of inputs use.

More in depth, the most common cultural practices in the new plantations are the following:

- increase use of machines (mechanical weeding instead of chemical systems);
- use of new varieties which are often more tolerant or resistant to diseases;
- spread of drip irrigation systems, which allows saving water.

As the strategies of varieties replacement are aimed to a greater competitiveness of the sector, the main negative effect is that many local varieties are abandoned.

With reference to the soil management practices, several studies (Giulivo, 1990; 1994; 2003) underline that in the new orchards systems grass mulching is largely widespread.

Evidence from the case study

New groves, realised by the help of structural funds (or through own resources), are usually designed with the overall objective to produce high quality fruits: in fact, only market-oriented holdings are prepared to carry out such costly investments, where co-financing does not exceed the 40% - 50% at most.

The quality of citrus production has been proved quite linked to a better management of the inputs rather than increasing the use of them.

²⁰ Union's leader

- Effects on soil, water and biodiversity of the grubbing-up grants

According to the literature, in the Northern-Eastern regions the grass mulching is a common practice in the new orchards plantations, especially in those managed with organic or low inputs farming methods.

The positive impacts of this agriculture practice on the soil is related to the improvement of its structure and gas exchanges, to the enhancement of the organic matter level and to the increase of the nutritive interactions between plants and soil (Vergnani, 2005).

Regarding the effect on biodiversity, according to our respondents²¹, the new orchards plantations have taken place only in certain regions, bringing to a very evident crop specialisation of fruit-growing: Trentino Alto Adige is the most emblematic example of this phenomenon of strong reduction in biodiversity.

On the other hand those areas which are less suitable to intensive fruit production have undergone a process of marginalisation, becoming ex-agriculture landscape, semi-natural or turned into grazing land (Barbera, 2003).

Conclusion

From the analysis of the situation in Emilia Romagna, it emerges that the level of implementation of the structural measures related to replace old varieties with new ones is increasing over the time. The main negative effect of the replacement of varieties is the loss of genetic biodiversity, as producers are fostered to adopt only a few number of varieties which are demanded by big retailers. On the other hand, new plantations are characterised by a higher efficiency in the use of external inputs, especially water resources, fertilizers and pesticides.

2.1.4 Fruits - Theme 4: Nut fruits

Question 1 (F4): What are the environmental impacts of the income support measure to improve nut quality?

Context

Before the Reg.2200/96 the nut sector was regulated by the CEE Regulation 2159/89, setting the modalities for the implementation of the nuts specific measures as established in the Reg. 1035/72. The Reg. 2159/89 aimed at enhancing both the quality and marketing of five products -almonds, hazelnuts, walnuts, carobs and pistachios- through the implementation of decennial plans, which could benefit of a public aid corresponding to the 55% of the total funding, the 45% of which from the European Union and the remaining 10% from each Member States. Besides, the hazelnut could benefit of an additional aid corresponding to 15 €/ha in order to be competitive with the Turkish production. The decennial plans aimed at sustaining the producers' incomes in the disadvantaged and marginal areas, in order to maintain the rural population and preserving the traditional landscape. The last plans were supposed to end with the campaign 2006-2007.

The present intervention system is based on the following regulations:

- EU Regulation 1782/2003 setting the intervention system based on the payment for cultivated area;
- EU Regulation 2237/2003 setting the modalities for the implementation of the 1782/2003 in the nut sector;
- the Ministry Decree 18th of February 2004, which is the national regulation for the implementation of the nuts' intervention system.

According to the EU Regulation 2237/2003 the nut production is supported through two different grants:

- one from the E.U., which is divided in different quotas for each Member State.
- the other one in discretion of each member State, up to a maximum amount of 120, 75 €/ha.

²¹ University of Pisa, POs functionars

The Italian choice is to use both the European and the national grant. Furthermore, before 2005 the aid rate used to be differentiated on the basis of the crop, in order to grant a privilege to the hazelnuts, representing the most important sector in Italy. At the moment however there is no differentiation between the nut crops.

Evolution of the implementation of the measures to improve the nut quality

With respect to the implementation of the measures to improve the nut quality the decennial plans had a late and slow implementation in Italy, without any national framework. In Piemonte for instance, where the Pos system is well developed, they started only in 1996-97. Indeed the impact of the 2159/89 has been definitely low if compared with the Italian home produced, as showed in the following tables:

Tab. 63 Decennial plans: European grant in the period 1990-2001-Reg. EU 2159/89

COUNTRY	GRANT VALUE (millions of euro)	% ON THE TOTAL
Spain	1.005,20	95,18
France	23,9	2,27
Italy	16,64	1,58
Portugal	2,2	0,21
Greece	1	0,02
Others	7,20	0,69
Total	1.056,14	100

Source:Unaproa

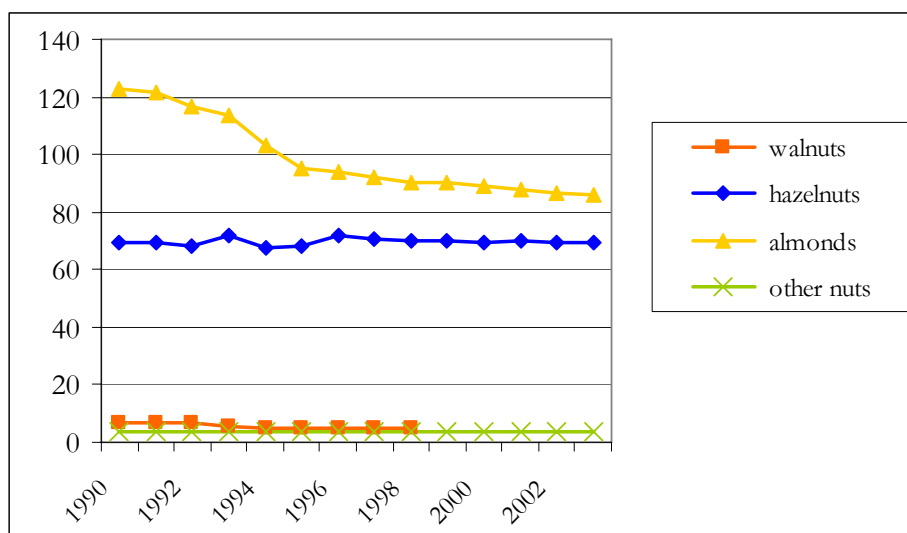
Tab. 64 Nut sector in the E.U.

COUNTRY	TOTAL NUT PRODUCTION (t)	INCIDENCE (%)
Spain	361.000	37
Italy	372.560	38
Portugal	53.300	5
Greece	102.500	11
France	50.506	5
Germany	14.500	1
Others	15.300	2
Total	969.766	100

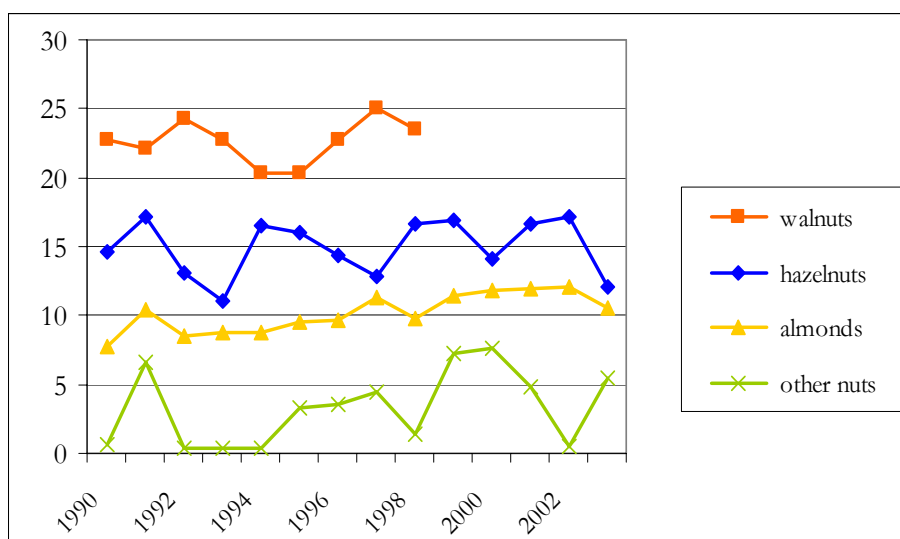
Source:Unaproa

Practices' evolution from 1990 to 2003

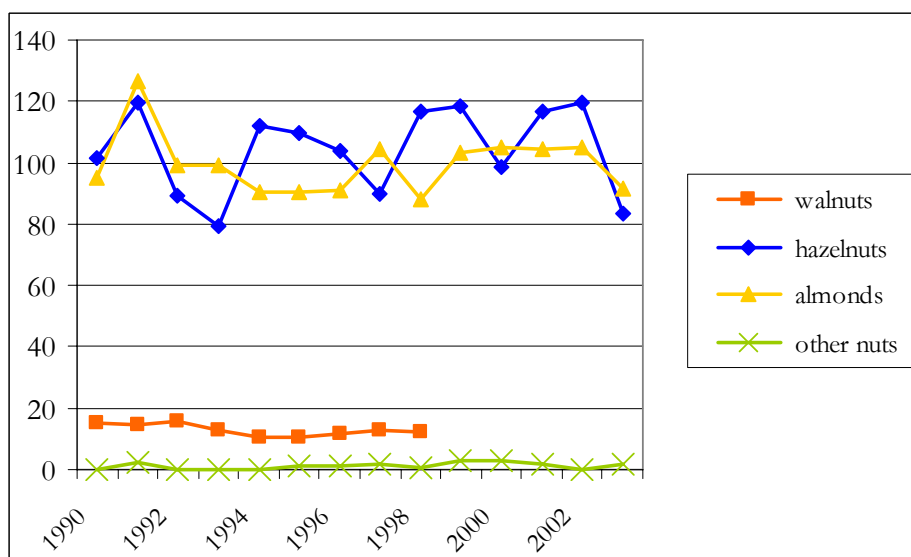
Graph. 34 Evolution of the nuts area (1000ha)



Source: Eurostat

Graph. 35 Evolution of the nuts yields (100kg/ha)

Source: Eurostat

Graph. 36 Evolution of the nuts production (100kg/ha)

Source: Eurostat

The general decrease in the nut surfaces is linked to the widespread phenomenon of abandonment, due to the competition of the extra-European countries.

With respect to each sector the hazelnuts, which represent the most important Italian crop, are mainly located in four areas:

1. Campania (Province of Avellino) with the 50% of the total production;
2. Lazio (Province of Viterbo) with the 30% of the total production;
3. Sicilia (Province of Messina) with the 9% of the total production;
4. Piemonte (Province of Cuneo) with the 8% of the total production.

However, there is no direct relation between the production level and the efficiency in the POs' system. As a matter of fact in some regions, such as Piemonte and Lazio, the POs successfully developed, whereas in Campania and Sicily the producers' association level is still low.

The following table reports some data illustrating the dimension of the farms involved in the hazelnuts' production in these four regions:

Tab. 65 Number of farms and surfaces divided in farmed land class

FARMED LAND CLASS (HECTARES)										
REGION		less than 1	01-févr	02-mai	05-oct	oct-20	20-50	50-100	more than 100	total
Campania	number of farms	6337	3029	2191	435	99	31	3	1	12126
Avellino	surface	2020,6	2243,7	3315,6	1237,1	391,5	231,5	39,3	0,3	9479,7
Lazio	number of farms	3996	2382	2413	762	300	145	35	21	10054
Viterbo	surface	1498,5	2290,6	5030,5	3433,3	2531,4	2087,6	747,4	427,3	18046,6
Piemonte	number of farms	1408	1203	1936	1123	462	163	16	2	6313
Cuneo	surface	444,6	911,2	2548,9	2429,1	1306,1	548,0	89,0	0,3	8277,2
Sicilia	number of farms	6347	230	1862	576	228	165	47	29	11484
Messina	surface	1506,9	1591,4	2753,8	1626,9	1094,9	1336,0	431,6	339,3	10680,8

Source Istat

From the data of the table it is evident that the number of farms belonging to the farmed land class “less than 1 ha” is much higher in Campania and Sicily than in Piemonte and Lazio. A possible reason could be a better development and organisation of the POs in Piemonte and Lazio, whereas in Campania and Sicily the Pos are only at their infancy.

With respect to the walnuts a reduction both in the area and the total production occurred till 2001 (Eurostat data from 1998 to 2003 are not available but we refer to publications on scientific magazines, in particular “*Informatore Agrario*”), due to the not adequate quality standards. However, in the last three years a phase of strong growth is underway, thanks to the use of new clones and production techniques, especially in some Northern regions, such as Emilia-Romagna and Veneto.

On the contrary, the almond sector is constantly falling in Puglia and Sicily, which have always been the traditional suitable areas.

Finally the other nuts had a rather inconstant trend in the period 1990-2003.

Evidences from the case study

The sector of nuts, that was well-known in Sicily in the past, namely for pistachios, almonds and hazelnuts, over the last 15 years has been undergoing a very serious market crisis, due to the competition with north-Africa as well as middle-east Countries. Spain is also a strong competitor for the Sicilian nuts. In general, most of the orchards are old and not specialised, and placed on marginal areas (especially pistachios and carobs). Except some rare distinctive cases (see the forthcoming POD “Pistacchio Verde di Bronte”), the whole sector is suffering an inexorable decline.

No specific CMO measures in favour of nuts have been actually implemented in Sicily until January 2004, when the EC Regulations 1782/03 and 2237/03 came into force, providing an incentive for almonds, pistachios, walnuts, hazelnuts and carobs.

Regarding the implementation of EC Reg. 1035/72 and, subsequently, EC Regulations 558/2001 and 545/2002, any producers associations presented “quality and marketing improvement plans”: rather, from the interviews it emerges that the nuts sector in Sicily has never been so well-organized to manage such complex operational plans.

Environmental effects of the decennial plan and of the new plan

According to our respondent²², with respect to the environmental effects of the decennial plan there is no evidence of their link with possible negative environmental effects, although they did not succeeded in reducing the phenomenon of the abandonment in the most suitable areas. Indeed a general reduction in the total national nut areas occurred, with the only exception of the hazelnuts.

²² Functionary of Piemonte Region

With respect to the new plan, according to our interviews the implementation of the environmental measures (action 4) is successful in fostering the development of practices with a positive environmental impact. In Piemonte for instance the permanent grass cover for the hazelnuts is a common practice which reduces the risk of erosion.

Conclusion

In conclusion we could say that in Italy the environmental impact of the decennial plans is hard to define as they had a very limited implementation and they started later than in other European countries.

On the contrary the present intervention system, which aims at stabilizing the cultivated area avoiding the abandonment in the marginal areas, is having positive environmental effects in the maintenance of the nuts' areas, especially of the hazelnuts and the walnuts, as well as in avoiding some risks, such as fires and erosion.

2.1.5 Fruits – Theme 5: Coordination between agro-environmental measures

Question 1 (F5): As the co-ordination between environmental measures in the CMO and the agri-environmental measures been adequate to produce optimal environmental impacts?

