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Agricultural Plastic Disposal in California: An Analysis by Industry

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CAL POLY

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.



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.

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.

Industry	Tons of Agricultural Plastic Disposed of Annually in California	
	Estimate Based on Average Producer	Estimate Based on Median Producer
Other Vegetables	12,194.29	4,101.06
Greenhouse and Nursery	11,799.81	927.21
Strawberries with Fumigation Plastic	10,484.31	9,555.00
Dairy	7,902.53	1,185.21
Orchard	4,544.79	51.55
Tomatoes	4,196.70	2,653.45
Hay	2,187.14	765.44
Peppers	1,536.94	1,433.32
Grapes	340.04	273.29
Melons	193.29	5.65
Berries other than Strawberries	126.84	63.88
Total	55,506.70	21,015.05

Reference: Stephens, Larry N., 2007. "California's 2006 Statewide Diversion Rate Estimate," California Department of Resources Recycling and Recovery , <http://www.calrecycle.ca.gov/lgcentral/rates/diversion/2006/default.htm>

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.

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.