Agricultural Plastic Disposal in California: An Analysis by Industry

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Background:
- Plasticulture is the use of plastic in agriculture.
- A segment of California producers engage in plasticulture to enhance their production of agricultural commodities.
- At the end of agricultural plastics life cycle there is a potentiality that it enters the waste stream in California.

Objectives of the Study:
- To estimate how much agricultural plastic is being disposed of by eleven different agricultural production industries.
- To estimate how much agricultural plastic is disposed of in California by its agricultural producers.

Methods:
- A stratified survey conducted by the California Agricultural Statistics Service was sent to 3,000 producers in the state (30% response rate) on plastic usage and disposal.
- Industry represented in the survey: berries other than strawberries, strawberries, peppers, melons, tomatoes, nursery, greenhouse and horticulture, dairy, hay, grapes, and tree fruit and tree nuts.
- USDA-NASS statistics, California agricultural statistics, and the sample survey results were compiled to develop the estimate.
- A three step process was undertaken:
  1. Developed an estimate of the average and median usage for each industry using survey information.
  2. Multiplied the average or median usage by the total production units for the industries of interest.
  3. The last step summed together all of the industries disposal amounts to get a total amount for the state.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Tons of Agricultural Plastic Disposed of Annually in California</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate Based on Average Producer</td>
</tr>
<tr>
<td>Other Vegetables</td>
<td>12,194.29</td>
</tr>
<tr>
<td>Greenhouse and Nursery</td>
<td>11,799.81</td>
</tr>
<tr>
<td>Strawberries with Fumigation Plastic</td>
<td>10,484.31</td>
</tr>
<tr>
<td>Dairy</td>
<td>7,902.53</td>
</tr>
<tr>
<td>Orchard</td>
<td>4,544.79</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>4,196.70</td>
</tr>
<tr>
<td>Hay</td>
<td>2,187.14</td>
</tr>
<tr>
<td>Peppers</td>
<td>1,536.94</td>
</tr>
<tr>
<td>Grapes</td>
<td>340.04</td>
</tr>
<tr>
<td>Melons</td>
<td>193.29</td>
</tr>
<tr>
<td>Berries other than Strawberries</td>
<td>126.84</td>
</tr>
<tr>
<td>Total</td>
<td>55,506.70</td>
</tr>
</tbody>
</table>

Problem Statement:
- It is unknown how much agricultural plastic is entering the California waste stream.
- The importance of knowing how much agricultural plastic disposed of per year:
  - Regulations are being examined in California on whether there is a need to regulate the entrance of agricultural plastic into the waste stream without a solid estimate of how much agricultural plastic is being used in the state.
  - There is a group of agricultural plastic recyclers who are interested in entering the state to recycle this plastic, but are unsure how much supply they could have access to.

Implications of the Study:
- Given that in 2006, total California waste production was estimated to be 92.2 million tons (Stephens), agricultural plastic disposal represents a very small portion of the total California waste stream.
- Based on discussion with agricultural plastic recyclers from Asia, the approximately 56,000 tons of agricultural waste would only meet 1/12 of the supply needed to make a plant feasible.