Context

❖ List of the AEM that have a potential link with the orchards:

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

- A1 Pesticides reduction
- A2 Organic agriculture
- D1²³ Protection of the countryside and the landscape

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

- F1a Methods of low inputs farming
- F1b Introduction and maintenance of the methods of organic agriculture
- F3 Restoring and/or maintenance of the traditional rural landscape, of natural and semi-natural areas

❖ List of the environmental measures that must be introduced in the OPs:

Operative Programs in relation with the environment involve activities related to the following sectors:

- Sustainable agricultural practices: definition of a Code of Practice and Technical assistance for integrated production
- Organic and integrated production: technical assistance in support of low impact farming methods
- Activation of demonstrative projects aimed to use of new environmental friendly techniques
- Plant protection (calibration of the spraying devices in order to optimise the use of pesticides)

❖ List at regional level of the AEM that overlap or are in synergy with some OPs environmental measures

According to Union leaders, there has been a satisfactory integration between agri-environmental measures of the Rural development plans and environmental measures of operational plans.

However, some measures overlap with the AEM:

Low input agricultural practices: definition of Code of Practice and Technical assistance for integrated production

Organic and integrated production: technical assistance in support of low impact farming methods

²³ *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.

Implementation

In order to assess the co-ordination between environmental measures in the CMO and AEM we consider the level of implementation in Emilia Romagna.

Our respondents²⁴ put into evidence the following points of incoherence:

- farmers, who require the technical assistance service granted by the OPs, cannot join to the RDPs funding;
- the subsidies granted to farmers to cover the additional costs of applying agri-environmental measures within OPs are lower than the ones granted by the RDPs;
- RDPs foster the maintenance of the local varieties, whereas OPs foster to substitute old varieties with new ones.

Evidences from the case-study

In Sicily, a good co-ordination between the measures for the regional citrus sector emerges.

Interviewed farmers, who are members of POs and beneficiaries of Ames at the same time, stated that there are not contradictions between the environmental standards to be followed, as provided both from the OPs and the Ames.

For instance, holdings practising integrated agriculture, as POs members and beneficiary of the RDP Measure F1a, refer to the same production standards, issued by the Region (Technical Norms of IPM); holdings getting aids through RDP Measure F1b (organic agriculture), that are also PO members of organic POs, have to refer to the same standards, as provided by the EC Reg. 2092/91.

Tab. 66 Confrontation among CMO Elms and Ames

EM of OPs	AEM (EC Reg. 2078/92)	AEM (EC Reg. 1257/99)
<ul style="list-style-type: none"> • <i>Production: services, training</i> → technical assistance in support of low input systems • <i>Production: Technical measures</i> → application of organic and low impact farming methods (definition of Codes of Practices) • <i>Production: special environmental measures</i> → sustainable management of waste disposal; technical measures improving environmental friendly systems (drip irrigation systems, use of insects traps, use of pollination insects...); demonstrative projects aiming at discovering new technical solutions; technical interventions for the optimisation of chemical inputs • <i>Control: quality and phytosanitary measures:</i> monitoring activities; products certifications 	<ul style="list-style-type: none"> • A1 Pesticides reduction • A2 Organic agriculture • D1* Countryside and the landscape protection 	<ul style="list-style-type: none"> • F1a Low input farming systems • F1b Introduction and maintenance of the organic system • F3 Restoring and/or maintenance of the traditional rural landscape, natural and semi-natural areas

²⁴ Union's leaders

Environmental effects

The environmental effect has been evaluated according to the intermediate evaluation of the AEM/RDP measures of Emilia Romagna (*Agriconsulting*, 2003), which methodology represents an attempt to quantify the environmental impacts of the application of the agro-environmental measures.

The analysis has been focused on some crops, among them peach and pear orchards, putting in evidence the differences in practices between organic and conventional farming and between low inputs and conventional farming.

More specifically the analysis has focused on the following aspects:

- **use of chemical inputs:**

Regarding the use of fertilisers, the data put in evidence significant reductions both for organic and low inputs farming compared to the conventional methods.

Concerning the use of pesticides, the difference between organic and conventional farming is not due only to the reduction in the quantities and in the number of applications, but is mainly due to the different toxicity, in compliance with the Reg. (EU) 2092/91.

The comparison between integrated and conventional is more articulated: as matter of fact, in the pear and in the peach orchards toxic pesticides are still used, even their quantities are lower than in the conventional farming.

Tab. 67 Differences (kg/ha) in the quantities of fertilisers

	N		P2O5		K2O	
	integrated /conventional	Organic /conventional	integrated /conventional	Organic /conventional	integrated /conventional	Organic /conventional
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
peach	-24,4 (-35%)	n.a	-8,8 (-51,8%)	-5,8 (-39,7%)	-17,5 (-58,7%)	29,8 (118,7%)
pear	-12,4 (23,4%)	-82,8 (-97,1%)	n.a	-54,7 (-86,4%)	-52,1 (-100%)	-105,1(-92,5%)

Source: Agriconsulting

Tab. 68. Differences (kg/ha) in the quantities of fungicide (A1=integrated systems, B1 conventional systems; A2=organic systems; B2 conventional systems)

	fungicide (toxic)		fungicide (noxious)		fungicide (no toxic)		fungicide (Reg. 2092/91)	
	A1/B1	A2/B2	A1/B1	A2/B2	A1/B1	A2/B2	A1/B1	A2/B2
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
peach	n.a	n.a	-0,41 (-52%)	-0,35 (-100%)	n.a	-5,65 (-100%)	n.a	27,05
pear	-0,281 (-100%)	-0,43 (-81,6%)	n.a	n.a	n.a	n.a	5,727	51,606

Source: Agriconsulting

Tab. 69. Differences (kg/ha) in the quantities of insecticide (A1=integrated systems, B1 conventional systems; A2=organic systems; B2 conventional systems)

	insecticide (toxic)		insecticide (noxious)		insecticide (no toxic)		insecticide (Reg. 2092/91)	
	A1/B1	A2/B2	A1/B1	A2/B2	A1/B1	A2/B2	A1/B1	A2/B2
	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha
peach	-0,455 (-56,9%)	0,576 (-100%)	n.a.	-0,026 (-100%)	n.a.	-1,266 (-95,7%)	7,079	50,65
pear	-1,607 (-74,7%)	n.a.	n.a.	n.a.	-2,28 (-55,1%)	n.a.	60,497	51,606

Tab. 70. Differences (kg/ha) in the quantities of herbicides (A1=integrated systems, B1 conventional systems; A2=organic systems; B2 conventional systems)

	herbicide	
	integrated /conventional	organic/ conventional
	kg/ha	kg/ha
peach	0,263 (355,4%)	-0,103 (-100%)
pear	n.a	-0,76 (-100%)

Source: Agriconsulting

To sum up, the adoption of low inputs or organic farming led to a substantial reduction in agro-chemical inputs, in terms of number of applications and in terms of class of toxicity.

○ *use of irrigated systems*

Regarding the use of irrigation systems, from the study it emerges that the low inputs production systems provide an increase in the use of water, in comparison with the conventional systems. On the contrary, the organic methods led to a strong reduction of the irrigation water, thanks to the wide use of drip irrigation systems.

Tab. 71. Differences (% and mm) in the quantities of irrigation water (A1=integrated systems, B1 conventional systems; A2=organic systems; B2 conventional systems)

	Irrigation				Drip irrigation			
	A1/B1		A2/B2		A1/B1		A2/B2	
	Diff		Diff		Diff		Diff	
	%	mm	%	mm	%	mm	%	mm
Peach	2241,3	179,3	n.a	n.a	-62,8	-120	-100	-14,6
Pear	128,0	44,8	n.a	n.a	n.a	n.a	n.a	n.a

Source: Agriconsulting

Conclusion

The environmental effects of the application of the agro-environmental measures has been promoted by the Regional Government of Emilia-Romagna and analysed by a research centre (CRPV).

The results are still in elaborations, but from the first analysis on the level and on the quality of agro-chemical inputs and water of irrigation, significant differences between holdings (specialised in peach or pear production) which benefit of the agro-environmental measures and the conventional ones are emerging. The annual use of *Nitrogen* fertilisers per hectare are decreasing and this negative trend is more marked for the *Phosphoric* fertilisers. Regarding the use of pesticides, the adhesion to agro-environmental actions has provided a substantial reduction or, in some cases, annulment in the utilisation of the more toxic products, by privileging the products which are allowed by the Codes of Practices of organic farming.

Comparing these results with the measures taken for the cross compliance of the aids to the production by CMO it is evident the same positive environmental effects due to the widespread of low inputs of farming systems.

However, from the analysis of the environmental measures within the CMO, it emerges a lack of any measure related to the themes of the landscape changes and the biodiversity erosion, whereas they are part of the AEM EC Reg. 1257/99 (F3 restoring and/or maintenance of the traditional rural landscape, natural and semi-natural areas). Therefore a higher degree of integration between these different levels of agri-environmental measures would be necessary in order to face the risk of losing fruit varieties and traditional landscapes.

2.2 Horizontal questions

2.2.1 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.]

Context

The period 1990-2003 was characterised by a decreased in the total fruit area (see Q1 F1). In order to evaluate the changes in the land use we refer to *Corine Land Cover - Lucas* data base. The following table shows:

- the variation at regional level of the orchard areas
- the variation in land use

Tab. 72 Variation in land use. By relevant region (Corine Land Cover - Lucas data base) (Ha)

Region	Orchards area (ha) 1990	Orchards area (ha) 2000	Variation 2000 – 1990 %	Land use 1990
Trentino	28815,41494	28455,64721	-1,2	Orchards
				Orchards
				Orchards
Emilia Romagna	12222,34483	12092,41818	-1,1	Orchards
				Orchards
				Orchards
Lazio	30688,139	30450,70444	-0,8	Seeds crops areas (not irrigated)
				Orchards
				Orchards
				Orchards
Campania	56024,55954	55164,68304	-1,5	Seeds crops areas (not irrigated)
				Orchards
				Orchards
				Orchards
				Orchards
				Orchards
Calabria	44485,27465	44129,36366	-0,8	Mine area
				Seeds crops areas (not irrigated)
				Annual crops associated with permanent crops
				Complex crops systems
				Wood
				Sclerophillum areas
				Orchards
				Orchards
				Orchards
				Orchards
Sicilia	167804,6707	167620,9813	-0,1	Seeds crops areas (not irrigated)
				Orchards
				Orchards
				Orchards

Following from previous page:

Region	Area (ha) 1990	Land use 2000	Area (ha) 2000
Trentino		Patchy urban area	154,0879546
		Complex crops systems	114,1452765
		Crops	91,53508329
Emilia Romagna		Industrial or commercial areas	55,5877837
		Seeds crops areas (not irrigated)	31,89400371
		Patchy urban area	42,44502147
Lazio	48,90519667	Orchards	
		Seeds crops areas (not irrigated)	205,4659503
		Patchy urban area	45,02955494
		Complex crops systems	35,84458072
Campania	50,45618053	Orchards	
		Patchy urban area	349,7111901
		Industrial or commercial areas	58,0293184
		Urban area	21,5409831
		Complex crops systems	459,1455025
		Mine area	21,90578181
Calabria	10,74952497		
	817,6569591	Crops	28,01806602
	333,2259259	Industrial or commercial areas	74,84200017
	93,30402684	Seeds crops areas (not irrigated)	255,3329997
	40,31629118	Complex crops systems	158,9384032
	5,44720915	Patchy urban area	151,1308729
		Annual crops associated with permanent crops	623,7485658
		Permanent grass	47,78923073
		Port area	9,84027005
		<i>Sclerophillum</i> areas	8,15606035
Sicilia	223,130652	Urban area	59,94955056
		Patchy urban area	268,4682498
		Industrial or commercial areas	50,38349958
		Mine area	27,09434791

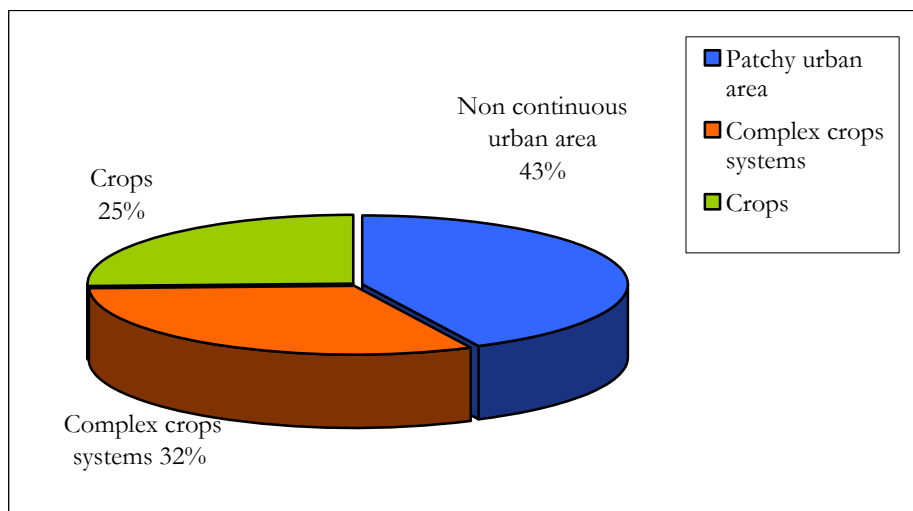
According to *Corine Land Cover* data, all the regions that we have considered show a slight reduction in orchard areas.

Where an increase in orchards areas has occurred, fruits crops have replaced mainly not irrigated seeds crops or woods.

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

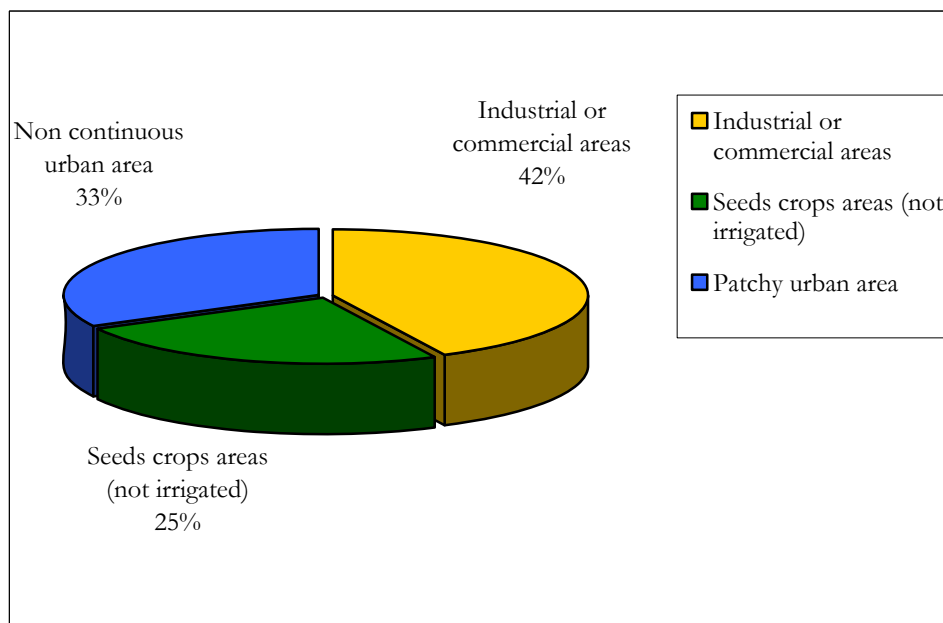
The following graphs show the change in land use in those areas where the orchards have been abandoned.

