

# Latest Activities and Successes of Ag Field Plastic Pollution Prevention

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# Agriculture Plastic and the Ocean

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- Ag is the dominant industry within the Monterey Bay National Marine Sanctuary watersheds
- Exposure to sun, wind, and water leads to exportation of plastic out of the fields and into the ocean

Source – Google Earth, CSUMB SFML, CA OPC, Terra Metrics



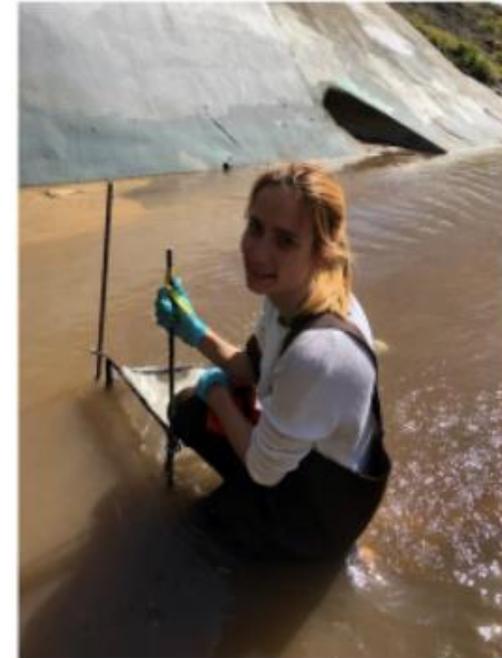
# Plastic Travels to the Ocean



# Look at SAC Meeting 2020

## Our Work Going Forward

- Look for opportunities to fund my continued work on plastic solutions for agriculture.
- Participate in Biodegradable Mulch Collaboration and Field Trials. Develop ways to communicate outcomes with Growers and Ag Professionals.
- Collaborate with CSUMB and MLML on continued monitoring, fate, transport and degradation of plastic
- Seek solutions for each plastic type and find ways to communicate to the ag community.



# 2020 - Assessment of Field Plastic Use In Monterey County

Crop Type	Planted Acreage 2018	Drip Tape (lbs/year)	Hoop House Plastic (lbs/year)	Mulch and Fumigation tarp (lb/yr)	Total Field Plastic (lb/yr)
Artichoke	5,993	232,941	0	0	232,941
Cane Berry	905	11,104	401,765	85,147	498,016
Cole	82,175	2,286,960	0	0	2,286,960
Field Crop	9,583	142,326	0	0	142,326
Grapes	44,924	3,179,945	0	0	3,179,945
Leafy Green	131,683	3,848,480	0	0	3,848,480
Misc	50,402	1,764,045	197,109	55,685	2,016,839
Orchard	1,938	207,995	0	0	207,995
Strawberry	9,839	517,876	0	7,801,007	8,318,882
<b>TOTAL</b>		<b>12,191,672</b>	<b>598,874</b>	<b>7,941,839</b>	<b>20,732,384</b>

Source -Krone 2020

# Benefits of Plastic Use in Agriculture

- More efficient resource utilization
- Weed suppression and lower pesticide use
- Longer crop season
- Control animal entry to field-food safety
- Packaging/ transport
- Increased yields
- Grow crops in arid areas/ expand area of crop production



Source - Rivulis



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# Drip Irrigation in Monterey County

- Minimize water use and are used consistently on many row crops in
- Drip Irrigation Tape (DIT) is the most abundant plastic type (by weight) used in crop production
  - ~ over 12 million pounds/year
- About 60% of the types of ag plastics assessed



Source : Pam Krone



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# Drip Tape Use in Monterey County

- Drip Irrigation Tape (DIT) use in Monterey County has increased by 250%, from 2005 to 2019.
- DIT is mostly recyclable, but recycling services are not easily accessible to all growers



Source : Jazmine Mejia-Munoz

# Solution Oriented Approach



- Involve key stakeholders to strategize and implement solutions to improve the recycling rate of DIT and reduce its leakage out
- 2021 - Hybrid Stakeholder meeting at the Monterey Farm Bureau



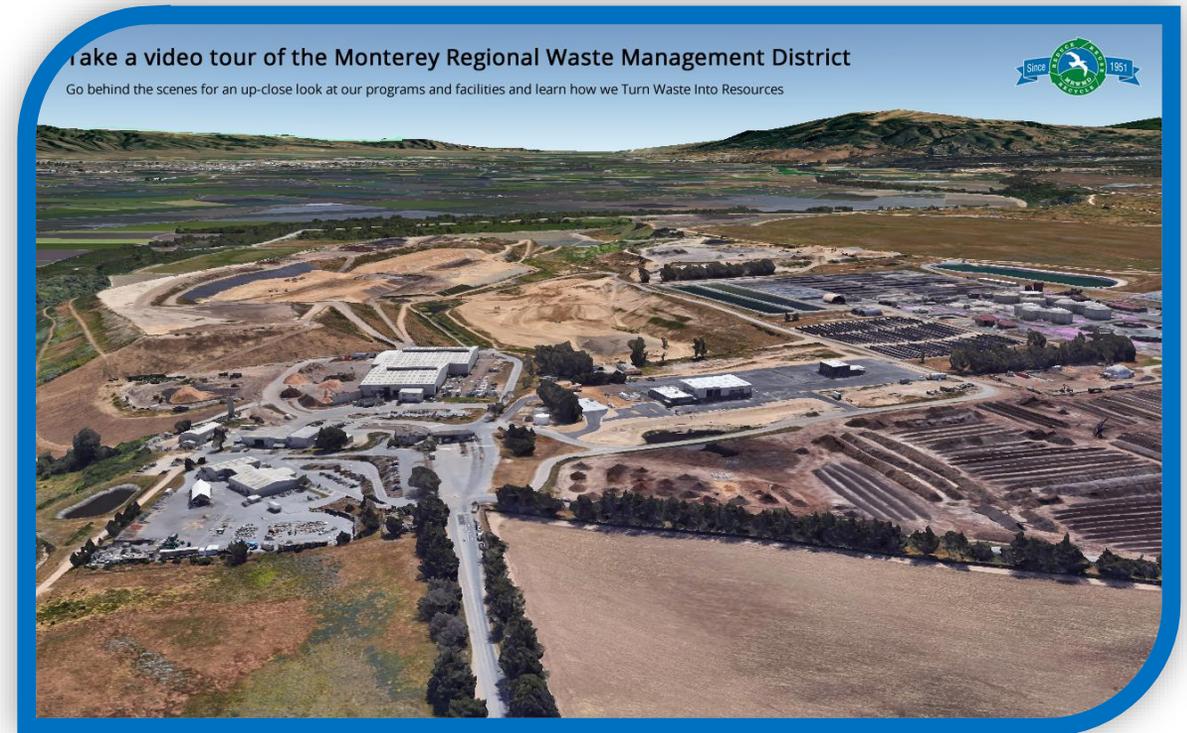
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# DIT Pilot Program at MRWMD

