



EU policies for olive farming

*Unsustainable
on all counts*



This report and its recommendations were produced jointly by WWF Europe and BirdLife International. The two organisations believe that agricultural policies should promote farming systems which conserve our natural resources, not degrade them. We are working in the olive sector as part of a two-year project analysing the environmental and social potential of sustainable olive farming and processing, and the policy instruments required to support this.

The WWF European Agriculture and Rural Development Team is working for the reform of the Common Agricultural Policy in 2002-2004. Olive farming is the first sector targeted by this campaign. http://www.panda.org/resources/programmes/epo/ag_r_dev/agrimission.cfm

BirdLife International European Agriculture Task Force is working for the conservation of farmland birds and their habitats through the reform of the Common Agricultural Policy. <http://www.birdlife.org.uk>

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Summary

Olive farming could be a model for sustainable land-use in the Mediterranean region, producing highly-valued foodstuffs and environmental benefits, while helping to maintain populations in marginal areas.

But the Common Agricultural Policy (CAP) is driving the sector down the wrong road. Almost the entire budget of the CAP olive regime (around 2,250 million) is spent on production subsidies. These encourage farmers to intensify production and to use more irrigation, while marginalizing low-input systems.

Intensified olive farming is a major cause of one of the biggest environmental problems affecting the EU today: the widespread soil erosion and desertification in Spain, Greece, Italy and Portugal. The expansion of irrigated olive production is increasing the over-exploitation of water resources that have already been eroded by other agricultural sectors.

On the other hand, low-input olive farming provides landscape and habitat diversity in many upland areas, but the CAP production subsidies are weighted against these traditional systems. They face a choice between intensification and abandonment, both of which lead to the loss of their special environmental values.

Most Member States have made very little effort in applying CAP environmental measures to olive farming, despite their considerable potential for reducing the environmental impacts and enhancing the conservation benefits of this land use.

It is not only the environment that suffers under current policies: following years of production subsidy, intensification and expansion, producers now face market surpluses and falling prices.

Furthermore, the CAP regime is plagued by widespread fraud: olive production subsidies are difficult to control, and Member States have failed to establish the effective data-bases required by EU Regulations since the 1970s. This situation has been highly criticised by the European Court of Auditors and the European Parliament.

In 1997, the European Commission attempted to tackle these problems by reforming the olive regime. Member States were offered a choice between two existing support systems: a payment per tree (then applied to small producers) or a production subsidy (then applied to large producers)¹.

The Council of Ministers chose in favour of the production subsidy, which ensured that the incomes of large, intensive producers were maintained. But the change from tree payment to production subsidy resulted in a considerable loss of income for small producers practising low-input farming, thus further marginalizing these systems.

This "interim" olive regime was intended to run to November 2001², when a more fundamental reform would be introduced. Now, the European Commission has proposed to suspend a decision on reform and to roll-over the existing production subsidy until 2003, on the grounds that olive data-bases are still not ready³. Implementation of a new regime may be delayed for several years more.

The present situation is clearly unsustainable in environmental, socio-economic and administrative terms. If the European Parliament and Council of Ministers agree to the Commission's proposal, the problems of intensification, expansion, marginalization and fraud will continue for at least another two years, at the cost of the tax-payer and the environment.

WWF and BirdLife International urge the EU institutions and Member States to comply with the Treaty requirements on environmental integration and sustainability⁴, by taking a firm decision now for a fundamental reform of the olive regime, to be implemented from 2003.

The European Parliament and Council of Ministers should reject the Commission's proposal for again postponing reform.

- The European Commission should present a new proposal, incorporating a commitment from the Member States to replace production subsidies from 2003 with a flat-rate area payment unrelated to production or yields, in order to remove the incentive to intensification and increase support for low-input farms.
- The new proposal should reaffirm that plantations established after 1998 will not be eligible for CAP support payments, as laid down in Regulation 1638/1998, in order to check the "speculative" expansion of plantations which is still taking place.
- National and regional authorities should require olive producers receiving CAP support to comply with locally-established codes of good agricultural practice, incorporating basic environmental protection, within the framework of Article 3 of Regulation 1259/1999.

¹ COM(97) 57 final, of 12 February 1997.

² Regulation 1638/1998, of 20 July 1998.

³ COM(2000) 855 final, of 21 December 2000.

⁴ According to Articles 2 and 6 of the Amsterdam Treaty, all EU policies should promote sustainable development and environmental protection should be integrated into all policy areas.

- The European Commission and Member States should allocate greatly increased resources to agri-environment programmes for olive farming, in order to address the full range and scale of environmental issues affecting the sector in each region.
- Member States should use Rural Development Programmes to implement sustainability strategies for olive farming, including measures which promote improved farming practices through producer associations, advisory services, training and targeted grant-aid.
- The European Commission, jointly with national agricultural and environmental authorities, should develop by 2003 an integrated GIS data-base for olive areas, including data which would allow the effective targeting and monitoring of environmental measures.

WWF and Birdlife International believe that these policy recommendations, if implemented effectively, would enable the long-term social, environmental and economic viability of olive farming in the EU. Benefits would include:

- A considerable reduction in the degradation of natural resources being caused by intensive olive farming.
- Improved viability of low-input production systems and farms in marginal areas, combined with an enhancement of their conservation benefits.
- Increased employment in environmentally beneficial actions and farming practices on olive farms.
- A sound basis for controlling fraud and the expansion of olive plantations.

1. The importance and diversity of olive farming in the EU

Olive farming is an important land-use in the Mediterranean region, with significant social, environmental and economic implications. Although olives are common in North Africa and the Middle East, and are grown in places such as California, Australia and Argentina, the world's largest productive areas are in the European Union (EU) countries.

Spain, Italy, Greece and Portugal dominate the world olive market, producing 80% of the world's olive oil from a total olive area of approximately five million hectares. Two Spanish provinces (Jaén and Córdoba) account for 40% of total world production.

Olive farming in the EU is far from homogeneous. There are striking differences between olive farming areas and between one farm and another, ranging from the very small (<0.5ha) to the very large (>500ha) and from the traditional, low-intensity grove to the intensive, highly mechanised plantation.