Graph. 37 Variation in land use in Trentino Alto-Adige (new land use after fruit orchards grubbed up) in 2000



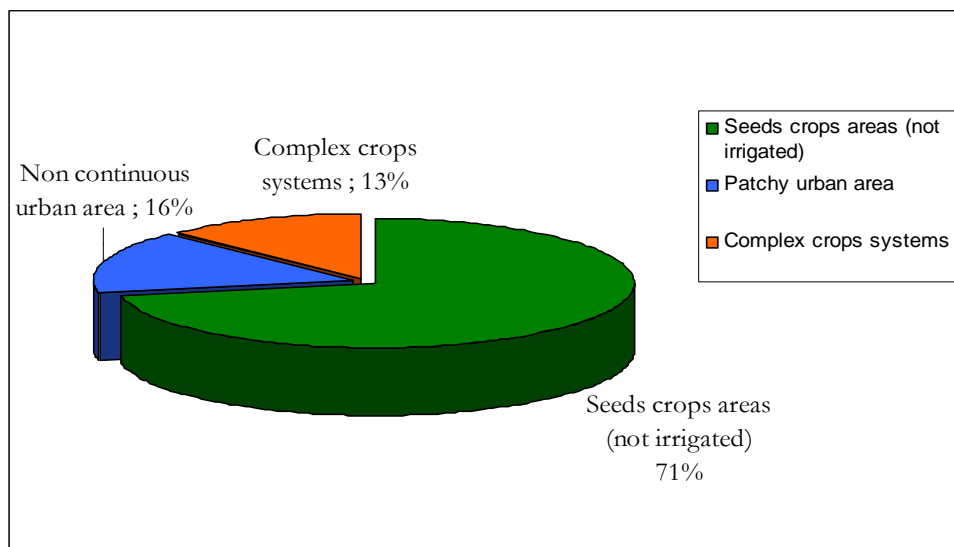
Source: Corine land cover data

Graph. 38 Variation in land use in Emilia Romagna (new land use after fruit orchards grubbed up) in 2000



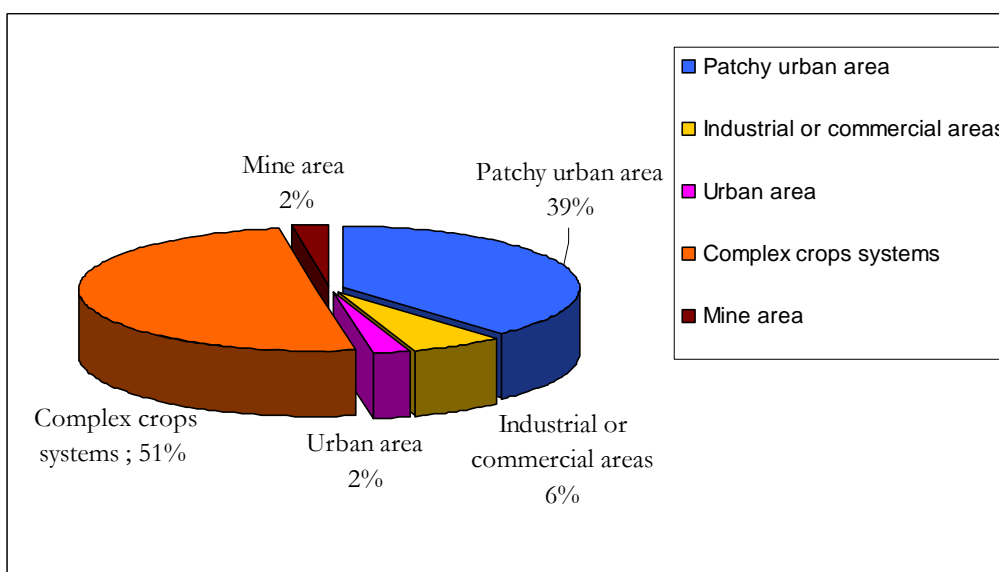
Source: Corine land cover data

Graph. 39 Variation in land use in Lazio (new land use after fruit orchards grubbed up) in 2000



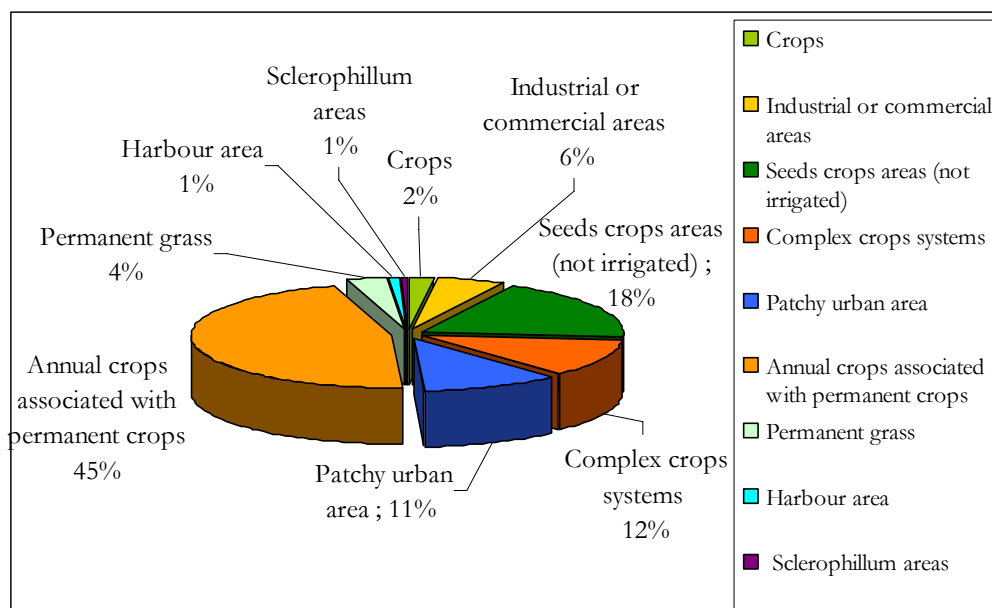
Source: Corine land cover data

Graph. 40 Variation in land use in Campania (new land use after fruit orchards grubbed up) in 2000



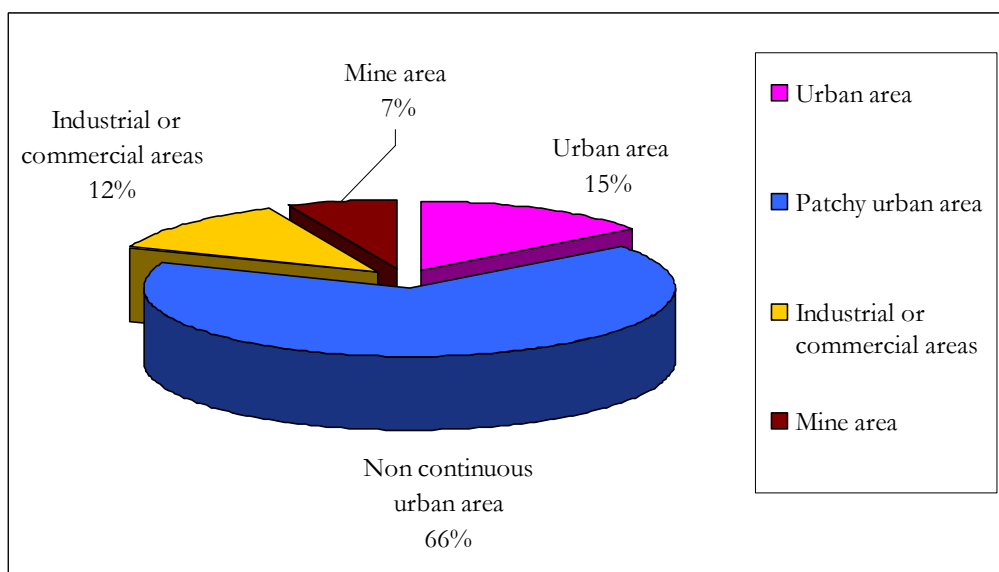
Source: Corine land cover data

Graph. 41 Variation in land use in Calabria (new land use after fruit orchards grubbed up) in 2000



Source: Corine land cover data

Graph. 42 Variation in land use in Sicilia (new land use after fruit orchards grubbed up) in 2000



Source: Corine land cover data

More in detail the main changes are the following:

- In Trentino the ex orchards areas became urban areas (43%) and crops (63%);
- In Emilia-Romagna the orchard areas were replaced by industrial-urban areas (70%) and crops (25%);
- In Lazio only the 16% of the orchards areas turned into urban areas and the rest became crops;
- In Campania the ex orchards areas became urban areas (50%) and crops (50%);
- In Calabria the ex orchards areas became urban areas (20%) and crops-wood areas (80%);
- In Sicily all the orchards areas turned into urban, industrial or commercial areas.

Environmental effects

According to our interviews²⁵, the fruit sector was characterised by two different processes:

- The marginal hilly areas faced a strong tendency to the abandonment of traditional and not remunerative cultivation systems with a progressive replacement by shrubs or forests;
- On the other hand, in the most specialised regions the distinctive traits have been the increase in yields, in plantation densities and in irrigated surfaces, the reduction in the class of age and the increase in the use of localized fertilisation, resulting in lower quantities of fertilizers.

Furthermore, what emerges from the data showed above is a general phenomenon of orchards' abandonment, the environmental effects of which are obviously extremely negative as the consequence is an increase in urban or industrial areas.

With respect to the areas where the urbanisation did not occur the orchards were replaced mainly by not irrigated seeds crops systems, which are well known as having a lower environmental impact.

Results from the case-study

According to the interviews, abandonment of citrus fruit orchards has been occurring where economic return cannot be guaranteed anymore. It is therefore typical the case of the lemon crop, grown on the coast terraces in the Catania province, that is currently under serious abandonment, both for the high production costs and the low market demand.

In some cases, the abandoned citrus groves are replaced by vegetable crops under greenhouse, or flowers nurseries. In other cases, vineyards replace the citrus fruit. In other cases, the citrus orchard is simply abandoned, becoming prone to fire.

Conclusion

To sum up we could argue that, in spite of the CMO implementation, the phenomenon of the orchards' abandonment was more pronounced than the plantations. Besides, a strong urbanisation process took place in those areas where the phenomenon of abandonment was more marked.

2.2.2 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.]

Context

❖ Share of each sector in the CMO budget

With respect to the share of each sector in the CMO budget, the following table is a summary of the relevant measures:

Tab. 73 EAGGF expenses for fruits – moil ECU/euro

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Export subsidies	30,2	32,5	22,7	35,9	14,8	7,7	7,1	3,6	2,6	2,9	3,0
Withdrawals	40,4	142,7	48,5	38,1	27	54,8	21,,4	17,2	52,2	21,9	14,4
Citrus processing	141,3	106	42,4	141,4	103,4	125,5	²⁶ -	-	-	-	-
POs funding	-	-	-	-	-	-	45,8	54,1	66,0	74,5	94,0
Nut fruits	-	-	-	-	-	-	-	-	-	2,5	5,7

Source: INEA on European Commission data

²⁵ University of Pisa

❖ Share of each measure in the CMO sector

In order to evaluate the share of each action of the OPs in the CMO budget, we refer to the data of Emilia Romagna., where the regional budget destined to the implementation of the environmental measures has been stable in the period 1999-2003 and it represents the second budget item.

Environmental effects

With respect to the relationships between the environmental measures and their implementation we could state that the single environmental measures, 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 plays a crucial role in reducing the use of fertilisers, pesticides, as well as water and energy resources, as showed in the following grids, where some of the most implemented environmental measure have been evaluated by our respondents. According to the literature, however, the management of low input fruit systems implies some technical problems related to the weeds control (Bartolini, 2005).

Measure 1

Evaluation parameters	Type of notation		
Nature of impact	Low input practices: definition of a code of practices and technical assistance for low input systems		
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 2

Evaluation parameters	Type of notation		
Nature of impact	Organic production		
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 3

Evaluation parameters	Type of notation		
Nature of impact	Demonstrative projects enhancing the use of environmental friendly techniques		
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 4

Evaluation parameters	Type of notation		
Nature of impact	Plants' protection (calibration of the spraying devices for the optimisation of the pesticides)		
Target	SOIL		
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		

Evidence from the Sicily case study

In general, from the respondents' opinions it emerges that the implementation of IPM schemes together with the practice of organic farming (that has been in fact supported by the payment of certification costs plus specific TA) has been both the most effective EMs in mitigating the environmental impact of farming activity.

Farmers, sector leaders and researchers agreed on the fact that such OPs, above all, led to a better management of the agro-chemicals, for plant protection and weed control, which often run the risk to be misused.

Conclusion

If we look at the evolution of the total spending on the CMO it is evident that the budget for the withdrawals has strongly decreased over the time, whereas the funding for the POs has had a positive trend. This change in the target of the total CMO expenditure led on one side to the reduction of the production surpluses, and on the other side to the improvement and rationalisation of the production systems, which became more focused on environmental friendly techniques. As a matter of fact, especially in the more suitable regions to fruit production the positive environmental impacts have to be ascribed to the high rate of low inputs systems' implementation.

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

Context

The decoupling of spending at its present level resulted in the reduction of production surpluses on one side and in the increasing support to the POs' activities on the other side.

The POs operational programs have been mainly focused on the improvement of the marketing activities in order to meet the demand of the big retailers. As a consequence the fruit supply became more and more homogeneous and standardised and the fruit production systems more intensive, especially in the Northern-Eastern regions, bringing to the phenomenon of the abandonment of the less demanded and local fruit varieties (genetic erosion). A situation of this kind could be risky, especially if seen in the light of the changes in the international fruit market scenario, where the extra-European countries are becoming more and more competitive.

Discussion and conclusion

As a consequence a broader differentiation, both in the fruit supply and in the marketing channels, together with a reduction in the fruit systems' intensification, would be the necessary preconditions for the maintenance of the European marketing share within the fruit sector. To this respect, we would suggest two levels of action:

- the economic support to POs could be based upon an aggregate indicator, which takes into account the number of POs members together with the farmed land. The result would be the total decoupling of spending, which plays a key role in avoiding the risk of a too extreme intensification;

- a wider diversification of the local varieties could be adopted in the implementation of the objective 1 (art.11), together with a higher support to the diversification of sustainable production systems;

2.2.3 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?

Context

- ❖ Table of the main environmental problems by CMO

PROBLEM	DESCRIPTION
Soil erosion	<ul style="list-style-type: none"> • typical of the fruit hilly areas • due to the use of heavy machineries • can be avoided through the use of the permanent cover grass
Water use	<ul style="list-style-type: none"> • especially in some regions of Southern Italy such as Sicily, Puglia and Basilicata and for intensive systems • can be avoided through the use of localised and drip irrigation
Landscape changes	<ul style="list-style-type: none"> • due to the crop specialisation of fruit-growing in certain regions • consists in the geographic concentration of the industrial fruit production in the Northern regions and in the process of marginalisation in the Southern regions
Biodiversity erosion	<ul style="list-style-type: none"> • due to the use of only a few varieties, which are the most demanded from the market

- ❖ Identification of high damaged areas

If we look at the problem of the geographic concentration of the fruit sector in certain areas the main risks are the development of monoculture systems, the loss of local varieties and the increase in the inputs' intensification. To this respect in the North-Eastern regions these phenomena are more significant in terms of environmental risks, such as the genetic erosion and the underground water nitrogen pollution of the underground water, due to the shallow nature of the soil, especially in Trentino-Alto Adige.