- The California Integrated Waste Management Act (AB 939), requires that centers divert 50% or more of the waste
- Collaboration with Monterey Regional Waste Management District and Recyclers – growers can drop off separated Drip Tape



Source: Jazmine Mejia-Muñoz

# Achievements

- Report: Identifying and Communicating Ways to Increase the Recycling of Drip Irrigation Used in Agriculture in Monterey County
- Outreach Events and Material – Ag Plastic Conference San Diego , Eco Farm, Ag Expo, ALBA, Upcoming National NRCS meeting (April 19)



Source: Jazmine Mejia-Muñoz

**100% of Separated Drip  
Tape arriving to MRWMD is  
now being Recycled!**

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# Polyethylene Mulch



- 7.9 millions pounds of plastic mulch are used per year in Monterey County
- Benefits – weed control, moisture retention, soil temp modification, etc
- Existing local Solution: Completely remove the mulch plastic from the fields including all the small fragments and take to landfill

Source: Jazmine Mejia-Muñoz

# Soil- Biodegradable Mulch (BDM)

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Source: Jazmine Mejia-Muñoz

- Alternative to PE Mulch, tilled in to the soil at the end of the season.
- Eliminates plastic waste and Disposal Challenges
- Ocean Trials – How does BDM behave in marine systems?



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# BDM Trials

- In 2021 - we had five BDM trials of biodegradable mulch in strawberry production on the Central Coast
- PSE Monitoring, Interviews, and Post Tillage monitoring
- Challenge – Need a faster Decomposition Rate



Source: Jazmine Mejia-Muñoz

# Best Practices!



Source: Jazmine Mejia-Muñoz

1. At the end of the season separate, clean, and bundle plastics used in agriculture fields
2. Collect stray pieces of plastic that are left behind
3. Recycle your plastic whenever possible
4. Purchase agricultural products made with recycled content or use alternative products

# Moving Forward

- Chemical Recycling - Pilot Program for recycling Mulch in Monterey County
- Expand BDM trials to include other colors, counties, crops, substrates to increase degradation, and ocean trials.
- Seek Funding for additional funding to support Ag Work
  - NOAA'S Marine Debris Prevention Grant, SCRI Grant
- Look at end of life solutions for other ag field plastics.
- Establish long term monitoring of Ag Plastic- Collaborate with beach clean up/ marine debris prevention groups to better understand the escape of Ag Plastics .



Source: Jazmine Mejia-Muñoz



# Stay Connected!

- Agriculture Water Quality Alliance-  
[www.awqa.org/](http://www.awqa.org/)
- You Tube Channel – California Marine Sanctuary Foundation
- Social Media as CA Marine Sanctuary Foundation
  - Instagram
  - TikTok
  - Facebook



**Snapshot Day**  
May 7th, 2022

Become a citizen scientist for a day and collect water quality data about the health of streams in your area.

Online refresher training April 20th at 6:00 pm  
Contact Pam.Krone@noaa.gov to participate

A row of logos for partner organizations including Salinas, San Mateo Resource Conservation District, Monterey Bay National Marine Sanctuary, Monterey Sea, and Santa Cruz.

# Thank you Ag Community Stakeholders!

Allan Company	American Recycling	ALBA
Bedford Enterprises	Boutonnet Farms:	Andros Engineering
Cal Giant	California Strawberry Commission	Braga Fresh
CMSF	D'Arrigo	CMP
Effectus Corporation	Gonzales Irrigation	Driscoll's
Flipping Iron	Huntington Farms / Natures Reward	Farmhouse Communication
Grower Shipper Association	Jain Irrigation Inc	Green Business Team
Irritec	Miguel Ramos	Impact Recycling
Measure to Improve	NRCS	JSM Organics
Netafim	RCD- Monterey Bay	MPWMD
Plant Sciences	Rebecca Bozarth	Open Farm Tours
RDO Water Company	Rivulis	RCD- San Mateo
Revolution Plastics	Satsuma Farms	RCD -Santa Cruz
Salinas Valley Recycles	The Monterey County Farm Bureau	Salinas Tarp Pullers
Taylor Farms	USDA	SWIX
UCCE	Monterey National Marine Sanctuary	Toro
Yolo County- Waste Reduction	Washington State University	Others that I might have missed!

# Thank You!

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**Pam Krone  
Bridget Hoover  
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Danielle Brown  
Karen Grimmer  
Dawn Hayes  
Lisa Wooninck**



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# Questions?

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