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# Public Works Officers Institute

## SUCCESSFUL GREEN WASTE DIVERSION

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# Overview

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- Most practices for disposing greenwaste end in land-application.
- Contaminated greenwaste harms the environment and increases trash bills.
- Communities need to communicate this to residents and businesses.

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# Anaerobic digestion alone not a solution

- ❑ Recovers some energy
- ❑ Does not treat wood
- ❑ Generates both *solid* and *liquid* waste (digestate)



Composting uses the energy contained wastes to

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- Stabilize it
- Make it safe to use
- Reduce its volume and mass
- Create a marketable product

# Compost: A Human *Biosecurity* Measure



# Compost: A Plant *Biosecurity* Measure



**Shot Hole Borer**



**Citrus Greening  
Disease**

# Compost improves soil structure

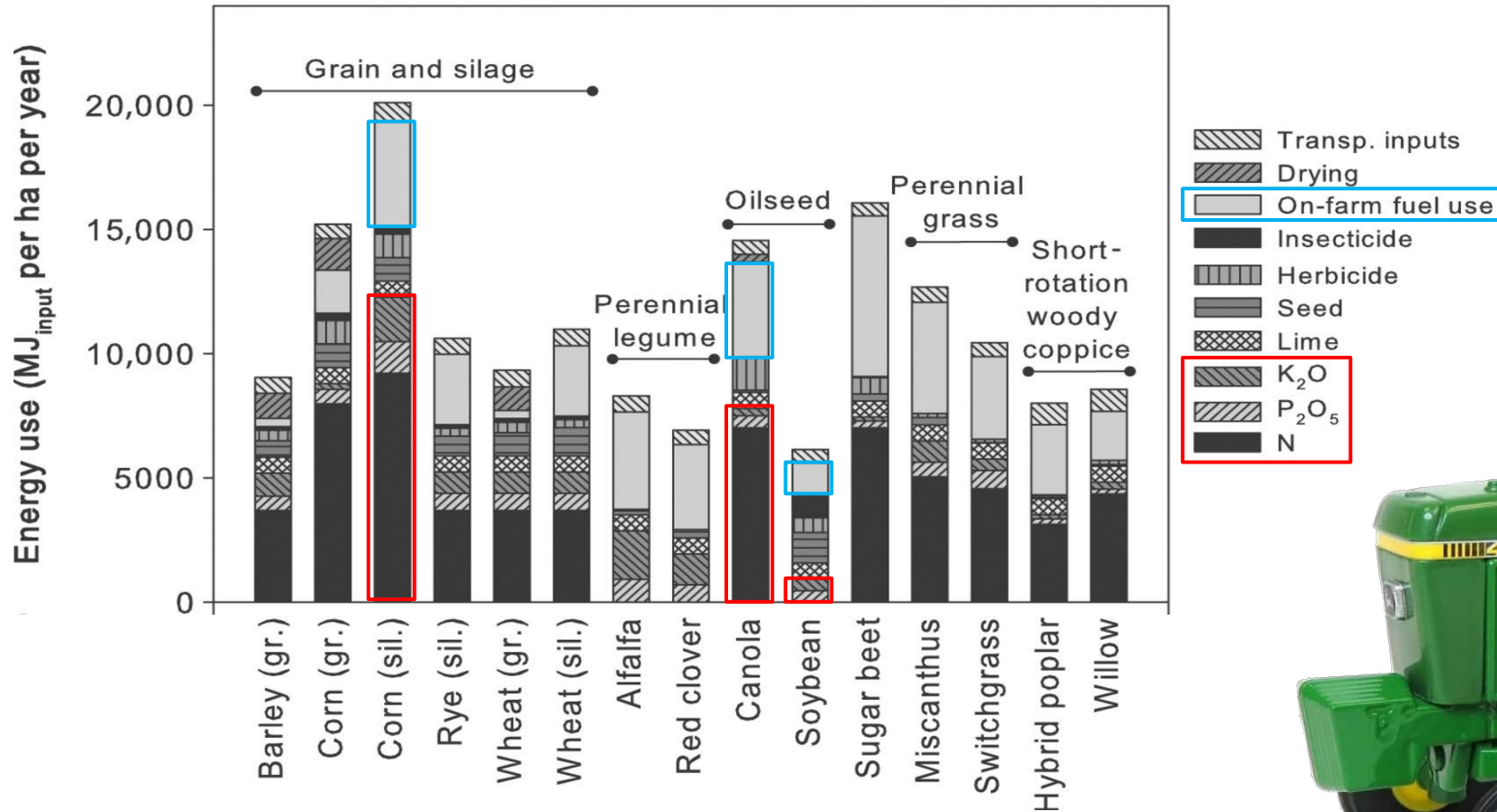
- ❑ Hold water while allowing air and water to penetrate
- ❑ Facilitate drainage and salt removal
- ❑ Allow roots to penetrate
- ❑ Are more stable, resisting erosion





