Summary

1. June Survey statistics indicate that the area of uncropped land (set-aside and fallow/GAEC12) in England fell by around 70 thousand hectares (14%) between 2006 and 2007 to 424 thousand hectares. About 15 thousand hectares of this is explained by an increase in the area of industrial crops grown on set-aside.

2. Using the Single Payment Scheme data it is possible to categorise uncropped land as rotational (i.e. uncropped for the current year only) or non-rotational (i.e. uncropped for two or more years). The area of rotational uncropped land fell by 15% between 2006 and 2007, compared to 8% for non-rotational. The area in field margins and corners increased by 6%, although this figure should be treated with caution as not all such areas have to be separately recorded.

3. Around a third of the non-rotational uncropped area in 2007 had only been out of production for two or three years. A quarter had been out of production for ten or more years. This suggests that the distinction between rotational and non-rotational uncropped land is somewhat blurred in practice, with the result that some of the more recent non-rotational land may be easily returned to production.

4. A telephone survey of participants in the Farm Business Survey was used to produce estimates of the intentions for 2008. Results suggest that, despite the late announcement of the zero set-aside rate by the European Commission, the area of uncropped land will reduce by just over 50% (95% confidence limits 48-58%). The rotational area is expected to fall by 85% (95% limits 79-91%), and the non-rotational area by 35% (95% limits 27-44%). The area in margins and corners of fields will fall by 13% (95% limits 6-20%), with greater falls on farms not in environmental stewardship schemes.

The FBS results also suggest that most farmers have reduced their cropped areas as much as they intend to, with only 19% of those with remaining uncropped land intending further reductions in future years. However, we cannot rule out the possibility that FBS farms are better informed and more proactive than the general population, in which case there might be a smaller reduction than the FBS results suggest in 2008 and a greater loss in subsequent years. Results from other sources, particularly the December Survey, will be important in determining whether this is the case. Crop forecasts produced by ADAS based on responses from a panel of farmers suggest a 40% drop in uncropped land.
1 Introduction

The Agricultural Change and Environment Observatory has published two reports on set-aside presenting results based on data up to the 2006 harvest year\(^1\). The second of these was published in draft form in June 2007 but was rapidly overtaken by events with the European Commission’s announcement of a zero rate of set-aside for 2007-08.

The possibility of large areas of uncropped land returning to cultivation as a result of the combination of the zero rate and very high cereal prices, led to concern that the environmental benefits described in our previous reports would be lost. Following discussion with the Environment Agency and Natural England (Defra’s statutory advisors), and consultation with a range of other organisations, Hilary Benn, the Secretary of State for Defra, announced on 26\(^{th}\) September 2007 that the Observatory would be leading a programme of monitoring to establish the environmental impact of the changes. The programme, which is summarised in Annex 1, aims to ensure that Ministers have the improved evidence base needed to make policy decisions that will mitigate the impacts on Defra’s environmental objectives.

The purpose of this document is to publish the first results from that programme of environmental monitoring, in the form of an analysis of a telephone survey conducted in November and December 2007. We will also provide some results from set-aside data relating to the 2006-07 cropping year, which was not available at the time of the earlier publication.

\(^1\) Reports 1 and 8 http://statistics.defra.gov.uk/esg/ace/research/published/index.htm
2 Changes in area of uncropped land in 2007

2.1 June Survey estimates

The June Survey estimates published on 26th November 2007 are shown below in table 2.1. Because of inconsistencies in the way set-aside is recorded by farmers and processed by the RPA, some of the figures may show misleading trends. In particular, the total area of formal set-aside should be much more consistent than these figures suggest. However, the total uncropped area estimate should be reliable and comparable over time, as farmers record this accurately; it is the split into set-aside and fallow/GAEC 12 that caused confusion in the first couple of years of the SPS, both on the June Survey and SPS forms. Similarly, the figures for industrial crops on set-aside are accurately recorded via the SPS form and comparable over time. The total uncropped area is estimated to have fallen by 70 thousand hectares between 2006 and 2007, with 15 thousand hectares of this fall explained by the increased area of industrial cropping on set-aside land.

Table 2.1: 2007 June Survey estimates. Figures in italics may show misleading trends, because of inconsistencies in whether land is recorded as set-aside or fallow.

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>% change 2006 - 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total formal set-aside</td>
<td>458.8</td>
<td>392.0</td>
<td>366.0</td>
<td>-6.6</td>
</tr>
<tr>
<td>Industrial crops on set-aside</td>
<td>72.0</td>
<td>76.5</td>
<td>91.4</td>
<td>+19.5</td>
</tr>
<tr>
<td>Unproductive formal set-aside</td>
<td>386.7</td>
<td>315.5</td>
<td>274.7</td>
<td>-12.9</td>
</tr>
<tr>
<td>Fallow/GAEC12 land</td>
<td>143.6</td>
<td>178.1</td>
<td>148.8</td>
<td>-16.5</td>
</tr>
<tr>
<td>Total land out of production, excluding industrial crops.</td>
<td>530.3</td>
<td>493.6</td>
<td>423.5</td>
<td>-14.2</td>
</tr>
</tbody>
</table>

Notes: the total land out of production is a survey estimate and not therefore subject to the SPS recording issues, but it is subject to survey error of around +/-9 thousand hectares (95% confidence limits).

2.2 Detailed analysis of 2007 SPS data

More detail on the areas left out of production as set-aside or GAEC12 (‘fallow’ or ‘voluntary set-aside’) can be obtained from the detailed field-level information held on the Single Payment System (SPS) database. In particular, by matching SPS data between different years, it is possible to subdivide the area out of production into the following categories:

- Field margins and corners.
- Non-rotational set-aside/GAEC12.
- Rotational set-aside/GAEC12.

See below and Annex 2 for more information on the methods used.

It should be noted that the areas of uncropped land recorded in the SPS dataset are somewhat lower than those recorded in the June Survey (by 56 thousand hectares in 2006 and 28 thousand hectares in 2007). This is partly because field
Margins in agri-environment schemes do not have to be separately recorded on the SPS form. However, there has probably also been a degree of under-recording of the GAEC12 area by farmers, particularly in 2006 as this was the first year in which this land was separately recorded.

Table 2.2 splits the uncropped area into field margins & corners, non-rotational areas which were also uncropped in 2005-06, and rotational areas that were cropped the previous year. For more detail on these definitions see the table notes and Annex 2. The comparisons with the 2006 figures are interesting. Both non-rotational and rotational areas have declined, but the percentage loss is greater for rotational areas (15%, compared to 8% for non-rotational). The amount of non-rotational uncropped land lost is perhaps higher than expected and more work will be done to investigate the type of land lost and the reasons for it (see section 4 for early thoughts). The area in field margins and corners increased by 6% between 2006 and 2007, and this may be an underestimate, since these figures will exclude many agri-environment scheme margins.

Table 2.2: 2007 uncropped set-aside and fallow sub-divided into margins/corners, non-rotational and rotational by GoR (thousands of hectares and as a percentage of the total uncropped area). The final row shows the equivalent 2006 figures for comparison.

<table>
<thead>
<tr>
<th>GoR</th>
<th>Total area uncropped</th>
<th>Field margins &amp; corners</th>
<th>Non-rotational</th>
<th>Rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thou ha</td>
<td>Thou ha</td>
<td>Thou ha</td>
<td>Thou ha</td>
</tr>
<tr>
<td>NE</td>
<td>16.2</td>
<td>1.2</td>
<td>6.1</td>
<td>8.9</td>
</tr>
<tr>
<td>NW</td>
<td>10.5</td>
<td>1.3</td>
<td>6.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Y &amp; H</td>
<td>44.3</td>
<td>5.7</td>
<td>18.3</td>
<td>20.3</td>
</tr>
<tr>
<td>E Mids</td>
<td>74.5</td>
<td>9.3</td>
<td>28.3</td>
<td>37.9</td>
</tr>
<tr>
<td>W Mids</td>
<td>33.7</td>
<td>5.2</td>
<td>14.7</td>
<td>13.8</td>
</tr>
<tr>
<td>Eastern</td>
<td>103.2</td>
<td>12.8</td>
<td>49.0</td>
<td>41.4</td>
</tr>
<tr>
<td>SE</td>
<td>65.0</td>
<td>6.7</td>
<td>34.4</td>
<td>24.0</td>
</tr>
<tr>
<td>SW</td>
<td>48.0</td>
<td>5.5</td>
<td>23.1</td>
<td>19.4</td>
</tr>
<tr>
<td>England 2007</td>
<td>395.5</td>
<td>47.8</td>
<td>179.9</td>
<td>167.8</td>
</tr>
<tr>
<td>England 2006</td>
<td>437.7</td>
<td>45.1</td>
<td>194.6</td>
<td>198.0</td>
</tr>
</tbody>
</table>

Notes: Field margins & corners refers to areas occupying less than 25% of the field and less than 4ha.

