FINAL REPORT

Annexe 27 du rapport d'évaluation

EUROPEAN COMMISSION
DG AGRICULTURE

Evaluation of the Impact of the Set-aside Measures in the United Kingdom: *National Level Report*

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CONTENTS

1 PLACE OF COP IN THE NATIONAL AGRICULTURAL CONTEXT *1*

1.1 SHARE OF UUA IN THE UK *1*
1.2 TRENDS IN SURFACE AREA AND COP PRODUCTION IN THE PERIOD 1985 TO 1999 *1*
1.2.1 Trends in fallow area 1985-2000 *2*

2 ELEMENTS OF SET-ASIDE IMPLEMENTATION *3*

2.1 THE UK REGIONALISATION PLAN *4*
2.1.1 Introduction *4*
2.1.2 UK Yield Regions *4*
2.1.3 UK Base Areas *4*

3 REGULATORY CONTEXT FOR IMPLEMENTATION OF SET-ASIDE IN THE UK *7*

3.1 ORGANISATION OF IMPLEMENTATION, MONITORING AND EVALUATION OF CAP AND SET-ASIDE *7*
3.2 CHOICES MADE IN RELATION TO COMMUNITY TEXTS *9*
3.2.1 Nature of cover *9*
3.2.2 Environmental Regulations *10*
3.2.3 Transfer of set-aside *11*

4 SYNTHESIS OF CASE STUDIES *12*

4.1 INTRODUCTION *12*
4.2 ELEMENTS OF RESPONSES TO QUESTIONS 411 TO 421 *12*
4.3 RESPONSES TO QUESTIONS 422 TO 444: ENVIRONMENTAL PERFORMANCE *24*
4.4 RESPONSES TO QUESTIONS 451 AND 452 - EFFECTIVENESS, ADMINISTRATIVE AND OTHER CHANGES *31*

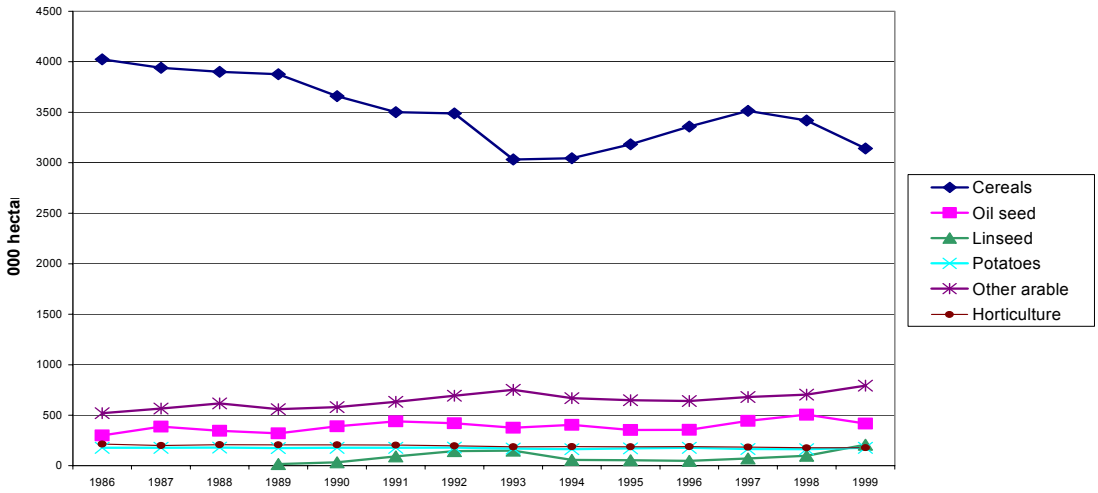
Annex 1 - LIST OF STAKEHOLDERS CONSULTED
Annex 3 - BIBLIOGRAPHY
Annex 4 - DETAILS OF COP SURFACE AREA 1985 TO 2000 IN THE UNITED KINGDOM
Annex 5 - PROCEDURE FOR IDENTIFYING SAMPLE OF FARMERS

1 PLACE OF COP IN THE NATIONAL AGRICULTURAL CONTEXT

1.1 SHARE OF UUA IN THE UK

The UK has 18.7 million ha of utilised agricultural area (UAA). At the time set-aside was introducted in 1993, 26% of the UAA was arable, of which 6.6 million ha were cultivated under cereals,oil or protein crops (COP).

Figure 1: Area of Agricultural Land and Main Crop Use in the UK



Source: DEFRA

1.2 TRENDS IN SURFACE AREA AND COP PRODUCTION IN THE PERIOD 1985 TO 1999

As shown by the Figures 2 and 3 below, the place of cereals and particularly wheat, is very dominant in the UK.

Figure 2: Trends in Surface Area under COLP (including Linseed) 1985-99

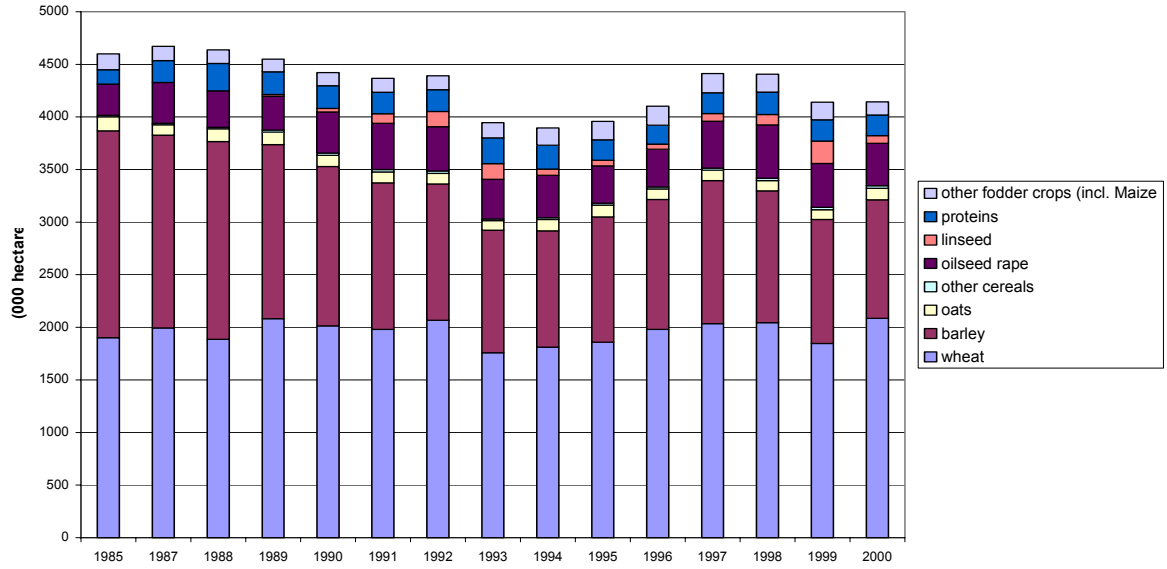
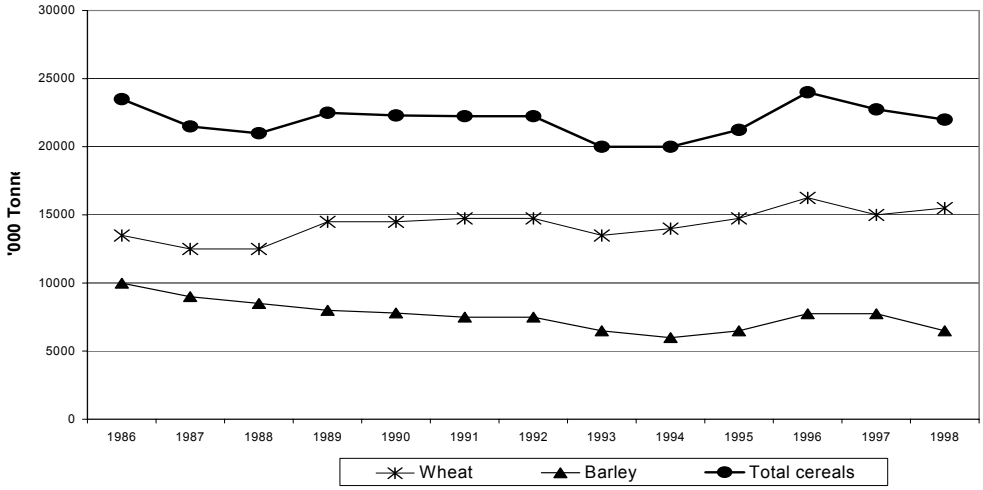


Figure 3: Trends in production in tonnes of COP 1985-1999.



Source: DEFRA, HGCA as referenced in "Economics of Cereal Production, 1998/99" University of Cambridge.

1.2.1 Trends in fallow area 1985-2000

Table 1 illustrates the relationship between fallow area and set-aside. These statistics, which are sourced from the Department for Environment, Food and Rural Affairs (DEFRA)[1], define bare fallow as arable land left uncultivated, which is not part of the set-aside regulation. As can be seen, the introduction of set-aside appears to have little observable effect over the overall area of fallow land (or in other words, the relationship between the two factors is unclear). Although there has been a marked decline in total bare fallow land since set-aside has been implemented, this is more closely related to the overall decline in total arable land surface area over a longer term period, rather than specifically to set-aside. For example, there is no marked decrease in fallow land surface area in 1999, where set-aside surface area markedly increased from 312.9 in 1998 to 571.6 in 1999.

Table 1: Trends in surface area under bare fallow (in thousand ha) 1985-1999 in UK

Thousand hectares

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total crops	**5 139.2**	**5 012.7**	**4 955.9**	**4 980.7**	**4 518.7**	**4 469.7**	**4 543.7**	**4 699.0**	**4 990.5**	**4 968.9**	**4 708.6**
+Bare fallow	69.1	64.0	63.9	52.6	46.9	46.4	42.5	38.0	29.4	33.9	33.0
Total Tillage	**5 208.3**	**5 076.8**	**5 019.8**	**5 033.2**	**4 565.5**	**4 516.1**	**4 586.2**	**4 737.0**	**5 019.9**	**5 002.8**	**4 741.6**
+Grasses under five years old	1 561.4	1 582.0	1 585.5	1 562.1	1 561.1	1 456.0	1 406.7	1 411.8	1 404.8	1 301.4	1 226.5
Total Arable Land	**6 769.8**	**6 658.8**	**6 605.3**	**6 595.3**	**6 126.6**	**5 972.1**	**5 993.0**	**6 148.8**	**6 424.6**	**6 304.2**	**5 968.1**
Total Tillage And Grass (1)	**12 073.1**	**11 931.1**	**11 866.2**	**11 808.4**	**11 335.4**	**11 359.8**	**11 367.9**	**11 497.9**	**11 706.1**	**11 668.3**	**11 417.0**
+ Set-aside **(2) (3)**	na	71.9	97.0	160.3	677.4	727.8	632.9	519.8	306.3	312.9	571.6
TOTAL AREA ON HOLDING (4)	**17 692.6**	**17 327.1**	**17 264.5**	**17 281.2**	**17 301.1**	**17 625.6**	**17 520.1**	**17 513.9**	**17 432.2**	**17 375.0**	**17 352.2**

(1) Total Tillage and Grass also includes Grasses 5 years and older

(2) Set-aside scheme land is all land officially designated under a Set-aside-Scheme

(3) Industrial Crops grown on Set-aside are included in the total Set-aside surface area figure

(4) Total Area on Holding also includes a) sole right through grazing land, b) woodland on holdings and c) all other land on holdings.

Source: http://www.defra.gov.uk/esg/econfrm.htm, on-line Economics and Statistics service and DEFRA Statistics department

[1] DEFRA is the new government department dealing with agricultural issues, including set-aside, in England, and from May 2001, replaces the Ministry of Agriculture, Fisheries and Food (MAFF).

2 *ELEMENTS OF SET-ASIDE IMPLEMENTATION*

The context is summarised in the data for implementation of set-aside (Table 2 and 3).