However, we should take into account that in the same areas the high efficiency in the implementation and territorial covering of the POs allowed to adoption of environmental friendly production systems, such as low input and organic, which play a key role in reducing the impact of the intensive fruit systems.

- ❖ 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

EM of OPs	AEM (EC Reg. 2078/92)	AEM (EC Reg. 1257/99)
<ul style="list-style-type: none"> • <i>Production: services, training</i> → technical assistance in support of low input systems • <i>Production: Technical measures</i> → application of organic and low impact farming methods (definition of Codes of Practices) • <i>Production: special environmental measures</i> → sustainable management of waste disposal; technical measures improving environmental friendly systems (drip irrigation systems, use of insects traps, use of pollination insects...); demonstrative projects aiming at discovering new technical solutions; technical interventions for the optimisation of chemical inputs • <i>Control: quality and phytosanitary measures: monitoring activities; products certifications</i> 	<ul style="list-style-type: none"> • A1 Pesticides reduction • A2 Organic agriculture • D1* Countryside and the landscape protection 	<ul style="list-style-type: none"> • F1a Low input farming systems • F1b Introduction and maintenance of the organic system • F3 Restoring and/or maintenance of the traditional rural landscape, natural and semi-natural areas

CMO

❖ Presence (or not) and content, by MS (or region), of the cross-compliance measures linked to the fruit cultivation

Within the context of the AEM each region has the possibility of setting its own framework.

In this case we refer to the cross-compliance measures adopted in Emilia-Romagna and the autonomous province of Bolzano (Alto-Adige):

Cross-compliance measures in Emilia-Romagna

ACTION	SUB-ACTION	MEASURES	
environmental measures	4.a environmental friendly production	TECHNICAL RESOURCES	HUMAN RESOURCES
		-HW and SW -recyclable packaging -chemical residuals analysis -soil analysis -sprayers' calibration -technical instruments: useful insects, sexual traps -more rules for the implementation of environmental friendly methods -waste disposal -products' processing	-technicians giving assistance to farms -recyclable packaging management operator -environmental aspects operator

Source: Emilia Romagna Regional Government

Cross-compliance measures in the Province of Bolzano

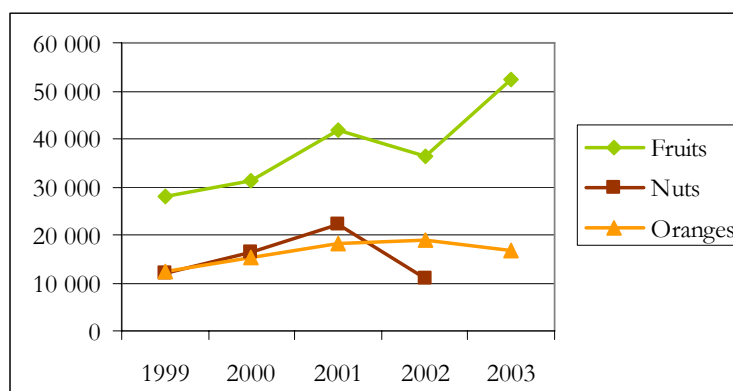
ACTION	SUB-ACTION	MEASURES
environmental measures	4.a environmental friendly production	-grant of 500 €/ha for those producers using low input systems -sexual traps for harmful insects -recyclable packaging -chemical products' monitoring through the residuals analysis -sprayers' calibration -renting of peeling machineries with a mechanic system instead of the chemical system -water purification system

Source: Emilia Romagna Regional Government

❖ List of the MS/region measures linked to the development of the organic agriculture
 The national framework does not contain any additional specific measure for the development of the organic agriculture, which is one of the objectives of the agro-environmental measures taken by MS and regions relating to the cross compliance of the aids to the production by CMO mentioned above.

❖ Evolution of the organic agriculture from 1990 to 2003 related to fruit sector
 With respect to the organic sector the organic fruit areas was characterised by a decreasing trend starting from 1999 up to 2001, followed by a year of decrease in 2001-2002 and a period of strong growth from 2002 to 2003.
 On the other hand the trend for the citrus sector is more stable, without any negative or positive pick. Finally the evolution of the organic nuts areas is difficult to evaluate, as the 2003 data are not available.

Graph. 43 Evolution of organic orchards areas (ha)



Source: SINAB

Discussion and conclusions

If we look at the table of main environmental problems by CMO they can be classified in four themes:

- Soil erosion
- Water use
- Landscape changes
- Biodiversity erosion.

Comparing these four issues with the measures taken by MS and regions for the cross compliance of the aids to the production by CMO it is evident the lack of any measure related to the themes of the landscape changes and the biodiversity erosion, whereas they are part of the AEM EC Reg. 1257/99 (F3 restoring and/or maintenance of the traditional rural landscape, natural and semi-natural areas).

Therefore a higher degree of integration between these different levels of agri-environmental measures would be necessary in order to face the risk of losing fruit varieties and traditional landscapes.

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

Flaminia Ventura, Capo della Segreteria Tecnica del MiPAF

Diego Maresca, responsabile settore frutta MIPAF

Fausto Rossi, Dirigente Dipartimento delle politiche di mercato Direzione Generale per le politiche agroalimentari Settore degli ortofrutticoli e del settore florovivaistico.

Eleonora Iacovoni, Dirigente Dipartimento della qualità dei prodotti agroalimentari e dei servizi Direzione Generale per la qualità dei prodotti agroalimentari e la tutela del consumatore QTC IV - Accordi di filiera per la produzione e la distribuzione agroalimentare (contatto telefonico)

Mariangela Perito, settore ortofrutta INEA

Gaetana Petriccione, settore ortofrutta INEA (contatto telefonico)

Bazzana, COLDIRETTI- responsabile nazionale settore frutta

Andrea Pruneti ,Coldiretti Regione Toscana- responsabile settore ortofrutta

Vincenzo Falconi , UIAPOA

Patrizia Giordani, direttore APOCONERPO

Carlo Stigliano direttore ASSOFRUITS

Nicola Muto, direttore APOFRUS

Piero Spidalieri, OP Euroortifrutticola del Trigno- responsabile gestione finanziamenti

Guido Bucci ,OP Euroortifrutticola del Trigno

Rossano Massai , professore Frutticoltura Università degli Studi di Pisa- Facoltà di Agraria

Mazzotti , direttore Centro Servizi Ortofrutticoli -Ferrara

Daria Lodi, Centro Servizi Ortofrutticoli –Ferrara

Fausto Ramini, Direzione Generale Agricoltura Assessorato Ambiente e Sviluppo Sostenibile, Servizio Produzioni Vegetali, Regione Emilia Romagna

Marco Cestaro, Direzione Generale Agricoltura Assessorato Ambiente e Sviluppo Sostenibile, Servizio Produzioni Vegetali, Regione Emilia Romagna

Paolo Giacomelli, Regione Piemonte

Andreas Kraus, Organizzazione Mercato Ortofrutticolo e Cooperative Ortofrutticole, Provincia Autonoma di Bolzano

Stefano Oliviero esperto GIS Università di Milano

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Annex 3 : No data available:

- Level of implementation of the agro.environmental measures at national level
- Evolution of the number of the fruit varieties market by POs

Annex 4 : Evaluation grids of the Fruits CMO environmental measures

GRUPPO MEDITERRANEO AOP (Emilia Romagna, Marche, Basilicata and Sicilia regions)

Measures		Implementation (0/1/2)	Nature of impact (+/-)	Relevance of impact (0/1/2/3)	Target Soil, Water resources, Air, biodiversity	Comments
Objective 1: Organisation and rationalisation of the production						
1.1	Adaptation of the production to the demand	2	+	3	All of them	<ul style="list-style-type: none"> Reconversion of old plantation with new varieties (indirect negative effect on the loss of local and less demanded varieties) The management of the new plantations has to be only by adopting low inputs or organic practices (direct positive impact on the preservation of the agro-ecosystem) UNi EN ISO 14001 environmental certifications have fostered to be implemented (Environmental project) Program of EUROGAP standards implementation (direct positive impact on the preservation of the agro-ecosystem)
1.2	Improvement of the products quality	2	+/-	2	Mainly biodiversity	<ul style="list-style-type: none"> Implementation of grids of analysis for the eating quality attributes of the fruits in order to meet the large distribution demand (indirect negative effect on the loss less demanded varieties) Project of anti hail net (protection from the weather means a minor uses of chemical inputs)
Objective 2: Valorisation and promotion of the production						
2.1	Grouping supply (fine tuning of Hardware and Software to improve the logistic management)	1	0	0	Not relevant	
2.2	<ul style="list-style-type: none"> Marketing development (communication activities in order to improve the consumers' knowledge about organic productions; promotion of the organic label (<i>Almaverde bio</i>) ; promotion of the local produces, certified as PGI) 	1	+	1	Natural resources (water resources, soil and woods)	<ul style="list-style-type: none"> valorisation of organic or integrated productions through the use of recyclable packaging
Objective 3: Costs reduction						
3.1	Reduction of the production costs (rationalisation	1	+	2	Mainly soil and	<ul style="list-style-type: none"> Adoption of drip and micro fertilisation systems

Measures		Implementation (0/1/2)	Nature of impact (+/-/0/-)	Relevance of impact (0/1/2/3)	Target Soil, Water resources, Air, biodiversity	Comments
	of the external inputs use)				water	(implementation on 100 ha)
3.2	Withdrawals reduction (agreements with processing industries)	1	+	2	All of them	
Objective 4 : Environmental measures		2	+	3	All of them	
4.1	Definition and implementation of a code of practices and technical assistance for low inputs systems	2 (all of the members)	+	3	All of them	<ul style="list-style-type: none"> Financial support given to producers in order to cover the certification costs
4.2	Organic production certifications	2	+	3	All of them	
4.3	Demonstrative projects enhancing the use of environmental friendly techniques	1	+	3	All of them	
4.4	Plants' protection (calibrations of the spraying devices)	2	+	3	All of them	<ul style="list-style-type: none"> Optimisation of the pesticides use
4.6	Chemical residuals analysis	2	+	3	Soil/ water	<ul style="list-style-type: none"> In order to verify the correct implementation of the codes of practices for low inputs systems



OCM FRUITS 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

EM: environmental measures

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

IAA: Istituto Agrumicoltura di Acireale

IFOAM: International Federation of Organic Agricultural Movements

INEA: Istituto Nazionale Economia Agraria

IPM: Integrated Pest Management

ISMEA: Istituto per i Servizi per il Mercato Agricolo Alimentare

ISTAT: National Statistic Institute

OP: Operational Programme

OF: organic farming

PO: Producers Organisation

RDP: Rural Development Plan

TA: technical assistance

UAA: Utilised Agricultural Area

1 CONTEXT OF CITRUS AND NUTS PRODUCTION IN SICILY

1.1 Mains characteristics of the production of citrus and nuts in Sicily

1.1.1 Citrus areas and productions

Citrus cultivation in Sicily mainly concentrates on the eastern part of the island, in the provinces of Catania (35% of the regional citrus production), Siracusa (23,1%) and Messina (12,2%).

Table 1: Evolution of citrus area in Sicily per species (hectares)

	1991	1996	1997	1998	1999	2000	2001	2002	Δ % 02/91
Oranges	65.241	65.694	64.921	64.342	64.061	64.393	64.011	58.881	-9,7
Tangerines	7.802	7.581	7.448	7.355	7.144	7.150	7.029	7.035	-9,8
Clementines	4.422	4.454	4.426	4.232	4.247	4.241	4.235	4.177	-5,5
Lemons	34.446	33.604	31.921	31.769	31.246	30.860	30.756	30.666	-11,0

Source : ISTAT/CORERAS 2003

Among the species, orange is the most represented and it is predominantly present in the provinces of Catania (38,4% of the regional orange area), Siracusa (29,2%), Enna (10,5%) and Agrigento (7,2%).

In the mid-eastern part of Sicily the red-pigmented cultivars, like “Tarocco”, are prevailing; in the Agrigento province, the “blonde pulp” cultivars are instead dominant, belonging to the “Navel” group: the “Washington Navel” being the most represented.

The lemon follows the orange, in terms of importance: the most important provinces are Catania (26,7% of the regional lemon area) and Messina (26,4 %), followed by Palermo (24,5%) and Siracusa (17%).

Clementines are principally cultivated in the provinces of Catania (50,1% of the regional clementine area), Ragusa (23,9 %) and Siracusa (15,8%).

Tangerines are mostly grown in the province of Palermo (34,1% of the regional mandarine area) and Catania (33,8%). Third and fourth position are taken by the provinces of Messina (14,9%) and Ragusa (10%).

On countertendency, grapefruit has recorded a positive trend (+ 301%) from 1991 to 2002; the crop is presently solely grown in the Siracusa province and presently takes around 223 hectares (CORERAS, 2003).

The productive citrus area has passed from 109.688 hectares (1990) to 103.135 hectares (2003), marking a reduction of 6% (ISMEA, AGRUMINET) (Table 2). The diminution concerned all the species, particularly lemons (- 11%) (CORERAS, 2003) (Table 1).

The total citrus area has passed from 111.695 hectares (1990) to 103.422 (2003), marking a reduction of 7,4 %.

Table 4 shows, for the period 1990-2003, the Δ between the productive area and the total one.

Citrus production has decreased in Sicily over the last 13 years. Actually, the total citrus production has gone from the 2.191.164,99 tons of the four-years time 1990-1993 to the 1.657.995 tons of the four-years time 2000-2003 (- 24,3 %); the harvested production, for the same studied intervals, has passed from 1.990.320 tons to 1.656.280,2 tons (- 16,8 %) (Table 7).

The drop of production concerned all the species, however the most significant loss, for the period 1991-2002, concerned the clementines (-34,4%), lemons (- 22,5%), oranges (- 21,9%) and tangerines (-12,2%).

The average incidence of the harvested production on the total one has been fluctuating over the time reflecting the periods of market crisis, that led to leave part of the fruit on the trees: on the period 1990-93, the incidence was the 90,8%; on 1996-1999, 87,8%; on 2000-2003, 99,9%.

The drop of the overall citrus production was mainly due to the reduction of the area, but also it was consequence of the weakening of the market demand, that led in turn to the extensification of certain citrus areas and to the reduction of the yield per hectare (Table 8) (CORERAS_Ivan, 2003). On 2003, the highest citrus harvested productions are mainly concentrated in the provinces of Catania (41,9%), Siracusa (21,5%), Messina (9,5%) and Palermo (8,4%) (ISMEA).