# Farm energy use:

Most energy goes into **fertilizer production**, not **tractors**.



Camargo et al. (2013)



# Mulches

- ❑ Conserve water
- ❑ Control weeds
- ❑ Reduce runoff
- ❑ Stop erosion
- ❑ Remediate wildfires



# Public sentiment



- ❑ Composts are wholesome!
- ❑ Mulches are good!
- ❑ If they are clean....  
.....PFAS?



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# Compost, Mulch, C&G Use

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- These are land-applied.
- Land application takes people with land!
- People will pay more for clean material.
- Trash in compost becomes trash in the environment.

# Greenwaste collected June 8, 2018



(after cleaning)

# All this came out of just one truck



Picking before composting misses many items and it's expensive to clean thoroughly.





Trommel screens are used for post-processing, separating “fines” and “overs”



# Screened fines (best for soil amendments)



Screened overs concentrate contaminants.  
Best for mulches, the most visible use.



# New CA Physical Contamination Limits (Title 14)

- Total contaminants:  
≤ **0.5%** dry weight
- Film plastic:  
≤ **0.1%** dry weight
- *Rules apply to compost,  
mulch, chip and grind alike*

**0.1% film** →  
**plastic looks** →  
**like this** →

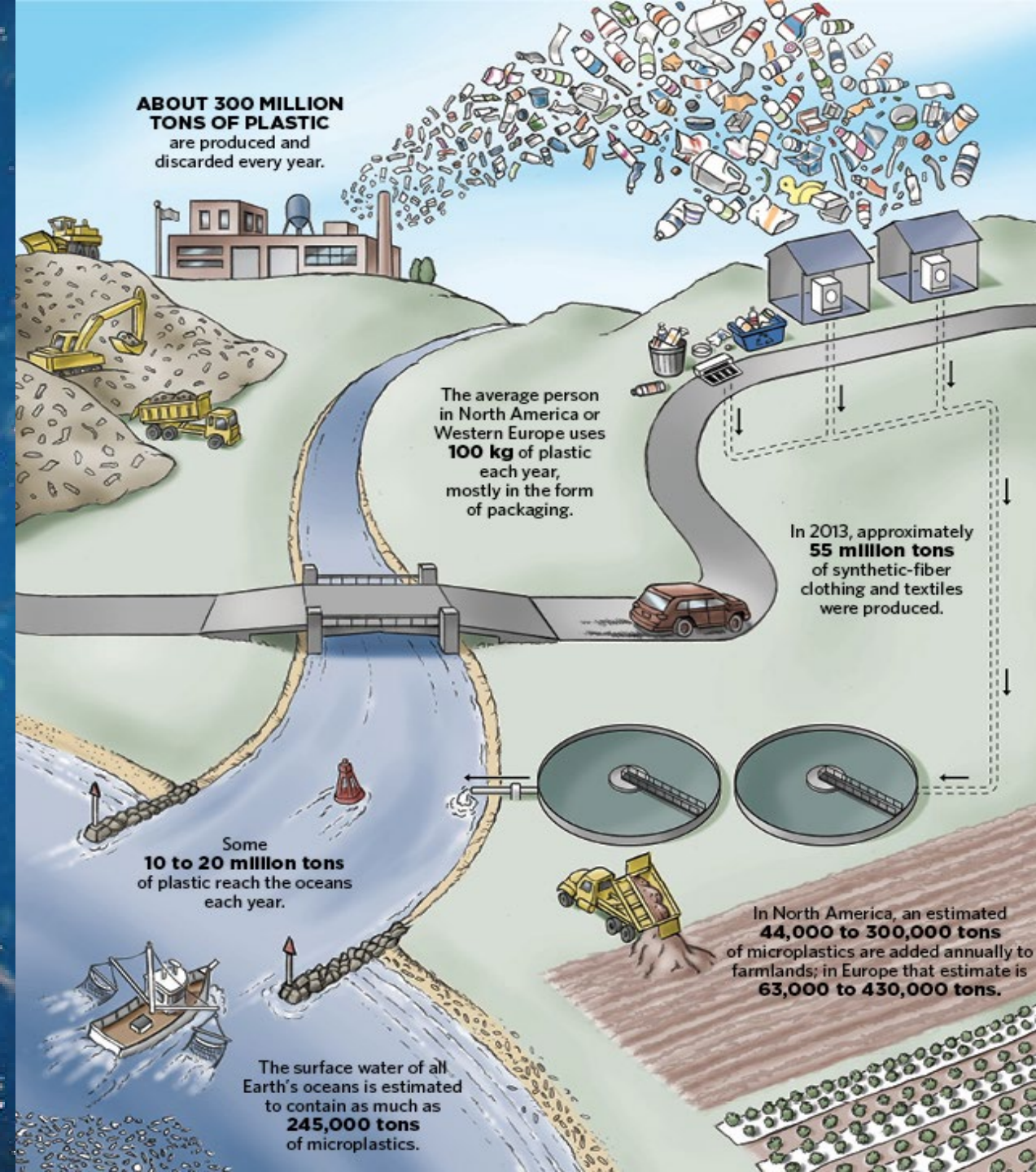


Compost decomposes leaving plastic behind.



# Microplastics

Title 14 does not regulate contaminants smaller than 4 mm



# Agricultural Use

- Somewhat more tolerant of contaminants than landscapers
- Often means shipping long distances (\$\$)
- Low prices per ton
- Farms usually use  $< 10 \text{ yd}^3$  per acre