Table 2: Set-aside and COP in England (1993-2001)

Set Aside Statistics - ENGLAND

		Season													
		1993/94		1994/95		1995/96		1996/97		1997/98		1998/99		1999/2000	
a) Total surface area	Ha.	3794600		3794600		3794600		3794600		3794600		3794600		3794600	
b) Obligatory set aside rate	%	15%		15%		12%		10%		5%		5%		10%	
c) Total set aside	Ha.	492869		576084		518886		419067		249856		253139		498148	
d) Obligatory set aside (theoretical)	Ha.														
e) Voluntary set aside (theoretical)	Ha.														
f) Number of applications (with set aside)															
g) Total COP Surface area	Ha.														
h) Rate in relation to base area	%.														
i) Real rate of set aside	%														
j)' Total set aside, of which	Ha	492869	5.93	576084	5.93	518886	5.89								
Rotational set aside	Ha	492869	5.93	468962	5.93	285900	5.89								
of which is non food	Ha	49550	5.93	94542	5.93	67578	5.89								
Non-rotation set aside	Ha			107122	5.93	232986	5.89								
of which is non food	Ha			3046	5.93	17567	5.89								
Voluntary set aside	Ha														
j)' Total set aside (other than special)	Ha	492869	5.93	576084	5.93	518886	5.89	419067	5.84	249856	5.89	253139	5.89	498148	5.89
of which obligatory	Ha	492869	5.93	576084	5.93	518886	5.89	345031	5.85	174658	5.89	176671	5.89	353824	5.89
of which voluntary	Ha							74036	5.82	75198	5.89	76468	5.89	144324	5.89
of which paid at 48.3 ECU	Ha							14785	5.85	17070	5.89	14497	5.89	15130	5.89
(of which not paid)	Ha							1306	5.83	2196	5.89	2217	5.89	3373	5.89
of which non food	Ha	49550	5.93	97588	5.93	85145	5.89	58037	5.89	28016	5.89	27893	5.89	114884	5.89
of which not paid	Ha							29	5.89	9	5.89	26	5.89	2	5.89
k) 5 year set aside (R.2328/91)	Ha	106897		72006		29971	5.89	12452	5.89						
l) Special set aside	Ha														
m) Other information on set aside															
* estimated															
j)1Regulation years 1993-94 to 1995-96; j2 Regulation years 1996-97 to 2000-01															

Source: EC

Table 3: Set-aside and COP in the United Kingdom (1993-2000)

Set Aside Statistics - UNITED KINGDOM

Includes England,Wales, Northern Ireland, Scotland LFA and Scotland others

		Season													
		1993/94		1994/95		1995/96		1996/97		1997/98		1998/99		1999/2000	
a) Total surface area	Ha.	4E+06		4461000		4461000		4461000		4461000		4461000		4461000	
b) Obligatory set aside rate	%	15%		15%		12%		10%		5%		5%		10%	
c) Total set aside	Ha.	567541		662131		597162		485020		290434		295221		582142	
d) Obligatory set aside (theoretical)	Ha.	552940		633749		558985		410323		209369		204779		408244	
e) Voluntary set aside (theoretical)	Ha.	14601		28382 *		38177 *		74698		87204		90442		173898	
f) Number of applications (with set aside)		32476		34003		35154		35898		39413		37255		38219	
g) Total COP Surface area	Ha.	4E+06		4010633		3999068		4088016		4187377		4168601		4256337	
h) Rate in relation to base area	%.														
i) Real rate of set aside	%	15.1%		16.5%		14.9%		11.9%		7.1%		7.1%		13.7%	
j)' Total set aside, of which	Ha	567541	5.87	662131	5.86	597162	5.85								
Rotational set aside	Ha	567541	5.87	533516	5.87	328232	5.85								
of which is non food	Ha	52159	5.87	100396	5.90	73062	5.87								
Non-rotation set aside	Ha			128615	5.84	268930	5.85								
of which is non food	Ha			3643	5.87	19033	5.87								
Voluntary set aside	Ha														
j)' Total set aside (other than special)	Ha	567541	5.87	662131	5.86	597162	5.89	485020	5.84	290434	5.84	295221	5.84	582142	5.98
of which obligatory	Ha	567541	5.87	662131	5.86	597162	5.89	397672	5.85	200476	5.85	203863	5.85	408245	5.85
of which voluntary	Ha							87348	5.82	89958	5.82	91358	5.83	173897	5.82
of which paid at 48.3 ECU	Ha							16184	5.85	19479	5.84	17237	5.82	19370	5.79
(of which not paid)	Ha							1574	5.83	2543	5.85	2598	5.84	3953	5.84
of which non food	Ha	52159	5.87	104039	5.86	92095	5.89	62629	5.87	29830	5.87	30005	5.87	120154	5.88
of which not paid	Ha							29	5.89	9	5.89	26	5.89	2	5.89
k) 5 year set aside (R.2328/91)	Ha	132547		85558		36534	5.82	15209	5.82						
l) Special set aside	Ha							4626	5.67						
m) Other information on set aside															
* estimated															
j)1Regulation years 1993-94 to 1995-96; j2 Regulation years 1996-97 to 2000-01															

Source: EC

2.1 THE UK REGIONALISATION PLAN

2.1.1 Introduction

The Arable Area Payments Scheme (AAPS) was introduced in 1993 following the 1992 reform of the Common Agriculture Policy (CAP). In order to compensate for a cut in the intervention price of cereals in a way which did not encourage continued over-production, the scheme allows farmers to claim area payments on cereals, oilseeds, proteins and linseed, fibre flax and fibre hemp. (Linseed was added to the AAPS in 1994; fibre flax and hemp also receive aid, not where grown on land eligible for AAPS but where fibre flax or hemp was grown and received payment under the subsidy schemes in 1998-2000.) Provision was made for the area payments to be varied across the EU and across Member States, by reference to the average of observed yields in different "yield" or "production" regions in the five years between 1986/87 and 1990/91 (omitting the years with the highest and lowest yields). Compulsory set-aside was first introduced in 1993 based on the UK's first regionalisation plan, which was submitted for approval in September 1992.

Two controls were introduced to avoid encouraging over-production of crops eligible for payments. First, payments were restricted to crops grown on land which was in arable use at 31 December 1991. Second, a "base area" was introduced. This is the average of areas down to AAPS eligible crops (and the then set-aside scheme) in the years 1989, 1990 and 1991. If the total of the areas claimed in a given year exceeded this historic level, the areas to be paid on each claim would be scaled back in proportion.

2.1.2 UK Yield Regions

Since coming into force, the UK's regionalisation plan has been subject a number of modifications so that today, the UK is divided into seven yield regions. Originally the yield factors for each were calculated entirely separately but since 1994 they have been an average of 60% of the actual regional yield and 40% of the UK average. The 7 UK yield regions are:

	Yield region	**t/ha**
1	England	5.89
2	Wales LFA (less favoured area)	5.05
3	Wales non-LFA	5.17
4	Scotland LFA	5.21
5	Scotland non-LFA	5.67
6	Northern Ireland LFA	5.03
7	Northern Ireland non-LFA	5.22

2.1.3 UK Base Areas

The UK base areas originally corresponded to the original yield regions (ie. were divided into five), and were not modified in 1994 to reflect the increase to 7 yield regions. However separate base areas were defined in England and Wales for maize and other crops, and the base areas were increased to reflect the addition of linseed to the AAPS in 1994. (The base areas were not increased to reflect the addition of fibre flax and hemp in 2001 because the UK production of these commodities in the reference years only averaged 43 ha).

Today there are 4 regional base areas in the UK:

1. England (with sub-divisions for maize and for other crops)
2. Wales (with sub-divisions for maize and for other crops)
3. Scotland

4. Northern Ireland

A separate base area was defined in England for maize (33,200 ha) and other crops (3,761,400 ha). The England base area accounts for 85% of the base area for the UK.

For most crops, with the exception of maize, there is parity between the Assigned Base Area (ASB) and the claimed area. There is a separate base area for the maize crop because it is considered a forage rather than food crop. This area is always over-subscribed so that the area claimed for is effectively three times the ASB. For 2000, the paid areas for maize and its associated set-aside in England were scaled back to 35% of the area that would otherwise be eligible for payment (compared with 33.15% in 1999). Payments for other crops and set-aside were reduced to 98.36% of the eligible areas (compared with 99.06% in 1999).

As well as the national base area limits, the payment for oilseeds is subject to further adjustments. Following a successful US GATT complaint, the EU and the US signed what is known as the "Blair House" oilseeds agreement. This sets a Maximum Guaranteed Area (MGA) for oilseeds in the EU; payments to producers must be cut by 1% for every 1% by which the area of oilseeds receiving "crop specific" aid payments exceeds the MGA less the greater of 10% or the current percentage of compulsory set-aside. Any cuts under the agreement fall only on those Member States in which the area of oilseeds exceeds a level calculated by reference to the 1990/1991 average area with certain adjustments. Penalties are carried forward from year to year until the EU paid areas fall below the MGA. The mechanism described here will continue to apply in 2001 but it will end in 2002 when payment rate for oilseeds is aligned with other crops in 2002 and so is not "crop specific".

In 1993 the amount of land to be set-aside was 15% on a rotational basis. It was kept at the same rate in 1994 and then consistently reduced through 12%, 10% and 5% in 1995, 1996 and 1997/1998 respectively. In 1994 non-rotational set-aside was permitted at the higher rate of 17.5%. As shown in Table 1 the real rate of set-aside has been at least 1-2% higher than this for the entire period rising to +3% for the 1999 and 2000 seasons.

Arable area payment rates are set in Euro/tonne for the EU as a whole and are converted to Euro/ha by reference to Members States' average cereals yields in the period 1986/87 to 1990/91.

The areas claimed in 2000 under the AAPS were:

	United Kingdom	**England**
No. of Claims (approx)	59,200	43,800
Total Area (ha.)	4,500,000	3,800,000
Cereals (ha.)	3,314,000	2,790,000
Oilseeds (ha.)	327,000	292,000
Proteins (ha.)	209,000	205.000
Linseed (ha.)	76,000	73,000
Set-aside (ha.)	567,000	483,000

This amounted to approximately £990 million (EUR 1.625 billion) worth of AAPS claims in 2000, and a further £34 million (EUR 55.9 million) is being paid as agrimonetary compensation. The figures for England are £855·5 million (EUR 1.4 billion) under AAPS and £29 million (EUR 47.7 million) as agrimonetary compensation.

Yield of main cereal crops in the United Kingdom

Tonnes per hectare	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Total cereals	**6.9**	**7.3**	**6.7**	**6.7**	**7.0**	**7.2**
Wheat	7.7	8.1	7.4	7.6	8.0	8.0
Barley - total	5.7	6.1	5.8	5.3	5.6	5.8

Barley - winter	6.2	6.6	6.3	5.6	6.0	6.3
Barley - spring	5.1	5.5	4.9	4.8	5.2	5.1
Oats	5.5	6.1	5.8	6.0	5.9	5.9
Other cereals (rye, mixed corn and triticale)	5.5	5.9	5.5	5.0	5.9	6.1

Area, yield and production of oilseed rape in the United Kingdom

		1996	**1997**	**1998**	**1999**	**2000**
TOTAL	Area	415	473	534	537	402
	Yield	3.4	3.2	2.9	3.2	2.8
	Production	1,415	1,527	1,566	1,737	1,129
NON SET-ASIDE LAND	Area	356	445	506	417	332
	Yield	3.5	3.2	2.9	3.2	2.9
	Production	1,246	1,444	1,493	1,354	965
SET-ASIDE LAND	Area	58	28	27	120	70
	Yield	2.9	3.0	2.7	3.2	2.4
	Production	169	83	73	383	164

(a) Area in thousand hectares, yield in tonnes per hectare and production in thousand tonnes

(b) Production figures and therefore yields have been adjusted to 9% moisture content

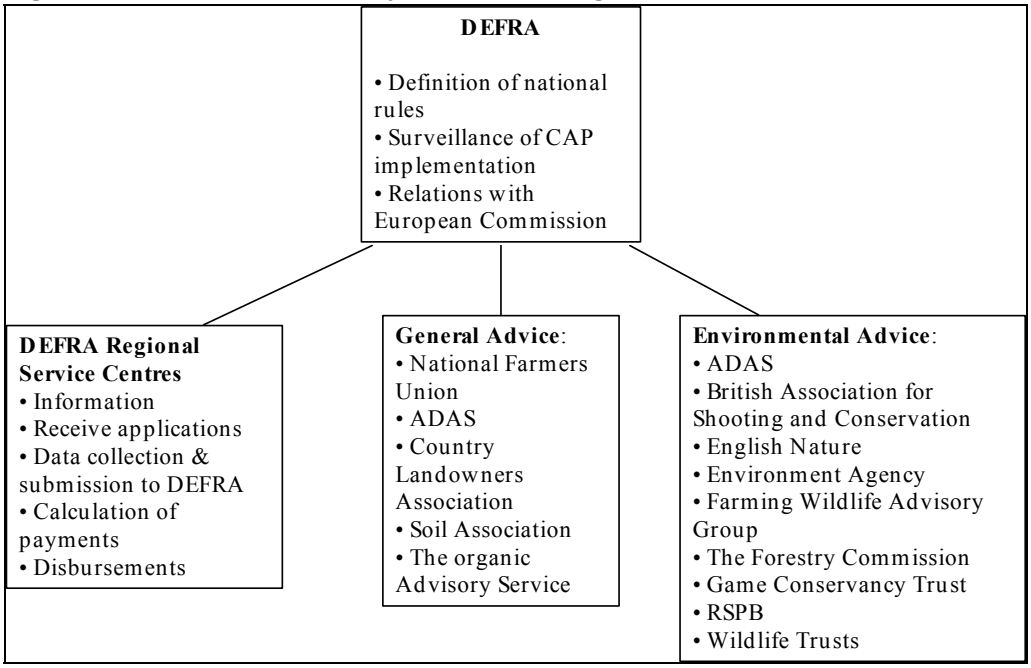
3 REGULATORY CONTEXT FOR IMPLEMENTATION OF SET-ASIDE IN THE UK

3.1 ORGANISATION OF IMPLEMENTATION, MONITORING AND EVALUATION OF CAP AND SET-ASIDE

Set-aside in the UK is administered by DEFRA. Policy and the detailed management prescriptions for the scheme are established by the AAPS section of DEFRA and until now, the applications, screening, monitoring and payments for the scheme have been administered by 9 regional offices. As of May 2001 these have been reorganised into 9 Regional Service Centres which now act as amalgamated payment agencies according to standard government administrative regions (which were reorganised for other economic activities during 1999).