Table 2: Evolution of the citrus production area in the Sicilian provinces (ha)

Province	2003	2002	2001	2000	1999	1998	1997	1996
Agrigento	4.463,00	4.490,00	4.456,00	4.404,00	4.184,00	4.181,00	4.172,00	4.159,00
Caltanissetta	565,00	659,00	659,00	659,00	659,00	659,00	659,00	635,00
Catania	39.018,00	39.523,00	40.199,00	40.140,00	39.980,00	39.977,00	39.977,00	39.977,00
Enna	6.315,00	6.276,00	6.326,00	6.389,00	6.389,00	6.389,00	6.401,00	6.410,00
Messina	12.310,00	12.310,00	12.310,00	12.310,00	12.310,00	13.061,00	13.061,00	13.061,00
Palermo	10.100,00	10.450,00	10.910,00	10.900,00	11.468,00	11.760,00	11.895,00	13.618,00
Ragusa	5.100,00	5.100,00	5.400,00	5.400,00	5.400,00	5.400,00	5.550,00	5.450,00
Siracusa	23.189,00	23.421,00	23.489,00	23.390,00	23.610,00	23.630,00	23.280,00	25.307,00
Trapani	2.075,00	2.075,00	2.075,00	2.075,00	2.075,00	2.075,00	2.102,00	2.102,00
Sicily	103.135,00	104.300,00	105.824,00	105.667,00	106.075,00	107.132,00	107.097,00	110.719,00

Province	1995	1994	1993	1992	1991	1990
Agrigento	n.d.	n.d.	4.192,00	4.187,00	4.173,00	4.155,00
Caltanissetta	n.d.	n.d.	661,00	679,00	679,00	701,00
Catania	n.d.	n.d.	40.027,00	40.053,00	39.924,00	39.711,00
Enna	n.d.	n.d.	6.396,00	6.400,00	6.405,00	6.388,00
Messina	n.d.	n.d.	13.057,00	13.065,00	13.067,00	13.067,00
Palermo	n.d.	n.d.	13.676,00	13.220,00	13.283,00	13.283,00
Ragusa	n.d.	n.d.	6.409,00	6.409,00	4.979,00	4.979,00
Siracusa	n.d.	n.d.	25.378,00	25.378,00	25.378,00	25.026,00
Trapani	n.d.	n.d.	2.159,00	2.256,00	2.389,00	2.378,00
Sicily	n.d.	n.d.	111.955,00	111.647,00	110.277,00	109.688,00

Source: Istat/CORERAS 2003

Table 3: Evolution of the total citrus area in the Sicilian provinces (ha)

Province	2003	2002	2001	2000	1999	1998	1997
Agrigento	4.503,00	4.523,00	4.510,00	4.506,00	4.204,00	4.211,00	4.198,00
Caltanissetta	565,00	659,00	659,00	659,00	659,00	659,00	659,00
Catania	39.018,00	39.591,00	40.267,00	40.267,00	40.267,00	40.267,00	40.267,00
Enna	6.331,00	6.280,00	6.340,00	6.403,00	6.403,00	6.406,00	6.404,00
Messina	12.310,00	12.335,00	12.310,00	12.310,00	12.310,00	13.061,00	13.061,00
Palermo	10.100,00	10.450,00	10.910,00	10.910,00	11.470,00	11.769,00	11.895,00
Ragusa	5.100,00	5.300,00	5.400,00	5.400,00	5.400,00	5.400,00	5.550,00
Siracusa	23.420,00	23.795,00	23.859,00	23.910,00	24.210,00	23.950,00	24.580,00
Trapani	2.075,00	2.075,00	2.075,00	2.075,00	2.075,00	2.075,00	2.102,00
Sicily	103.422,00	105.008,00	106.330,00	106.440,00	106.998,00	107.798,00	108.716,00

Province	1996	1995	1994	1993	1992	1991	1990
Agrigento	4.186,00	n.d.	n.d.	4.214,00	4.217,00	4.211,00	4.201,00
Caltanissetta	635,00	n.d.	n.d.	661,00	681,00	689,00	701,00
Catania	40.340,00	n.d.	n.d.	40.490,00	40.842,00	40.801,00	40.730,00
Enna	6.439,00	n.d.	n.d.	6.453,00	6.465,00	6.480,00	6.480,00
Messina	13.061,00	n.d.	n.d.	13.057,00	13.065,00	13.067,00	13.067,00
Palermo	13.618,00	n.d.	n.d.	13.676,00	13.676,00	13.734,00	13.739,00
Ragusa	5.450,00	n.d.	n.d.	6.409,00	6.409,00	4.979,00	4.979,00
Siracusa	25.502,00	n.d.	n.d.	25.614,00	25.614,00	25.614,00	25.378,00
Trapani	2.102,00	n.d.	n.d.	2.165,00	2.275,00	2.420,00	2.420,00
Sicily	111.333,00	n.d.	n.d.	112.739,00	113.244,00	111.995,00	111.695,00

Source: Istat/CORERAS 2003

Table 4: Productive vs. total citrus area in Sicily

Area	2003	2002	2001	2000	1999	1998	1997	1996
productive	103.135,00	104.300,00	105.824,00	105.667,00	106.075,00	107.132,00	107.097,00	110.719,00
total	103.422,00	105.008,00	106.330,00	106.440,00	106.998,00	107.798,00	108.716,00	111.333,00
Δ %	- 0,28	- 0,67	- 0,48	- 0,73	- 0,86	- 0,62	- 1,49	- 0,55

Area	1995	1994	1993	1992	1991	1990
productive	n.d.	n.d.	111.955,00	111.647,00	110.277,00	109.688,00
total	n.d.	n.d.	112.739,00	113.244,00	111.995,00	111.695,00
Δ %	-	-	- 0,70	- 1,41	- 1,53	- 1,80

Elaboration on ISMEA data

Table 5: Total citrus production (x 100 kg)

Provincia	2003	2002	2001	2000	1999	1998
Agrigento	940.665,00	926.450,00	753.800,00	787.260,00	868.430,00	829.490,00
Caltanissetta	49.550,00	60.318,00	70.350,00	60.335,00	54.685,00	54.745,00
Catania	7.421.000,00	5.387.900,00	5.851.330,00	6.734.600,00	5.797.700,00	4.331.740,00
Enna	767.170,00	686.160,00	689.980,00	759.918,00	766.310,00	564.940,00
Messina	1.698.600,00	1.857.575,00	1.709.100,00	1.894.200,00	2.017.300,00	1.740.240,00
Palermo	1.493.500,00	1.543.500,00	2.037.600,00	1.566.000,00	1.582.480,00	1.519.535,00
Ragusa	1.270.000,00	770.000,00	642.000,00	1.650.000,00	510.000,00	527.000,00
Siracusa	4.126.790,00	3.441.318,00	3.454.650,00	3.742.600,00	4.392.800,00	2.661.500,00
Trapani	329.400,00	379.100,00	383.550,00	383.550,00	399.850,00	383.550,00
Sicily	18.096.675,00	15.052.321,00	15.592.360,00	17.578.463,00	16.389.555,00	12.612.740,00

Provincia	1997	1996	1995	1994	1993	1992	1991	1990
Agrigento	909.180,00	746.422,00	n.d.	n.d.	857.091,00	1.002.611,00	748.872,00	653.000,00
Caltanissetta	50.636,00	42.620,00	n.d.	n.d.	42.095,00	44.290,00	43.845,00	25.215,00
Catania	6.389.220,00	7.035.830,00	n.d.	n.d.	8.117.950,00	9.389.512,00	7.983.320,00	7.662.950,00
Enna	1.079.300,00	1.397.270,00	n.d.	n.d.	1.010.845,00	889.230,00	764.000,00	432.090,00
Messina	1.368.885,00	1.623.425,00	n.d.	n.d.	2.158.500,00	2.217.055,00	2.302.790,00	1.631.630,00

Palermo	2.179.260,00	2.403.195,00	n.d.	n.d.	2.456.795,00	2.439.907,00	2.562.357,00	1.713.935,00
Ragusa	1.143.000,00	603.000,00	n.d.	n.d.	1.348.490,00	1.163.210,00	960.770,00	412.550,00
Siracusa	5.107.840,00	4.892.630,00	n.d.	n.d.	7.328.940,00	6.281.360,00	5.757.414,00	5.673.691,00
Trapani	401.860,00	488.440,00	n.d.	n.d.	510.960,00	457.170,00	324.230,00	277.930,00
Sicily	18.629.181,00	19.232.832,00	n.d.	n.d.	23.831.666,00	23.884.345,00	21.447.598,00	18.482.990,96

Source: Istat/CORERAS 2003

Table 6: Harvested citrus production (x 100 kg)

Province	2003	2002	2001	2000	1999	1998
Agrigento	940.665,00	880.127,00	753.800,00	787.260,00	825.009,00	787.842,00
Caltanissetta	39.288,00	32.315,00	28.140,00	41.403,00	27.342,00	48.982,00
Catania	7.421.000,00	5.387.900,00	5.851.330,00	6.734.600,00	5.160.090,00	3.596.538,00
Enna	716.923,00	555.800,00	689.980,00	714.215,00	766.310,00	536.695,00
Messina	1.698.600,00	1.772.120,00	1.709.100,00	1.800.030,00	2.017.300,00	1.653.228,00
Palermo	1.493.500,00	1.347.000,00	2.037.600,00	1.486.250,00	1.506.225,00	1.462.487,00
Ragusa	1.270.000,00	308.000,00	642.000,00	1.650.000,00	510.000,00	527.000,00
Siracusa	3.803.535,00	3.273.180,00	2.713.430,00	3.370.020,00	3.388.260,00	2.067.050,00
Trapani	329.400,00	205.600,00	383.550,00	383.550,00	399.850,00	383.550,00
Sicily	17.712.911,00	13.762.042,00	14.808.930,00	19.967.328,00	14.600.386,00	11.063.372,00

Province	1997	1996	1995	1994	1993	1992	1991	1990
Agrigento	873.177,00	716.324,00	n.d.	n.d.	806.110,00	953.181,00	720.113,00	633.408,00
Caltanissetta	45.224,00	42.620,00	n.d.	n.d.	29.409,00	31.104,00	43.845,00	24.102,00
Catania	5.500.282,00	6.428.920,00	n.d.	n.d.	7.701.001,00	8.902.030,00	7.679.556,00	7.369.350,00
Enna	647.580,00	1.313.583,00	n.d.	n.d.	950.220,00	817.336,00	725.737,00	414.758,00
Messina	1.283.591,00	1.578.584,00	n.d.	n.d.	1.835.547,00	2.018.744,00	2.217.709,00	1.631.630,00
Palermo	2.131.373,00	2.331.156,00	n.d.	n.d.	2.377.155,00	2.374.933,00	2.492.684,00	1.666.870,00
Ragusa	1.074.000,00	603.000,00	n.d.	n.d.	1.348.490,00	1.163.210,00	960.770,00	412.550,00
Siracusa	3.811.472,00	3.771.948,00	n.d.	n.d.	5.644.153,00	5.204.762,00	3.454.448,00	5.447.037,00
Trapani	401.860,00	488.440,00	n.d.	n.d.	510.960,00	453.260,00	323.930,00	272.700,00
Sicily	15.768.559,00	17.274.575,00	n.d.	n.d.	21.203.045,00	21.918.560,00	18.618.792,00	17.872.405,00

Source: Istat/CORERAS 2003

Table 7: Harvested vs. total citrus production in Sicily (x 100 kg)

Area	2003	2002	2001	2000	1999	1998	1997	1996
harvested	17.712.911,00	13.762.042,00	14.808.930,00	19.967.328,00	14.600.386,00	11.063.372,00	15.768.559,00	17.274.575,00
total	18.096.675,00	15.052.321,00	15.592.360,00	17.578.463,00	16.389.555,00	12.612.740,00	18.629.181,00	19.232.832,00
Δ %	-2,12	-8,57	-5,02	13,59	-10,92	-12,28	-15,36	-10,18

Area	1995	1994	1993	1992	1991	1990
harvested	-	-	21.203.045,00	21.918.560,00	18.618.792,00	17.872.405,00
total	-	-	23.831.666,00	23.884.345,00	21.447.598,00	18.482.990,96
Δ %			-11,03	-8,23	-13,19	-3,30

Elaboration on ISMEA data

Table 8: Yield per hectare (x 100 kg)

Province	2003	2002	2001	2000	1999	1998
Agrigento	210,80	206,30	169,20	178,80	207,60	198,40
Caltanissetta	87,70	91,50	106,80	91,60	83,00	83,10
Catania	190,20	136,30	145,60	167,80	145,00	108,40
Enna	121,50	109,40	109,10	118,90	119,90	88,40
Messina	138,00	150,90	138,80	153,90	163,90	133,20
Palermo	147,90	147,70	186,80	143,70	138,00	129,20
Ragusa	249,00	151,00	118,90	305,60	94,40	97,60
Siracusa	178,00	146,90	147,10	160,00	186,10	112,60
Trapani	158,70	182,70	184,80	184,80	192,70	184,80
Sicily	175,50	144,30	147,30	166,40	154,50	117,70

following table 8

Province	1997	1996	1995	1994	1993	1992	1991	1990
Agrigento	217,90	179,50	n.d.	n.d.	203,39	237,75	177,83	155,43
Caltanissetta	76,80	67,10	n.d.	n.d.	63,68	65,03	63,63	35,97
Catania	159,80	176,00	n.d.	n.d.	200,49	229,89	195,66	188,14
Enna	168,60	218,00	n.d.	n.d.	156,64	137,54	117,90	66,68
Messina	104,80	124,30	n.d.	n.d.	165,31	169,69	176,22	124,86
Palermo	183,20	176,50	n.d.	n.d.	179,64	178,40	186,57	124,74
Ragusa	205,90	110,60	n.d.	n.d.	210,40	181,49	192,96	82,85
Siracusa	219,40	193,30	n.d.	n.d.	286,13	245,23	224,77	223,56
Trapani	191,20	232,40	n.d.	n.d.	236,00	200,95	133,97	114,84
Sicily	173,90	173,70	n.d.	n.d.	211,38	210,91	191,50	165,47

Source: CORERAS 2003

1.1.1.1 The Sicilian citrus holdings

Citrus are grown in specialized farms or in holdings where the crop is prevailing.

Table 9 shows structural data about the citrus sector in Sicily, as surveyed by ISTAT in the 5th Census of Agriculture on 2000. Some data may not coincide with those above presented, taken by the ISMEA citrus data-base, due to different survey methods used by ISTAT for census.

Table 9: Holdings and relative area for citrus

					Average holding area (ha)	
	Holdings	% var. 2000-1990	Area (ha)	% var. 2000-1990	2000	1990
Total citrus	73.902	- 15,5	72.453	- 28,2	0,98	1,16
Orange	51.784	-	49.124	-	-	-
Tangerine	13.625	-	3.732	-	-	-
Clementine	5.016	-	2.185	-	-	-
Lemon	30.839	-	16.177	-	-	-
Other citrus	3.323	-	1.236	-	-	-

Source : ISTAT 5th Census Agriculture, 2000

The citrus holdings represent the 20,22% of the holdings of the whole Sicilian agricultural sector.

Orange and lemon are still the most important crops: in fact, the corresponding holdings represent the 70% and the 41,7% of the total citrus holdings, respectively.

On one hand, the highest concentration of the citrus farms is in the Messina province (20.700 units, equal to the 28% of the total regional citrus holdings): however, due to their small size, the Messina's holdings cover just the 10,5% of the regional citrus area. On the other hand, the 66,5% of the total regional citrus area is covered by the provinces of Catania and Siracusa, where the 25,2% and 15,5% of the total holdings are present, respectively.

From Table 9, it emerges that the citrus holdings surveyed on 2000 are the 15,5% less than the holdings of 1990; the average holding area also decreased from 1,16 ha to 0,98 ha.