# Energy conservation: Logistics

- Biggest expense/GHG footprint in waste management is *logistics*
- C&G is transported great distances and spread at rates up to 12" deep. 3x per year.
- Contaminants accumulate.





# Energy conservation: Logistics

- Local markets
  - ▣ *New construction*
  - ▣ *Existing homes*
  - ▣ *Parks*
  - ▣ *Community Gardens*
  - ▣ *Local Agriculture*
- Saves \$\$\$



# Local Construction: Riverside WELO

- Exposed soils must be covered with 3" mulch
  - 403 yd<sup>3</sup> per acre
- Planted soils must incorporate 4 yd<sup>3</sup> per 1000 ft<sup>2</sup> (1.3")
  - 174 yd<sup>3</sup> per acre
- Educational!!
- Close



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# This guy.



These items only in green waste bins:

- Garden prunings
- Grass clippings
- Leaves
- Small branches (up to 75mm in diameter and 750mm long)
- Flowers
- Weeds

Items that are not accepted in green waste bins include:

<input checked="" type="checkbox"/> NO Plastic bags	<input checked="" type="checkbox"/> NO Soil
<input checked="" type="checkbox"/> NO Plant pots	<input checked="" type="checkbox"/> NO Food scraps
<input checked="" type="checkbox"/> NO Domestic waste	<input checked="" type="checkbox"/> NO Hazardous waste or chemicals

A green waste bin with a lid that is slightly open. The lid has a circular logo with a crossed-out trash can and the text "ITEMS MUST BE LOOSE" and "NO PLASTIC BAGS". The bin has a logo on the front that says "MURPHY'S". The bin is surrounded by various types of garden waste, including leaves, grass clippings, small branches, flowers, and weeds. Arrows point from these items towards the bin.

The public must understand that there are consequences when green waste is contaminated.