‘Non-rotational’ means land also in set-aside/GAEC12 in the previous cropping year.
‘Rotational’ refers to land not in set-aside/GAEC12 in the previous cropping year.
These figures reflect areas recorded out of production in the SPS database and are below the June Survey estimates for the reasons discussed above.
2006 figures are roughly comparable, but are subject to greater uncertainty due to the absence of a separate code for fallow land in 2005.

2.3 Regional distribution of set-aside and fallow

Table 2.3 shows the area in uncropped set-aside and in GAEC12 in each Government Office Region (GoR). This is also expressed as a proportion of the arable area, defined as the area on which SPS entitlements are paid, excluding permanent pasture. Both the absolute and relative area not in production tend to
be highest towards the East of the country, reflecting the distribution of arable land and the tendency for dairy farmers to set the minimum amount of land aside.

Table 2.3: 2007 uncropped set-aside and GAEC12 land (‘fallow’) by GoR (thousands of hectares and as a percentage of the SPS arable area).

<table>
<thead>
<tr>
<th>GoR</th>
<th>SPS arable</th>
<th>Uncropped set-aside</th>
<th>GAEC12</th>
<th>Total area out of production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thou ha</td>
<td>Thou ha</td>
<td>%</td>
<td>Thou ha</td>
</tr>
<tr>
<td>NE</td>
<td>196.4</td>
<td>11.0</td>
<td>5.6%</td>
<td>5.1</td>
</tr>
<tr>
<td>NW</td>
<td>183.4</td>
<td>8.4</td>
<td>4.6%</td>
<td>2.1</td>
</tr>
<tr>
<td>Y &amp; H</td>
<td>607.0</td>
<td>31.3</td>
<td>5.2%</td>
<td>13.0</td>
</tr>
<tr>
<td>E Mids</td>
<td>858.3</td>
<td>50.0</td>
<td>5.8%</td>
<td>24.5</td>
</tr>
<tr>
<td>W Mids</td>
<td>471.7</td>
<td>26.0</td>
<td>5.5%</td>
<td>7.7</td>
</tr>
<tr>
<td>Eastern</td>
<td>1174.2</td>
<td>70.5</td>
<td>6.0%</td>
<td>32.6</td>
</tr>
<tr>
<td>SE</td>
<td>657.8</td>
<td>42.3</td>
<td>6.4%</td>
<td>22.7</td>
</tr>
<tr>
<td>SW</td>
<td>705.5</td>
<td>38.3</td>
<td>5.4%</td>
<td>9.7</td>
</tr>
<tr>
<td>England</td>
<td>4854.2</td>
<td>277.9</td>
<td>5.7%</td>
<td>117.6</td>
</tr>
</tbody>
</table>

Notes: SPS arable area is defined as the total area claimed, apart from permanent pasture. This includes all non-permanent crops, temporary grass, fallow and set-aside.

‘Uncropped set-aside’ includes all compulsory set-aside not used for industrial crops.

‘SE’ includes London.

These figures reflect areas recorded out of production in the SPS database and are below the June Survey estimates for the reasons discussed above.

The previous Observatory documents on set-aside have plotted June Survey set-aside areas for each Joint Character Area, to give a more detailed impression of the spatial distribution. At the time of preparing this paper, sub-national June Survey data was not available for 2007 and so Figure 2.1 uses SPS data instead. There are in any case some advantages in making this change. In particular, the June Survey data includes industrial crops grown on set-aside, which will distort the trends for uncropped land, and produce a break in the series in 2008. However, a disadvantage is that some uncropped land in environmental schemes is excluded. As a result, although these maps are superficially similar to those shown in the earlier papers, the scales are different and they are not directly comparable.

Comparing the maps for 2006 and 2007 it is apparent that there have been substantial declines in some areas, particularly Yorkshire, Lincolnshire and parts of East Anglia.

Figure 2.1 also shows the percentage of the uncropped land which is rotational set-aside or fallow within each JCA. The greatest concentrations lie in a band...
stretching from Gloucestershire, up through the East Midlands and along the East coastal fringe from the Cambridgeshire fens northwards.

Figure 2.1 Distribution of uncropped set-aside and GAEC12 based on SPS data, shown by Joint Character Area. Grey areas indicate no data or data suppressed to preserve confidentiality. For the reasons discussed in the text, the first two maps are not directly comparable to the maps in the earlier Observatory reports.
2.4 Local spatial effects

The previous Observatory publications investigated the spatial disaggregation of set-aside by calculating distances from random points to the nearest piece of uncropped land. In particular, the percentage of the land area of England within 500m of the nearest uncropped land provides a measure of how widely dispersed these areas are, and hence their impact on wildlife. Results from 2007 are shown in Table 2.4 below and indicate that the area within 500m of uncropped land fell slightly in 2007.

Table 2.4 Spatial statistics on the distribution of non-industrial set-aside and GAEC12 land. ‘Distance’ refers to the mean distance between random points in England and the nearest set-aside land. ‘% within 500m’ is an estimate of the percentage of English land (including non-farmland) within 500m of non-industrial set-aside.

<table>
<thead>
<tr>
<th>Year</th>
<th>Distance in km mean</th>
<th>Distance in km s.e.</th>
<th>% within 500m %</th>
<th>% within 500m s.e.</th>
<th>Total area km² 000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>2.56</td>
<td>0.030</td>
<td>31.9%</td>
<td>0.49%</td>
<td>3.2</td>
</tr>
<tr>
<td>1995</td>
<td>2.19</td>
<td>0.027</td>
<td>38.0%</td>
<td>0.49%</td>
<td>4.4</td>
</tr>
<tr>
<td>1996</td>
<td>2.37</td>
<td>0.030</td>
<td>36.7%</td>
<td>0.49%</td>
<td>3.6</td>
</tr>
<tr>
<td>1997</td>
<td>2.10</td>
<td>0.024</td>
<td>33.6%</td>
<td>0.48%</td>
<td>2.3</td>
</tr>
<tr>
<td>1998</td>
<td>2.14</td>
<td>0.024</td>
<td>34.7%</td>
<td>0.49%</td>
<td>2.3</td>
</tr>
<tr>
<td>1999</td>
<td>2.06</td>
<td>0.024</td>
<td>39.4%</td>
<td>0.49%</td>
<td>3.7</td>
</tr>
<tr>
<td>2000</td>
<td>2.00</td>
<td>0.024</td>
<td>42.5%</td>
<td>0.50%</td>
<td>4.2</td>
</tr>
<tr>
<td>2001</td>
<td>1.72</td>
<td>0.022</td>
<td>51.7%</td>
<td>0.49%</td>
<td>7.2</td>
</tr>
<tr>
<td>2002</td>
<td>1.86</td>
<td>0.023</td>
<td>46.3%</td>
<td>0.50%</td>
<td>4.6</td>
</tr>
<tr>
<td>2003</td>
<td>1.90</td>
<td>0.023</td>
<td>47.5%</td>
<td>0.50%</td>
<td>5.4</td>
</tr>
<tr>
<td>2004</td>
<td>1.94</td>
<td>0.024</td>
<td>45.1%</td>
<td>0.50%</td>
<td>4.3</td>
</tr>
<tr>
<td>2005</td>
<td>1.69</td>
<td>0.021</td>
<td>44.4%</td>
<td>0.50%</td>
<td>3.8</td>
</tr>
<tr>
<td>2006</td>
<td>1.71</td>
<td>0.021</td>
<td>45.5%</td>
<td>0.50%</td>
<td>4.2</td>
</tr>
<tr>
<td>2007</td>
<td>1.75</td>
<td>0.023</td>
<td>44.3%</td>
<td>0.50%</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Notes: The total set-aside/GAEC12 area in the final column is the area of known fields on which calculations are based and may differ appreciably from the best estimates of the total area shown elsewhere. These areas are included solely to assist in interpretation of the other columns.

2.5 Length of non-rotational set-aside

In the previous sections set-aside land was categorised as rotational (one year only) or non-rotational. However, it is also of interest to know how long the non-rotational land has been out of production. Land that has been set-aside for many years may well be of greater value for biodiversity, although this will also be influenced by other factors, such as management and the proximity to other semi-natural habitats. The botanical field study (Annex 1, section 5) will be providing more information on this relationship over the coming months. Land that has not been cropped for many years may also be more difficult to bring back into cultivation, again depending on the way it has been managed.