Olive trees range from ancient, large-canopied specimens, cultivated by grafting onto wild olives and maintained by pruning for over 500 years, to modern dwarf varieties planted in dense lines, to be grubbed-out and replanted every 25 years. Tree densities vary from as few as 40-50 stems per hectare in some older plantations to 300-400 stems or more per hectare in the most intensive plantations.

Across the EU, olive plantations can be broken down into three broad types (EFNCP, 2000):

- a) Low-input traditional plantations and scattered trees. These are often ancient and are typically planted on terraces. They are managed with few or no chemical inputs, but with a high labour input⁵. As a result of their particular characteristics and farming practices, these plantations have potentially the highest natural value (biodiversity and landscape) and the most positive environmental effects (such as controlling water run-off in upland areas). They are also the least viable in economic terms and hence most vulnerable to abandonment. Ironically, these plantations receive the least support from CAP subsidies, due to their very low yields and their tendency to produce a crop only once every two years.
- b) Intensified traditional plantations. These follow traditional patterns but are under more intensive management, making systematic use of artificial fertilisers and pesticides and with more intensive weed control and soil management. There is a tendency to intensify further by means of irrigation, increased tree density and mechanical harvesting.
- c) Intensive modern plantations. These use smaller tree varieties, planted at high densities and managed under an intensive and highly mechanised system, usually with irrigation. The intensified-traditional and modern-intensive systems are inherently of least natural

⁵ In this report, the term "low-input" refers to agronomic inputs other than labour.

value and have the greatest negative environmental impacts, particularly in the form of soil erosion, run-off to water bodies, degradation of habitats and landscapes and exploitation of scarce water resources. These plantation types are generally of far higher and more consistent productivity than the low-intensity traditional types and they consequently benefit from a much higher level of CAP support (up to 10-20 times higher per hectare).

2. EU policies for olive farming

The Common Agricultural Policy is the most significant policy directly affecting olive farming in the EU. There are two groups of measures, corresponding to the two “pillars” of the CAP:

- The “market” regime for olives, which includes a subsidy paid to farmers per kilo of olives produced, and restrictions on imports from outside the EU.
- “Structural” and “accompanying” measures, including agri-environment incentives, aid for farmers in Less-Favoured-Areas and grants for grubbing-out old olive groves, replanting and irrigation. These measures are now grouped under the Rural Development Regulation⁶.

2.1. Background to the CAP olive regime

The CAP market regime for olives has by far the greatest influence on the sector. It has its origins in 1960s and, until 1998, included a minimum price for producers, a consumption subsidy paid to the processing sector and export subsidies. Large producers (more than 500kg of oil per year) received a subsidy in direct proportion to the oil they produced, whereas small producers (less than 500kg) received an aid per tree, weighted according to the average historical yields of their district.

To ensure adequate control of subsidies to producers, Member States were required (and provided with funds⁷) to establish comprehensive registers of

olive plantations, using aerial photography. These registers were to have been completed ten years ago⁸, but none of the Member States fulfilled this requirement (EC, 1997). The lack of an adequate olive data-base has repeatedly hampered the effective management of the CAP regime.

Indeed, olive subsidies have been plagued by fraud on an alarming scale in all producing countries, as highlighted over the years by reports of the EU Court of Auditors (EC, 1997). An important root cause of fraud has always been the nature of the support system: the CAP production subsidy is paid on the olives or the oil, which are extremely difficult for the authorities to track, rather than on the land which produces them (EC, 1997).

Following damning criticism of the olive regime from the European Court of Auditors and the European Parliament, the European Commission produced a discussion paper in 1997⁹ which reviewed some of the main problems with the existing support regime, including continuing intensification and expansion, fraud and environmental impacts.

A reform of the system was clearly required, and two broad options were discussed, based on the establishment of a single support system for all olive producers. The support options were variations on the two which already existed: an aid per tree or a subsidy paid in direct proportion to production.

Although over 60% of olive producers in the EU already received aid in the form of a tree payment, the Agricultural Ministers chose in favour of abolishing this system and applying the production subsidy to all producers. They thus opted for the system most vulnerable to fraud and most complex and costly to administer, but which had the political “advantage” that the incomes of large producers would be maintained.

At the same time, the change from tree aid to production subsidy resulted in a considerable loss of income for small producers practising low-input farming, especially in years of poor harvest (normally every second year in dryland olive farming).

The “interim” olive regime was to run for three years from 1998 to 2001¹⁰. Regulation 1638/1998 laid down that a more fundamental reform would be introduced from November 2001, on the basis of a new Commission proposal. In the intervening period, basic olive data was to be improved by means of aerial and satellite imagery and integrated in a computerised Geographical Information System (GIS) in order to facilitate the design and control of an appropriate regime.

⁶ Regulation 1257/1999, of 17 May 1999.

⁷ A total of ECU 249 million was provided in the period 1979-95, of which ECU 202 million were spent (EC, 1997).

⁸ According to Regulations 75/154 and 2276/79, the deadlines were 1981 (France and Italy), 1988 (Greece) and 1992 (Spain and Portugal) (EC, 1997).

⁹ COM(97) 57 of 12 February 1997.

¹⁰ Regulation 1638/1998, of 20 July 1998.

2.2. The latest proposal from the European Commission

The European Commission's proposal for 2001 is to suspend the expected reform and roll-over the existing production subsidy until 2003. The main explanation given is that the new GIS data-base is still not ready, and that fundamental changes to the support system cannot be made until there is complete and reliable information on the olive area and number of trees.

Yet fundamental changes were made to the support regimes for arable crops in 1992, including a shift from production subsidies to area payments, without the prior establishment of a specific data base. The same could be done now for olives. Member States would have to refine their national registers in the initial years, as they did for arable crops.

If the Commission's proposal is accepted by the European Parliament and Council of Ministers, a more fundamental reform of the CAP olive regime will again be put off, due to the failure or unwillingness of authorities to prepare themselves for change. The problems of intensification, expansion and fraud will continue for another two years, at the cost of the tax-payer and the environment.

3. Environmental effects of olive farming

With appropriate management, olive farming can contribute to the conservation of natural resources and values. But tendencies in recent years have been towards environmental degradation, as a result of bad farming practices, the expansion of intensive plantations and the marginalisation of low-input farms. The main problems and proposed solutions are reviewed below¹¹.

