The National Agricultural Statistics Service (NASS) Agricultural Chemical Use Program is the U.S. Department of Agriculture’s official source of statistics about on-farm and post-harvest fertilizer and pesticide use and pest management practices.

In the fall of 2020, NASS collected data for the 2020 crop year, the one-year period beginning after the 2019 harvest and ending after the 2020 harvest, about chemical use and pest management practices used on soybean production. The data was collected as part of the Agricultural Resource Management Survey (ARMS) and the results are presented here.

The 2020 Agricultural Chemical Use Survey of soybean producers collected data about fertilizer and pesticide use as well as pest management practices in growing soybeans.

**Fertilizer Use**

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients, primarily nitrogen (N), phosphate (P2O5), and potash (K2O). Of the three primary macronutrients, potash was the most widely used on soybean acres planted in Wisconsin. Farmers applied potash to 77% of planted acres at an average rate of 92 pounds per acre per year. Macronutrients nitrogen and phosphate were applied at an average rate of 19 and 48 pounds per acre per year, respectively. The secondary macronutrient, sulfur, was applied to 37% of acres planted to soybeans.

**Pesticide Use**

The pesticide active ingredients used on soybeans are classified in this report as herbicides (targeting weeds), insecticides (targeting insects), and fungicides (targeting fungal disease). Herbicide active ingredients were applied to 99% of the soybean acres planted. Glyphosate isopropylamine salt was the most widely used pesticide on soybean acres, while glyphosate potassium salt was the active ingredient with the greatest total amount applied. Insecticides were applied to 14% of soybean acres planted in Wisconsin.
### Fertilizer Use on Soybeans – Wisconsin and Program States: 2020

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Wisconsin</th>
<th>Program states</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plant acres treated</td>
<td>Yearly rate</td>
</tr>
<tr>
<td></td>
<td>(percent)</td>
<td>(lbs per acre)</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>55</td>
<td>19</td>
</tr>
<tr>
<td>Phosphate</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Potash</td>
<td>77</td>
<td>92</td>
</tr>
<tr>
<td>Sulfur</td>
<td>37</td>
<td>20</td>
</tr>
</tbody>
</table>

### Pesticide Use on Soybeans – Wisconsin and Program States: 2020

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Wisconsin</th>
<th>Program states</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plant acres treated</td>
<td>Yearly rate</td>
</tr>
<tr>
<td></td>
<td>(percent)</td>
<td>(lbs per acre)</td>
</tr>
<tr>
<td>Fungicide:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>(D)</td>
<td>(D)</td>
</tr>
<tr>
<td>Herbicide:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clethodim</td>
<td>23</td>
<td>0.133</td>
</tr>
<tr>
<td>Fomesalen sodium</td>
<td>11</td>
<td>0.288</td>
</tr>
<tr>
<td>Glufosinate ammonium</td>
<td>13</td>
<td>0.624</td>
</tr>
<tr>
<td>Glyphosate dim. salt</td>
<td>15</td>
<td>1.627</td>
</tr>
<tr>
<td>Glyphosate iso. salt</td>
<td>34</td>
<td>0.974</td>
</tr>
<tr>
<td>Glyphosate pot. salt</td>
<td>33</td>
<td>1.332</td>
</tr>
<tr>
<td>Pyroxasulfonyne</td>
<td>10</td>
<td>0.114</td>
</tr>
<tr>
<td>S-Metolachlor</td>
<td>33</td>
<td>1.167</td>
</tr>
<tr>
<td>Sulfentrazone</td>
<td>13</td>
<td>0.185</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>3,920</td>
</tr>
<tr>
<td>Insecticide:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>28</td>
</tr>
</tbody>
</table>

1The 19 program states surveyed about soybeans in the 2020 APMS were Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, Pennsylvania, South Dakota, Tennessee, and Wisconsin.
2Total Fungicide, Herbicide, and Insecticide includes pesticides that are not listed in this table.
3Given the large number of herbicides applied to row crops, active ingredients that were applied to less than 10 percent of planted acres in Wisconsin are not included in this table, but can be found at [www.nass.usda.gov](http://www.nass.usda.gov).
4(D) Withheld to avoid disclosing data for individual operations.