Table 10: Citrus holdings per class of UAA (ha) and concerned area

	< 1	1-2	2-5	5-10	10-20	20-50	50-100	> 100	Total
Nr. of holdings per class of UAA									
Tot citrus	43.703	12.794	10.124	3.973	1.940	1.006	242	120	73.902
Orange	28.641	9.304	7.759	3.270	1.619	872	214	105	51.784
Tangerine	8.333	2.185	1.723	706	387	204	58	29	13.625
Clementine	2.835	884	718	297	148	95	25	14	5.016
Lemon	19.985	4.932	3.616	1.217	639	321	84	45	30.839
Other citrus	1.897	555	522	160	104	62	15	8	3.323
UAA (ha)									
Tot citrus	11.673	10.034	15.082	11.596	9.054	8.476	3.746	2.792	72.453
Orange	6.801	6.473	10.156	8.311	6.275	6.207	2.809	2.091	49.124
Tangerine	780	549	688	550	447	403	205	110	3.732
Clementine	337	288	500	359	278	248	57	118	2.185
Lemon	3.514	2.554	3.464	2.192	1.881	1.512	619	440	16.177
Other citrus	241	170	273	184	173	106	57	32	1.236

Source : ISTAT 5th Census Agriculture, 2000

Table 10 highlights the big fragmentation of the citrus sector in Sicily, where the 59,1% of the holdings (43.703 units) have an area less than 1 hectare, engaging the 16% of the regional citrus area. Holdings with area between 1 and 5 hectares are the 31% of the total holdings and use the 34,7% of the regional citrus area.

The 6.919 holdings that belong to the class 5-50 hectares engage the 40,2% of the regional area. Then, the remaining 9% of the citrus area is engaged by 362 farms with a farm area higher than 50 hectares.

1.1.2 Nuts production in Sicily

The sector of nuts, that was well-known in Sicily in the past, namely for pistachia, almonds and hazelnuts, over the last 15 years has been undergoing a very serious market crisis, due to the competition with north-Africa as well as middle-east Countries. Spain is also a strong competitor for the Sicilian nuts. In general, most of the orchards are old and not specialised, and placed on marginal areas (especially pistachia and carobs). Except some rare distinctive cases (see the forthcoming POD “Pistacchio Verde di Bronte”), the whole sector is suffering an inexorable decline.

Today, the most cultivated crops are the almond with 51.262 hectares and the hazelnut (16.155 ha). Table 11 and 12 show the progressive reduction of cultivated area and production.

Table 11: Nuts areas in Sicily (hectares)

	94/96	97/99	00/02	Var. % 00/02 – 94/96
Almond	58.830	54.069	51.262	-12,9
Pistachia	3.672	3.642	3.643	-0,8
Carob	17.203	16.817	11.258	-34,6
Hazelnut	16.433	16.021	16.155	-1,7
Total	96.137	90.549	82.318	-14,4

Source: CORERAS, 2003

Table 12: Evolution of nuts production in Sicily (x 100 kg)

	94/96	97/99	00/02	Var. % 00/02 - 94/96
Nuts	983.732	1.151.086	935.249	-4,9

Source: CORERAS, 2003

1.1.3 Production of PDO/PGI citrus fruits and nuts in Sicily

The sole citrus product that has so far received the PGI recognition is the “Arancia Rossa di Sicilia”. Other three tipologies of citrus fruits are still waiting for the recognition. At present there are not PDO recognitions for citrus fruits.

The production area of the PGI “Arancia Rossa di Sicilia” is in the eastern part of Sicily, in some selected municipalities in the provinces of Catania, Siracusa and Enna. On 2001, the PGI marketed product counted 1.500 tons.

Several POs fall in the area of the PGI “Arancia Rossa di Sicilia”, that mostly concerns the eastern provinces of Sicily: the production standards of this PGI do not consider particular provisions on environmental-friendly farming practices. However, limitations on planting density and yield per hectare are present and play a certain environmental function.

At present, there are not quality recognitions for nuts. Recognition of PDO status for the “Pistacchio Verde di Bronte” is still in progress.

1.1.4 Organic citrus fruits and nuts in Sicily

The evolution of the total number of organic holdings and organic UAA in Sicily is presented in Table 13. 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 cannot be evaluated.

Table 13: 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 14).

Table 14: 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

Table 15 presents the evolution of organic citrus and nuts on 2001 and 2002 (ISMEA, 2004).

Table 15: Evolution of organic area on 2001-2002 (ha)

	UAA under conversion			Organic UAA			Total		
	2001	2002	Var %	2001	2002	Var %	2001	2002	Var %
citrus	7.484	7.325	-2	10.812	11.543	7	18.296	18.868	3
nuts	9.973	3.759	-62	12.061	7.067	-41	22.034	10.826	-51

Source: ISMEA 2004

Nuts organic area drastically decreased in a such a short time (-51%), whereas organic area of citrus fruit remained approximately stable.

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

1.2.1 Citrus fruit sector

1.2.1.1 Characteristics of the Producers Organisations

On 2002/2003 the POs in Sicily, as recognised in compliance with the EC Reg. 2200/96, were 52. POs mainly operate in the product categories of fruit and vegetables, vegetables and citrus fruit. POs are present in all the provinces, except Ragusa, Trapani and Agrigento (Table 16).

Table 16: Distribution of the POs in Sicily per product category (EC Reg. 2200/96)

Province	Product category							Total
	Fruit and vegetables	Fruit	Vegetables	Products intended for processing	Citrus fruit	Nuts	Mushrooms	
Agrigento								
Caltanissetta			1					1
Catania	7				6			13
Enna								
Messina	1				4			5
Palermo	11			1	1			13
Ragusa	9		1					10
Siracusa	9				1			10
Trapani								
Sicily	37		2	1	12			52

Source: CORERAS 2003

The citrus production is therefore managed by the 37 “fruit and vegetables” POs plus the 12 “citrus fruit” POs. On 2002-2003, these POs had 12.957 members, being the 17,5% of the total citrus holdings (CORERAS, 2003). From this data, it may be therefore observed how the “joining capacity” of the Sicilian POs is rather poor.

The membership to the PO quite often occurs through the already existing cooperatives of producers. In fact, holdings - “single member” are just 1.292, whereas the remainder 11.655 are members of 190 cooperatives.

Table 17 shows the membership composition of the “fruit and vegetables” and “citrus fruit” POs per province, on 2003.

Table 17: Citrus producers associated to the POs (EC Reg. 2200/96)

	Cooperatives	Members of cooperative	Single members	Total members
Catania	88	2.856	338	3.194
Messina	34	3.879	249	4.128
Palermo	49	3.001	332	3.333
Ragusa	7	814	58	872
Siracusa	12	1.115	315	1.430
Sicily	190	11.665	1.292	12.957

Source: CORERAS, 2003

1.2.1.2 Citrus areas concerned by the CMO

According to CORERAS, on 2003 the regional citrus area within the provisions of the EC Reg. 2200/96 has reached 37.000 hectares (Table 18), representing the 35,8% of the total regional citrus area. From 2000 to 2003, the total citrus area concerned by the CMO has dropped of 17,7%, mainly due to the diminution of lemon and mandarine: the drop is directly linked to the AGEA controls that have induced the operators to declare a surface “more pertinent to reality”, in order to prevent sanctions or aid reductions. From Table 13 however it emerges that the declared orange area has increased.

Table 18: Regional citrus area within the provisions of EC Reg. 2200/96 (hectares)

Year	Orange	Lemon	Tangerine	Clementine	Other citrus fruit	Total
2002/03	21.028	13.519	2.074	503	113	37.237
2001/02	18.391	14.844	1.524	478	97	35.334
2000/01	18.958	20.508	5.129	665	n.d	45.260

Source: CORERAS 2003

1.2.1.3 Citrus productions concerned with the CMO

Table 19 presents the citrus productions concerned with the CMO on years 2000-2003 (762.551,3 tons), compared with the harvested citrus regional productions on 2003 (1.771.291,1 tons).

The 2003 overall citrus production concerned with the CMO represents the 43% of the citrus harvested production in Sicily.

Table 19: Citrus productions concerned by EC Reg. 2200/96 (x 100 kg)

Year	Orange	Lemon	Tangerine	Clementine	Other citrus fruit	Total	% of the harvested reg. citrus fruit product.
2002/03	3.758.362,3	3.311.144,4	482.898,5	42.543,0	30.564,3	7.625.513	43%
2001/02	3.013.864,0	2.945.034,0	326.361,0	26.840,0	33.800,0	6.345.899	-
2000/01	2.738.334,0	3.934.568,0	756.909,0	29.672,9	n.d	7.459.484	-

Source: CORERAS 2003

1.2.1.4 Product destination

So far the improvement of the quality standards of citrus fruit production and its better market positioning, as meant by the EC Reg. 2200/96, were not the main activities of the Sicilian POs. On the contrary, POs have been mainly playing the role of intermediation, by subscribing contracts with the processing industry to get the CMO aid, prescribed by the EC Regulation as alternative support for the product not having access to market outlets.

On the other hand, market and processing are the only alternative destinations of the POs product from the end of the 90's, since withdrawals have never been carried out over this period. Data about withdrawals on previous years were not available from the Regional administration.

Table 21 shows the destination of the citrus fruit production of the POs per species, from 2001 to 2003. On 2003, the 72% of the total POs citrus production has been processed. Only the remaining 28% therefore has been marketed as fresh product. On 2001 the processed share was around 80%; on 2002, around the 77%.

Table 20 shows the market outlets of the product managed by the POs. As it may be observed, the largest quantity is marketed for domestic consumption.

Table 20: Market destinations of POs fresh product (2002/2003)

	Destination		Total	Italy/Total	Abroad/Total
	Italy	Abroad		%	%
Orange	1.243.841,0	29.113,2	1.272.954,2	97,7	2,3
Lemon	562.155,9	103.641,2	665.797,1	84,4	15,6
Tangerine	218.860,6	1.772,5	220.633,1	99,2	0,8
Clementine	28.423,0	164,3	28.587,3	99,4	0,6
Grapefruit	4.893,0	738,2	5.631,2	86,9	13,1
Other citrus fruit	22.142,3	1.427,0	23.569,3	93,9	6,1
Total	2.080.315,8	136.856,4	2.217.172,2	93,8	6,2

Source: CORERAS 2003

Table 21: Destination of citrus production by OPs per species and per destination from 2001 to 2003 (%)

		Oranges		Lemons		Tangerines		Clementines		Grapefruits		Tot Sicily	
	Province	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed	Fresh	Processed
2000/2001	Catania	46,5	53,5	38,1	61,9	72,7	27,3	90,4	9,6	n.a.	n.a.	45,2	54,8
	Messina	12,7	87,3	14,9	85,1	13,2	86,8	71,0	29,0	n.a.	n.a.	14,0	86
	Palermo	10,6	89,4	10,0	90,0	13,9	86,1	12,4	87,6	n.a.	n.a.	10,9	89,1
	Ragusa	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Siracusa	24,7	75,3	36,2	63,8	100,0	0,0	100,0	0,0	n.a.	n.a.	33,2	66,8
	Sicily	27,0	73,0	17,5	82,5	14,9	85,1	58,1	41,9	n.a.	n.a.	20,09	79,91
2001/2002	Catania	34,2	65,8	3,7	96,3	55,0	45,0	60,0	40,0	80,2	19,8	32,2	67,8
	Messina	10,6	89,4	19,5	80,5	3,2	96,8	45,5	54,5	100,0	0,0	14,8	85,2
	Palermo	8,1	91,9	17,1	82,9	30,4	63,6	100,0	0,0	14,1	85,9	17,6	82,4
	Ragusa	25,4	74,6	14,0	86,0	0,0	0,0	0,0	0,0	0,0	0,0	17,1	82,9
	Siracusa	43,8	56,2	25,8	74,2	100,0	0,0	100,0	0,0	100,0	0,0	34,1	65,9
	Sicily	25,7	74,3	18,6	81,4	30,2	69,8	63,3	36,7	36,5	63,5	23,2	76,8
2002/2003	Catania	41,8	58,2	17,0	83,0	84,1	15,9	81,1	18,9	66,8	33,2	40,9	59,1
	Messina	16,5	83,5	12,0	88,0	22,7	77,3	22,7	77,3	100,0	0,0	14,4	85,6
	Palermo	9,7	90,3	17,4	82,6	34,0	66,0	18,4	81,6	100,0	0,0	17,5	82,5
	Ragusa	17,2	82,8	20,9	79,1	0,0	0,0	0,0	0,0	0,0	0,0	19,7	80,3
	Siracusa	43,3	56,7	38,3	61,7	100,0	0,0	100,0	0,0	100,0	0,0	40,3	59,7
	Sicily	31,9	68,1	19,8	80,2	46,2	53,8	65,1	34,9	80,5	19,5	27,9	72,1

Source: CORERAS on AFDRS data 2003)

1.2.2 Nuts production and CMO implementation

Table 16 shows that there are not POs for the category “nuts”.

Associations/cooperatives of nuts producers are therefore unusual, where in fact individualistic behaviour is prevailing.

No specific CMO measures in favour of nuts have been actually implemented in Sicily until January 2004, when the EC Regulations 1782/03 and 2237/03 came into force, providing an incentive for almonds, pistachia, walnuts, hazelnuts and carobs.

Regarding the implementation of EC Reg. 1035/72 and, subsequently, EC Regulations 558/2001 and 545/2002, any producers associations presented “quality and marketing improvement plans”: rather, from the interviews it emerges that the nuts sector in Sicily has never been so well-organized to manage such complex operational plans.

1.3 Institutional framework of citrus and nuts 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 institution in charge of the implementation of the CMO in the region.

The management of the OPs of the POs is carried out by the Service V - U.O. 22: this Office is in charge, among others, of approving or rejecting the OP.

POs recognition is carried out by the Service VII – U.O. 37.

Management of the CMO aids about citrus industrial processing is carried out by the Service VII – U.O. 36.

The CMO aids for the nuts sector are managed by the Service V – U.O. 25.

The AFDRS offices carry out all the administrative controls on the OPs statement and send the authorization to AGEA, that carries out the payments to the POs.

1.3.2 Institutions in charge of the controls

Technical controls are carried out by the AFDRS on the 55% of the POs. AGEA on its own carries out administrative controls.

1.3.3 Producers Organisations

See chapter 1.2.1, Table 16.

1.3.4 Farmers unions

The three main national organisations, Coldiretti, Confagricoltura and Confederazione Italiana Agricoltori, have their branch-offices in Sicily.

1.3.5 Research and technical institutes, Institutes for statistics

- Istituto Nazionale Economia Agraria (INEA), regional office
- Istituto Sperimentale per l’Agrumicoltura, CRA Consiglio per la ricerca e la sperimentazione in agricoltura, Acireale, Catania
- Department of Horticultural Crops (DCA), University of Palermo
- Department of Economy of the Agro-Silvicultural Systems (ESAF), University of Palermo
- Department of Orto-Floro-Arboricoltura e Tecnologie 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). Actually, the regional Decree on eco-conditionality, likewise to the national one, does not specifically address permanent crops, except in Norm 4.4 where, in order to preserve traditional landscapes, it is forbidden to destroy existing terraces.

1.4.2 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.

1.4.2.1 General characteristics of AEP application in Sicily

Table 22 lists the AEP measures and its objectives.

The fruit sector is essentially interested by the measures A1, A2 and D1.

Table 22: AEP measures implemented in Sicily

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.