The length of time fields have been uncropped can be investigated using the SPS/IACS datasets, by tracking the field back through the datasets. This cannot be done for all fields, as some will have been subject to substantial boundary
changes, perhaps because the field has been split into two or merged with another field. Also some fields will have had their co-ordinates changed, often because they had previously been incorrectly recorded\textsuperscript{3}. Nevertheless, we have managed to trace the cropping records back to 1995 for nearly 18,000 fields that were uncropped in 2007, with a total area of 66 thousand hectares. The length of time these fields had been in set-aside is shown in Figure 2.2\textsuperscript{4}. Overall 34% of the fields had only been out of production for two or three seasons, and only 24% had been set-aside or fallow for ten or more years. There is some regional variation, with a higher proportion of recent set-aside in the North and West of England, no doubt partially due to those dairy farmers who first became eligible for compulsory set-aside in 2005. The South-East has the highest proportion of land that has been in set-aside for ten or more years.

\textsuperscript{3} Many such changes have happened as a result of the digital mapping carried out for the Rural Land Register. It is possible to track these changes from the records held by the RPA, but this is difficult and time consuming, and has not been attempted here.

\textsuperscript{4} This figure is based on fields that (a) were at least 95% non-rotational set-aside in 2007; (b) could be traced back to 1995; (c) had not changed their total area by more than 20% in any year. A field was considered to be set-aside in earlier years if at least 50% of its 2007 area was uncropped.
2.6 Industrial crops grown on set-aside land

Table 2.5 looks at the area of industrial crops grown on set-aside land. This includes both conventional crops grown for industrial or biofuel use, and specialist bioenergy crops such as Miscanthus and short-rotation coppice. Figures for industrial crops grown on non-set-aside land are not shown because they cannot be accurately estimated from the SPS dataset.

Table 2.5: 2007 industrial set-aside area (thousands of hectares and as percentages of the total arable area and the total set-aside area).

<table>
<thead>
<tr>
<th>GoR</th>
<th>Industrial area '000 ha</th>
<th>% of arable area</th>
<th>% of set-aside area uncropped and industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE</td>
<td>4.0</td>
<td>2.0%</td>
<td>26.6%</td>
</tr>
<tr>
<td>NW</td>
<td>1.7</td>
<td>0.9%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Y &amp; H</td>
<td>16.2</td>
<td>2.7%</td>
<td>34.0%</td>
</tr>
<tr>
<td>E Mids</td>
<td>17.9</td>
<td>2.1%</td>
<td>26.3%</td>
</tr>
<tr>
<td>W Mids</td>
<td>8.3</td>
<td>1.7%</td>
<td>24.1%</td>
</tr>
<tr>
<td>Eastern</td>
<td>25.0</td>
<td>2.1%</td>
<td>26.2%</td>
</tr>
<tr>
<td>SE</td>
<td>10.9</td>
<td>1.7%</td>
<td>20.5%</td>
</tr>
<tr>
<td>SW</td>
<td>8.6</td>
<td>1.2%</td>
<td>18.3%</td>
</tr>
<tr>
<td>England Total</td>
<td>92.5</td>
<td>1.9%</td>
<td>25.0%</td>
</tr>
</tbody>
</table>

Notes: Arable area is defined as in Table 2.3. Excludes industrial crops grown on land other than set-aside. The England total differs slightly from the official June Survey estimate in Table 2.1 due to methodological differences, partially relating to the treatment of cross-border businesses.
3 Estimates for 2008: FBS Phone Survey

The 2008 SPS dataset, including uncropped GAEC 12 areas, will not be available for analysis until autumn 2008, which is after farmers need to make their decisions about the 2008-09 cropping year. In order that Ministers and their officials have the best evidence for examining policy options for 2009 it was therefore essential that estimates of the 2008 GAEC12 area were available by the end of January 2008. This need was met with a telephone survey of participants in the Farm Business Survey (FBS). Using an established survey like the FBS was more likely to be successful, in terms of providing a high response rate and reliable estimates, than conducting a completely separate exercise. This section presents some of the results of this survey and uses them to project future trends in uncropped areas. A fuller, more technical, account of the analysis can be found in Annex 3.

The survey work was conducted between mid November and mid December by FBS researchers using an agreed script of questions (see Annex 3). Approximately 450 of the 1,800 FBS participants in England were selected to take part in the survey, using a stratified random survey design, with a higher sampling rate amongst farms most likely to have set-aside. This ensured that efficient and unbiased estimates could be produced, whilst imposing the minimum burden on farmers. Analysis of the results was carried out by Observatory statisticians using a modified version of the weights used to gross up other FBS results to give national estimates.

Confidentiality rules relating to the FBS prevented the farms’ SPS data being used in the analysis and so participants were asked about their set-aside areas in both 2006-07 and 2007-08, in order to be able to estimate change. This also provided a check on the accuracy of results and the overall 2007 estimate was within 2% of the June Survey estimate for the same period. The split between rotational and non-rotational areas differed from that suggested by the SPS data (Table 2.2 above), perhaps because the farmers’ interpretation of what constitutes rotational set-aside differs from our own. This is discussed in more detail in Annex 3. Because of this, the results presented here will concentrate on the percentage changes, rather than the absolute figures.

3.1 Change from 2007 to 2008

Table 3.1 shows the estimates of change in set-aside and fallow areas from 2007 to 2008. Overall the area not used for production is expected to decline by 53% (95% confidence limits 48%-58%). As expected, the decline is greatest in the area of rotational ‘set-aside’, but there is also a 35% decline in the area of long-term ‘set-aside’. Margins and corners show a much smaller relative decline (13%). The vast majority (over 80%) of the area in margins and corners is on farms in agri-environment schemes; on farms not in such agreements there is a 38% loss.
Table 3.1 estimates of 2008 uncropped areas as a percentage of the equivalent 2007 area.

<table>
<thead>
<tr>
<th>category</th>
<th>2008 as % of 2007</th>
<th>% loss since 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>estimate s.e.</td>
<td>Estimate</td>
</tr>
<tr>
<td>q3a all set-aside/fallow</td>
<td>46.9% 2.3%</td>
<td>53.1%</td>
</tr>
<tr>
<td>q3b margins</td>
<td>87.3% 3.5%</td>
<td>12.7%</td>
</tr>
<tr>
<td>q3c long-term</td>
<td>64.6% 4.3%</td>
<td>35.4%</td>
</tr>
<tr>
<td>q3d rotational</td>
<td>15.1% 3.0%</td>
<td>84.9%</td>
</tr>
</tbody>
</table>

The final columns show approximate 95% confidence limits for the percentage of each type lost since 2007.

Table 3.2 2008 set-aside/fallow areas as a percentage of the 2007 areas by GoR, membership of environmental schemes and organic status.

a) by Government Office Region

<table>
<thead>
<tr>
<th>GoR</th>
<th>2008 set-aside/fallow</th>
<th>margins</th>
<th>long-term</th>
<th>rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td>all uncropped</td>
<td>% s.e.</td>
<td>% s.e.</td>
<td>% s.e.</td>
<td>% s.e.</td>
</tr>
<tr>
<td>North East</td>
<td>36.3% 4.7%</td>
<td>100.0%</td>
<td>0.0%</td>
<td>95.1%</td>
</tr>
<tr>
<td>North West</td>
<td>63.4% 2.6%</td>
<td>83.6%</td>
<td>8.8%</td>
<td>77.1%</td>
</tr>
<tr>
<td>Yorkshire &amp; Humber</td>
<td>43.4% 9.4%</td>
<td>44.9%</td>
<td>16.1%</td>
<td>67.4%</td>
</tr>
<tr>
<td>East Mids</td>
<td>37.8% 4.5%</td>
<td>89.4%</td>
<td>9.7%</td>
<td>52.8%</td>
</tr>
<tr>
<td>West Mids</td>
<td>47.6% 8.4%</td>
<td>86.4%</td>
<td>8.4%</td>
<td>77.6%</td>
</tr>
<tr>
<td>East of England</td>
<td>48.0% 4.2%</td>
<td>88.5%</td>
<td>5.0%</td>
<td>60.7%</td>
</tr>
<tr>
<td>South East</td>
<td>58.9% 5.3%</td>
<td>99.3%</td>
<td>2.1%</td>
<td>65.6%</td>
</tr>
<tr>
<td>South West</td>
<td>40.9% 6.5%</td>
<td>88.8%</td>
<td>8.7%</td>
<td>55.9%</td>
</tr>
</tbody>
</table>

b) by membership of agri-environment scheme

<table>
<thead>
<tr>
<th>membership of scheme</th>
<th>2008 set-aside/fallow</th>
<th>margins</th>
<th>long-term</th>
<th>rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td>all uncropped</td>
<td>% s.e.</td>
<td>% s.e.</td>
<td>% s.e.</td>
<td>% s.e.</td>
</tr>
<tr>
<td>Not in scheme</td>
<td>36.1% 4.7%</td>
<td>62.0%</td>
<td>12.8%</td>
<td>61.6%</td>
</tr>
<tr>
<td>In agri-env scheme</td>
<td>50.3% 2.6%</td>
<td>91.2%</td>
<td>3.0%</td>
<td>65.4%</td>
</tr>
</tbody>
</table>