Farmers submit claims for set-aside when submitting their Integrated Administration and Control Scheme (IACS) data for AAPS and livestock schemes (1) on 15th May detailing area by crops and set-aside (from 15th Jan). Field inspections on the crop and the management regime are carried out on 5% of farms between June and September. Results of the inspections are reflected in the report to the Commission. The penalties for incorrect or fraudulent applications are considered severe by farmers and as each of the main schemes has different submission dates and requirements farmers tend to err on the side of caution in calculating their eligible areas.

Figure 4: The Administration of Set-aside in England



(1) IACS also covers Beef Special Premium, Suckler Cow Premium, Sheep Annual Premium, Hill Livestock Compensatory Allowances.

Table 4: Changes in the Set-aside Regulation for England since 1992/3

Season	Types of set-aside	Rate	Major management rules and rule changes
1992-3	No distinctions	15%	Green cover required in most cases until 1 May Cover by natural vegetation , sown cover or unharvestable crop mixture Cultivation and cutting allowed after 1 May
1993-4	Rotational (RSA) and Non Rotational (NRSA)	15% 18%	Non residual herbicides allowed without permission from 15 April on RSA Cultivation and cutting still allowed after 1 May, remaining cover to be destroyed by 31 August NRSA to be cut at least once a year, though 2m strip can be left next to hedge or woodland cutting required between 15 July and 15 August to 10cm or less; cuttings not removed
1994-5	Rotational flexible Guaranteed Voluntary Additional Voluntary	12% 15%	Up to 10% of NRSA cover can be left uncut each year, each such area to be cut the next year Ban on clover, Lucerne and sainfoin on guaranteed set-aside
1995-6	Rotational Flexible Guaranteed Voluntary Additional voluntary	10% 10%	Land in certain agri-environment and farm woodland schemes can count towards set-aside requirement New guaranteed set-aside restricted to countryside access agreements and short rotation coppice
1996-7	Obligatory (=both rotational and non-rotational) Guaranteed Voluntary Additional Voluntary	5%	Cultivation allowed only after 1 July Cutting not allowed if cover already sprayed
1997	Obligatory Guaranteed Voluntary Additional Voluntary	5%	New rules on spraying/cutting and cultivation and lucrative use of set-aside. Extension to the list of crops that can be sown after 15th July for harvest after following 15th Jan. New restrictions on eligibility for new guaranteed set-aside agreements
1998	Obligatory Guaranteed Voluntary Additional Voluntary	10%	New rules for non food crops grown on set-aside land. Eligibility of land that can be set-aside changed. Pigs allowed onto set-aside land from 1st Sept providing there is in no financial or other return.
1999	Obligatory Guaranteed Voluntary Additional Voluntary	10%	Extension of Guaranteed set-aside to Jan 2000. Two year ownership rule removed. Farmers able to leave Guaranteed set-aside without penalty after 31st August in the final year of the agreement and can sow crops on that land from 15th July for harvest after the following Jan. Farmers can set-aside more than 50% of the area claimed for biomass production.
2000/1	Obligatory Voluntary Additional Voluntary Multi- annual	10%	Transfer of set-aside between farmers no longer permitted. New rules for farmers with set-aside in more than one yield region. Rules changed to allow any AAPS eligible land to be set-aside. Multiannual set-aside introduced so that farmers can protect themselves against any decrease in the set-aside payment by setting aside land for 5 years

Source: Agronomic and Environmental Evaluation of Set-aside under EC Arable Areas Payment Scheme, Firbank et al, ITE, 1998 and MAFF

1 The dividing line between compulsory and voluntary set-aside in England is 15.5 ha which, based on average yields is equivalent to production of 92 tonnes cereals pa.

During 2000/1 electronic registration forms for IACS were introduced for the first time. As part of the national agricultural policy evaluation cycle the University of Cambridge have carried out an

economic analysis of Set-aside during 2001. This is not yet published but some of the unpublished results are reflected in this study.

3.2 CHOICES MADE IN RELATION TO COMMUNITY TEXTS

Annex 5 of the Oréade Brèche report details the areas in which Member States have discretion in formulating rules at the national level in respect of CAP reform (1765/92 and 1251/99).

The main areas where the UK has exercised its discretionary powers are in:

- changing the rules for farmers in order provide greater flexibility in how they retire land;
- trying to maximise the environmental benefits of the scheme.

3.2.1 Nature of cover

The period when the set-aside rules apply is from 15 January to 31 August, although from 15 July producers may prepare the land and sow certain crops for harvest the next year. This includes a limited range of horticultural crops, (ornamental bulbs, field grown trees and shrubs, cane fruit, and strawberries).

With a few exceptions, set-aside land cannot be put to any agricultural use. The main exception is that it can be used to grow certain crops for non-food use, subject to rules to ensure that the crops do indeed go for such use. A new exception introduced in 2001 allows farmers registered with a recognised organic certification body, and whose holdings are totally organic, to grow certain leguminous fodder crops on their set-aside land.

Set-aside cannot be used for non-agricultural purposes except under very restricted conditions. In addition, no lucrative use can be made of set-aside unless the activity could equally well take place on a field with a standing crop.

The main management requirement for farmers is that a green cover must be established by either natural regeneration or by sowing a suitable cover. Cultivation of set-aside land is not allowed before 1 July; and if a farmer sprays his set-aside with a non-selective herbicide after 15 April he may not then cut the set-aside between 15 April and 1 July. The cover must be cut short between mid-July and mid-August or destroyed by 31 August. If the green cover is retained, producers must not rent the land out, or sell hay or silage from the set-aside land. They may harvest hay or silage for their own use during this period, or graze their own animals on the land. However, it is possible to obtain an exemption from the cutting requirements for environmental reasons, but if the green cover is left uncut this may not be grazed or cut for hay or silage between 1 September and 14 January.

Type of cover

- bare fallow not allowable
- natural regeneration allowable but not following maize or legumes
- sown cover crop allowable
- permitted cover species include:

1. any grass species and herbs including broadleaved plants and wild flowers
2. a maximum of 5% legumes (clover, sainfoin and Lucerne are not allowed)
3. wildbird cover (ie a mixture of at least 2 crops)
4. non food crops

Timing

- cover must be established before the start of the set-aside season ie 15th Jan and must be maintained until 1st May

Cover Maintenance:

- cutting as often as required but must cut short between 15th July and 15th August or destroyed by 31 August.
- Cuttings must remain on the ground.
- If non selective herbicide is applied after 15th April must not be cut before 1 July
- No specific cutting dates for field margin set-aside but must be cut once a year

The following are the UK prescriptions for management of set-aside cover

Mechanical Cultivation:

- Not until 1 July
- From 15th July ground may be prepared and crops sown for harvest/use after 15th January of the following year.

Environmental Options:

- Additional payments available on enrolment in 'Countryside Access Scheme'
- May apply for an exemption to management requirements on environmental grounds.

3.2.2 Environmental Regulations

From 1996 farmers were allowed to enter land into certain agri-environment schemes (e.g. Habitat Improvement, Nitrate Sensitive Areas or Woodland Grant Scheme) and count this against their set-aside obligations.

There are restrictions on the use of agro-chemicals and protection for environmental features. But farmers may use a selective non-residual herbicide at any time provided the green cover is not destroyed. From 15 April farmers may use non-selective non-residual herbicides, without specific exemption, to deal with serious weed problems, as an environmentally less damaging alternative to cutting or cultivation.

Current EC legislation allows land to be set-aside either as whole or part fields, or as strips which must have a minimum width of 20 metres. From 2000 new regulations allowed set-aside of a minimum 10 metres width along permanent watercourses.

The rules have also been amended to allow land leaving environmental schemes to be set-aside within one year of exit.

For the 2001 season a change to rules allowed following set-aside where no cover was required. The 10m rule introduced in 2000 has been amended to allow certain barriers between the set-aside strip and the watercourse. Multi- annual set-aside will provide for the option of management plans setting out special measures for the management of set-aside to achieve an environmental objective has also been introduced.

Farmers with land inside a Nitrate Sensitive Area (NSA) are encouraged to site their set-aside land within the zone alongside water courses in order to reduce leaching from pesticides and fertilisers. In areas prone to soil erosion farmers are encouraged to place vulnerable parts of fields under fixed set-aside.

Organic farmers or those in the process of conversion registered with a recognised scheme are eligible for some exemptions: sowing green cover using more than 5% legumes and cultivating the land to control weeds from 1 May.

Pesticide and Fertiliser Use

- Non residual herbicides may be used
- Selective herbicides may be used at any time to control problem weeds providing the cover is not destroyed
- Non selective herbicides not before 15th April
- No other pesticides allowed.
- Organic fertilisers and manure may only be applied if from the holding
- No other fertilisers allowed.

3.2.3 Transfer of set-aside

Under article AR26 of the scheme introduced in 1994 farmers were allowed to export their set-aside obligations to other farmers. Initially this was at the expense of a 3% penalty above the rate applying in the importing area, but this was reduced to +1% from 1997/8 and with no penalty if the importing farm is in an environmentally designated area. From 2000 transfer of set-aside between farmers is no longer permitted.

Transfer of set-aside obligations was allowed to:

- A - farms within a 20 Km radius
- B - farms with eligible land on environmental grounds e.g. Nitrate Vulnerable Zones, Nitrate Sensitive Areas, land adjoining Sites of Special Scientific Interest (SSSIs – an governmental nature protection designation) or sites of historic or archaeological interest.

4 SYNTHESIS OF CASE STUDIES

4.1 INTRODUCTION

Initially ERM intended to undertake case studies in both the East and West of England but, on the advice of DEFRA and with agreement of the European Commission, it was agreed that this was not possible due to the Foot and Mouth Crisis which has prevented farm visits to mixed farms and affected areas since February 2001. As a result, this section draws heavily on the East of England case study and on four major studies which have been undertaken on different aspects of set-aside or the Arable Areas Payment Scheme in the UK (see Box). This includes an evaluation of set-aside undertaken by the University of Cambridge on behalf of DEFRA which is unpublished. However, some of the findings have been included in this study.

- The agronomic and environmental evaluation of set-aside under the EC Arable Area Payments Scheme (1995-7), Institute for Terrestrial Ecology, and the British Trust for Ornithology, Firbank et al, 1997. The aim of the study was to identify beneficial and detrimental agronomic and environmental effects of set-aside in England.
- MAFF Economic Evaluation of Arable Area Payments schemes, Nov 1997, Andersons Farm Business Consultants and Dept of Agriculture and Food Economics, University of Reading. This study aimed to evaluate the impact of the AAPS on arable farming in England and Wales. It included an evaluation of effectiveness in controlling production of eligible crops, impacts on economic indicators, farmers attitudes, administration of the scheme, the impact of set-aside and links with agri-environment schemes.
- Economics of Wheat and Barley Production in GB 1998/9 - Carol Asby and Alan Renwick, Agricultural Economics Unit, University of Cambridge which also specifically covered non-industrial set-aside; 168 farms with non industrial crops on set-aside land.
- Evaluation of Set-aside by University of Cambridge of behalf of MAFF, 2000/1, unpublished. Farmers in England and Wales who had participated in the 1998 study were re-contacted to see if they were willing to provide some additional information on set-aside and industrial crops (1) .