3.1. Soil erosion and desertification

Soil erosion is one of the most serious and widespread environmental problems in the Mediterranean region. Erosion reduces the soil's productive capacity, making it necessary to use more fertiliser. Topsoil, fertiliser and herbicides are washed into water courses and water bodies, causing widespread pollution (García Torres, 1999). In extreme cases, soil erosion leads to desertification, or "serious degradation of the soil"¹². Once this situation is reached, recovery

Box 1: Why intensive olive farming causes soil degradation

"The Mediterranean region has witnessed in recent years the highest rate of soil loss in all Spain, and this fact is due, at least in part, to the bad management of olive plantations" (Aguilar Ruiz et al, 1995).

In intensified olive plantations, farmers usually keep the soil bare of vegetation all the year round, by regular tillage. This is mostly up and down the slope, rather than following the contours. Severe erosion takes place with the arrival of torrential autumn rains on bare soils which have been cultivated to a fine tilth by summer harrowing.

Erosion is most extreme on steep slopes, where many plantations have been established without supporting terraces. But even on relatively flat land and on terraces, severe soil erosion can result from inappropriate soil management.

Intensive tillage not only exposes the soil to the erosive effects of rainfall, it also increases the soil's vulnerability by reducing its organic content, especially when combined with the use of non-organic fertilisers and residual herbicides. The decline in the organic matter content of many soils in southern Europe, as a result of intensive cultivation practices, has become a major process of land degradation, according to the European Soil Bureau (1999).

is extremely difficult, and the capacity to support vegetation is lost.

Intensified olive farming is a major cause of soil erosion and desertification, as reported in numerous agronomic publications (for example, Tombesi, Michelakis and Pastor, 1996). The CAP production subsidies exacerbate the problem by encouraging intensification (see Boxes 1 and 2).

CAP production subsidies also encourage the establishment of new plantations, often at the expense of natural vegetation, thus destroying the most effective protection against erosion. This problem is reported in regions such as Crete and Andalucía (EFNCP, 2000).

Effective solutions to soil erosion are available. In some cases, relatively small changes in farming practice may be sufficient, such as shallower and less frequent tillage, and the maintenance of a grass cover on the soil at the most critical times of the year. Research shows that these measures can lead to an increase in yields and in productive efficiency at the same time as tackling the environmental problem (for example, Pastor, Castro, Humanes and Saavedra, 1997).

In some situations, the construction of small earthworks may be necessary to control water run-off, implying a cost for the farmer. In extreme cases, it may be advisable to turn steeply sloping land over to forest

¹¹ The water-pollution problems caused by the wastes from olive processing plants are not covered in this publication.

¹² For example, through erosion, salinisation, etc. (Spanish Ministry of Environment, 1999).

Box 2:
Examples of desertification caused by olive farming

Soil erosion is a serious problem in all producer countries, where inappropriate cultivation practices coincide with vulnerable soils. Very severe erosion is defined as an average rate of 50 t/ha/year or more by the Spanish draft National Action Plan Against Desertification (MMA, 1999). In Andalucía, an estimated 80 t/ha of topsoil are lost each year from olive plantations, with even higher rates in certain situations (Pastor and Castro, 1995; MAPA, 1999). On the basis of these estimates, the approximately one million hectares of olive plantations in Andalucía are losing as much as 80 million tonnes of soil per year.

In Greece, large areas of land have been cleared in recent years for new olive plantations and are subsequently eroded by gullies. Upland areas with olives on shallow soils are especially vulnerable to erosion because of intensive tillage and soil compaction from farm machinery (EC, 1992; Yassoglou, 1971). Soil erosion is caused in some areas when intensive goat and sheep grazing follows the abandonment of traditional plantations.

In Italy, continuous tillage and the spraying of residual herbicides to control weeds in intensive plantations causes an impoverishment of the soil and the loss of its structure leading to erosion. In Puglia it is reported that intensive tillage has caused erosion at different levels, especially on steeper slopes. The abandonment of traditional olive plantations in northern regions, such as Liguria, has led to an increased incidence of wild fires and subsequent risk of soil erosion.

(with low-intensity management, such as light grazing, to prevent fires), which is the most effective protection against erosion.

Traditionally, terraces were created with supporting stone walls, to enable the cultivation of hillsides in upland areas without excessive soil erosion. These terraced systems are still common in many parts of the Mediterranean region, and represent an enormous historic investment of human time, energy and skill.

But their maintenance is labour-intensive and abandonment is quite common in marginal areas. This can lead to land-slips and sometimes to desertification, for example when it is followed by repeated wild fires or over-grazing by sheep and goats. Support measures are needed which maintain the economic viability of traditional systems without encouraging intensification, and which reward the conservation of existing terraces.

3.2. Water run-off, pollution and over-extraction

3.2.1. Controlling water run-off and floods

In upland areas, traditional olive plantations on terraces can help to slow run-off and improve water penetration. This reduces the risk of floods in lowland areas following heavy rainfall. This is a particular concern in parts of Italy. To fulfil these functions, terraces

and channels need to be maintained and soil management should aim at reducing erosion.

3.2.2. Pollution of surface and ground water

Eroded soils and chemicals from farmland are among the principal pollutants of surface waters in Mediterranean regions. Residual herbicides, such as Simazine, are widely used in intensified-traditional and modern-intensive olive plantations. These chemicals remain highly concentrated in the top 5-15cm of soil, even after several months, and are washed into streams, rivers and reservoirs with the soil that is eroded in heavy rains.

Soil run-off from olive plantations into reservoirs also leads to important economic costs, as in the case of the silted-up Guadalén reservoir in Jaén, Andalucía (Pastor, Castro, Humanes and Saavedra, 1997). This leads to the building of new reservoirs, often with considerable environmental impacts.

Nitrogen inputs in the most intensive, irrigated olive farming can reach high levels (up to 350kg per hectare in extreme cases), so experience from arable farming systems suggests that a problem of groundwater pollution is likely to exist in some olive areas. However, there is little monitoring or research of groundwater pollution in intensive olive areas (EFNCP, 2000).