Rotating crops during the past 3 years and scouting for weeds were the top pest management practices on soybean acreage.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of area planted</td>
<td>% of operations</td>
</tr>
<tr>
<td><strong>Avoidance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop or plant variety chosen for specific pest resistance</td>
<td>64</td>
<td>62</td>
</tr>
<tr>
<td>Planting locations planned to avoid cross infestation of pests</td>
<td>31</td>
<td>28</td>
</tr>
<tr>
<td>Planting or harvesting dates adjusted</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Rotated crops during past 3 years</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>Row spacing, plant density, or row directions adjusted</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnostic laboratory services used for pest detection via soil or plant tissue analysis</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Field mapping data used to assist decisions</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Scouted—established process used</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>for pests due to a pest advisory warning</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>for pests due to a pest development model</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>for pests or beneficial organisms—not scouted</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>for pests or beneficial organism by conducting general observations while performing routine tasks</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>for pests or beneficial organism by deliberately going to the crop acres or growing areas</td>
<td>72</td>
<td>68</td>
</tr>
<tr>
<td>Scouted for diseases by employee</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>by farm supply company or chemical dealer</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>by independent crop consultant or commercial scout</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>by operator, partner, or family member</td>
<td>72</td>
<td>69</td>
</tr>
<tr>
<td>Scouted for insects &amp; mites by employee</td>
<td>79</td>
<td>77</td>
</tr>
<tr>
<td>by farm supply company or chemical dealer</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>by independent crop consultant or commercial scout</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>by operator, partner, or family member</td>
<td>72</td>
<td>68</td>
</tr>
<tr>
<td>Scouted for weeds by employee</td>
<td>91</td>
<td>90</td>
</tr>
<tr>
<td>by farm supply company or chemical dealer</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>by independent crop consultant or commercial scout</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>by operator, partner, or family member</td>
<td>76</td>
<td>73</td>
</tr>
<tr>
<td>Weather data used to assist decisions</td>
<td>82</td>
<td>78</td>
</tr>
<tr>
<td>Written or electronic records kept to track pest activity</td>
<td>42</td>
<td>37</td>
</tr>
<tr>
<td><strong>Prevention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beneficial insect or vertebrate habitat maintained</td>
<td>34</td>
<td>26</td>
</tr>
<tr>
<td>Crop residues removed or burned down</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Equipment &amp; implements cleaned after field work to reduce spread of pests</td>
<td>47</td>
<td>42</td>
</tr>
<tr>
<td>Field edges, ditches, or fence lines were chopped, sprayed, mowed, plowed, or burned</td>
<td>48</td>
<td>45</td>
</tr>
<tr>
<td>Field left fallow previous year to manage insects</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flamers used to kill weeds</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>No-till or minimum-till used</td>
<td>45</td>
<td>33</td>
</tr>
<tr>
<td>Plowed down crop residue using conventional tillage</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Seed treated for insect or disease control after purchase</td>
<td>45</td>
<td>33</td>
</tr>
<tr>
<td>Water management practices used</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Suppression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beneficial organisms applied or released</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Biological pesticides applied</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Buffer strips or border rows maintained to isolate organic from non-organic crops</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Floral lures, attractants, repellants, pheromone traps, or biological pest controls used</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ground covers, mulches, or other physical barriers maintained</td>
<td>58</td>
<td>57</td>
</tr>
<tr>
<td>Pesticides with different mechanisms of action to keep pest from becoming resistant to pesticides</td>
<td>29</td>
<td>34</td>
</tr>
<tr>
<td>Scouting data compared to published information to assist decisions</td>
<td>44</td>
<td>36</td>
</tr>
<tr>
<td>Trap crop grown to manage insects</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

1 The 19 program states surveyed about soybeans in the 2020 AHMS were Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, Pennsylvania, South Dakota, Tennessee, and Wisconsin.

2 Less than half the rounding unit.