The sample size used in the survey permits some degree of cross-tabulation by factors such as farm type and region, although care is needed in interpreting the results since one or two farms with extreme results can have a big impact on the figures. Table 3.2a shows 2008 estimates as a percentage of 2007 for each

Note: the zero standard error for margins and corners in the NE occurs because none of the 23 farms questioned had made any changes. This will underestimate the true uncertainty of this estimate.
Government Office Region (GoR). Whilst there are some interesting trends, such as the greater loss of set-aside in the north-east, further analysis shows that the overall differences are only of borderline statistical significance. The very low value for margins in Yorkshire and Humberside should be treated with caution as it is strongly influenced by two farms with large survey weights.

As mentioned above, there are some very large differences between farms with and without agri-environment scheme payments (most commonly Entry Level Stewardship). These results are shown in Table 3.2b. These figures are based on farms receiving payments in the 2006-07 financial year, and may therefore exclude some farms which have recently joined a scheme. The overall set-aside areas and the margins and corners show the biggest differences, indicating the degree to which agri-environment schemes are helping to reduce the impact of the zero set-aside rate. The difference is much smaller for long-term set-aside, although regression analysis suggests that there may be a significant effect after allowing for other explanatory variables. For rotational set-aside, the rates of loss are in fact greater on farms in agri-environment schemes, although this is probably a chance effect.

The selected sample included 25 farms that were wholly or partially organic, which is sufficient to produce estimates for this split (Table 3.2c). The organic holdings have retained more of their uncropped land in all categories, and these differences are statistically significant for all uncropped land and for margins and corners. The figures for long-term and rotational set-aside/fallow need to be treated with more caution, due to the very low numbers of organic farms with such land, but are nevertheless suggestive of a real difference. These results are not surprising since organic land was exempt from the set-aside requirement, and the changes on organic holdings must be driven purely by the high prices, rather than the zero set-aside rate.

Respondents were also asked if their plans for the 2007-08 cropping year were likely to change. The estimated proportion of farms with a high likelihood of changing their plans was only 3%, with a further 5% uncertain. Where farmers responded ‘yes’, their comments mainly related to uncertainty regarding the exact details of their spring cropping. However, it is possible that unforeseen circumstances may lead to more change than farmers envisaged at the time of this survey. In particular, if the very wet weather experienced in January 2008 continues, flooding and waterlogged soil may delay, or even prevent planting of spring crops in some areas.

Some further questions concerned the autumn cropping of land which would have been set-aside, had farmers not increased their crop area in response to the zero rate or the high prices. Respondents were asked what percentage of the extra cropped area was, or would be, put under autumn crops. The results indicated that around 80% (standard error 2.6%) of land that would normally have been left as rotational set-aside was sown with autumn crops. This will result in a substantial reduction in the national area of winter stubble. There is some regional variation with lower percentages autumn sown in the south and west of England. By contrast only 56% (standard error 5.8%) of land which was formally long-term set-aside was autumn sown, presumably because the greater work
involved in returning such land to cropping has resulted in farmers choosing to delay until the spring before sowing it.

Finally, respondents were asked about their plans for future years, if the zero set-aside policy continued. The results indicate that around 19% (standard error 6.0%) of farms which still retain some set-aside are planning to make further reductions in 2008-09. 70% (standard error 5.6%) do not plan further reductions, and the remaining 11% did not know.

3.2 Detailed spatial distribution

By applying the figures for anticipated percentage loss shown in Table 3.1 to the known spatial distribution of set-aside and fallow from the 2007 SPS dataset, it is possible to predict what the spatial distribution will look like in 2008 at Joint Character Area level. This is shown in Figure 3.1. Comparison with Figure 2.1 shows the impact of the changes, if the FBS results do prove to be representative of all farms in England. None of the JCAs now has more than 4ha per square kilometre of land out of production, making the last 4 categories redundant. This has happened partially because those JCAs with very high uncropped areas in earlier years also tended to have high proportions of rotational set-aside/fallow (Figure 2.1), and have therefore suffered the greatest losses.

The distributional statistics are also predicted to change dramatically. The average distance from a random point in England to the nearest uncropped land will increase from 1.8km in 2007 to 2km in 2008 (see Table 2.4). In 2008 only 34% of England will be within 500m of uncropped land compared to 44% in 2007. It should be remembered however that the SPS areas used in these calculations omit some Environmental Stewardship field margins, and may therefore exaggerate the decline somewhat.

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5 Note that due to time constraints and the limitations of the data, these predictions only consider the different rates of loss for the different types of uncropped land shown in Table 3.1. They do not allow for differences in, for example, membership of stewardship schemes between different regions.
Figure 3.1 Predicted distribution of uncropped land (GAEC12) based on applying the estimates of Table 3.1 to 2007 SPS data, shown by Joint Character Area. The 2007 map from Figure 2.1 is repeated to allow comparison. Grey areas indicate no data or data suppressed to preserve confidentiality.
4 Discussion

The ending of set-aide (predicted as part of the CAP Healthcheck) has always been seen as having a potentially significant implication for the farmed environment in England. With this in mind, the progress review of Environmental Stewardship has been considering the extent to which options in the scheme might help mitigate any loss of environmental benefits. However, the recent announcement by the European Commission of a zero set-aside rate for the 2007-08 cropping season, combined with high cereal prices, is leading to rapid reductions in the uncropped area, before Environmental Stewardship has reached its full potential, in terms of development, coverage and the maturity of the habitats created. That is partly why Defra, through the Observatory, is devoting so much effort to monitoring changes in uncropped land.

Analysis of both the initial Single Payment data and the June Survey figures indicates a substantial fall in the area of uncropped land in the 2006-07 cropping year. This was clearly prompted by the increased crop prices, since there was no change in the set-aside rate for 2007. Some of this reduction resulted from increased planting of industrial crops on set-aside, partially driven by increased demand for feedstocks for biofuels and bio-energy.

These trends would undoubtedly have continued into 2008, even without the change in the set-aside rate. The FBS telephone survey results suggest, however, that the change in the coming cropping year will be much greater than would have been anticipated without the zero rate. We will not attempt to speculate exactly how much of the estimated reduction might be due to the set-aside rate and how much is due to prices; in practice farmers’ decisions will be complex and frequently influenced by both considerations. The important issues are the sizes of the reductions and the impact on the environment.

The FBS results must be treated with a degree of caution. FBS participants are a volunteer panel and differ from the wider population of farmers, if only by their willingness to take part in the survey. It is therefore possible that their responses differ from those of other farmers, perhaps because they are better informed and have been able to make changes in 2007-08. By contrast, other farmers might have held back, given the very late announcement of the rate. Some indication of whether this is the case will come in the early spring of 2008 when the December Survey results are published. In this context, it should be noted that crop forecasts produced by ADAS suggest a 40% drop in uncropped land, slightly lower than the FBS estimate. Both the ADAS forecast and the FBS estimate are broadly consistent with the predictions made by Defra economists in the autumn of 2007.

Nevertheless, on the basis of the evidence available so far, it looks like most farmers have been very quick to respond. Rotational set-aside has to a large extent disappeared leading to big reductions in the areas of winter stubbles available to birds. The impacts of this will be increased by the comparatively low uptake of the stewardship options relating to winter stubbles, although it is not yet known to what extent birds are using alternative habitats. In contrast to rotational
set-aside, the area of uncropped land in margins and corners, has held firm, largely as a result of those farmers taking part in Entry Level Stewardship.

The FBS results also suggest that around a third of non-rotational set-aside has already been lost, or will be within the next couple of months. Some might be surprised by this, but the results on the length of time land has been in set-aside may shed some light on this. It has often been assumed that land is either in rotational set-aside for one year, or alternatively has been out of production for many years. In fact, examination of the data shows that comparatively little land has been set-aside or fallow for more than five years. Instead there is more fluidity, with some areas returning to production for one reason or another, after a couple of years, even without the exceptional changes of the current year. Personal observations around the Observatory’s base in Yorkshire suggest that the non-rotational set-aside that has been cropped is this intermediate category, rather than the land that has been set aside for many years. It will be important to ascertain whether this pattern is repeated nationally.