3.2.3. Water abstraction for irrigation

The over-exploitation of water resources for irrigation is an enormous environmental problem in the Mediterranean region. Irrigation is expanding rapidly in the olive sector and is contributing to the unsustainable use of water resources that have already been eroded by other agricultural sectors. Although the quantities used per hectare are relatively low compared with arable cropping, irrigated olive plantations cover an increasingly large area in some regions and their total impact on water resources is considerable.

The CAP production subsidy acts as a powerful incentive to the spread of irrigated plantations: conservative estimates show that the subsidy increases the difference in net income between irrigated and dryland plantations by as much as 600%. Without the production subsidy, the change to irrigation would be much less profitable (see Box 3).

The regions affected by the expansion of irrigated olive plantations often have serious water deficit problems. For example, in Puglia (Italy), Crete (Greece) and Jaén (Spain), irrigated olive plantations have continued to expand even though ground waters are already severely depleted.

Box 3:
Comparison of incomes in dryland and irrigated
plantations in Córdoba (Spain)

	<i>Intensive dryland</i>	<i>Intensive irrigated</i>
Annual yield per ha (olives)	4,500kg	6,500kg
Annual net income per ha without subsidy	907	997 (+ 90)
Annual net income per ha with subsidy	1,897	2,427 (+ 530)

Source: Adapted from Guerrero, 1994.

In Jaén, the regional government's data for 1997 indicates a water deficit of 480 million m³ for the Guadalquivir river basin (Consejería de Medio Ambiente, 1997). This problem has been aggravated in recent years by the expansion in irrigated olive plantations (Pastor, Castro and Vega, 1998). It has been estimated that irrigated plantations in Jaén consume approximately 300 million m³ per year (EFNCP, 2000).

The increasing demand for irrigation water leads to an indirect impact on the environment through the construction of new reservoirs to supply irrigation water. In southern Spain and Portugal, several major dam-building projects have been identified as amongst the principal threats to the survival of the Iberian lynx (*Lynx pardinus*), an endemic Iberian species on the verge of extinction and strictly protected under the EU Habitats Directive (WWF, 1999).

The new reservoirs are not intended exclusively for supplying irrigation water; but agriculture is the main consumer of water in these regions (over 80%) and thus the driving force for increasing supply. Olives are one of the few crops in which irrigation is expanding rapidly. Under the 1992 CAP reform, area payments were introduced for arable crops, with a fixed eligible base area, which has helped to limit the expansion of irrigation in this sector: a similar means of control is needed for olives.

In many regions there are insufficient planning and control mechanisms to ensure that irrigation does not exceed the sustainable capacity of water resources. The EU Water Framework Directive (WFD¹³), which entered into force in 2000, requires Member States to correct this situation and ensure that all ground and surface waters are managed sustainably (see Box 4).

3.3. Biodiversity and landscape

Biodiversity tends to be high in traditionally managed olive plantations as their structural diversity (trees, understorey, patches of natural vegetation, dry-

Box 4:
The EU Water Framework Directive (WFD)

This new European law, introduced in 2000, requires Member States to take a strategic and integrated approach to the management of all water resources and river basins. Authorities must follow a series of steps laid down in the Directive, including planning of river basin districts, identification of pressures and impacts and the implementation of measures to reduce impacts. The overall aim is to ensure that extraction, pollution and other pressures do not degrade water resources, and that these are maintained at, or above, a level defined as "good status".

For example, by 2004, governments must review the impact of human activity on water "status" by identifying pressures and assessing impacts, leading to the identification of those waters at risk of failing to fulfil the WFD's basic objectives. They must also carry out an economic analysis of water use to enable the development of sound pricing policies, and to identify the most cost-effective measures for achieving the WFD's objectives. Certain measures are compulsory under the Directive, including incentives for efficient water use and controls on water abstraction.

Making irrigated agriculture compatible with "good status" of ground and surface waters represents a major challenge in Mediterranean regions. Planning and effective controls will have to be introduced to ensure that abstraction does not exceed the recharge capacity of water resources. Authorities will have to evaluate and decide, with full public participation, whether irrigated agriculture can continue to expand.

Many of the river basin districts to be designated under the WFD already suffer from water abstraction beyond the limits of sustainability. If the expansion of irrigation is permitted in certain sectors, such as olives, measures will have to be taken to reduce water consumption in other sectors.

stone walls, etc.) provides a variety of habitats. The older trees support a high diversity and density of insects which, together with the tree's fruit, provide an abundant supply of food (Parra, 1990). The low level of pesticide use allows a rich flora and insect fauna to flourish, which in turn provides a valuable food source for a variety of bird species.

However, the intensive application of techniques for increasing production (especially frequent tillage and heavy herbicide and insecticide use) has a strongly detrimental effect on ground flora and on insect populations and results in a very considerable reduction in the diversity and total numbers of flora and fauna. Some of the agro-chemicals used in olive farming, such as Dimethoate and Fenoxycarb, have been found to cause a dramatic reduction in a wide spectrum of insect species, including several which have a beneficial role in controlling pests species (Cirio, 1997).

The rationalisation of olive production through replanting has become common in some regions. This is usually accompanied by the clearance of remaining patches of natural vegetation, field boundaries, rocky areas and dry-stone walls, leading to a significant loss of wildlife habitat, and the erosion of the "ecological infrastructure" of the farmland (Kabourakis, 1999).

¹³ Directive 2000/60/EC of 23 October 2000.

Box 5:
Proposals for improving the environmental effects of olive farming in the EU

Reducing negative effects in intensive systems:

- Reduce currently high levels of soil erosion and run-off to water courses, by promoting changes in management practices or, in extreme cases, a change in land use (maintaining olive trees and introducing grazing and/or afforestation).
- Promote a more rational use of agro-chemicals in order to reduce impacts on flora and fauna and reduce the risks of pollution, especially of soil and water.
- Promote a more sustainable exploitation of water resources for irrigation and control the spread of irrigation in areas with sensitive (over-exploited) water resources.
- Prevent the further expansion of olive plantations onto valuable habitats (natural and semi-natural) and soils that are vulnerable to erosion.

Maintaining and improving positive effects:

- Prevent the abandonment of olive plantations where these make a positive contribution to resource management (soil and water) and to natural and landscape values (mainly traditional, terraced systems).
- Develop and promote sustainable and environmentally-favourable olive farming systems, such as organic and integrated production systems.
- Promote the maintenance and improvement of habitat and landscape features in olive plantations.