4.2 ELEMENTS OF RESPONSES TO QUESTIONS 411 TO 421

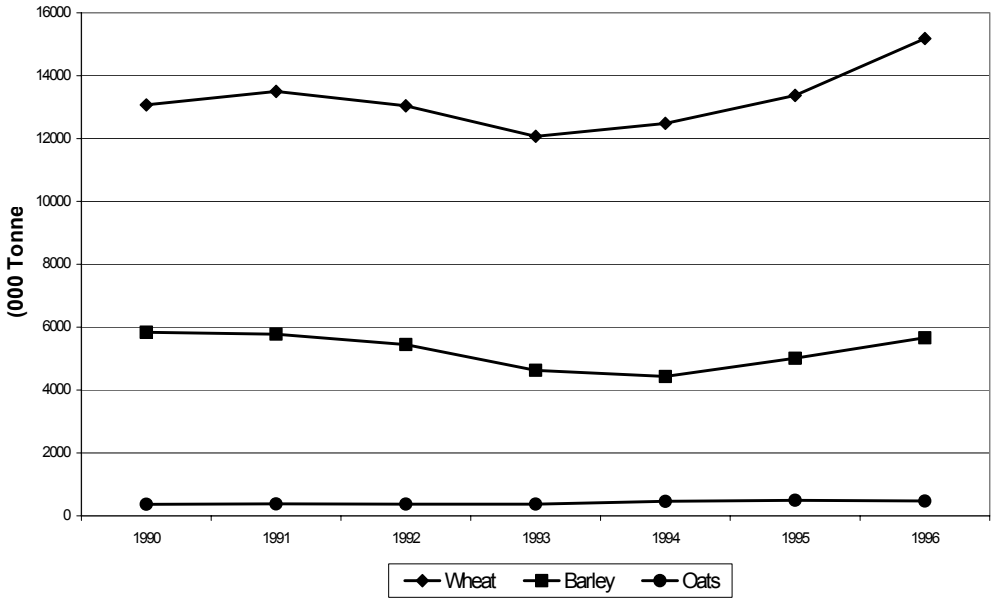
For this series of questions the quantitative analysis is undertaken at European level but this section summarises the qualitative analysis emerging from UK wide studies and the East of England case study.

411 Have obligatory and voluntary set-aside measures contributed in a significant manner to managing arable crop production levels? In particular what have been their contribution to reducing cereals surpluses (and other crops) in the region.

Figure 5 shows that the initial introduction of the reforms led to a reduction in the cereals area and production levels (a fall of 11% between 1990 and 1993) but that the relaxing of the requirements and the continual improvements in yield meant that by 1995/6 production had reached its 1992/3 level. By 1996 yields for both wheat and barley were up by 21% and 8% respectively on 1992 levels reaching 8t/ha for wheat and 6t/ha for barley for the first time.

(1) A questionnaire was devised and posted to these farmers with a letter of explanation. This was followed by a telephone call from an experienced fieldworker, in many cases the same person who had visited them in 1998, who went through the questionnaire

Figure 5: Cereals production in England and Wales, 1990-96 (000 tonnes)



Source: DEFRA

While the overall area under production of cereals has fallen since 1996, the underlying trend in rising yields could explain increasing production levels and imply that set-aside has not been very effective in meeting its production related objectives.

The overall impacts of set-aside on production levels are the result of a number of factors. Average yields may have increased under set-aside due to:

- farmers taking the poorest land out of production;
- the yield enhancing effects on crops which follow;
- the concentration of resources and inputs on the remaining cropping land and more timely rotations.

Yields may have fallen due to:

- a fall in yields in the following crops because of increased weed competition;
- less intensive cultivation on the remaining land in order to reduce costs.

National studies to date (Firbank et al, 1997, AAPS survey 1997) have shown some yield increasing impacts (a large percentage of farmers opting for some fixed set-aside and taking out the worst land, many farmers with rotational set-aside perceiving increased yields in following crops to be a major benefit). However there is little evidence of intensification, extensification or any agronomic problems associated with pests, weeds or disease on set-aside land. Indeed data on nitrogen inputs (see figures 8 and 9) shows a reduction in input use both overall and no clear increase in application rates per hectare. The Cambridge university 1998/9 study concludes that although yields have risen this may be more attributable to climatic factors and overall improvements in cereals production technology rather than set-aside.

The 1998 Cambridge study found that, across the UK, farmers have changed their farm businesses very little as a result of set-aside with about 95% of farmers making no changes to their capital, labour, on farm or off farm practices. The results are summarised in Table 5.

Table 5: Changes to Farm Businesses as a Result of Set-aside

	Increased	Decreased	No change

Machinery investment	2.2	2.5	95.4
Use of contractors	2.2	2.8	95.1
Diversification	3.7	0.3	96.0
Livestock Enterprises	0.9	1.8	97.2
Off Farm activity	3.4	0.3	96.3
Full time labour	0.3	5.6	94.1
Part time labour	0.9	4.9	94.1
Casual labour	1.3	6.6	92.2

Source: Cambridge University, 1998/9

They have adapted set-aside to their own situation and found ways of integrating it into farming systems as follows:

- **Rotational set-aside** has largely been used as a fallow 'break crop' while controlling weeds and providing an early entry to oilseed rape or winter barley to those using the non food crop option to maximise their cropped area.
- **non rotational set-aside** has been used to: increase tractor safety by taking out sharp corners and steep slopes; providing access and amenity and creating wildlife habitats.
- **in Livestock areas** on mixed farms to establish grass and to gain some benefit from the grazing after 1st September.

These results are endorsed by the case study survey in the East of England which shows that the removal of productive land under obligatory set-aside has had a minimal effect on crop production levels on surveyed farms. Commodity prices are still the major factor affecting what and how much is produced. Although the trend in COLP prices has seen a marked decline in recent years, the level of and remuneration from obligatory set-aside have not been sufficiently large to affect a change in crop production levels. In the East of England the soil type (sandy, clay, loamy) and variations of soil type on a holding are one of the most important determinants of the type and amount of set-aside. Overall many the East of England farmers view set-aside as an important "management tool" rather than cap on production levels, allowing them to remove problematic parcels of land from production and most significantly, rely on it for a minimum guaranteed income at a time of fluctuating commodity prices.

However, it should not be concluded that set-aside has had no effect on production. Our farmer survey in the East of England showed that 63.3% of farmers have marginally changed their activities to maintain overall farm incomes the patterns, but the patterns of doing so are not at all clear. About half of these had increased their production of COP crops (oil crops (15.8%), cereals (31.6%) and protein crops (15.8%)) while others reduced COP production (oil crops (21.1%), cereals (57.9%) and protein crops (31.6%)).

412 To what extent has the level of remuneration for voluntary set-aside reinforced the effectiveness of the set-aside measure? Estimate the area of voluntary set-aside which would otherwise have been unproductive in the absence of set-aside?

As with the previous question is not easy to distinguish the impacts of voluntary from obligatory set-aside. This impact must therefore be analysed by other means at the European level.

Across the East of England in general DEFRA has not seen a long term trend towards high uptake of voluntary set-aside. The main reasons given are that the remuneration does not appear to be comparable to cropping the land, unless the farm business is restructuring or downsizing. However where voluntary set-aside is being used this is mainly for management convenience or because existing fields are non economic. This reinforces findings of earlier surveys (AAPS survey 1997)

which found that 60% of farmers had voluntary set-aside for convenience, making up field sizes and because the additional land was not considered agronomically worthwhile.

It appears that some restructuring is becoming common amongst smaller farmers due to declining profitability of production. One stakeholder believes that the situation where smaller farmers are growing 50% cereals, are setting-aside 50% and are getting part-time jobs is increasingly evident, ie. more land is being voluntarily set-aside in an attempt to keep the economics simple.

Table 6: Reasons for Selecting Voluntary Set-aside

	East of England		West of England	
	Average area (ha)	No. Observations	Average area (ha)	No. observations
No reason given	7	1	16	1
Uneconomic for crops/ weed infested	21	8	7	8
To make complete SA fields	14	15	3	7
Management convenience	37	2	11	2
For environmental purposes	0	0	10	1
Countryside Stewardship plan	6	2	0	0

Farmer Survey, Cambridge University, 2000

There has not been a notable uptake in voluntary set-aside in the study area to the extent that it reinforces the effectiveness of the set-aside regulation. Although it was discovered that many farmers do have some small percentage of land in voluntary set-aside, the reasons for this were to avoid potential penalties due to miscalculations of area, rather than for economic or agronomic reasons. Most farmers are still very much "production orientated" in that, for emotional reasons, they do not wish to see more of their land lying unproductive than is strictly necessary. However in 2000-01, the percentage of land which was voluntarily set-aside was notably higher, primarily due to the bad weather earlier this season, which prevented farmers carrying out their normal cropping practices. In this regard, set-aside has proved to be a useful safety net to guarantee a minimum income.

413 To what extent has set-aside been important in the development of non food crop production in the area?

The AAPS survey suggests that there were 23, 700 ha of oil seed rape on set-aside land throughout the UK by 1997. Oilseed Rape is the dominant crop and by 1999 there were nearly 24,500 ha in the East of England alone (see Table 7).

Table 7: Non food use, 1999, ha

Ha	Total AAPS	Camomile	SRC	Linseed	medicinal plants	oilseed rape	rapeseed (farm saved)	sugar beet
East of England	120,851	27.47	28.65	1232.01	34.93	24471	3491	2.07

Source: MAFF AAPS report, 1999

The University of Cambridge 2000 survey showed a similar pattern in the East of England (Table 8) with a dominance of oil seed rape and sown grasses on the surveyed farms. In the West of England the survey did not identify any farmers growing industrial set-aside crops.

Table 8: National Survey of Farmers, Non Food Set-aside

		Oilseed Rape	Linseed	Other	Energy coppice/crop	Wild bird cover	Sown grass
East	(hectares)	304	41	18	0	29	352
	% Total SA	12.4	1.7	0.7		1.2	14.4
West	(hectares)	0	0	0	0	9	111
	% Total SA					1.4	16.6

Farmer Survey, Cambridge University, 2000

This study found the main reasons for growing industrial crops were profit and because farmers disliked seeing good land unproductive (Table 9). Many of those with industrial crops (52%) also reported that it had rotational benefits for the crop which follows. The reasons for choosing not to plant an industrial crop on set-aside were also predominantly profit (88%) and contractual difficulties (33%).

Table 9: National Survey 2000, Reasons for growing industrial crops (multiple answers allowed)

	Profit	Utilise labour	Utilise Machinery	To see land used	Rotational benefits
East					
of those growing ind.crops					
% important/very important	57.1	19.0	23.8	66.7	52.4
% not/less important	28.6	61.9	38.1	23.8	19.0
West					
of those growing ind.crops	Not enough observations to make this a valid analysis				
% important/very important					
% not important					

Farmer Survey, Cambridge University, 2000

Table 10 National Survey, 2000 Reasons for not growing industrial crops (multiple answers allowed)

	Profits not good	Labour constraints	Machinery constraints	Soil type	Difficulty with contract
East					
of those not growing ind.crops					
% important/very important	88.1	10.2	11.9	15.3	33.3
% not/less important	6.8	64.4	71.2	74.6	66.1
West					
of those not growing ind.crops					
% important/very important	72.7	21.2	27.3	24.2	36.4
% not important	18.2	48.5	45.5	42.4	11.9

Farmer Survey, Cambridge University, 2000

Within the study area, there has been no notable uptake of industrial set-aside crops, apart from oil seed rape (about 200 ha). The economics of growing industrial crops on the more marginal lands taken out for set-aside were not considered attractive by most farmers. Problematic cultivation or overlapping harvest times are also cited as reasons for not growing industrial crops.

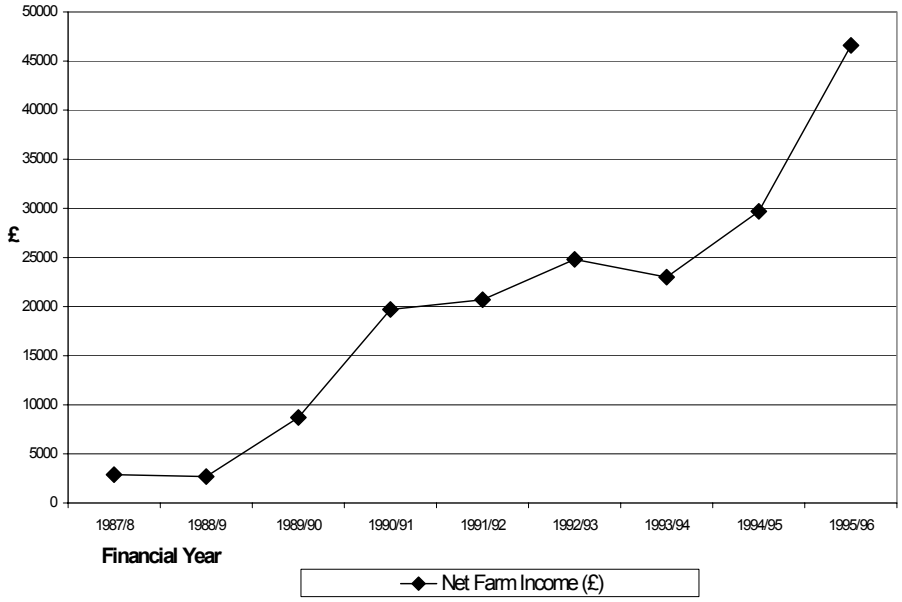
421 Is the budgetary cost of the measure justified in terms of its desired effects?

NB this question has only been addressed by Oreade Breche at European Community level.