Whilst not directly linked to the set-aside debate, concern has been expressed that significant areas of permanent grassland may be ploughed to grow arable crops, motivated both by high cereal prices and the low returns to livestock enterprises. At present the evidence for this is largely anecdotal. Estimates of crop areas, from the December Survey, HGCA Planting Survey and the June Survey, may give some indication of the scale of switch from grassland to arable. However, much better evidence will come when the 2008 SPS data is available, as this will give information both on the total area involved and its exact location.
5 Annex 1: MONITORING OF UNCROPPED LAND IN 2007-2008

This annex summarises the sources which will be used to enhance the evidence base available to Ministers and officials on the environmental impacts of the 0% set-aside rate. The monitoring scheme will collect information on the land taken out of production in 2007-2008, the characteristics of that land, and the possible environmental implications. For the sake of brevity, in this document the term ‘set-aside’ is used to refer to that land, even though set-aside will no longer exist in a formal sense. Although the June Survey of Agriculture is not specifically mentioned below, this is, of course, important in collecting wider information about cropping patterns.

1. Single Payment System

Data provided: Definitive information on the area set-aside\(^6\). There may be some under-recording of field margins taken out of production (this is allowed for land in agri-environment schemes where the margin may be recorded using the same code as the bulk of the area), but otherwise it provides complete coverage at high spatial resolution.

Timing: Unfortunately, SPS data will not be available until September 2008 (and many months after that for a final version) and so this data will not help with decisions for 2008-2009.

Strengths: completeness and high spatial resolution. By matching against the previous year’s field level SPS dataset, it is also possible to classify the land to rotational or non-rotational set-aside. No additional compliance cost to farmers, beyond existing requirement.

Weaknesses: timing, as above. No information on quality of habitat. Lack of detailed crop codes (as used in IACS prior to the SPS) limits information on other cropping.

2. December Survey of Agriculture.

Data provided: an estimate of the total area of land expected to be uncropped in 2007-08.


Strengths: Large sample size and robust design due to use of existing, established survey. Low additional costs to both Defra and respondents from collecting this extra information.

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\(^6\) There was a possibility that the RPA would still require farmers to record the set-aside or GAEC12 codes on their SPS forms in order to avoid penalties, even though the land could be used for production. However, it is now understood that the RPA have identified an alternative solution that allows farmers to accurately record the actual cropping without penalty.
Weakness: because it is a postal survey it is not possible to collect any detailed information, such as a breakdown into rotational and non-rotational set-aside.

3. Telephone survey of Farm Business Survey participants.

Data provided: areas set-aside in 2006-7 and 2007-8, subdivided into rotational/non-rotational and, for 2007-8 cover type.


Strengths: early timing. Builds on the existing Farm Business Survey to give statistical robustness and high rate of farmer co-operation. Cost relatively low.

Weakness: small sample size will limit precision and the ability to produce regional figures.


Data provided: data on longer term intentions, assuming the 0% rate remains.


Strengths: established survey with good design and reasonable response rate.

Weakness: postal survey, limiting the detail which can be included.

5. Field and interview survey

Data provided: information on management of set-aside land and botanical diversity. Based on this information we will be able to provide a more accurate assessment of the wildlife value of such land.

Timing: to be confirmed, but probably spring 2008, with provisional results available around June 2008.

Strengths: very detailed information. Assessment of wildlife value, which cannot be reliably ascertained from phone or postal surveys. May be possible to link to cross-compliance monitoring.

Weakness: high cost, due to labour-intensive nature of the work, and hence small sample size.

6. External data sources (e.g. NFU, HGCA, Catchment Sensitive Farming)

Data provided: various.

Timing: various

Strengths: early qualitative information on what farmers are planning

Weakness: variety of methodology means that quantitative information must be interpreted with care.
Projects 7-9 below will also form part of the evidence base, but some are not yet finalised.

7. **Quantifying the water quality impacts of 0% set-aside**

**Data provided:** To quantify the impacts of 0% set-aside on water quality (N, P and sediment).

**Timing:** January to March 2008

**Strengths:** Early quantification of potential impact on water quality - and potential for estimation of policy response required to reach agreed standards

**Weakness:** Lack of published data (to support modelling) suggests that the results for phosphorus and sediment will be less robust than the results for Nitrates.

8. **Assessment of impacts on farmland birds.**

**Data provided:** data on changes in winter bird numbers as a result of loss of rotational set-aside stubbles and to a lesser extent, permanent set-aside. Based on re-surveys at regional and national level.

**Timing:** interim report due 7 February with full results by 1 May 2008.

**Strengths:** detailed information on changes in bird numbers in East Anglia including use of alternative habitats, such as wild bird seed crops. Supported by more generic information from national survey.

**Weaknesses:** provides only a snap-shot so impact of other factors, such as climatic extremes, will not be covered. Reasons for loss of stubbles other than zero rate, for example, higher cereal prices will not be covered rigorously due to short duration of project. However, some indicative data will be collected from the East Anglian survey.

9. **Impact of zero set-aside on farmland birds and implications for the development of mitigation measures.**

**Data provided:** data on the value of set-aside land to birds in summer and winter compared to conventional cropped land and land under Environmental Stewardship (ES) agreements. Identification of mitigation measures and modelling to provide estimates of the areas (of those measures) needed to compensate for loss of set-aside.

**Timing:** results due on 14 March 2008.

**Strengths:** first time that all studies on the topic will have been collated and gaps in knowledge identified. Estimates of required uptake of mitigation measures at a national level.

**Weaknesses:** unclear how much information will be available in the literature and therefore how much progress will be made with aims of project. The complexity of
the modelling that can be undertaken will be constrained by the short duration of the project.

Project 10 is not part of the evidence gathering activity but in the long term it is likely to inform the development of policy options within Environmental Stewardship.

10. Field trials of potential mitigation measures to compensate for loss of set-aside.

Data provided: development of new in-field ES options to benefit plant, invertebrate and bird populations.


Strengths: multi-site, field-scale project. May also include other ecosystem services such as pollinator services and natural resource protection but final decision awaits outcome of discussions with Food and Farming Group.

Weaknesses: Will not provide evidence for early decisions regarding mitigation. Probably only appropriate to “incentive” policy levers such as ES. Concept Note provided so far but project may be too ambitious for the estimated cost of £150k per annum.
6  Annex 2: Analysis of SPS data - methods and limitations

Results presented here are based on matching individual fields between the administrative datasets to find out the recent history of cropping on the field, and hence allow uncropped areas to be divided into rotational (i.e. in set-aside/fallow for one year only) and non-rotational (‘permanent’, in set-aside/fallow for more than one year). This is a powerful approach, but there are a number of problems/approximations:

1. Set-aside total areas are a moving target in these databases as RPA continue to revise the datasets. The June Survey figure for formal set-aside also comes from this source, but the total area out of production (formal set-aside plus GAEC12) is a survey estimate and should not be subject to revision. Updated 2007 SPS data will be acquired in due course.

2. The absence of a code for GAEC12/fallow in 2005 means that we don’t know which fields were voluntarily withdrawn from production in that year. As a result, in some cases, the status of 2006 fields needs to be deduced from 2004 data, with consequent greater scope for error. The introduction of the OT2 code in 2006 for recording GAEC12 land means that we can be more certain about whether 2007 set-aside/fallow was rotational or non-rotational.

3. There is a discrepancy between the June Survey figures for fallow and the area recorded to OT2. This is partially because uncropped margins in stewardship schemes are not separately recorded, but probably also due to some farmers continuing to record such land to OT1 (which was the correct approach in 2005). It may be possible to get some more information on the first possibility by looking at the code TG3 for temporary grassland in Environmental Stewardship, but this is not straightforward and has not been attempted here.

4. I’ve assumed that all fields with blocks of set-aside/fallow making up less than 25% of the field area and less than 4ha represent strips of set-aside in the margins or odd corners. These can be regarded as non-rotational, although in some cases they may shift around the field from year to year. This is an approximation, as there may be some small fields that are genuinely subdivided between croppable areas (i.e. split down the middle) with rotational set-aside.

The basic procedure for finding the three categories is as follows:

1. Any uncropped area which accounts for less than 25% of the total field area (in terms of total activated entitlements), and is less than 4ha, is considered to be a field margin or an edge.