Monitoring environmental effects:

- Research and monitor the state of natural resources (soil, water, flora and fauna, habitats) in all olive-producing regions, using common methodologies, criteria and data bases.

Rationalisation can be detrimental to bird species that breed in the gnarled trunks of old trees (e.g. Little Owls) or breed or feed in the vegetation around the bases of trees (Quail and Partridge) or between the trees on semi-open ground (Woodlark and Stone Curlew) as many of these features are lost or modified through this process (Pain, 1994).

The use of Mediterranean olive plantations as a food source by very large numbers of migrant passerine birds, both from northern and central Europe and from Africa, is well documented. But where pesticides are used intensively to control parasites, the overall insect population inevitably suffers and the trees' overall value as a food source for birds is reduced.

The expansion in olive plantations which has taken place in the main producing areas in recent years has often taken place at the expense of natural woodland and other vegetation. These habitats are of high conservation value, as they contribute an element of diversity in landscapes already dominated by intensively managed olive plantations. New olive plantations have also encroached on arable land in areas of importance for steppeland bird communities, for example in Córdoba and Málaga (Spain) and in Alentejo (Portugal).

Many of the habitat losses due to olive expansion have gone unrecorded, as there has been little official monitoring of such changes in land-use. Nevertheless, a local project in Córdoba (Spain) revealed over 50 cases of clearance of Mediterranean forest habitats to make way for new olive plantations during the 1990s, including cases within protected areas such as the Parque Natural de las Sierras Subbéticas.

Finally, traditional olive terraces are a characteristic of upland landscapes in many Mediterranean regions, and contribute to their attraction for tourism. However, the stone walls which support them are often in a state of general neglect and semi-abandonment. This results in a loss of landscape value which becomes irreversible after a period of time.

4. Policy opportunities for environmental integration and sustainability

The great weight of CAP funding and administrative effort is devoted to the olive production subsidy, which encourages intensification and expansion. These processes have led to the degradation of natural resources (soil and water) and the loss of biodiversity and landscape values.

Low-input, traditional production systems, which have positive functions in the conservation of soil, water and biodiversity, are faced with decreasing viability and a choice between intensification and abandonment. Both tendencies lead to a loss of environmental benefits.

CAP environmental measures receive only a small fraction of the total budget and have been applied to olive farming in a very narrow way. Issues such as soil erosion, water use, biodiversity and the maintenance of traditional terraced systems are not being addressed on any significant scale.

Important policy opportunities exist for correcting this situation, notably:

CAP market regimes

- The CAP olive regime, due to be reformed during 2001 or by 2003, depending whether the EC's latest proposal is approved.
- The olive data base (GIS) currently being developed by the European Commission.

CAP environmental measures

- Environmental measures under Article 3 of the "Common Rules" Regulation¹⁴, including the possibility for Member States to make

¹⁴ Regulation 1259/1999, of 17 May 1999.

CAP subsidies conditional upon compliance with specific environmental conditions.

- Agri-environment measures under Chapter VI of the “rural development” Regulation 1257/1999.

CAP rural development measures

- Rural development measures under Regulation 1257/1999, particularly in Chapter IX (adaptation and development of rural areas) and in Chapter I (investment in agricultural holdings).

By taking full advantage of the opportunities available, WWF and Birdlife International believe that considerable progress could be made towards greater environmental sustainability and integration in EU olive farming. The main issues which need to be addressed are reviewed below.

4.1. CAP olive regime

4.1.1. Production subsidies

Production subsidies for olive farming have rewarded intensification and expansion, which has led to negative effects on the environment (see for example Fotopoulos, Liodakis and Tzouvelekas, 1997; EC, 1997).

Whilst most notable in the more productive areas, in the form of developments such as new plantations, irrigation and intensive use of inputs, intensification is also apparent in many traditional plantations in marginal areas, to the detriment of natural values.

The CAP olive regime favours intensified systems, because the subsidies are paid in direct proportion to production and intensive plantations can produce 10-20 times more olives per hectare than low-input systems. They thus receive 10-20 times more support (see Table 1).

Yet intensive plantations need far less support than low-input plantations, because they are inherently more competitive. Furthermore, traditional, low-input farms have higher labour costs than intensive plantations, due to factors such as the presence of terraces and old, awkwardly shaped trees, which constitute part of the environmental value of traditional plantations. Under the existing regime, many low-input plantations are barely viable, and only continue to be managed thanks to family or casual labour, either unpaid or very poorly remunerated.

WWF and Birdlife International propose that the present production subsidy should be converted into an area payment for olives, unconnected to production levels. This would follow a similar approach to that applied to the CAP arable regime since 1992, but with a flat-rate payment per hectare, not related to historic yields (i.e. the same level of payment per hectare for all

Table 1:
Comparison between the current production subsidy and an alternative system based on a flat-rate area payment of 450/ha

	<i>Low-input traditional plantation¹</i>	<i>Intensified traditional plantation</i>	<i>Intensive modern plantation with irrigation</i>
Average annual yield of olives/oil ²	500 / 75	2,500 / 375	6,500 / 975
Direct costs	650 ¹	900 ³	1,547 ⁴
Sales income (0.30 per kg olives)	150	750	1,950
Production subsidy (1.30 per kg oil)	97	487	975
Gross income with production subsidy	247	1,237	2,925
Net income with production subsidy ⁵	-402	+337	+1,378
Possible flat-rate area payment	450	450	450
Net income with flat-rate area payment ⁵	-50 ¹	+300	+853

Figures show estimated annual average per hectare for a representative plantation of each type. Monetary unit = .

Notes:

¹ From Cáceres case study (EFNCP, 2000). Costs include all labour input, including maintenance of stone terraces and walls, at local rates for farm labour. In practice, a large part of the labour in traditional plantations is provided by the farmer and his family so is not paid for directly. The negative net income shown in the table therefore does not reflect a real monetary deficit. Nevertheless, this is a real labour input which should be costed, as it gives an indication of the very low level of remuneration of this farm type and consequent risk of abandonment. Agri-environment incentives for maintaining the environmental values of this type of farm would reward part of these labour inputs and thus produce a positive net income.

² Oil production based on an average oil yield of 15kg per 100kg of olives. In practice, the percentage of oil extracted from olives varies considerably (ranges from 10% to 25%), depending on climate, olive variety, etc.