422 Is the impact of set-aside on farm incomes of large farmers sufficient for them to modify their choice of crops in order to better respond to market demand.

A number of surveys in the UK have tried to identify the impact of AAPS and set-aside on farm incomes. The national figures for net farm incomes (see Figure 6 show that incomes started to rise in the early 1990s on cereals farms from very low levels in the 1980s, but this has accelerated since the introduction of set-aside. The 1997 MAFF study examined farm incomes by size of farm holding and showed that net farm incomes overall and per hectare almost tripled between 1991/2 and 1995/6. This showed that large farms (>200 ha) and small farms (<80ha) both experienced a growth in earnings of almost 200%, while medium sized farms (80<200 ha) saw slightly lower growth of 130%. The growth was most marked on cereals farms in the Eastern part of the country.

Figure 6: Net Farm Income on Cereal Farms, England 19987-1996, £



Source: DEFRA

The 1997 study also found that some of the additional cash available through AAPS was invested in diversification out of COLPs and into high quality potatoes, outdoor pigs and carrots/parsnips in the East of England. A large percentage of farmers at that time reported that set-aside improved profitability (37%), helped cover costs (33%) or helped in limiting the workload. This benefit of set-aside was particularly noted amongst the 300+ ha size group.

The 1998/9 survey by Cambridge University looked specifically at the impact of set-aside on the financial returns of farm businesses. This showed that 45% reported no change, about 18% some positive change and about the same number negative changes.

For the East of England study we analysed whether set-aside had led to sustained changes in cropping patterns or farming systems to make larger farms more competitive and market oriented. In the case of farmers with 200 ha or over set-aside has not had a sufficient impact on farm incomes to precipitate a trend in change in crops grown in the East of England.

The impact of set-aside on the choice of crops or rotation systems is perceptible but difficult to characterise as no clear patterns emerge. Most large farmers have responded by changing their relative production of different crops with a reduction in cereals (as would be expected) replaced by oil seed rape or natural regeneration/wild bird cover. While there has been some shift from COP crops, particularly to organic production, there has been little diversification out of agriculture altogether. Large farmers appear to have integrated set-aside into their rotational systems. There was unanimous agreement that set-aside/AAPS payments were far to important to farm incomes on these predominantly cereals producing farms for farmers to opt out of set-aside and forfeit cereals payments.

431 Has the existence of set-aside led to a sound crop rotation. What are the alternative crops on the parcels where set-aside has taken place?

Set-aside could be considered to have improved the crop rotation system if it has changed the rotational pattern on rotational set-aside land for the better.

The UK wide surveys show that even since the fixed set-aside option has been available the majority of cereals farmers have opted mainly for rotational set-aside. For instance in the 1997 survey 64% had completely rotational, 8% mixed and only 27% had all fixed set-aside. By the time of the 2000 farm survey the number of farmers with rotational set-aside in both the Eastern (arable) and western (more mixed) areas was over 70% (see Table 11).

Table 11: Type of Set-aside, Percentage of all Respondents

	Rotational set-aside	**Permanent set-aside**
East	72.9	27.1
West	75.8	24.2

Source: Cambridge University Farmer Survey, 2000

Table 12: Reasons for choosing rotational set-aside, England 1997

Reason	**Percentage of respondents**
Fits with rotation	64
Useful as a break	24
Used to control weeds	14
Use for early entry	7
To establish grass	3
No 'poor' land	2
Thought it was obligatory	2
Other	6

Source: AAPS survey 1997

In the 1997 AAPS survey the reasons for farmers to choose rotational set-aside were mainly because it fitted with the rotation (64%) or because it provided a useful break (24%) (Table 12). In the earlier study farmers had identified weed control and resting the land as two of the major benefits of set-aside.

Table 13: UK Study, Perceived advantages of Set-aside

Benefits of set-aside	**Percentage of respondents**
improved yield	22
improved timeliness	35
good break in rotation	40
opportunity for an industrial crop	20
Other	17

Source: Cambridge University 1998/99

Previous surveys have shown that farmers do not have a very rigid rotation system, but this changes with weather conditions, relative prices and soils on different parts of the farm. Generally however, set-aside has changed rotations because they now have a break/industrial crop. This has generally resulted in a fall in land under cereals and a shift to autumn sown crops. In over 70% of cases farmers with rotations have replaced one cereal with natural regeneration of grasses. The set-aside crop generally follows wheat or barley and is followed by wheat, barley or OSR.

In our case study for the East of England we found similar changes in rotational patterns of farmers interviewed. While 40% had changed their rotation, many respondents stressed that this was not solely due to set-aside but also reflected market prices and weather.

In our sample rotational set-aside accounted for 56.5% of the total land area with 70% of farmers putting their land into a combination of rotational and fixed set-aside, but only 20% of farmers practising rotational set-aside on all of their land. Overall we estimate that in 40% of cases the results have been positive. In 43% of cases the effect of set-aside has been neutral and in 16.7% negative. These figures appear to tally with 55% of the sample of farmers reporting that agronomic reasons were the first or second reason behind their choice of crop and that they had opted for rotational set-aside due to:

- agronomic reasons including a fit with their existing rotation system and the need for break crops on heavy clay soils;
- for weed control;
- as an opportunity to introduce industrial crops into the rotation;
- as a fallow after cereals with the expectation that the following wheat crop would have higher yields .

Table 14: Effect of set-aside on the rotation system in the East of England Case study

Type of effect of set-aside on the rotation system	Effect of set-aside negative for a good rotation	Effect of set-aside neutral for a good rotation	Effect of set-aside positive for a good rotation
Classification of farms according to the dominant effect	16.7%	43%	40%

ERM case study

432 Has the location of set-aside plots in the holding led to better agricultural practices.

Better agricultural practices within the framework of set-aside are defined as those resulting in net gains in both agronomic and economic factors. This largely depends on whether the location of parcels of set-aside on the farm favour better cultivation practices.

During the 1997 AAPS survey farmers with fixed set-aside said they had chosen this because the land was unproductive (47%), inaccessible (19%) or already sown to grass (17%). Likewise during the East of England survey respondents were asked how they choose the location of set-aside parcels. Over 73% had chosen to locate fixed set-aside on the poorest land. This includes poor soils, non irrigated, sloping, distant, in the shade of woodlands and squaring off of fields, implying that the principal strategy of farmers with fixed set-aside is to minimise economic losses. From the agronomic point of view in about 40% of cases there has been no change with an overall improvement in another half.

The Cambridge 1998/9 survey investigated the economics of set-aside management and showed an overall reduction in farm costs. The survey showed that 95% of the farms with highest margins from set-aside use no sprays, the major means of clearing cover from set-aside land. Of these 50% had rotational set-aside . However, they may have incurred additional costs in the use of machinery and labour when preparing ground for the next crop. For those in the lowest quarter in terms of margins, over 70% used sprays which on average cost more than £7.20/hectare (EUR 11.85/hectare). Only 22% of the total sample reported seed costs, of which half were using a grass mix used for forage

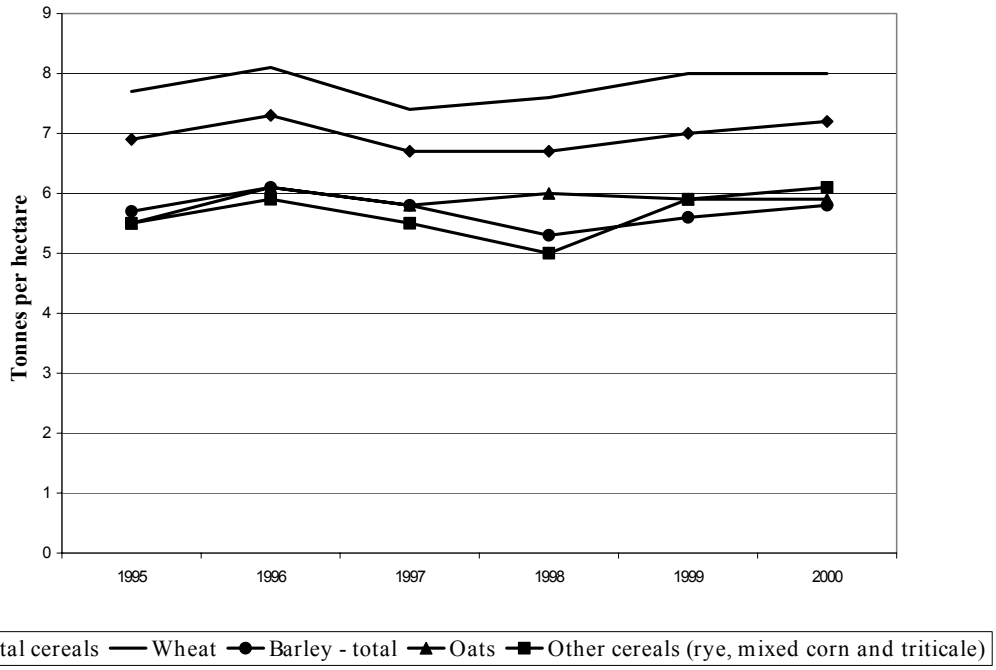
after 1st Sept and another third were planting for game/wild bird cover. Fertiliser costs (including applications of slurry or lime) were recorded on very few farms. However, herbicides were widely used (more than 60%) at an average cost of £7.75/ha (EUR 12.75./hectare) Insecticide use is only allowed with special permission and was scarcely used on any of the sample farms.

Factors associated with environmental management are dealt with in Questions 44.

433 Has the existence of set-aside led to an intensification of production on other parcels of land.

The criteria for assessing this question is whether intensification of production has occurred at a faster rate than would otherwise have been. National statistics and studies show that overall, although cereal yields have shown some fluctuation since 1995, there has been slight upward trend as Figure 7 shows.

Figure 7: UK Yields for main cereal crops



Source : DEFRA

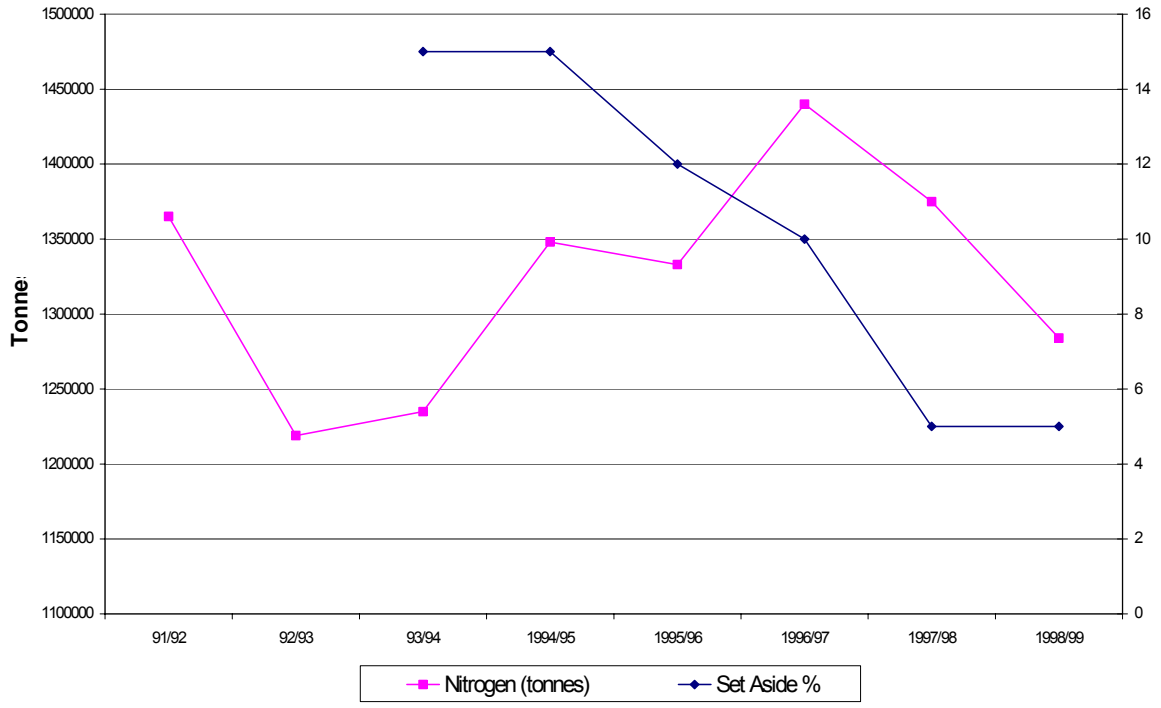
These increases appear to be associated with climatic factors and improved production techniques rather than directly to intensification of inputs or activities on other COP land. Indeed the Economic Evaluation of AAPS done by Andersons Consultants concluded that "there is no evidence from the survey that the existence of set-aside as the main mechanism for production constraint has any appreciable effect on the yield from land which remains in production". In terms of inputs, information from the UK Fertilisers Manufacturers Association (FMA) claim that the general trend in nitrogen application rates since the mid-1980s has actually been downward. The use of nitrogen has fallen with set-aside in absolute terms and average inputs per hectare have not visibly increased since the introduction of set-aside (See Figures 8 and 9). However, the FMA also points out that overall nitrogen usage on some arable crops, most notably wheat, is not in decline, although it is not growing at the rate sufficient to sustain the increase in wheat yields.