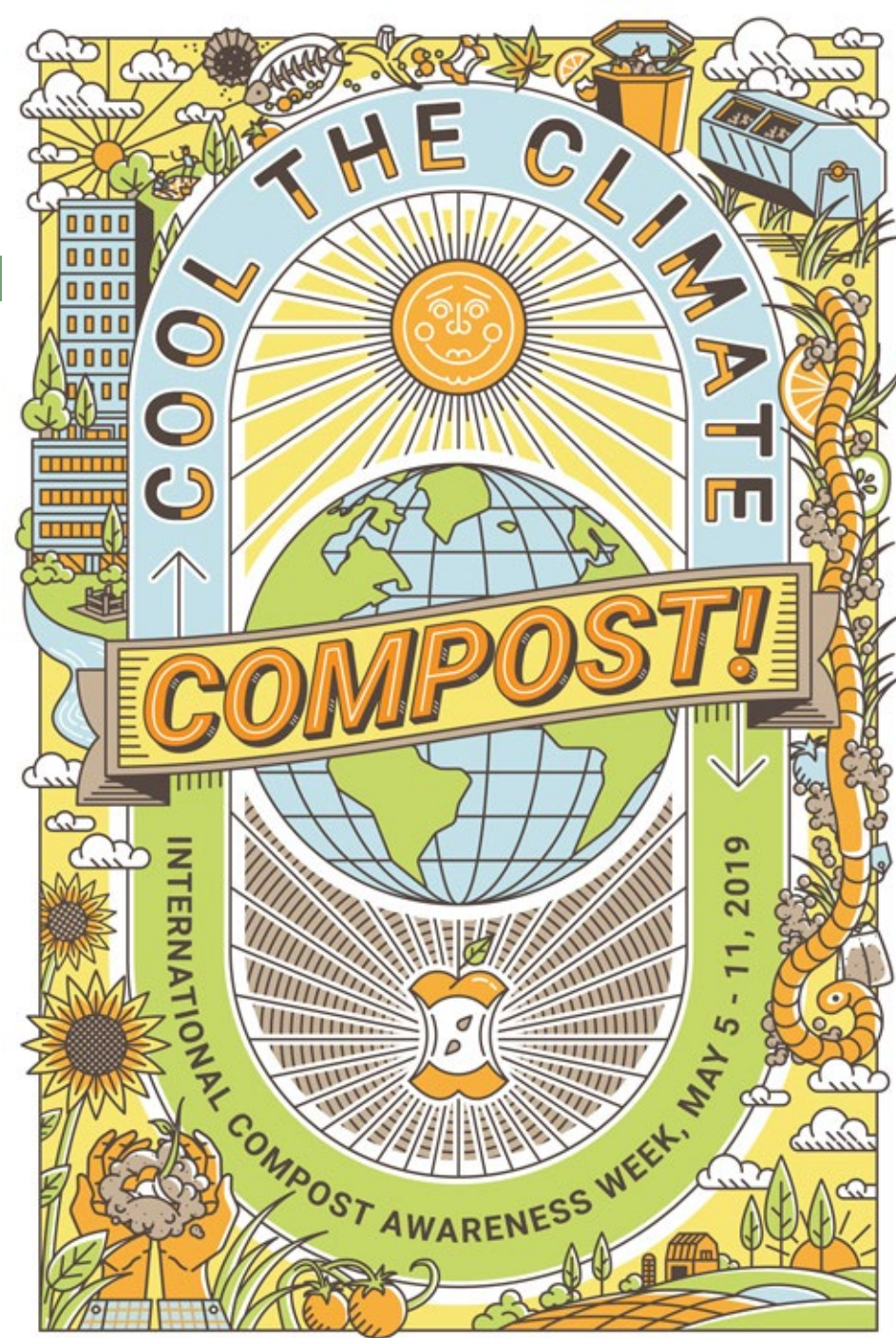
# Who will educate? Haulers or Communities?

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- ❑ Public education is likely not part of your hauler's repertoire.
- ❑ Haulers solve hard problems, like contamination, but they charge for it.
- ❑ Give haulers less problems and they can charge less.
- ❑ Education must be done locally, by the community, sensitive to the awareness and needs of neighbors.

# Educate and empower

- ❑ Assume people do not know.
- ❑ Interest is contagious, but so is apathy. It can be a street by street battle.
- ❑ Knowledge is power and people want to feel that power. Give them knowledge.
- ❑ People want to contribute to a healthy world and are looking for ways to do so.
- ❑ Encourage neighborhood awareness and pride.
- ❑ Find allies.



Make this a topic of public conversation:

- ❑ Keep contaminants out of our greenwaste bins.
- ❑ Purchase and use clean composted mulches and soil amendments.
- ❑ Encourage neighbors to discuss
  - Keeping green clean.
  - Using composts and mulches.





# Make this a topic of public conversation:

- It's a statewide issue. Let's have a *statewide* communication program.
- Let's fund *program evaluators* to document our best approaches (American Evaluation Association, AEA).



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