³ From UPA, 1998

⁴ Adapted (5% inflation added) from Guerrero, 1997.

⁵ Gross income minus direct costs.

olive plantations). The incentive to intensify production would thus be eliminated entirely.

The change to a flat-rate area payment would provide a more solid basis for the viability of low-input plantations in marginal areas, through a higher and more consistent level of aid (see Table 1), reflecting the high labour costs of these production systems.

The establishment of a system of district “base areas” eligible for aid, as established for the CAP arable regime, would also provide an effective means of controlling the continuing expansion of olive plantations in the main producing regions, which is leading to environmental impacts, structural surpluses and falling olive prices. See Box 6.

4.1.2. Olive data-base

The European Commission is creating a new GIS data-base, based on aerial surveys, in order to manage

Box 6:**Olive expansion and fraud should be controlled by switching from production subsidies to area payments**

While traditional plantations in the most marginal areas are faced with abandonment, modern intensive plantations continue to expand in areas with a comparative advantage, such is their profitability under the current EU regime (see Table 1).

Profitability is illustrated by land prices: in the most intensive producing areas, such as Córdoba and Jaén (Spain), average plantation prices were over 12,000 per hectare by 1999, reaching 24,000 per hectare in some cases. These are exceptional price levels for farmland.

Under the 1998 “interim” reform of the regime, it was decided that plantations created after 1998 would not be eligible for the production subsidy, in order to try to stabilise the situation. But it is impossible for the authorities to prevent olive oil from post-1998 plantations from receiving the CAP production subsidy – there is no way of checking which plantations the oil has come from. Consequently, landowners continue to plant olives, confident that they can get a subsidy.

The latest Commission proposals for the olive regime seem to provide a possible green light for post-1998 plantations to receive olive subsidies after 2003, so long as they are included in the new GIS data-base. If interpreted in this way, this may encourage landowners to plant even more between now and 2003. New Regulations should reaffirm that post-1998 plantations cannot receive CAP support.

A switch from production subsidies to payments per hectare would provide an effective mechanism for controlling expansion – land is easier to control than olive oil. As with the direct payments in the arable sector, a system of “base areas” should be established, setting a maximum number of hectares eligible for the payment in each region or district.

the olive support regime. This is an excellent opportunity to combine agronomic and environmental data in one cartographic information system. The inclusion of data on the average slope of plantations, vulnerability to erosion, state of ground and surface waters (pollution and exploitation levels), presence of terraces, etc., would allow the targeting of policy measures for environmental objectives.

This would be basic step towards environmental integration in agricultural policy-making and would enable a more effective implementation of Community environmental law, such as the Water Framework Directive and Habitats Directive. But the GIS developed by the Commission will be limited to conventional agronomic information, such as hectares, numbers of trees and average yields, reflecting a totally outdated approach to policy design.

4.2. CAP environmental measures

4.2.1. Common Rules Regulation

Until now, farmers have received CAP subsidies regardless of whether they protect or degrade the envi-

ronment. This situation is unacceptable: farmers should be required to comply with a basic standard of environmental responsibility in return for the public support they receive, an approach known as “cross-compliance”.

The possibility for national authorities to attach environmental conditions to all CAP subsidies was introduced in 1999, as part of the “Agenda 2000” reforms (Article 3 of Regulation 1259/1999). These conditions should establish a basic level of environmental responsibility, included within the concept of “good agricultural practice”.

Cross-compliance is developing extremely slowly in the EU, especially compared with countries such as Switzerland and USA, where measures are applied on a wide scale.

In the USA, for example, farmers cultivating land with a high erosion risk are required to draw up a soil-conservation plan measures in return for the farm subsidies they receive. Of the 59 million hectares identified as highly erodible at the start of the programme in the mid-1980s, conservation plans had been approved on 57 million hectares and fully applied on 34 million hectares by the early 1990s (USDA, 1993 quoted in Baldock and Mitchell, 1995).

A similar approach is required urgently in the EU, to help address soil erosion and other environmental problems in olive farming. Cross-compliance should be used to eliminate basic bad practices, such as inappropriate tillage, excessive and illegal water extraction or irrational pesticide use. Yet at the time of this publication, no Member State had applied this mechanism to olive farming.

4.2.2. Agri-environment programme

If a farmer undertakes environmental actions that go beyond good agricultural practice, these “services” should be rewarded with payments under the CAP agri-environment programme. Table 2 shows the type of commitments which should be required under cross-compliance and rewarded through agri-environment payments.

Under appropriately designed schemes, agri-environment payments could increase the use of labour for actions which deliver environmental benefits, such as restoring and maintaining terraces, stone walls and habitats, or managing spontaneous vegetation through mowing or grazing.

All Member States have been obliged to implement agri-environment programmes since 1992, but very few schemes have been targeted at olive farming, and these have failed to address the scale and range of environmental issues affecting the sector. The main emphasis has been on promoting organic production,

Table 2:
WWF and Birdlife International proposed actions and intended benefits.