As a sidenote, the downward trend in nitrogen usage on arable crops is additionally affected by the cropping mix and set-aside, with applications to grassland being influenced by summer rainfall. There is little evidence that recent economic pressure has influenced nitrogen rates on arable crops.

The Andersons Consultants report concluded "the Scheme has had little effect on farming systems and most farmers' use of inputs has not changed as a result of it."

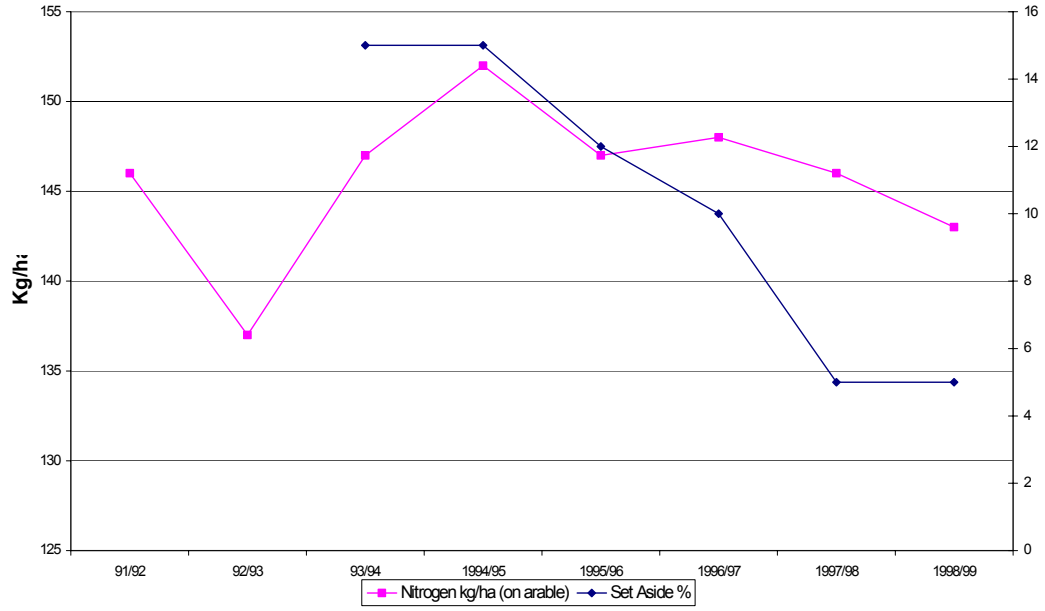
However when considering the increase in yields and the decrease in inputs, the reduction in overall arable land surface must also be taken into consideration. Other considerations include continuing improvement in the efficient usage of fertilisers, and the increase in usage of organic manures which contribute valuable nitrogen, and other agronomic impacts, for example the use of seed able to fix soil nitrogen more readily.

Figure 8: Nitrogen Usage in the UK and the rate of set-aside, 1991-1999



Source: UK Fertilisers Manufacturers Association

Figure 9: Intensity of nitrogen application per hectare in the UK and the rate of set-aside, 1991-1999



Source: UK Fertilisers Manufacturers Association

Within the East of England case study, surveyed farmers had the perception of increasing yields on rotational land.

434 To what extent has the measure impacted on competition by changing the structure of farm holdings

It is very difficult to analyse the impacts of set-aside alone on competition in the sector since so many other variables have changed over the period 1992 to 2000. It is, however, possible to look at adaptation of farm size on the one hand and adaptation of farmers to set-aside on the other hand. By comparing the survey results on the one hand and DEFRA figures on average size of holdings on the other it is possible to determine underlying trends in the size of holdings for the pre- set-aside and post- set-aside periods.

The 1997 AAPS survey found no clear evidence of structural changes to the size of farms: 70% reported no change in farm sizes between 1992 and 1996, 9% reported a fall in size while 22% had grown. The study did find evidence of increasing rentals and land values for AAPS registered land between 1992 and 1996, particularly for short term rents. However, the surveyed farmers did not attribute this solely to AAPS and reported that, if anything, AAPS had slowed down the rate of structural change in the sector, tending to fix pre-1992 production and land use patterns for the cereals sector.

For respondents in the East of England survey some 50% had increased the size of their farms between 1992 and 1999, while only 30% had during the period 1987-1992. The average size of enlargement for the 1992-1999 period was 125 ha. Although no data was available for the earlier period the post set-aside rate of expansion was perceived to be faster. In the case of very large farmers (500ha or over) we found that 67% had increased the size of their farms between 1992 and 1999 adding an estimated 1,100 ha to their previous lands through buying or renting additional land on which to locate set-aside or increase output to maintain previous farm incomes. Several farmers in the survey were also responsible for managing more than one farm of this size.

However, those who had increased the size of their holdings reported that this was not solely due to set-aside (and indeed the rules about siting set-aside on newly acquired land changed from 1966), but rather reflect underlying structural changes in the sector. Other organisations interviewed during the case study reported an observable trend for smaller farmers to simplify their agricultural activities and spend up to 50% of their time on non farming income generation. This trend was not picked up in the survey but may become evident from the 2001 census of population data currently being processed in the UK.

4.3 RESPONSES TO QUESTIONS 422 TO 444: ENVIRONMENTAL PERFORMANCE

This section summarises what is known about the environmental impacts of set-aside in the UK. A more detailed review of the literature is included in the European level report. The major study in the UK to consider set-aside impacts has been a 1997 study by the Institute of Terrestrial Ecology, ADAS and the British Trust for Ornithology. The AAPS 1997 report also reviews research on the environmental benefits (as opposed to farmers perceptions covered in the survey) of set-aside under 4 headings: nitrate leaching; wildlife; public access and landscape.

The ITE study reports on farmers perceptions and detailed field work on vegetative cover and bird populations. ***Overall the report found that set-aside has caused no major problems in terms of pests, weeds or disease and that the impacts have been beneficial for wildlife, particularly for breeding and overwintering birds.***

At a more subjective level the overall environmental impacts of set-aside may be considered beneficial or at least neutral if:

- appropriate provisions are in place at the national level
- farmers are aware of them
- and actively implement them.

During our survey:

- 100% of farmers reported that they either knew the regulations very well (70%) or well (30%)
- 97% of those aware of the regulations felt that they were implementing them.

At least 70% of the sample appeared to consider that environmental improvement was or should be an explicit objective of set-aside (about 20% replied that they thought this was the objective alongside reducing surpluses and maintaining farmers incomes) while many others made suggestions for how environmental outcomes could be improved (see section 5).

Overall ***national management rules*** pertaining to the management of set-aside (soil, water, land) have been well established and implemented. Failure to comply with the rules results in a farmer's payment being reduced by £1 (EUR 1.6) for each 0.01 hectare on which the rules are infringed subject to a minimum of £100 (EUR 160). In the case of environmental features, the reduction is £100 (EUR 160) for each feature on which the requirement is breached. Our regional case study showed that 70% of farmers surveyed were "very aware" about the environmental management regulations on set (30% were "aware)". 97% of respondents applied the rules. In addition to the government advice centres, many UK farming organisations exist which provide an excellent resource base on any matters relating to the environmental management of set-aside. Our regional case study showed that farmers often use such organisations, which include the National Farmers Union and the Farming and Wildlife Advisory Group.

Question 441 - Has set-aside had a significant positive impact on management of soils (erosion, fertility, soil structure, etc…)

In this section any major impacts on soil quality or erosion rates as a result of the location, cropping system and type of cover applied under set-aside have been analysed. It should be noted that although impacts on soil, water and landscape management analysed separately here, they are very much interlinked in reality.

National management rules with regards to soil management (with knock-on effects for water management) on set-aside land were established at the same time as the introduction of the measure. Farmers must comply with these rules in order to receive the set-aside payment. Our regional case study showed that farmers are well aware of these rules and implement them. These rules include: establishing a green cover (to minimise nitrate leaching), limiting the period in which farmers can use non-selective and non-residual herbicides, severely limiting the use of residual, soil-acting herbicides and ensuring that farmers only use agro-chemicals appropriate for the crop or situation as designated by the governmental Pesticides Safety Directorate. Fertiliser, manure or organic waste (apart from home grown slurry, manure or organic wastes) cannot be applied to set-aside land. Farmers are not allowed to use set-aside land as a storage, disposal or dumping ground for any other form of waste.

The introduction of set-aside has had some impact on the management of soils, mainly by reducing soil erosion, rather than improving fertility or soil structure. The main role set-aside has had in soil management is to encourage UK farmers to take marginal land out of production (for example, sloping land more prone to erosion) and to put it into non-rotational set-aside. However this situation has not been primarily driven by a desire by farmers to use set-aside as a tool to improve soil management, rather improved soil management has been a by-product of farmers actions.

The East of England case study suggests that set-aside has changed agricultural practices and led to better soil management on nearly half (46.7%) of the farms visited through removing sloping fields and those prone to erosion. In a further 40% of cases the impacts of set-aside appear to have been neutral. In only 13.3% of cases has the impact on soils actually been negative. Soils quality does not appear to be a major issue in the survey area since of the 75% of farmers who reported also being involved in agri-environment schemes only 17.4% were doing so for soil protection reasons.

Type of behaviour	**Mainly negative changes : behaviour not leading to better soil management on set-aside land**	**No change : unchanged behaviour leading to no change in soil management to pre-set-aside situation**	**Mainly positive change: behaviour leading to improved soil management on set-aside land**
Examples of types of practice linked to soil management allowing classification	• Bare set-aside or poor cover • Application of pesticides on non cultivated set-aside land	• Cultivation of set-aside land for non food use • Correct management of set-aside • Fixed set-aside in areas without erosion risk	• Sowing of plants enriching set-aside lands • No pesticide use • Fixed set-aside on areas susceptible to erosion • long term planting (forestry) • Farmer participating elsewhere in agri-environment measures to protect soils
Classification of farm according to most common practices	13.3%	40%	46.7%

Question 442 – Has set-aside had a significant impact on the improvement of water management (pollution, water resources management, flooding etc)

This question attempts to assess whether set-aside has had positive, neutral or negative impacts on water quality and management in the UK. The major ways in which set-aside may affect resources are through:

- usage of water as an input: however not a single case of irrigated set-aside was found in the study area and this finding is endorsed by national studies;
- the inputs (nitrogen and pesticides) used on the land and how these leach into water courses;
- the management prescriptions for set-aside alongside water courses.

National management rules relating to water management on set-aside land have been well established (some of these also pertain to soil management, such as green cover establishment to reduce run off, limited use of herbicides and inputs.) Around permanent watercourses, farmers are obliged to leave a minimum buffer zone of 10 metres, to reduce the risk from accidental run-off of pesticides and fertilisers. Our regional case study showed that farmers are well aware of these rules and implement them. (Watercourses are defined by the DEFRA Code of Good Agricultural Practice).

At the national level, set-aside has had some impact on the positive management of water resources, mainly due the fact that farmers have chosen to locate a percentage of their set-aside alongside water courses. However, under UK law (Control of Pesticides Regulations 1986), the application of certain pesticides is only allowed where a buffer zone between the fields and water courses has been introduced. It is therefore fair to say that the location of set-aside along side water courses has been a pragmatic step by many farmers, meaning that they can simultaneously comply with AAPS and pesticides usage regulations, rather than a conscious decision to improve water management.

In our case study for the East of England our assessment of the overall impacts of set-aside on water management suggest that in 40% of cases set-aside has improved water management and the quality of water courses and in the remainder of cases the impact has been neutral. No cases of negative impacts were identified. The positive cases have mainly been where farmers have opted for fixed set-aside alongside water courses (30% of cases) or through a reduction in use of chemical sprays for the management of set-aside. While 57% of respondents use chemical sprays, 80% use mowing as a form of management on set-aside somewhere on their farm.

Type of behaviour	Mainly negative changes : behaviour not leading to better water management on set-aside land	No change : unchanged behaviour leading to no change in water management to pre-set-aside situation	Mainly positive change: behaviour leading to improved water management on set-aside land

Examples of types of practice linked to water management allowing classification (to be validated by interviewer according to dominant characteristics of farming in the region)	• Application of pesticides or nitrates on uncultivated set-aside land • Irrigation of set-aside land	• Cultivation of set-aside land for non food use • Correct management of set-aside	• fixed set-aside in humid zones and along water courses • Sowing of plants enriching soils on set-aside land • no irrigation of set-aside land • no usage of pesticides on set-aside land • farmer participating agri-environmental measures elsewhere to protect water
Classification of farm according to most common practices (single category)	0%	60%	40%

This matrix examines the impacts of set-aside in comparison to the impacts if the land had been cultivated.