2. Any area where at least 75% of the area was out of production the previous year is considered non-rotational. The 75% figure allows for small changes in the field area etc.

3. Any area that was not out of production the previous year is considered rotational. This is mostly land that was in production the previous year, but will include a small amount of land that was not activated and where the use is therefore unclear.
4. Mixed areas are divided appropriately. For example if a 10ha field is out of production in 2007, but in 2006 3ha was out of production and 7ha grew crops, this counts as 3ha non-rotational and 7ha rotational.

5. Where the field cannot be matched between the 2006 and 2007 datasets a probabilistic random assignment is used, based on a logistic regression model of the probability of being non-rotational with field size as the independent variable (large fields are more likely to be rotational).

There is a further problem in producing the 2006 figures shown in Table 3. Because the OT2 code for fallow land was not available to farmers in 2005, some of this land was recorded under the OT1 code, which is also used for crop areas. To get around this problem I have looked back at the 2004 data, which uses a full list of crop codes, with no ambiguity. This does mean that a proportion of 2006 fields may be misclassified.

Steve Langton
27th November 2007
Annex 3: FBS PHONE SURVEY

INTRODUCTION

Because of the time constraints on introducing new regulations, it was important that estimates of the 2008 set-aside area were available by January 2008. This need was meet with a telephone survey of participants in the Farm Business Survey (FBS). Using an established survey like the FBS was more likely to be successful, in terms of providing a high response rate and reliable estimates, than conducting a completely separate exercise. The survey work was conducted between mid November and mid December by FBS researchers using an agreed script. This document provides some detail about the design and analysis of the survey.

SAMPLING DESIGN

The approach taken was to base the survey design on the 2006-7 FBS population and recorded set-aside areas (harvest 2006 year). Potential designs were evaluated by seeing how they performed when used to estimate 2005 areas of fallow land (GAEC12). The rationale for this is that the fallow area is a subset of the total set-aside figure, and hence not dissimilar, in terms of statistical properties, to the types of quantities that we are estimating.

The main points of the design are as follows:

- Stratification was based on FBS quota type and economic size, as for the initial FBS weighting.
- Farms with less than 2ha of set-aside in 2006 were put in a separate stratum, with a low sampling rate, so that we did not waste a lot of sampling effort on holdings unlikely to have set-aside.
- This left very low numbers of farms for the predominantly livestock and horticultural quota types, so most of these were grouped together into another stratum. These farms only account for around 5% of the total set-aside area, so this should not be a problem and saves sampling effort.
- The remaining strata (all sizes bands for general cropping, cereals and mixed farms, plus large pig, horticultural, and dairy farms) were then subdivided, where numbers of farms allowed, into separate strata for holdings with 20ha or more of set-aside.

Optimal (Neyman) allocation was then used to determine the best sample size, with higher sampling rates in large strata and those with high variances. Minimum sample sizes of approximately 7 farms were used in very small strata to ensure variances can be estimated. In the '<2ha' category the sample size was set to around 40 to ensure that the design had some robustness against any unexpected increases (e.g. due to ELS), whilst not devoting excessive effort to a stratum contributing little to the total estimate. Some manual adjustment to the

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For the sake of brevity, in this document ‘set-aside’ is taken to refer to all land out of production, including GAEC12 land, unless otherwise specified.
sample sizes was necessary, for example where optimal sampling would sample more farms in some strata than the available FBS sample. Substitution of alternative farms for non-responders caused some further adjustments to the numbers sampled in each stratum, but the final design nevertheless represents an efficient strategy for collecting the maximum amount of information with the available sample size.

The target sample size for the survey was 450 of the 1800 farms in the FBS. Simulations indicated that increasing the sample size beyond this would yield relatively low gains in precision because it would have involved targeting proportionately more farms with little set-aside. Farms were selected at random within each strata by the Observatory statisticians. To allow for non-response and for those farms that had dropped out of the FBS, a reserve list of 100 farms was also selected at random. Response data was eventually provided from 454 farms, with only 14 contacted farms declining to take part.

Table 1: the strata used and achieved sample sizes.

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Notes</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals Part-time &lt;20ha</td>
<td>With &lt;20ha of set-aside in 2006</td>
<td>20</td>
</tr>
<tr>
<td>Cereals Part-time 20ha+</td>
<td>With 20ha+ of set-aside in 2006</td>
<td>9</td>
</tr>
<tr>
<td>Cereals Small &lt;20ha</td>
<td>With &lt;20ha of set-aside in 2006</td>
<td>31</td>
</tr>
<tr>
<td>Cereals Small 20ha+</td>
<td>With 20ha+ of set-aside in 2006</td>
<td>16</td>
</tr>
<tr>
<td>Cereals Medium &lt;20ha</td>
<td>With &lt;20ha of set-aside in 2006</td>
<td>14</td>
</tr>
<tr>
<td>Cereals Medium 20ha+</td>
<td>With 20ha+ of set-aside in 2006</td>
<td>18</td>
</tr>
<tr>
<td>Cereals (v) large &lt;20ha</td>
<td>With &lt;20ha of set-aside in 2006</td>
<td>8</td>
</tr>
<tr>
<td>Cereals (v) large 20ha+</td>
<td>With 20ha+ of set-aside in 2006</td>
<td>37</td>
</tr>
<tr>
<td>General Cropping Part-time all</td>
<td>Insufficient farms to subdivide further</td>
<td>19</td>
</tr>
<tr>
<td>General Cropping Small all</td>
<td>Insufficient farms to subdivide further</td>
<td>35</td>
</tr>
<tr>
<td>General Cropping Medium all</td>
<td>Insufficient farms to subdivide further</td>
<td>12</td>
</tr>
<tr>
<td>General Cropping (v) large &lt;20ha</td>
<td>With &lt;20ha of set-aside in 2006</td>
<td>8</td>
</tr>
<tr>
<td>General Cropping (v) large 20ha+</td>
<td>With 20ha+ of set-aside in 2006</td>
<td>31</td>
</tr>
<tr>
<td>Other Horticulture (v) large all</td>
<td>Insufficient farms to subdivide further</td>
<td>28</td>
</tr>
<tr>
<td>Specialist Pigs (v) large all</td>
<td>Insufficient farms to subdivide further</td>
<td>8</td>
</tr>
<tr>
<td>Dairy (Low/LFA) (v) large all</td>
<td>Insufficient farms to subdivide further</td>
<td>20</td>
</tr>
<tr>
<td>Mixed Small all</td>
<td>Insufficient farms to subdivide further</td>
<td>18</td>
</tr>
<tr>
<td>Mixed Medium all</td>
<td>Insufficient farms to subdivide further</td>
<td>8</td>
</tr>
<tr>
<td>Mixed (v) large &lt;20ha</td>
<td>With &lt;20ha of set-aside in 2006</td>
<td>13</td>
</tr>
<tr>
<td>Mixed (v) large 20ha+</td>
<td>With 20ha+ of set-aside in 2006</td>
<td>13</td>
</tr>
<tr>
<td>Others all</td>
<td>This is all farms of other types/sizes with at least 2ha of 2006 set-aside</td>
<td>48</td>
</tr>
<tr>
<td>&lt;2ha all</td>
<td>All farms with less than 2ha of 2006 set-aside</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>454</strong></td>
</tr>
</tbody>
</table>
### Box 1  Questions relating to set-aside land in 2006-07

**Firstly considering last year, that is 2006-07 cropping year (2007 harvest):**

2a How much land did you leave out of production as set-aside or fallow last cropping year (2007 harvest)?

*(notes: include all set-aside land, except industrial crops, and all fallow/voluntary set-aside/gaec12 land in 2006-7 cropping year. Also land left out of production in environmental schemes.)*

*If zero go to question 3.*

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>____</td>
<td>ha</td>
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</tbody>
</table>

2b How much was in field margins, field corners and other small areas?

*(notes: include land in agri-environment schemes. Include both rotational and non-rotational areas.)*

<p>| | |</p>
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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>____</td>
<td>ha</td>
</tr>
</tbody>
</table>

2c How much was in larger blocks of **long term** set-aside or fallow?

*(notes: include any whole field, or significant part of a field, that was also withdrawn from production in 2005-6 cropping year. **Exclude any margins, or corners included in 2b.** Please encourage farmers to use their common sense in distinguishing between margins/corners and ‘larger blocks’, and ensure no area is double counted in both 2b and 2c.)*

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>____</td>
<td>ha</td>
</tr>
</tbody>
</table>

2d How much was in **rotational** set-aside or fallow?