Action	Details	Intended benefits
Convert the CAP olive production subsidy into a flat-rate area payment.	<ul style="list-style-type: none"> – A minimum number of trees per hectare should be established (e.g. 40-50). Scattered trees not in plantations to be paid the same level of aid, converted to a tree-basis. – Olive “base areas” should be established at district level, setting a maximum area eligible for aid. – As laid down in Regulation 1638/1998, post-1998 plantations should not be eligible for CAP support. 	<ul style="list-style-type: none"> – Eliminate incentive to intensify and expand production. – Increase amount and consistency of support for marginal, low-input plantations. – Provide an effective control of expansion. – Provide a sound basis for applying cross-compliance to olive farming (very difficult to apply to a production subsidy).
Apply environmental cross-compliance to all CAP support for olive farming.	<ul style="list-style-type: none"> – Develop, and require compliance with, regional codes of Good Agricultural Practice for olive farming. – Codes should incorporate basic environmental protection. – Codes should be developed with full participation of farmer organisations, environmental authorities, NGOs and other stakeholders. 	<p>Eliminate basic bad practices, such as:</p> <ul style="list-style-type: none"> – Excessive tillage – Tillage up and down slopes – Bare soil at critical times of the year – Illegal water extraction (illegal boreholes, extraction above legal limits) – Illegal clearance of natural habitats – Persecution of protected wildlife species – Dumping pesticides and containers in water courses
Develop comprehensive agri-environment schemes for olive farming.	<ul style="list-style-type: none"> – Schemes should address the full range of environmental issues in the region or area. – Actions rewarded should go beyond Good Agricultural Practice. – Clear and quantified objectives should be established for these schemes, as well as effective monitoring systems to check whether targets are achieved. 	<p>Reward specific practices, such as:</p> <ul style="list-style-type: none"> – Maintenance and restoration of terraces and stone walls. – Maintenance and restoration of wildlife habitats and landscape features. – Maintenance of permanent grass cover with sheep grazing or mowing. – Reduce vulnerability of soil by increasing organic-matter content. – Create small earth works to reduce run-off on steep slopes. – Organic production systems.
Rural development programmes promoting sustainable development of olive regions.	<ul style="list-style-type: none"> – Fund associations of farmers who employ an advisor for developing and pursuing more sustainable practices. – Fund investments in environmental improvements (e.g. machinery for changing to non-tillage systems). – Fund economic diversification, production quality and labelling schemes incorporating environmental criteria. 	<ul style="list-style-type: none"> – Improved advice to farmers on sustainable farming practices. – Enable farmers to convert to environmentally beneficial practices which involve a start-up cost. – Improve social and economic viability of olive regions. – Improve product quality and make a direct link to production practices which are environmentally beneficial.
Develop an integrated data base and monitoring system.	<ul style="list-style-type: none"> – GIS data base, incorporating a common system for monitoring and reporting on environmental trends. – Each district should establish monitoring points in a selection of representative farms. 	<p>Data and monitoring on the state of:</p> <ul style="list-style-type: none"> – Soils – Water resources – Biodiversity – Landscape – Socio-economic viability

an option taken up by a significant number of producers due to the attractive subsidy, but which does not deal with issues such as soil erosion, maintenance of terraces, habitat conservation or water extraction.

With the exception of Portugal, no Member State has run significant programmes aimed at maintaining the environmental values of traditional olive plantations, in spite of the extensive literature highlighting the importance of these values in the Mediterranean landscape.

Limited funding is part of the problem. In Andalucía, for example, by 1998 measures aimed at reducing soil erosion in olive plantations had affected 49,000 hectares, or less than 4% of the regional olive area. With the EU funds allocated to this region for agri-environment programmes in the period 2000-2006, it is expected that no more than 5% of the total olive area will be able to participate in agri-environment measures. Yet as much as 40% of the regional olive area is reported to suffer serious soil erosion problems (see Box 2, above).

Whereas CAP production subsidies are financed 100% by the EU agriculture budget, national and regional governments have to provide at least 25% of the funding for agri-environment programmes from their own resources. For authorities in relatively poor regions of the EU (most olive regions are defined as Objective 1¹⁵ under EU regional policies), this is a major disincentive to the development of ambitious programmes.

Consequently, the coverage of agri-environment programmes is far greater in richer countries such as Austria, Germany and Sweden (over 50% of farmland was participating by the late 1990s) than in southern Member States (typically little more than 5% of farmland).

The European Commission should put forward proposals for agri-environment programmes and production subsidies to receive the same level of EU funding. This would help to promote these programmes in southern Member States.

4.3. Rural development measures

Rural development programmes are the much-vaunted “second pillar” of the CAP. But in most olive regions the programmes are a mixed bag of measures, designed and implemented separately from one another and not forming part of a clear strategy for the sustainable development of rural areas.

The programmes combine measures with different and sometimes conflicting objectives, including the agri-environment schemes referred to above and grants for intensification, for example through irrigation and the grubbing out of old plantations.

Nevertheless, there are examples of positive environmental initiatives supported by rural development programmes. These illustrate the opportunities which exist to promote environmental improvements in olive farming and which could produce benefits on a considerable scale if greater resources were made available for targeted measures with clear objectives.

One example is the producer groups in Spain which practise integrated pest control, known as ATRiAs (*Agrupaciones para Tratamientos Integrados en Agricultura*). These promote a more rational approach to pest control, treating only when necessary rather than using a fixed range of products and doses according to a standard calendar, which is the normal practice. An agronomist monitors pest populations and advises members when to treat pests and how.

Start-up funding for these groups in Andalucía comes from EAGGF¹⁶ Objective 1 programmes and the

Box 7: Area payments with cross-compliance will promote sound management and continued employment in marginal olive farms

Maintaining olive farming for the employment it provides in marginal areas is a justified social objective. Even though the employment is highly seasonal, it can be combined with work in other forms of agriculture or other sectors, such as tourism.

Employment in intensive plantations is falling rapidly as mechanised harvesting is becoming increasingly widespread. To harvest one “average” hectare of olives (2,500kg) manually requires 167 man hours, compared with 6 man hours using the most efficient mechanised systems.

But traditional, low-input plantations continue to have high labour requirements (maintenance of terraces, difficulties of mechanisation with ancient trees, etc.), which are reflected in relatively high costs per hectare (see Table 1). These features also form an integral part of the plantations’ environmental value, and their maintenance should be rewarded through the CAP.

The Common Rules Regulation allows Member States to “modulate” CAP production subsidies, directing more support to certain types of plantation requiring a high labour input. However, if production subsidies are maintained, then applying suitable criteria and administering such a system would be extremely complex, while the incentive to intensify would continue.

Replacing the production subsidy with a flat-rate payment would be a far simpler way to direct more support to marginal plantations. As illustrated in Table 1, this change would go a long way towards establishing their viability.

To ensure a continuation of management and harvesting, farmers receiving CAP support should be required to maintain their plantations in production by undertaking a basic level of management, to be defined within established codes of good agricultural practice. The area payment would be for managed and pruned olive plantations, not those invaded by scrub or woodland. Such conditions would be relatively simple to verify using aerial and satellite observation.

If farmers were required to maintain their plantations in productive conditions under codes of good agricultural practice, they would continue to harvest, if prices are not driven down by over-production.

regional government, but once established the cost of the adviser is covered by the farmers themselves. The cost is relatively low: approximately 10,000 per year to employ the adviser, or 1 per hectare, plus equipment costs. Even with the limited funding which has been made available, over 30 ATRiAs have been set up in Jaén province, each covering an estimated 10,000 hectares.