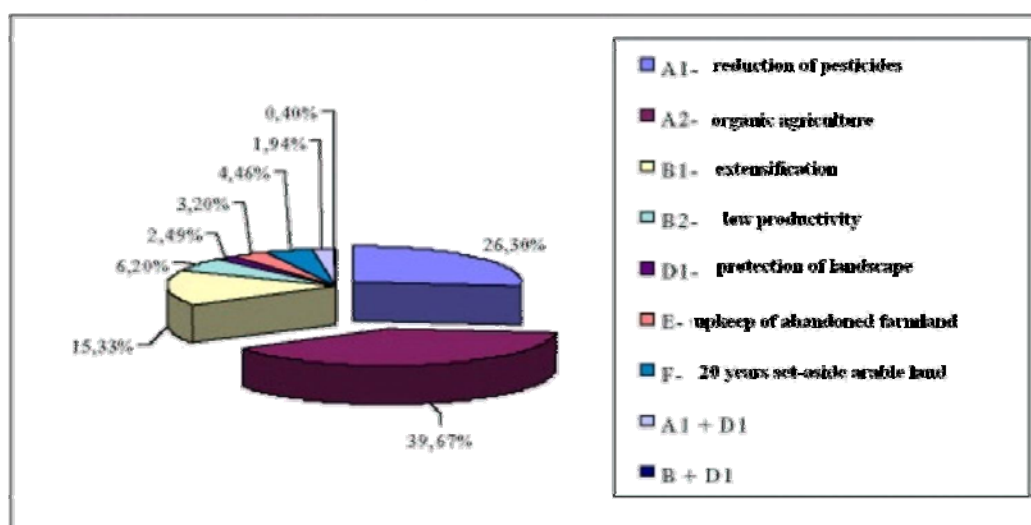
On 1998, the measures B2 (maintenance of low productivity), D1 (protection of the countryside and the landscape), D2 (preserving animal breeds under risk of extinction) and C (reduction of livestock density of cattle, sheep and goats) have been also started. On 1999, the measure G (land management for 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 23 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 1: Implementation of EC Reg. 2078/92: share of UAA per AEP measure, on 1998



Source: AFDRS

Table 23: 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 24), 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). Distinct data for nuts are not available.

Table 24: Situation of EC Reg. 2078/92 implementation per crop typology, 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%
<u>Citrus</u>	<u>36.498</u>	<u>101.847</u>	<u>21,72%</u>	<u>35,84%</u>
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 AEP application in the citrus sector

About the citrus sector, table 25 shows the level of payments for years 2001 and 2002: the measure A2 (organic farming) has been the most implemented (51,3% on 2001 and 97,8% on 2002 out of the total budget).

Table 25: Payments for citrus sector AEP – EC Reg. 2078/92. Years 2001 and 2002

Action	Nr applications	UAA (ha)	Total expenditure (€)
Year 2001			
A1	2.037	6.311,3	3.810.726,5
A1+D1	450	1.141,8	1.379.282,3
A2	903	4.740,1	5.725.983,4
D1	586	1.501,8	226.691,2
Total	3.976	13.695	11.142.683

Year 2002			
A1	824	3.322,6	3.322,6
A1+D1	149	572,1	572,1
A2	424	3.472,2	4.194.369,0
D1	272	589,6	89.006,5
Total	1.669	7.957	4.287.270

Source: AFDRS

1.4.3 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.

Citrus fruit and nuts are essentially concerned by the actions F1a, F1b and F3.

In particular, action F3 is limited to traditional citrus groves, localised on old terraces, classified by the Region as having “high landscape value”. Supported nuts are hazelnuts, chestnuts and pistachia, only when localised in very marginal areas (terraces, rocky spots, etc.), where mechanization is not feasible.

Table 26 shows the evolution of the RDP - AEM applications, the paid amount and the concerned areas for the citrus fruit on 2001 and 2002. Data on distinct payments for nuts are not available.

Table 26: Payments for citrus sector RDP – EC Reg. 1257/99. Years 2001 and 2002

Action	Nr applications	UAA (ha)	Total expenditure (€)
Year 2001			
F1a	69	717,2	430.306,8
F1b	84	1119,4	964.976,50
Totale	153	1.836,6	1.395.283,3
Year 2002			
F1a	47	567,0	340.211,3
F1b	116	1063,3	913.404,50
Totale	124	1.630,3	1.253.615,8

Source: AFDRS

Tables 25 and 26 highlight that the paid applications relative to the old programming (1994-1999, AEP), are more than those relative to the new one (2000-2006, RDP). 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, SIC (EC Dir. 438/92 “Habitat”), ZPS (EC Dir 409/79 “Birds”), highly vulnerable areas for water pollution (EC Dir 91/676), etc.

1.4.4 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, specific chapters of the GAP document are dedicated to the citrus fruits and nuts crop, grown under rainfed and irrigated conditions.

GAP norms have to be applied by the applicants of measure F on the whole farmland, also in the areas that not benefit by the premium.

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 specific sections are dedicated to the citrus fruits, almonds, pistachia and hazelnuts (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. Specific standards for organic cultivation of citrus fruit and nuts have not been however devised.

1.4.5 The Regional Operational Programme ROP (2000-2006)

The Axis IV “Local systems of development” of the ROP Sicily provides two measures that mostly concern, among others, the citrus fruit 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 Action 1 of the measure provided, on 2001, support for holdings growing oranges, mandarines, clementines and lemons, with the ban to increase the production capacity. The objectives of the Action were: a) to increase the efficiency of the holdings; b) to lessen the costs and c) to increase quality for better market positioning. On 2002, 45 projects for the citrus sector were admitted for a total amount of 3.511.094 Euros. When the CORERAS report was written, on 2003, any project were financed yet. On 2003, further 151 projects were submitted, however after acceptance by the Region, the initiatives had not been financed yet.

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 citrus sector, the incentives were mainly oriented in supporting the processing of red orange fresh juice plus fresh juice and essences of mandarine and lemon.

On 2003, the projects admitted were only two, for an amount of 1.988.500 Euros.

1.4.6 The “Citrus Plan”

The national law in support of the citrus sector (n. 423 of December 1998) is divided in several mid- and long-term interventions (measures and actions), targeted to strengthen the whole food chain through the improvement of market competition. Table 27 shows the measures of the plan.

Table 27: Measures of the Citrus Plan

Measures	
Horizontal	Specific
Action:	Action:
a) Markets monitoring	a) Support and co-financing to the integrated plans of the PO
b) Set up of the citrus file	
c) R&D	
d) Communication and promotion campaigns	
e) Incentives to set up producers associations for quality products	

Source: AFDRS

Several research institutions, at regional as well as national scale, are involved in the horizontal measures implementation, as INEA, ISMEA, IAA, AGEA.

The objective of the specific action “Support and co-financing to the integrated plans of the PO” is to increase the capacity of grouping the supply by the POs and to improve the programming and marketing ability. Such objectives are addressed through the “Integrated Plan”, that has to be presented by each PO with duration of 3-5 years; the Integrated Plan consists of various programming documents on the subject of marketing, structures modernization, reconversion of the orchards, services and communication, etc.

For the Citrus Plan’s implementation in Sicily around 29 millions of Euros have been allocated, for the period 1999-2001.

2. ANSWER TO EVALUATION QUESTIONS

2.1 Vertical questions relating to the fruits CMO

2.1.1 Fruits - Theme 1: market measures

Question 1+4(F1) : What has been the environmental effect of the market measures (notably support for organisations of producers and their operational funds, intervention, destruction/biodegradation) for the following categories: citrus and nuts? [a specific attention will be paid to the impact of the CMO promoting the grouping of supply]

As the statistics show (Chapter 1.2.1) in Sicily on 2002/2003, the citrus fruit area dealing with the CMO represents the 35,8% of the total one; the citrus production dealing with the CMO represents the 43% of the total one; and the citrus holdings getting benefits by the CMO represent the 17,5% of the total regional citrus holdings.

Such figures highlight the weak role of the CMO in Sicily in driving the citrus sector.

Moreover, the chapters above explain how negative was the development trend of the citrus sector in the period 1990-2003, with an average reduction of the citrus area of about 6,5% and a diminution of the harvested production of about the 17%.

It has to be further observed that production dropped down more drastically than the area, confirming the opinions of the interviewed sector leaders and producers on a progressive reduction of the amounts of the utilised inputs plus a reduction in the intensity of the farming practices (e.g. pruning, irrigation, thinning, etc.).

According to a part of the farmers, the gradual diminution of farming intensification was due to the frequent market crisis, all along the period under study, that forced the operators to lessen production costs.

However, some POs leaders stated that the market competition pushed the producers to improve the quality of their products, in a such a way to maximize the product share able to fulfill the highest EC quality standards (fruit size, color, appropriate food safety, etc.).

This effort has been quite well carried out through the POs, that could release the needed technical assistance and adequate equipment to its members, by driving the change and introducing innovation. In fact, “producing quality” led to farm in a more sustainable way, by reducing inputs, adopting IPM (or organic methods), making new investments, as cultivars reconversion (re-grafting of the old groves with new demanded cultivars), upgrading of the irrigation schemes, etc.

Two different scenarios may be therefore distinguished in Sicily nowadays, as result of the sector evolution of the last 15 years.

One group of holdings (around the two thirds of the total, often organised in POs) - that is highly suffering the market crisis but is not prone to make new investments – that is practising extensive farming methods just to minimize production costs. An overwhelming majority of the product goes to the processing industry, thanks also to the certainty of the CMO aid when applicable, and on the local market at very low prices.

Another group of holdings, the remaining one third - represented by those POs that aim at positioning their products on the national/European market - that reduce inputs and apply more sustainable farming methods (integrated or organic agriculture) with the double purpose of saving production costs and maximise quality. This second group is principally represented by the POs of the eastern Sicily (the Catania plain; the provinces of Siracusa and Messina). This group carries out careful planning of the production together with its customers; standardization of the field techniques; innovation to enhance the efficiency of the farm management, as introduction of drip vs. sprinkle irrigation, etc.

Summarising, the direct environmental effects due to the market measures provided by the CMO are likely to be positive, since linked to yields reduction in favour of better quality.

As reported by three professionals and one AFDRS official, not very market-oriented POs, however motivated by the CMO premium for processing, have been encouraged to apply the slightest farming techniques to save costs, so alleviating the environmental impact as well. The IAA carried out specific assessments on several nitrogen fertilisers efficiency in citrus groves, e.g. behaviour of organic and inorganic nitrogen fertilisers; field trials of N leaching to optimize the best time for fertiliser distribution; etc.

As seen on paragraphs 1.2.1.1, 1.2.1.2, 1.2.1.3), the CMO impact in promoting the grouping of the supply has been so far rather moderate in Sicily. Although the totality of the interviewed producers and sector leaders considered the role of CMO very strategic in favouring the grouping of the supply, still on 2003 the 52 Sicilian POs (only 12 belonging to the specific category “citrus fruit”) gathered just the 17,5% of the total citrus holdings; the 35,8% of the regional citrus area (-17,7%, compared to year 2000) and the 43% of the citrus harvested production, as possible consequence of the lack of operators’ confidence in the PO mechanisms.

The 40% of the interviewed producers, members of POs, answered that they increased the variety of the supply, by re-grafting or planting new citrus cultivars, under indication of the PO management; the other 60% however successfully grow the typical CV “Arancia Rossa” (red pigmented orange) only, so they have been maintaining such variety over the years.

The standardization of the farming practices, toward one more sustainable farming model (as integrated or organic agriculture), has been implemented by the 75% of the respondents members of POs, as consequence of the necessity to uniform the product quality under the EU quality norms. However, as reported by two POs technical managers, sometimes market-driven POs encouraged their members to abandon citrus groves that are not suitable anymore for quality production, since this would make it difficult to standardize the required quality. In addition, a certain decrease of biodiversity could have occurred due to the replacement of old cultivars with new ones.

Scientific studies about the subject of this question are not available; specific evidences on number of lost cultivars or areas of abandoned citrus groves and its fate are not available.

All the interviewed producers stated that grouping the supply facilitated the control of pesticide residues on the products, before being marketed: periodical collective controls were possible through the monitoring structures/laboratories co-financed by the OP.

As stated above, product withdrawals have never been carried out in Sicily since POs have started their activity, thus the specifications for environmentally friendly methods of withdrawal are not present in the OPs, as confirmed by the interviewed AFDRS officials as well as POs managers.

Question 2 (F1) : What is the environmental effect of transferring price support from fruit processors to producer groups? [Please note that in the CMO for fruit and vegetables the main measure is the support for organisations of producers and their operational funds].

Product amounts given to the processing industry vary every year according to: a) the harvested production (tied in its turn to the climatic conditions); b) the operators’ ability to reach with the fresh product the right market outlets; c) the market trend of the fresh and processed products, etc. The amount of Sicilian citrus fruit given to the processing industry has remarkably grown over the last twelve years, passing from 445,5 thousands of tonnes of the three-year period 1991/92-1993-94 to 667,4 thousands of tonnes of the three-year period 2000/01-2002/03 (marking an increase of around 50%) (Table 28). This growth interested all the regional citrus fruit productions (oranges, lemons, clementines, tangerines and grapefruits).

As explained by Schimmenti (2003), the increment of the processed quantities occurred, on one hand, because of the specific CMO support and the growing consumers’ demand for some citrus derivatives (e.g. the drinkable juices, especially those from red oranges); on the other hand, the increment has been also the consequence of the growing difficulties to place in the market the fresh products.

All the interviewed persons (namely producers, POs managers, regional authorities, researchers and professionals) stated that there were no significant operational consequences when the price

support was transferred from fruit processors directly to the producers. Rather, producers were pushed to join themselves in POs, in order to get the premium.

Of course, receiving themselves the payment gave the chance to have a certain negotiation with the processors to get a better price: however, only one interviewed PO's representative answered that nowadays the industry recognizes two different prices, linked to best or less quality. On the contrary, all the other POs leaders and producers answered that still there are no chances to bargain a price linked to the quality of the conferred product: when the contract is subscribed, the price that is offered is then fixed for all the campaign.

About the time of cashing the payment, seven producers complained that, before the reform, they could get paid sooner. At present, due to internal (Region) administrative reasons, the aid reaches the producers after several months from the product delivery.

Anyway, any respondents stated that the above considerations had or have to do with their farming behaviour. Therefore, there are not evidences that transferring price support from fruit processors to producer groups resulted in some kind of environmental effect.

Table 28: Citrus fruit produced in Sicily and processed by the industry, within the frame of the CMO support (tonnes)

	1991/92	1992/93	1993/94	1994/95	1995/96	1999/2000	2000/2001	2001/2002	2002/2003
Oranges	190.800	192.100	148.400	119.600	212.400	274.146	264.924	283.427	279.123
Lemons	209.700	259.200	274.100	209.400	340.900	337.661	397.396	321.373	287.886
Tangerines	37.200	n.a.	24.500	16.800	19.500	72.366	83.993	41.891	33.174
Clementines	n.a.	n.a.	400	700	600	1.388	1.971	2.367	1.533
Grapefruit	n.a.	n.a.	n.a.	n.a.	n.a.	820	2.049	1.114	137
Totale	437.700	451.300	447.400	346.500	573.400	686.381	750.333	650.172	601.853

Source: AFDRS and CORERAS elaboration on the three-year period 2000/01-2002/03.