*(notes: include any area withdrawn from cropping for a single year only. **Exclude any margins or corners included in 2b.**)*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>____</td>
<td>ha</td>
</tr>
</tbody>
</table>

### ANALYSIS METHODS

FBS researchers entered the data into an Excel spreadsheet and it was then imported to statistical package GenStat\(^8\), for analysis by Observatory statisticians. Analysis used the standard weights used for grossing up the FBS sample to represent the national (English) population of farm businesses meeting the FBS criteria. These weights were adjusted using the GenStat procedure SVREWEIGHT to allow for the fact that only a subsample of the full FBS sample were contacted. For the purposes of analysis these weights were treated as design weights (the inverse of the probability of inclusion). This is not strictly true, since the FBS weights are calibrated to ensure that they properly represent the full population; this may lead to some overestimation of standard errors, but the effect should be fairly small since set-aside areas are not strongly correlated with the calibration variables.

Because confidentiality rules prevented the comparison of FBS data with administrative records from the Single Payment Scheme, FBS researchers asked participating farmers for details of land left out of production in both 2006-07 and 2007-08. I have included analyses of the 2006-07 figures below, since they provide interesting information on possible biases in the data, but the main interest lies in the changes between the two years.

---

\(^8\) 10\(^{th}\) Edition. See http://www.vsni.co.uk/products/genstat/
RESULTS

2007 areas

The questions asked are shown in Box 1 and a summary of the results is in Table 2, with comparison with June Survey and SPS figures. The overall estimate is within 2% of the June Survey estimate, which is remarkably good given the sampling error involved. The greater error compared to the SPS figure is to be expected, because field margins in Environmental Stewardship Schemes do not have to be separately recorded on the SPS form, and there may also be some under-recording of GAEC12 land. These differences will also explain the substantial discrepancy between the SPS estimate for margins and corners and the FBS estimate.

Table 2: estimates of 2007 uncropped areas, together with June Survey and SPS values. All figures are in thousands of hectares.

<table>
<thead>
<tr>
<th>Results from FBS phone survey</th>
<th>category</th>
<th>estimate</th>
<th>Standard error</th>
<th>June Survey</th>
<th>SPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>q2a</td>
<td>all set-aside/fallow</td>
<td>415.9</td>
<td>20.4</td>
<td>423.5</td>
<td>395.5</td>
</tr>
<tr>
<td>q2b</td>
<td>margins</td>
<td>97.9</td>
<td>8.6</td>
<td>Not estimated</td>
<td>47.8</td>
</tr>
<tr>
<td>q2c</td>
<td>long-term</td>
<td>124.8</td>
<td>11.1</td>
<td>Not estimated</td>
<td>179.9</td>
</tr>
<tr>
<td>q2d</td>
<td>rotational</td>
<td>193.2</td>
<td>14.2</td>
<td>Not estimated</td>
<td>167.8</td>
</tr>
</tbody>
</table>

Notes: SPS data provided by RPA November 2007
June Survey figures are calculated by adding together bare fallow and set-aside and subtracting non-food crops.
Results in this and all subsequent tables are weighted as described in the ‘analysis’ section.

More surprising is the relative balance between long-term and rotational set-aside in the two datasets. FBS results suggest that the rotational area is substantially larger, whereas SPS figures indicate a slightly greater amount of long-term set-aside. There are a number of possible reasons why the FBS figures may differ from the SPS ones:

- There may be a bias in the FBS sample. Whilst every effort is made to make the panel of farmers used for the FBS representative of the wider population, some degree of bias is inevitable. Those farmers prepared to take part in the FBS may, for example, be more enthusiastic or better informed on average than other farmers.

- Farmers’ definitions of ‘rotational’ and ‘long-term’ may differ from our own. Our definitions are designed so that they can be deduced from the SPS data, and may not represent the reality on the ground. We included our definition in the notes, but the researchers may not have always been successful in communicating these to farmers. It is therefore possible that some areas classified by farmers as ‘rotational’ may have been out of production for more than one year and therefore constitute ‘long-term’ in our data.
• Farmers’ definitions of margins and corners may also differ from ours, leading to some long-term set-aside being recorded in the margins category. Whilst this may account for some of the difference, the area in margins is too small to explain it all.

• Differences between the FBS population and farms in the SPS. The FBS population is based on the June Survey population. It excludes smaller businesses of less than 0.5 SLR\(^9\), but includes some farms that do not claim the SPS.

Whatever the reasons for this difference, it suggests that the estimates from questions 3a-3d on 2007-08 intentions will not be directly comparable with the SPS figures. We will avoid this problem by using the FBS data to estimate change from 2007 to 2008; these ratios can then be applied to the 2007 SPS data to estimate absolute areas.

2008 areas
The questions asked are shown in Box 2 and a summary of the results is in Table 3. As explained above, the percentages relating the 2008 estimates to the 2007 estimates in Table 2 are of more use than the absolute area figures. Overall the area not used for production has declined by 53% (95% confidence limits 48%-58%). As expected, the decline is greatest in the area of rotational ‘set-aside’, but there is also a 35% decline in the area of long-term ‘set-aside’. Margins and corners show an even smaller decline (13%). The vast majority (over 80%) of the area in margins and corners is on farms in agri-environment schemes; on farms not in such agreements there is a 38% loss.

Table 3: estimates of 2008 uncropped areas, in absolute terms (thousands of hectares) and as a percentage of the equivalent 2007 area from Table 2. The final columns show approximate 95% confidence limits for the percentage of each type lost since 2007.

<table>
<thead>
<tr>
<th>category</th>
<th>000s hectares</th>
<th>2008 as % of 2007</th>
<th>% loss since 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>estimate</td>
<td>s.e.</td>
<td>estimate</td>
</tr>
<tr>
<td>all set-aside/fallow</td>
<td>195.2</td>
<td>13.4</td>
<td>46.9%</td>
</tr>
<tr>
<td>margins</td>
<td>85.4</td>
<td>7.7</td>
<td>87.3%</td>
</tr>
<tr>
<td>long-term</td>
<td>80.6</td>
<td>8.6</td>
<td>64.6%</td>
</tr>
<tr>
<td>rotational</td>
<td>29.2</td>
<td>6.4</td>
<td>15.1%</td>
</tr>
</tbody>
</table>

Notes: based on responses to q3a-q3d and q2a-q2d

The sample size used in the survey permits some degree of cross-tabulation by factors such as farm type and region, although care is needed in interpreting the results since one or two farms with extreme results can have a big impact on the figures. Table 4 shows 2008 estimates as a percentage of 2007 for each

---

Government Office Region (GoR). Whilst there are some interesting trends, such as the greater loss of set-aside in the north-east, regression models suggest that the overall differences are only of borderline significance after adjusting for other characteristics of the farms sampled.

Table 4: 2008 set-aside/fallow areas as a percentage of the 2007 areas tabulated by GoR. For example, if the 2007 estimate from the phone survey for a region was 10,000 ha, and the 2008 estimate was 7,800 ha, the figure shown would be 78% (i.e. a 22% loss of set-aside).

<table>
<thead>
<tr>
<th>Region</th>
<th>All Set-Aside</th>
<th>Margins</th>
<th>Long-Term</th>
<th>Rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td>North East</td>
<td>36.3%</td>
<td>9.9%</td>
<td>100.0%</td>
<td>95.1%</td>
</tr>
<tr>
<td>North West</td>
<td>63.4%</td>
<td>7.6%</td>
<td>83.6%</td>
<td>77.1%</td>
</tr>
<tr>
<td>Yorkshire &amp; Humber</td>
<td>43.4%</td>
<td>9.4%</td>
<td>44.9%</td>
<td>67.6%</td>
</tr>
<tr>
<td>East Midlands</td>
<td>37.8%</td>
<td>4.5%</td>
<td>89.4%</td>
<td>52.3%</td>
</tr>
<tr>
<td>West Midlands</td>
<td>47.6%</td>
<td>8.4%</td>
<td>86.4%</td>
<td>77.6%</td>
</tr>
<tr>
<td>East of England</td>
<td>48.0%</td>
<td>4.2%</td>
<td>88.5%</td>
<td>60.7%</td>
</tr>
<tr>
<td>South East</td>
<td>58.9%</td>
<td>5.3%</td>
<td>99.3%</td>
<td>65.6%</td>
</tr>
<tr>
<td>South West</td>
<td>40.9%</td>
<td>6.5%</td>
<td>88.8%</td>
<td>55.9%</td>
</tr>
</tbody>
</table>

Note: the zero standard error for margins and corners in the NE occurs because none of the 23 farms questioned had made any changes. This will underestimate the true uncertainty of this estimate.