Member States should use Rural Development Programmes to provide grant-aid to help farmers convert to more environmentally friendly practices where these involve an investment cost. An example is the purchase of machinery for mowing permanent vegetation, instead of treating with herbicides. Grants for environmental improvements should not be conditional upon criteria such as minimum holding size, or require-

¹⁵ Defined as regions whose per capita GDP is less than 75% of the EU average (Regulation 1260/1999, of 21 June 1999)

¹⁶ European Agricultural Guarantee and Guidance Fund.

ments to achieve increased economic returns, as currently happens.

5. Conclusions

Now is a critical time for the future of olive farming in the EU and a perfect opportunity for changing the design and implementation of an obsolete set of policies. The present situation is characterised by:

- Intensified and expanding production, leading to unsustainable use of natural resources (soil and water) and loss of biodiversity.
- Decreasing viability of traditional, low-input systems, which are faced with a choice between intensification and abandonment, both of which can produce negative consequences for the environment.
- Market surpluses, falling prices and continued expansion of production (an unsustainable market situation), especially due to new irrigation. This further reduces the viability of marginal farms.
- Complex and costly administration of production subsidies.
- Continuing fraud, with the additional problem of how to prevent post-1998 plantations from receiving production subsidy, as laid down in the Regulations.
- Incomplete olive data-bases, despite being required under Community law since the 1970s and financed by the EU taxpayer.

Olive farming could become a model for sustainable land and resource use across the Mediterranean region, given the right policy framework. Getting the CAP olive regime on the right footing is an essential first step. But it is equally important that Member States and the EU institutions dedicate far greater resources to developing, implementing and monitoring effective environmental measures, in order to promote improved farming practices and to maintain existing environmental values.

WWF and Birdlife International believe that the policy recommendations outlined below, if implemented effectively, could result in:

- A considerable reduction in the degradation of natural resources being caused by intensive olive farming.
- Improved viability of low-input production systems and farms in marginal areas, combined with an enhancement of their conservation benefits.

- Increased employment in environmentally beneficial actions and farming practices on olive farms.
- A sound basis for controlling fraud and the expansion of olive plantations.

6. Recommendations

6.1. CAP olive regime

The European Parliament and Council of Ministers should reject the Commission's current proposal to delay a decision on reforming the olive regime. A new proposal should be formulated, with clear commitments from the Commission and Member States:

- to replace production subsidies from 2003 with a flat-rate area payment unrelated to production or yields, in order to remove the incentive for intensification and increase the support for low-input, marginal plantations;
- to set a maximum area eligible for the new payment in each district (olive "base areas") by 2003, in order to control expansion;
- to reaffirm that plantations created after 1998 will not be eligible for CAP support, as laid down in Regulation 1638/1998, in order to prevent a renewed planting boom in the period 2001-2003;
- to finalise the new olive data-base (GIS) by 2003, and to incorporate data which would allow the effective targeting and monitoring of environmental measures.

– By taking these firm decisions now, the Council of Ministers can give national authorities and farmers a two year period to prepare for the new support system.

– The current budget of 2,250 million distributed between the approximately five million hectares of olive plantations would provide a flat-rate area payment of around 450/hectare for all olive plantations.

– This would increase greatly the level and consistency of support received by low-input, marginal plantations. Intensified-traditional plantations (the most widespread in the EU) would receive a similar level of support to that provided by the production subsidy. The most intensive, irrigated plantations would receive less support than at present, but would still produce a much higher net return than other plantation types, due to their very high productivity (see Table 1).

– The GIS should include data on degree of slope, vulnerability to erosion, state of ground and surface waters (pollution and exploitation levels) and loca-

tion of natural habitats. This is a basic step towards environmental integration in agricultural policy-making, and would facilitate the implementation of EU environmental laws, such as the Water Framework, Habitats and Birds Directives.

6.2. CAP environmental and rural development measures

National and regional authorities should require olive producers receiving CAP support to comply with locally-established codes of good agricultural practice incorporating basic environmental protection, within the framework of Article 3 of Regulation 1259/1999.

- This “cross-compliance” measure would aim to address basic bad practices, such as inappropriate tillage that causes soil erosion, illegal water extraction or irrational pesticide use.

- The change from production subsidy to area payments is an essential basis for applying cross-compliance to olive farming. It is administratively very difficult to attach conditions to a subsidy on olive oil, as it cannot be traced to a particular plantation.

The European Commission and Member States should allocate greatly increased resources to agri-environment programmes for olive farming, in order to offer payments to all olive farmers in return for envi-

ronmental services which go beyond good agricultural practice.

- Schemes should be designed to address the full range of environmental issues in the region or area, promoting specific practices such as the maintenance and restoration of terraces and wildlife habitats and the use of sheep grazing for weed control, as well as more standardised systems, such as organic production.

- Clear and quantified objectives should be established for these schemes, as well as effective monitoring systems to check whether targets are achieved.

- The European Commission and Parliament should check that environmental issues are addressed effectively in each Member State, both under these schemes and through “cross-compliance”.

Member States should use Rural Development Programmes to implement sustainability strategies for olive farming, including targeted funding for:

- Associations of farmers who employ an advisor for developing and pursuing more sustainable practices.

- Grant-aid for investments in environmental improvements (e.g. machinery for changing to non-tillage systems).

- Economic diversification, improved production quality and labelling schemes incorporating environmental criteria.

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Sheep grazing is an environmentally beneficial method of weed control in olive groves, but inappropriate stocking and shepherding can lead to overgrazing and soil erosion.



Bad soil management is widespread in olive farming, and can lead to dramatic soil erosion and desertification. In extreme cases, cultivation should be abandoned, allowing the land to revert to forest or extensive grazing.



A permanent grass cover, managed by mowing or grazing, benefits soil and wildlife conservation. This practice is common in some parts of Italy.



Maintaining stone walls and terraces, which are common in many traditional groves, is labour-intensive, and many are neglected. This results in a gradual loss of landscape value and may lead to landslips and abandonment.



This is the fate of many ancient olive trees in Crete, as traditional groves are cleared to make way for new, intensive plantations.

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