PUS surveys - 1965 - 2016

- Surveys funded by Defra under an LTSA
- Data used for registration & monitoring
- Respond to queries from Government, academia, industry & the public
- Surveys are voluntary but still achieve a 90% plus response rate
- Representative, stratified sample based on June Survey data
- National estimates made using Defra June Survey and Basic Horticultural Statistics data
PUS surveys - Data collected

- All usage - conventional pesticides; biopesticides & living biocontrol organisms
- Products, dates, rates and methods of application
- Water volumes and tank mixing
- Use of crop covers (selected surveys)
- Use of growing media (selected surveys)
- Use of pollinators (selected surveys)
Range of surveys currently conducted by the PUS(UK)

<table>
<thead>
<tr>
<th>Surveyed Crops</th>
<th>Number of Farms</th>
<th>% Area Grown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arable</td>
<td>1,201</td>
<td>6</td>
</tr>
<tr>
<td>Grassland &amp; Fodder</td>
<td>688</td>
<td>8</td>
</tr>
<tr>
<td>Edible Protected</td>
<td>272</td>
<td>52</td>
</tr>
<tr>
<td>Outdoor Vegetables</td>
<td>640</td>
<td>36</td>
</tr>
<tr>
<td>Soft Fruit</td>
<td>336</td>
<td>39</td>
</tr>
<tr>
<td>Orchards</td>
<td>283</td>
<td>35</td>
</tr>
</tbody>
</table>
PUS crop surveys - date of first survey

<table>
<thead>
<tr>
<th>Survey Year</th>
<th>Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>Hops</td>
</tr>
<tr>
<td>1965</td>
<td>Soft fruit</td>
</tr>
<tr>
<td>1966</td>
<td>Vegetables</td>
</tr>
<tr>
<td>1966</td>
<td>Outdoor bulbs &amp; flowers</td>
</tr>
<tr>
<td>1967</td>
<td>Orchards</td>
</tr>
<tr>
<td>1968</td>
<td>Glasshouse crops</td>
</tr>
<tr>
<td>1968</td>
<td>Mushrooms</td>
</tr>
<tr>
<td>1971</td>
<td>Hardy nursery stock</td>
</tr>
<tr>
<td>1974</td>
<td>Arable crops</td>
</tr>
<tr>
<td>1974</td>
<td>Grassland &amp; fodder crops</td>
</tr>
</tbody>
</table>
## PUS other surveys - date of first survey

<table>
<thead>
<tr>
<th>Survey Year</th>
<th>Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>Farm grain stores</td>
</tr>
<tr>
<td>1967</td>
<td>Commercial grain stores</td>
</tr>
<tr>
<td>1968</td>
<td>Local Authority Rodenticides</td>
</tr>
<tr>
<td>1981</td>
<td>Sheep</td>
</tr>
<tr>
<td>1983</td>
<td>Fruit stores</td>
</tr>
<tr>
<td>1988</td>
<td>Potato stores</td>
</tr>
<tr>
<td>1988</td>
<td>Rodenticide use - arable 1988</td>
</tr>
<tr>
<td>1989</td>
<td>Rodenticide use - fodder 1989</td>
</tr>
</tbody>
</table>
Surveys prior to 1987

- Data extracted from published reports
  - Survey & year
  - Crop surveyed
  - Methods of application
  - Treated areas with each active substance/formulation
  - Weight of active substance - issues with formulations
  - Additional data in reports, but not on rolling database
Surveys from 1987 onwards

• Full field level data
  • Survey & year
  • Crop surveyed, Products used
  • Dates, Rates & Methods of application
  • Tank mixing
  • Treated areas with each active substance/formulation
  • Weight of each active substance/formulation
Change in insecticide usage over the last decade - all crops
Change in insecticide usage on arable crops
Area of arable crops grown
Change in insecticide usage on arable crops
Change in pyrethroid usage on arable crops
Cypermethrin usage since 1981

Area treated (Ha)

2,500,000
2,000,000
1,500,000
1,000,000
500,000
0

Cypermethrin usage on wheat
Chlorpyrifos usage on wheat

Area treated (ha)
Oilseed rape - changing use of seed treatments
Oilseed rape - change in area grown (ha)
Change in area of hops grown
Change in insecticide usage on hops
Hops - number of insecticide applications
Change in insecticide usage on orchards

Area treated (ha)

Year:
- 1967
- 1970
- 1973
- 1979
- 1981
- 1983
- 1987
- 1992
- 1996
- 2000
- 2004
- 2008
- 2012
- 2014

Insecticides:
- Carbamate
- Neonicotinoid
- Organochlorine
- Organophosphate
- Pyrethroid
Change in area of orchards grown

![Bar chart showing the change in area of orchards grown from 1967 to 2014. The area grown decreases over the years, with significant decreases in the 1970s and 1980s.](image-url)
Change in insecticide usage on strawberries
Strawberries - number of insecticide applications
Change in living biocontrol usage on strawberries
Change in area of strawberries grown
# Strawberries - insecticide usage - 2014 - UK

<table>
<thead>
<tr>
<th>Active substance</th>
<th>Area Treated (Ha)</th>
<th>Weight Applied (Kg)</th>
<th>Prop Treated area</th>
<th>Prop Area grown</th>
<th>Number app</th>
<th>Prop RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorpyrifos</td>
<td>2,721</td>
<td>1,801</td>
<td>0.19</td>
<td>0.49</td>
<td>1.41</td>
<td>0.94</td>
</tr>
<tr>
<td>Pirimicarb</td>
<td>2,405</td>
<td>582</td>
<td>0.16</td>
<td>0.42</td>
<td>1.45</td>
<td>1.02</td>
</tr>
<tr>
<td>Thiacloprid</td>
<td>2,370</td>
<td>274</td>
<td>0.16</td>
<td>0.42</td>
<td>1.43</td>
<td>0.96</td>
</tr>
<tr>
<td>Pyrethrins</td>
<td>1,986</td>
<td>110</td>
<td>0.14</td>
<td>0.22</td>
<td>2.28</td>
<td>0.53</td>
</tr>
<tr>
<td>Lambda-cyhalothrin</td>
<td>1,811</td>
<td>16</td>
<td>0.12</td>
<td>0.35</td>
<td>1.30</td>
<td>0.74</td>
</tr>
</tbody>
</table>
Strawberries - timing of application -
2014 - UK