Box 2 Questions relating to set-aside land in 2007-08

Now turning to the current year, that is 2007-08 cropping year (2008 harvest)

3a How much land do you plan to leave out of production as ‘voluntary set-aside’ or fallow in this cropping year (2008 harvest)?
(notes: include all fallow/voluntary set-aside/gaec12 land in 2007-08 cropping year. Also land left out of production in environmental schemes.) If zero go to question 3e.

3b How much is in field margins, field corners and other small areas?
(notes: include land in agri-environment schemes. Include both rotational and non-rotational areas.)

3c How much is in larger blocks of long term ‘set-aside’ or fallow? (notes: include any whole field, or significant part of a field, that was also withdrawn from production in 2006-07 cropping year. Exclude any margins or corners included in 3b. Please encourage farmers to use their common sense in distinguishing between margins/corners and ‘larger blocks’, and ensure no area is double counted in both 3b and 3c.)

3d How much is in rotational ‘set-aside’ or fallow?
(notes: include any area withdrawn from cropping for a single year only. Exclude any margins or corners included in 3b.)

(Interviewer checks that 3b+3c+3d sum to the total in 3a)

3e Are your cropping and set-aside plans for the current year (2008 harvest) likely to change significantly?
(notes: please try to avoid use of ‘don’t know’ if possible.)
Table 5: 2008 set-aside/fallow areas as a percentage of the 2007 areas tabulated by farm size.

<table>
<thead>
<tr>
<th></th>
<th>all set-aside</th>
<th>margins</th>
<th>long-term</th>
<th>rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>s.e.</td>
<td>%</td>
<td>s.e.</td>
</tr>
<tr>
<td>Part-time</td>
<td>35.9%</td>
<td>7.1%</td>
<td>76.2%</td>
<td>14.9%</td>
</tr>
<tr>
<td>Small</td>
<td>48.7%</td>
<td>4.0%</td>
<td>90.7%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Medium</td>
<td>44.3%</td>
<td>4.6%</td>
<td>93.5%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Large</td>
<td>46.4%</td>
<td>4.7%</td>
<td>85.5%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Very large</td>
<td>54.8%</td>
<td>4.4%</td>
<td>86.2%</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

Table 6: 2008 set-aside/fallow areas as a percentage of the 2007 areas tabulated by farm type.

<table>
<thead>
<tr>
<th></th>
<th>all set-aside</th>
<th>margins</th>
<th>long-term</th>
<th>rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>s.e.</td>
<td>%</td>
<td>s.e.</td>
</tr>
<tr>
<td>Dairy</td>
<td>50.5%</td>
<td>8.2%</td>
<td>76.4%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Lowland Grazing</td>
<td>32.0%</td>
<td>12.0%</td>
<td>40.9%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Livestock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cereals</td>
<td>49.0%</td>
<td>3.4%</td>
<td>88.3%</td>
<td>4.3%</td>
</tr>
<tr>
<td>General cropping</td>
<td>46.1%</td>
<td>4.3%</td>
<td>98.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Mixed</td>
<td>34.6%</td>
<td>4.9%</td>
<td>78.2%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Horticulture</td>
<td>72.9%</td>
<td>10.6%</td>
<td>102.8%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

Notes: sample sizes for pigs, poultry and upland grazing livestock are too small to produce meaningful results.

Table 5 showing the changes in set-aside area tabulated by economic size of the holding is shown for completeness, but there is little sign of a consistent trend. Table 6 provides some evidence of statistically significant differences amongst farm types; the high figures for horticulture are perhaps surprising, but seem reasonably robust and are based on 34 businesses. The relatively high figures for dairy are also interesting, given that dairy farmers have tended to avoid set-aside as far as possible (see the earlier Observatory publications on the subject).

As was mentioned above, there are some very large differences between the results from farms with and without agri-environment scheme payments (most commonly ELS), and these results are shown in Table 7. The overall set-aside areas and the margins and corners show the biggest differences, indicating the degree to which agri-environment schemes are helping to reduce the impact of the zero set-aside rate. The difference is much smaller for long-term set-aside, although regression analysis suggests that there may be a significant effect after allowing for other explanatory variables. For rotational set-aside, the rates of loss are in fact greater on farms in agri-environment schemes, although this is probably a chance effect.
Box 2 Other questions

3f If yes, why?
(THis is to pick up where plans are not yet finalised but may change depending on spring plantings etc.)

3g If you have reduced the area of long-term non-rotational set aside, roughly what proportion of the area has been, or will be, put into autumn sown crops? (i.e. if there has been reduction from 2c to 3c above)

3h If you have cropped, or will crop, land that would normally have been put into rotational set aside for 2008 harvest, roughly what proportion of the area has been, or will be, put into autumn sown crops?
(Notes: a tricky question but we are trying to get an idea of the impact on areas of winter stubble etc. We want them to think about the area that they would, but for the 0% set-aside rate, have left as rotational set-aside, and to tell us whether it is now being used for autumn-sown crops)

3i If you still have some set aside for the current cropping year (2008 harvest), do you intend to reduce the area of set aside next year (for 2009 harvest) if the zero set aside policy is repeated in 2009?
(Notes: this is to find if more change will happen in the longer term, perhaps because farmers haven’t had time to change their plans this year)

4 Thank you for your help. Is there anything further you would like to add regarding set-aside and fallow land?

Table 7: 2008 set-aside/fallow areas as a percentage of the 2007 areas tabulated by whether the business received agri-environment payments in 2006-07.

<table>
<thead>
<tr>
<th></th>
<th>all set-aside</th>
<th>margins</th>
<th>long-term</th>
<th>rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>s.e.</td>
<td>%</td>
<td>s.e.</td>
</tr>
<tr>
<td>Not in scheme</td>
<td>36.1%</td>
<td>4.7%</td>
<td>62.0%</td>
<td>12.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>61.6%</td>
<td>8.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.7%</td>
</tr>
<tr>
<td>In agri-environment scheme</td>
<td>50.3%</td>
<td>2.6%</td>
<td>91.2%</td>
<td>3.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>65.4%</td>
<td>4.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.7%</td>
</tr>
</tbody>
</table>

Table 8: 2008 set-aside/fallow areas as a percentage of the 2007 areas tabulated by whether the business had any organic land (including in-conversion) in 2006-07.

<table>
<thead>
<tr>
<th></th>
<th>all set-aside</th>
<th>margins</th>
<th>long-term</th>
<th>rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>s.e.</td>
<td>%</td>
<td>s.e.</td>
</tr>
<tr>
<td>No organic land</td>
<td>46.2%</td>
<td>2.3%</td>
<td>86.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>64.5%</td>
<td>4.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.5%</td>
</tr>
<tr>
<td>With organic land</td>
<td>72.6%</td>
<td>13.9%</td>
<td>99.0%</td>
<td>0.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>95.8%</td>
<td>3.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28.0%</td>
</tr>
</tbody>
</table>

The selected sample included 25 farms that were wholly or partially organic, which is sufficient to produce estimates for this split (Table 8). The organic holdings have retained more of their set-aside land in all categories, and these differences are statistically significant for all set-aside and for margins and corners. The figures for long-term and rotational set-aside need to be treated with
more caution, due to the very low numbers of organic farms with such land, but are nevertheless suggestive of a real difference. These results are not surprising since organic land was exempt from the set-aside requirement, and so the changes on organic holdings are driven purely by the high prices, rather than the zero set-aside rate.

Respondent were also asked about whether their plans were likely to change. The estimated proportion of farms likely to change their plans was only 3%, with a further 5% uncertain. Where farmers responded ‘yes’, their comments mainly related to uncertainty regarding the exact details of their spring cropping.

Other questions

The remaining questions are shown in Box 3. Respondents were asked what percentage of the extra cropped area was, or would be, put under autumn crops. The results indicated that around 80% (standard error 2.6%) of land that would normally have been left as rotational set-aside was sown with autumn crops. This will result in a substantial reduction in the national area of winter stubble. There is some regional variation with lower percentages autumn sown in the south and west of England. By contrast only 56% (standard error 5.8%) of land which was formally long-term set-aside was autumn sown, presumably because the greater work involved in returning such land to cropping has resulted in farmers choosing to delay until the spring before sowing it.

Finally, respondents were asked about their plans for future years, if the zero set-aside policy continued. The results indicate that around 19% (standard error 6.0%) of farms which still retain some set-aside are planning to make further reductions in 2008-09. 70% (standard error 5.6%) do not plan further reductions, and the remaining 11% did not know.

Steve Langton
27/12/07

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areas.gen, regress.gen

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Results above