By the time of the 1998 survey, an overall environmental benefit was expected as a result of reduction in pesticides and nutrients on set-aside land, but a 'halo' effect was also anticipated as a result of more intensive cultivation on land which had not been set-aside. The 1998 survey showed that while initially there has been a slight reduction in average input use per hectare, now there is little difference in the rate of application.

A Wye College study of 1997 (1) reports studies of nitrate leaching on rotational set-aside. This shows that rotational set-aside on chalky and clay soils have shown very diverse results according to local soil composition, rainfall level and distribution. Webster and Goulding (1995) (2) suggest natural regeneration of cover on land under rotational set-aside does lead to a significant decrease in the level of nitrates in drainage water off the field and lower levels of nitrate concentration in drainage water continue in the following year under winter wheat test crop. Vonboberfeld and Jasper (1994) (3) equally suggest that sowing rye grass or grass sown cover in a ploughed field can lead to significant reductions of leaching but require higher nitrogen applications in the succeeding crops. Thus set-aside can reduce nitrogen pollution but much depends on the set-aside management and local conditions. Magid, Christensen and Skop, 1994 suggest that well managed set-aside on clay or chalky soils can also lead to reduced chloride, sodium and phosphate use.

Question 443 – Has set-aside had a significant impact on the improvement of landscape management ?

The notion of a significant improvement in the management of the countryside is difficult to assess objectively but generally set-aside might be considered to have had an acceptable impact where:

- the appropriate environmental regulations are in place and respected;
- there is an absence of observable negative impacts on the countryside.

(1) Possible Options for the Better Integration of Environmental Concerns into Support for Arable Crops, F Burch, B Green, J, Mitchley, C Potter, Environment Department, Wye College, University of London, May 1997

(2) Effect on one year rotational set-aside on immediate and ensuing nitrogen leaching loss, Webster P and Goulding K, Plant and Soil, Vol 177 pp203-209

(3) Effects of rotational fallows (set-aside land) on subsequent winter wheat. Vonboberfeld W and Jasper J, 1994, Journal of Agronomy and Crop Science, Vol 173 No 2 pp 125-134

National management rules applying to landscape features on set-aside are well established and include the requirement not to "damage, destroy or remove any of the following features which are sited on or immediately next to land which is set-aside: vernacular (traditional buildings, stone walls, hedges, trees including hedgerow trees, watercourses, ditches, ponds, pools, lakes and archaeological remains". There are also particular rules relating to hedge management. Our regional case study showed that farmers are well aware of these rules and implement them.

The ITE study in 1997 found little perception amongst farmers that set-aside improves landscape quality. The AAPS 1997 study found that set-aside land gives opportunities to re-establish hedges which have disappeared through past intensification, but that this had not really been a priority for farmers. 16% of respondents in the 1997 survey felt that set-aside land looked untidy. According to the authors the main reason for the unkempt appearance of the land is the choice of natural regeneration as set-aside cover since this causes the growth of volunteer plants of recent crop or annual species, many of which are small and fast growing. Therefore the cover on fallow lands looks scruffy. The study found that a better means to improve landscape appearance is to sow a grass cover but this practice has been adopted by relatively few farmers (28% in the 1997 sample).

In contrast to this analysis our case study respondents suggests that in all but one case (96.7%) the impacts of set-aside are now positive on the landscape in the East of England, while in a single case the overall impact on landscape is considered negative. This may be attributed to the fact that farmers have learnt how to manage weed cover on set-aside land and a relatively high percentage (50%) were interested in wild bird cover for game shooting. This uses a mixture of grasses and is generally viewed as more attractive and even welcome visual relief in the arable areas of Norfolk and Suffolk which have been described as an arable desert by environmental NGOs. The sample may have been biased to those with high environmental awareness since some 65% of respondents were also involved in agri-environment schemes with landscape enhancement objectives.

Type of behaviour	Usage of set-aside land with change of practices having a predominantly negative impact on the landscape	Usage of set-aside land practices having no effect on the landscape
Examples of types of practice linked to landscape	Bare set-aside; Poor management of set-aside; Strong concentration of set-aside lands in a single zone	Well managed set-aside Cultivated set-aside
Classification of farm according to most common practices	3.3%	96.7%

In addition to this,

- 80% of respondents in East Anglia had not concentrated their set-aside on one area of their farm;
- of the 13% that did, 75% did not have set-aside land adjoining set-aside of their neighbour; and
- 100% of respondents did not agree that the set-aside had an abandoned character.

Question 444 – Has set-aside had a significant impact on the conservation of biodiversity?

This question is very difficult to evaluate without detailed field work since the baseline data against which to judge maintenance or enhancement of biodiversity is completely lacking. As a result biodiversity impacts of set-aside are mainly covered in the European level literature review and only qualitative comments are dealt with in this report.

National management rules relating to biodiversity conservation on set-aside land are in place which have had environmental benefits - however the general conclusion from a number of different studies is that these rules could be improved and much better integrated with existing and

future agri-environment schemes to maximise the potential biodiversity conservation benefits. Apart from the rules mentioned above (eg. requirement to establish a green cove and reduced use of herbicides), the rules relate to what farmers can rather than cannot do on set-aside. Two thirds of respondents in all recent studies on set-aside in the UK have perceived that it has environmental benefits.

The management rules include allowing farmers to sow a 'wild bird cover' (mix of two or more crops) on set-aside; allowing exemptions to management (for environmental reasons - eg. cutting the green cover later to benefit particular birds); allowing farmers to sow higher levels of legumes to create a feeding area for over-wintering migratory geese. In addition advice is given to farmers by DEFRA on where to site their set-aside in order to achieve wildlife benefits.

Fixed set-aside is generally expected to be more beneficial for the environment than rotational. However, across the UK as a whole 70% of farmers have some rotational set-aside. This may also provide environmental benefits since it may offer the availability of whole fields rather than simply field margins. Whole fields of over wintered stubble have been found particularly beneficial for birdlife, particularly in areas where farming in general is moving towards autumn sown crops.

Table 15: Type of parcels put in set-aside

	Whole field	Part Field	Field margin	No. observations
	%	%	%	
East	77.7	17.3	4.9	85
West	76.3	21.8	1.9	46

Farmer Survey, Cambridge University, 2000

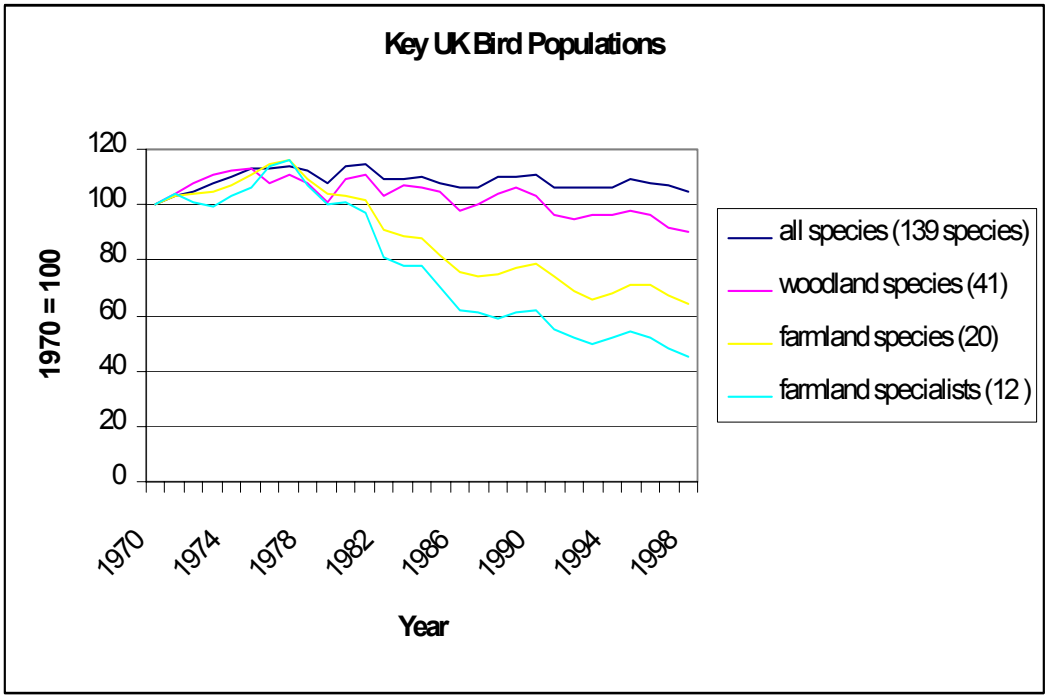
In the ITE survey (1997) 40% of farmers with rotational and 60% with fixed set-aside reported benefits. These were mainly increases in birds and hares and to a lesser extent butterflies and wildflowers. The study also found " strong tendencies for the greatest increases in wildlife to be reported by farmers who also considered wildlife and environmental issues important in siting set-aside. The field surveys undertaken during the study also found that while set-aside rarely results in plant communities of conservation interest it generates substantial benefits for breeding and wintering birds and potentially to other animal groups. Surveys found farms with smaller and more diverse structures of fields and semi-natural vegetation richer in species.

The structure of fields was also found to influence the number of skylarks, granivores and game birds. In particular, set-aside fields with a mosaic of bare patches and green cover appear to have been preferred. These conditions are mainly found on rotational set-aside and in the earliest years of non rotational set-aside. Thus it appears that set-aside offers the potential to provide food resources for farmland birds which have become increasingly scarce over the last 30 years, although it is difficult to prove this statistically.

These findings are backed up by other studies such as the 1998/9 Economics of Cereal Production study (op cit). This found that there had initially been problems with the implementation of set-aside and the environment, particularly in relation to the timing of mowing which was disturbing ground nesting birds. However, the survey showed the following percentages adopting environmental practices which go beyond regulation requirements:

- 15% controlling spraying
- 17% timing grass mowing
- 20% providing wildlife food or cover

Figure 10: Trend in Key UK Bird Populations



Source: DEFRA on-line Economics and Statistics pages (March 2001)
http://www.defra.gov.uk/esg/work_htm/publications/cf/auk/current/chart10-1.xls

As Figure 10 shows, although there remains a declining trend in farmland bird species and specialists in the UK, it can be seen that this decline has slowed since obligatory set-aside was introduced.

The farmers interviewed in the East of England case study were generally aware of biodiversity and wildlife issues and included a number of keen environmentalists and one demonstration farmer. 10% cited environment as one of the priority criteria for selecting crops. Overall some 40% of farmers reported positive biodiversity benefits leading to increased populations of hares, deer, game birds (especially partridge), skylarks, red wing, finches, migratory birds and owls. However, the direct causal link to set-aside is difficult to disentangle from the effects of other agri-environment schemes particularly since 75% of respondents were involved in agri-environment schemes and three quarters of these were doing so specifically to enhance biodiversity.

To conclude, the impact which set-aside has had an improving soil, water, landscape management and on biodiversity conservation, has, in most cases not been particularly significant. Where actions have been taken which have improved management, the main reasons for these actions have not typically been a desire to improve the environmental conditions. In other words, improvement in soil, water, landscape or biodiversity conservation conditions under set-aside has typically been a by-product of farmers actions, not the main focus. However this is not true of situations where farmers are undertaking agri-environmental schemes (which have specific environmental management aims) which count towards their set-aside obligation. In the case study 77% of respondents were taking part in an agri-environmental scheme.