Question 3 (F1) : What is the environmental impact of the requirements laid down in the market standards?

All the citrus fruits that do not fulfill the quality standards go to the processing industry (minus the actual reject, of course): as stated above, about the 76% of the citrus harvested production in the three-year period 2001-2003 has been sold to the processing industry.

Many factors might explain this fact: crisis of the sector (especially for the red-pigmented orange, that has a market limited to Italy), also due to growing international and European competition; weak marketing power of the Sicilian producers; low number of citrus holdings organised in POs; old groves that need to be reconverted with new cultivars and re-designed in order to lessen production costs; etc.

The interviewed POs producers, when really market-oriented, stated that, in order to fulfill the highest EC quality standards, a great effort of rationalisation of the cropping system has been done, through the centralised coordination given by the PO. As result, use of fertilisers has been diminished; the adoption of IPM techniques allowed to lessen the amount of agro-chemicals distributed in the groves. The central technical management introduced innovation, e.g. traps for biological control, that before was out of the reach of the single producers.

Therefore, the effort of the producers to fulfill the EC quality standards resulted in a positive environmental impact.

However, as above explained, switching to quality could have led somebody to abandon unsuitable citrus groves. In addition, the higher quantity of labour needed for the selection plus the management of the rejected product led to a higher energy consumption, resulted in a lower energy efficiency use.

Nevertheless, no scientific evidences on these subjects are unfortunately available to quantify the potential environmental damage.

It has to be added that, in some cases, the POs were requested by the customers to abide by the (voluntary) EurepGAP standards, that in some aspects are more restrictive than the EC ones, especially on the subject of environmental protection.

In general, all the respondents agreed on the above considerations.

The organic POs interviewed considered inadequate the EC quality standards, complaining that they do not take properly into account the “organic” quality of the product. In fact, the categories of appearance, size and colour are not fully satisfactory “to tell the story” of an organically-grown citrus fruit, furthermore, it is basically more difficult to get a high percentage of fruit without aesthetic defects by using the organic method: as a consequence, the fruit that do not comply with the present EC standards is immediately classified as “reject” by the market and depreciated, regardless its own peculiar organic quality. According to the respondents, a distinct section of quality standards should be devised, tailored on the organic products’ peculiarities, making up an autonomous category of “organic” quality.

Such view of the EC quality standards should make reflect on the negative links between them and the organic production, that – in the mid-long term – might be consequently discouraged, with negative environmental repercussions.

2.1.2 Fruits - Theme 2: environmental measures

Question 1 (F2) : What are the overall environmental impacts of the environmental cross-compliance provisions – on cultivation practices and waste management, for which the framework was specified by the Member States - in the CMO [Council Regulation 2200/96]?

and

Question 2 (F2) : Which kind of environmental measures [integrated production, organic production, plant production, fertilisers, energy management, water management, soil management, biodiversity/landscape and environmental management] paid by the operational fund for the producers organisations has turned out to be effective in terms of positive environmental impacts?

The CMO environmental cross-compliance provisions go under the name of “Environmental Measures”, and are addressed in the OP by the Action 4a “Production while respecting the environment”.

According to the AFDRS officials, the expenditure for the EM by every POs hardly reaches the 10-15% of the total OPs expenditure: actually, until 2004/2005, there was not a minimum mandatory level of expenditure for such measures. Nowadays, the regional administration, to boost environmental commitment by the POs, has fixed the minimum level of 20% of the OP total budget, that must be invested on EM.

Table 29 presents the overall POs expenditure for 2003 for the various categories of EM provided by the CMO: the total expenditure was **567.016,41** Euros. It has to be noted that for half of the provided measures there were no investments. Specific investments for integrated and organic farming represent almost the 48% of the total EM expenditure.

On the same year the Regione Sicilia paid to the POs the overall amount of 2.762.0000 Euros, equal to the 50% of the total OFs expenditure (5.524.000 €). Therefore, on 2003 the expenses for environmental measures represented just the 10,3% of the total OFs expenditure.

This low percentage might be partly due to the crisis status of the citrus sector: according to the 80% of the respondents, POs dealing with the market usually spend more for EM than those that predominantly deal with the processing industry (see answers to previous questions).

Table 29: POs expenditure for the various environmental measures on 2003 in Sicily (Euro)

AE measures										
Integrated farming	Organic farming	Energy management	Water resources management	Waste management	Biodiversity/Landscape	General environmental measures	Plant protection	Fertilisers	Other	Total EM
127.075,98	144.053,38	0	0	0	0	243.994,08	20.698,00	0	31.195,00	567.016,44

Source: AFDRS 2005

Among the EM, the most common operational interventions implemented by the Sicilian POs are the following (AFDRS):

- Engagement of free-lance agronomists, for specialised technical assistance and training to the producers in the subject of sustainable production (implementation of integrated and/or organic farming methods);
- Financial support to certification costs for organic production;
- Green pruning, for agronomic prevention of pests and diseases;
- Purchase and use of traps for pest monitoring within an IPM programme;
- Multi-residual analyses carried out by specialistic laboratories;
- Recourse to specialised companies for the disposal of the containers/packagings of the agro-chemicals employed in the productive process.

In the specific case of the POs that practise organic farming, the certification costs for the first 5 years from the conversion are also included among the Environmental Measures, namely they are paid by the OF. Certification costs to convert the processing equipment (machinery for selection, packing, etc.) are covered as well.

All the OPs must basically incorporate the “Technical Norms on IPM” that had been devised by the AFDRS when EC Reg. 2078/92 came into force, for the Measure A1 (integrated farming).

The Norms, that focus on IPM only, have been updated on the occasion of the RDP issue (EC Reg. 1257/99) and nowadays they are going to be extended, to include concepts of sustainable soil use and agroecological methods of farming.

POs practising organic agriculture refer to the production and processing standards provided by the EC Reg. 2092/91. In particular, one interviewed PO adopts private organic standards, internationally recognised by IFOAM, that are more restrictive with respect to the 2092/91: the private organic label represents an opportunity to better place the product in the European market.

In general, from statistics analysis and from the respondents' opinions it emerges that the implementation of IPM schemes together with the practice of organic farming (that has been in fact supported by the payment of certification costs plus specific TA) have been both the most effective EMs in mitigating the environmental impact of farming activity.

All the interviewed farmers, sector leaders and researchers agreed on the fact that such OPs, above all, led to a better management of the agro-chemicals, for plant protection and weed control, that often run the risk to be misused.

Scientific evidence on direct (or indirect) links between implementation of EM, as in the current OPs, and environmental impact is not available.

2.1.3 Fruits - Theme 3: structural measures

Question 1 (F3): What is the environmental impact of structural measures e.g. support for investment in irrigation?

Structural measures are managed in Sicily through the R.O.P. and the "Citrus Plan" (see chapter 1.4.5 and 1.4.6). Being Sicily in the area of Objective 1, the RDP exclusively concerns the AEM, the compensatory indemnity for LFA and afforestation.

According to the interviewed actors, larger holdings (more than 5 ha) mainly applies for structural funds. The most frequent investments are reconversion of the cultivars and upgrade of the irrigation schemes. Productivity cannot be enhanced in any case.

Specific statistics on expenditures and typologies of interventions were not available from the AFDRS.

All the interviewed producers however complained with the excessive bureaucracy of the administrative procedures to obtain the funds: in general, the phases of project evaluation and acceptance by the Region; placement in the list and cashing the money, take many months, which discourages the operators to apply to such measures.

All the interviewed producers and professionals reported that new groves, realised by the help of structural funds (or through own resources), are usually designed with the overall objective to produce high quality fruits: in fact, only market-oriented holdings are prepared to carry out such costly investments, where co-financing does not exceed the 40% - 50% at most.

As stated above, quality of citrus production has been proved quite linked to a better management of the inputs rather than increasing the use of them. Therefore, new "re-structured" groves are generally characterized by higher efficiency of inputs use:

- lower planting density vs. the traditional one, in order to facilitate mechanization that allows mechanical weeding instead chemical one;
- improved citrus cultivars, often tolerant or resistant to diseases;
- state-of-the-art drip irrigation systems, allowing to save water.

Therefore, application of structural funds were likely to result in overall positive (not negative) environmental impact, taking into account the typologies of the most implemented investments.

Scientific studies on irrigation in citrus groves vs. cropping techniques are not available. Scientific evidence on relationships about the evolution of structural investments vs. environmental impact on citrus groves are not available.

2.1.4 Fruits - Theme 4: nuts

Question 1 (F4) : What are the environmental impacts of the income support measure to improve nut quality?

As stated in the above chapters, the nuts sector in Sicily has been undertaking over the last 15 years a very serious market crisis, that led many hectares to be neglected or even abandoned.

The strong competition from the extra-EU nuts, together with the scarce attitude of the producers to form associations/POs to group the supply and improve quality, are the main reasons of the current crisis, as stated by all the interviewed actors.

There are no recognised POs for the category “nuts” and any specific CMO measures in favour of nuts have been actually implemented in Sicily until January 2004, when the EC Regulations 1782/03 and 2237/03 came into force, providing an incentive for almonds, pistachia, walnuts, hazelnuts and carobs.

Regarding the implementation of EC Reg. 1035/72 and, subsequently, EC Regulations 558/2001 and 545/2002, any producers associations presented “quality and marketing improvement plans”: rather, from the interviews it emerges that the nuts sector in Sicily has never been so well-organized to manage such complex operational plans.

Hence, it is not possible to give an answer to this question for Sicily.

2.1.5 Fruits - Theme 5: co-ordination with agri-environmental measures

Question 1 (F5) : Has the co-ordination between environmental measures in the CMO and the agri-environmental measures been adequate to produce optimal environmental impacts?

In Table 30, CMO EMs and AEMs are confronted, as implemented in Sicily.

As it has been underlined by the AFDERS officials in charge of managing the agro-environmental measures, AEMs promote the preservation of traditional groves exclusively in very marginal areas, where new investments, possibly supported by the CMO, would not anyway take place due to the very scarce economic return. In addition, AEMs do not support preservation of traditional cultivars of citrus fruit, so not competing with the CMO market measures, that are supposed to promote the planting of new cultivars in the place of the traditional ones.

The six interviewed farmers, who are members of POs and beneficiaries of AEMs at the same time, stated that there are not contradictions between the environmental standards to be followed, as provided both from the EMs and the AEMs. For instance, holdings practising integrated agriculture, as POs members and beneficiary of the RDP Measure F1a, refer to the same production standards, issued by the Region (the above-mentioned Technical Norms of IPM); similarly, holdings getting aids through RDP Measure F1b (organic agriculture), that are also PO members of organic POs, have to refer to the same standards, as provided by the EC Reg. 2092/91.

AEMs beneficiaries - and POs members - for integrated or organic agriculture get the AEM premium to sustain the higher production costs, plus they benefit by the specialised TA through the EMs: the whole framework is therefore well harmonized, without conflicts between EMs and AEMs.

For instance, one interviewed organic PO provides, through the OP EMs, financial aid to its members to support certification costs, which is not financed by the A2 and F1b AEM measures (OF).

In conclusion, from the analysis of the EMs and AEMs in Sicily it emerges a good synergy between the measures for the regional citrus sector, without significant competition and/or overlapping among them.

Table 30: Confrontation among CMO EMs and AEMs in Sicily

EM of OPs	AEM (EC Reg. 2078/92)	AEM (EC Reg. 1257/99)
<ul style="list-style-type: none"> ▪ Engagement of free-lance agronomists, for specialised TA and training to the producers in the subject of sustainable production (implementation of integrated and/or organic farming methods); ▪ Financial support to certification costs for organic production; ▪ Green pruning, for agronomic prevention of pests and diseases; ▪ Purchase and use of traps for pest monitoring within an IPM programme; ▪ Multi-residual analyses carried out by specialistic laboratories; ▪ Recourse to specialised companies for the disposal of the containers/packagings of the agro-chemicals employed in the productive process 	<ul style="list-style-type: none"> ▪ A1 Pesticides reduction ▪ A2 Organic agriculture ▪ D1* Protection of the countryside and the landscape 	<ul style="list-style-type: none"> ▪ F1a Methods of integrated farming ▪ F1b Introduction and maintenance of the methods of organic agriculture and livestock ▪ F3** Restoring and/or maintenance of the traditional rural landscape, of natural and semi-natural areas

*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.

**Action F3 of RDP is limited to traditional citrus groves, localised on old terraces, classified by the Region as having "high landscape value".

2.2 Horizontal questions

2.2.1 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.]

According to the interviews, abandonment of citrus fruit orchards has been occurring where economic return cannot be guaranteed anymore. It is therefore typical the case of the lemon crop, grown on the coast terraces in the Catania province, that is currently under serious abandonment, both for the high production costs and the low market demand.

In some cases, the abandoned citrus groves are replaced by vegetable crops under greenhouse, or flowers nurseries. In other cases, grapeyards replace the citrus fruit. In other cases, the citrus orchard is simply abandoned, becoming prone to fire.

However, scientific evidence of the above-mentioned opinions of the interviewed persons is not available; there are no research studies on environmental effects caused by the abandonment/replacement of permanent crops over the time.

2.2.2 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.]

2.2.3 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?

See chapter 1.4 to get elements for the answer.

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, AFDRS officials, farmers unions leaders, certification bodies for organic agriculture leaders, AP leaders, researchers).

Alberto Palmeri, CMO citrus responsible for POs recognition, Service VII - U.O. 37 AFDRS, Palermo

Alfredo Di Gangi, CMO responsible for approval of OPs of POs other than citrus, Service V - U.O. 23 AFDRS, Palermo

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

Antonino Mastropaolo, Office for the Interventions in organic farming and livestock, Service IV - U.O. 18 AFDRS, Palermo

Biagio Prestianni, president of the Cooperative of Pistacchio Smeraldo, Bronte, Catania

Biagio Schillirò, president of the Consorzio di Tutela del Pistacchio Verde di Bronte, Bronte, Catania

D'Agati, president of the Consorzio del Tardivo di Ciaculli, Palermo

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

Federica Argentati, general manager of one PO, Catania

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

Francesco Ancona, agronomist, technical director of one organic PO, Acireale, Catania

Francesco Intrigliolo, Director of the Istituto di Agrumicoltura di Acireale, Catania

Franco Ferro, CMO citrus responsible for industrial processing, Service V - U.O. 23 AFDRS, Palermo

Giorgio Aglialoro, CMO citrus responsible for industrial processing, Service VII - U.O. 36 AFDRS, Palermo

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

Ida Agosta, director of INEA, Palermo

Ivan Campanella, Researcher of CORERAS, Palermo

Lucio Gristina, Professor of Horticulture, University of Palermo

Paola Armato, CMO responsible for fruits other than citrus, Service V - U.O. 25 AFDRS, Palermo

Pietro Guzzo, CMO citrus responsible for approval of OPs of POs, Service V - U.O. 22 AFDRS, Palermo

Rosa De Gregorio, AEM-RDP responsible, Service IV - U.O. 17 AFDRS Palermo

Salvatore Battiato, agronomist, technical director of one organic PO, Palagonia, Catania

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

Tommaso La Mantia, Professor of Horticulture, University of Palermo

Vincenzo Oddo, agronomist, nuts expert, ESA (Agricultural Development regional body), Palermo

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