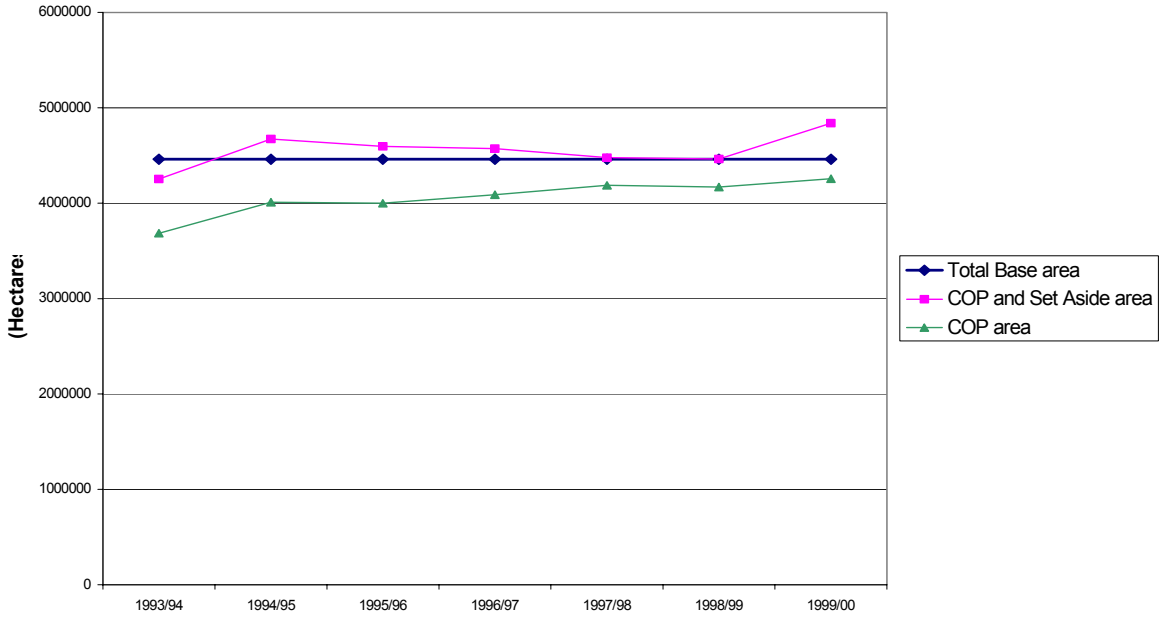
At a more general level 15% of respondents reported that they were surprised by how much set-aside has made them think about environmental management. However, about 30% of the sample reported that the current inflexibility of the rules has limited farmer's ability to manage set-aside for greater environmental benefit. The minimum size and width of set-aside parcels, the lack of flexibility in mowing regimes and the lack of ability to use selective herbicides to remove very specific weeds were all cited as limiting factors for biodiversity. Over a quarter of farmers surveyed

volunteered that they would rather see a system of CAP without set-aside but with environmental cross-compliance to ensure wider environmental benefits and a better fit with other agri-environment schemes.

4.4 RESPONSES TO QUESTIONS 451 AND 452 - EFFECTIVENESS, ADMINISTRATIVE AND OTHER CHANGES

There appears to be a slight degree of slippage of the base area restriction in the UK overall - as Figure 11 below illustrates. This results in an erosion of the efficiency of the set-aside system due an increase over the total base area of COP and set-aside (which can be mostly attributed to an increase in COP area).

Figure 11: COP and Set-aside area versus Total Base Area



Source: EC

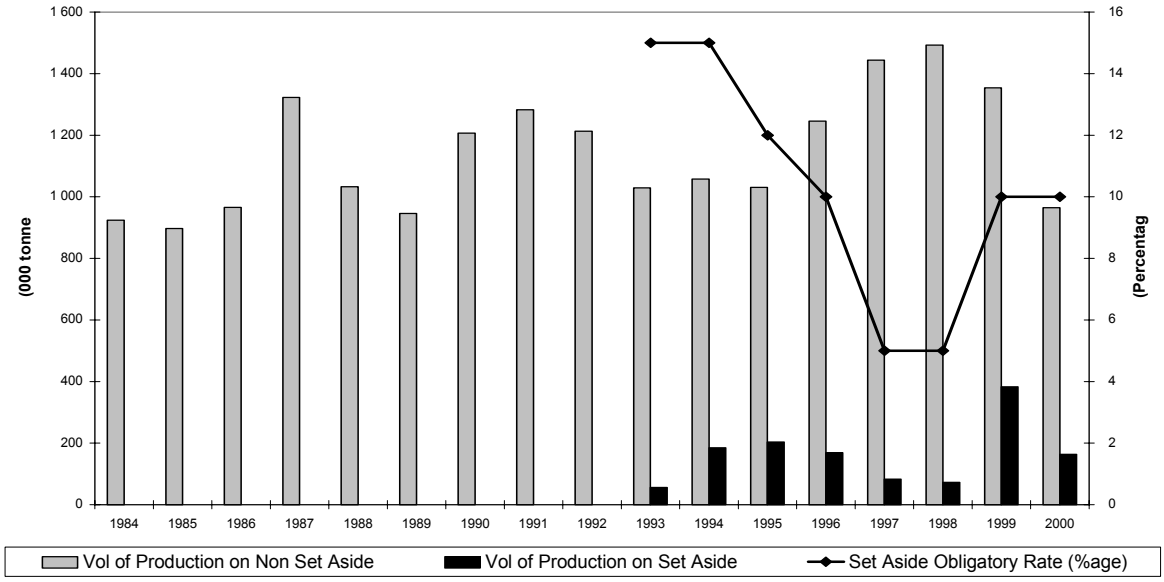
Industrial Set-aside

In terms of problems with implementing industrial set-aside, this survey managed to find very little written comment on the national situation. As discussed under Question 413, the main industrial crop grown on set-aside in the UK is oilseed rape, particularly by farmers over 100 hectares in size. The AAPS survey of 1997 found that only 8% of respondents surveyed grew industrial crops (oilseed rape) and the regional case study for this survey found that only 20% interviewed chose to grow industrial set-aside. Of those that chose not to grow industrial set-aside, 77% chose not too because of profit reasons (ie. felt it more profitable to take set-aside payment rather than oilseed rape revenue), 33% said that there were too many constraints and 88% also cited other reasons including using set-aside "for environmental purposes", " for organic conversion", "for wild bird cover", "not profitable against set-aside payment", " too much hassle", "extra work for marginal returns". For those that did decide to grow it, all claimed to do it for agronomic reasons, and 38% cited profit reasons too. For those who had grown it but had decided to stop, the main reasons given were lack of suitable returns in relation to the effort required to grow it (particularly in the case of linseed, which was found to be particularly problematic to grow and clashed with the harvesting of main cereal crops) and compared to set-aside payment rates.

The following Figures 12, 13 and 14 detail UK oilseed rape production, area and yield.

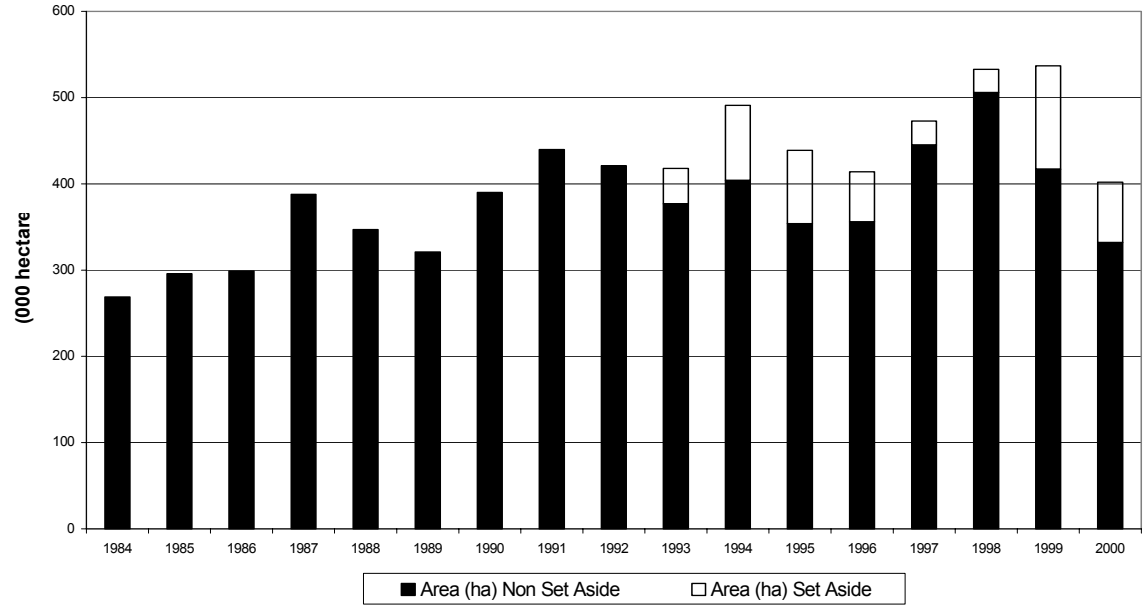
Figure 12 details oilseed rape production against obligatory set-aside rate and shows that there appears to be a visual correlation inverse correlation between the rate of obligatory set-aside and oilseed rape production on set-aside land. This is not the case in 2000, where both production on set-aside and non set-aside land fell, for other reasons.

Figure 12: UK Oilseed Rape Production (000 tonnes) and Obligatory Set-aside rate



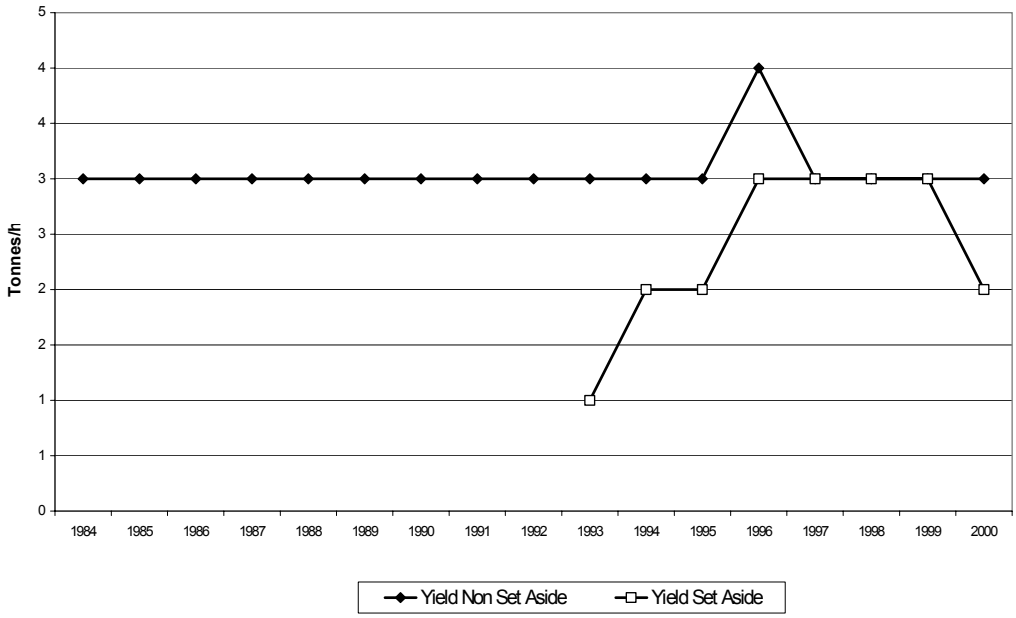
Source: DEFRA on-line economics and statistics service

Figure 13: UK Oilseed Rape Surface Area (000 ha)



Source: DEFRA on-line economics and statistics service

Figure 14: UK Oilseed Rape Yield (Tonnes/ha)



Source: DEFRA on-line economics and statistics service

Administrative Concerns

The UK 1993 Cereals survey showed that the majority of farmers were against set-aside but it was perceived as more beneficial to most farmers than addressing the causes of oversupply - high prices - directly.

By the time of the 1998 survey and 2000/1 Set-aside Evaluation the vast majority of farmers appeared to be positive about set-aside (by 1998 only 21% wanted to see it abolished) and to have adapted by incorporating it either into their rotational system or setting aside less productive land on a semi-permanent basis. The vast majority of farmers reported that set-aside has little or no impact on the financial returns of the business.

The 1997 ITE study found that most farmers interviewed found the documentation provided on set-aside comprehensible (but would have liked the application forms to be simpler) but 70% criticised the frequent changes in the rules. However, farmers were generally happy with the scheme, realising that the procedures that they have to comply with are appropriate for the level of payments involved.

This view also emerged from the East of England case study where the survey showed that while 100% of farmers now find set-aside indispensable, 53% were not happy about some aspect of the scheme. Some respondents have had some initial difficulties with the administrative aspects of set-aside but that these are relatively minor in terms of the detailed workings of the scheme, for instance:

- 10% had disagreements with DEFRA about calculations of small areas;
- 13.3% found the minimum sizes of parcels a problem since they are difficult to measure accurately and the penalties for making a mistake are high, and the overall percentage required is sometimes difficult to fit for farmers with smaller fields;
- 33.7% found the general level of bureaucracy burdensome; and
- 13.3% found lateness of announcement on rates an occasional problem.

In relation to the question of bureaucracy the issue most frequently raised was the apparent inflexibility of the scheme, to the detriment of the smaller farmer (with rules being seen in black or white) and the past lack of an appeals system. An appeals system is now being set up.

However, there is also recognition on the part of farmers and their representative organisations interviewed during the study that some level of scrutiny is necessary in order to have an audit trail and in order to preserve public interest. While the derogation process was described as formal and time consuming, several respondents commented that DEFRA had been efficient and flexible when presented with a derogation from a farmer. It appears that a common complaint is the time taken to get a derogation from the Department. This was also mentioned as a factor which may be deterring people from being more environmentally imaginative with their set-aside, instead of pursuing easy options.

One unresolved issue remains disparities between farmers maps and DEFRA maps used to calculate AAPS figures. This has led to cases of farmers being taken to court. A number of farmers also reported that when the Ministry initially introduced electronic submission of forms they had found the process almost impossible.