



# Partnering with USDA

William Orts – Research Leader, Bioproducts



18 November 2015

# Our USDA Research Mission:

**Add value to agricultural products  
to help the rural economy**

**Agricultural Research Service**



# ARS ⇔ >125 Locations with 4 Major Labs



# USDA Western Regional Research Center



## **Albany, California**

~340 people

~50 in Biofuels/  
& Bioproducts

Known for biotechnology,  
especially crop biotech.



# CRADA Partnership

CRADA Partners share a common goal and some shared equity in the game: ⇔

- \*Funding
- \*Equipment
- \*Materials
- \*Facility Access
- \*Staff
- \*Know-how

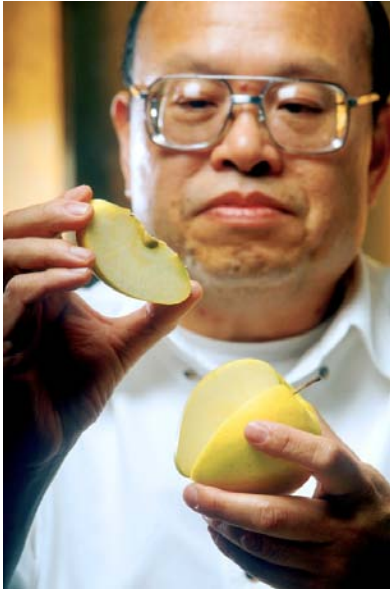
Corporate Partners will receive:

- \*Access to ARS technology and expertise
- \*Service from ARS Patent Advisors
- \*Right to negotiate an exclusive patent license

Use of USDA facilities, etc.



# Packaged Fruit Slices



**McDonald's sells 65 million lbs/yr of apples in the U.S.**  
USDA continues to collect royalties

On August 1, 2014, the USDA, the EPA, and the DOE released a Biogas Roadmap outlining voluntary measures that farmers and dairy producers can implement to increase the use of methane digesters.



# Adding Biogas Capacity: An ongoing story.....

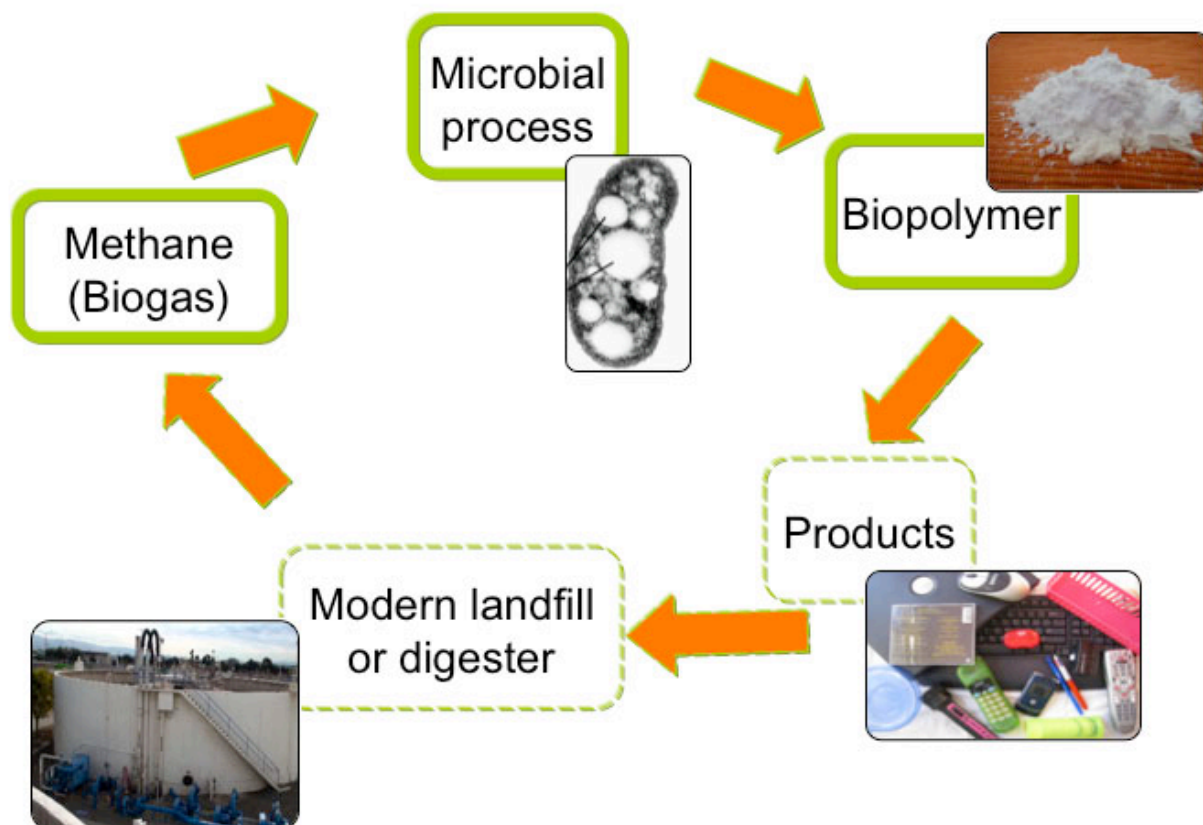


SALINAS VALLEY  
SOLID WASTE AUTHORITY  
*Promoting the Environmental Health  
of the Salinas Valley*





# Plastics from Biogas



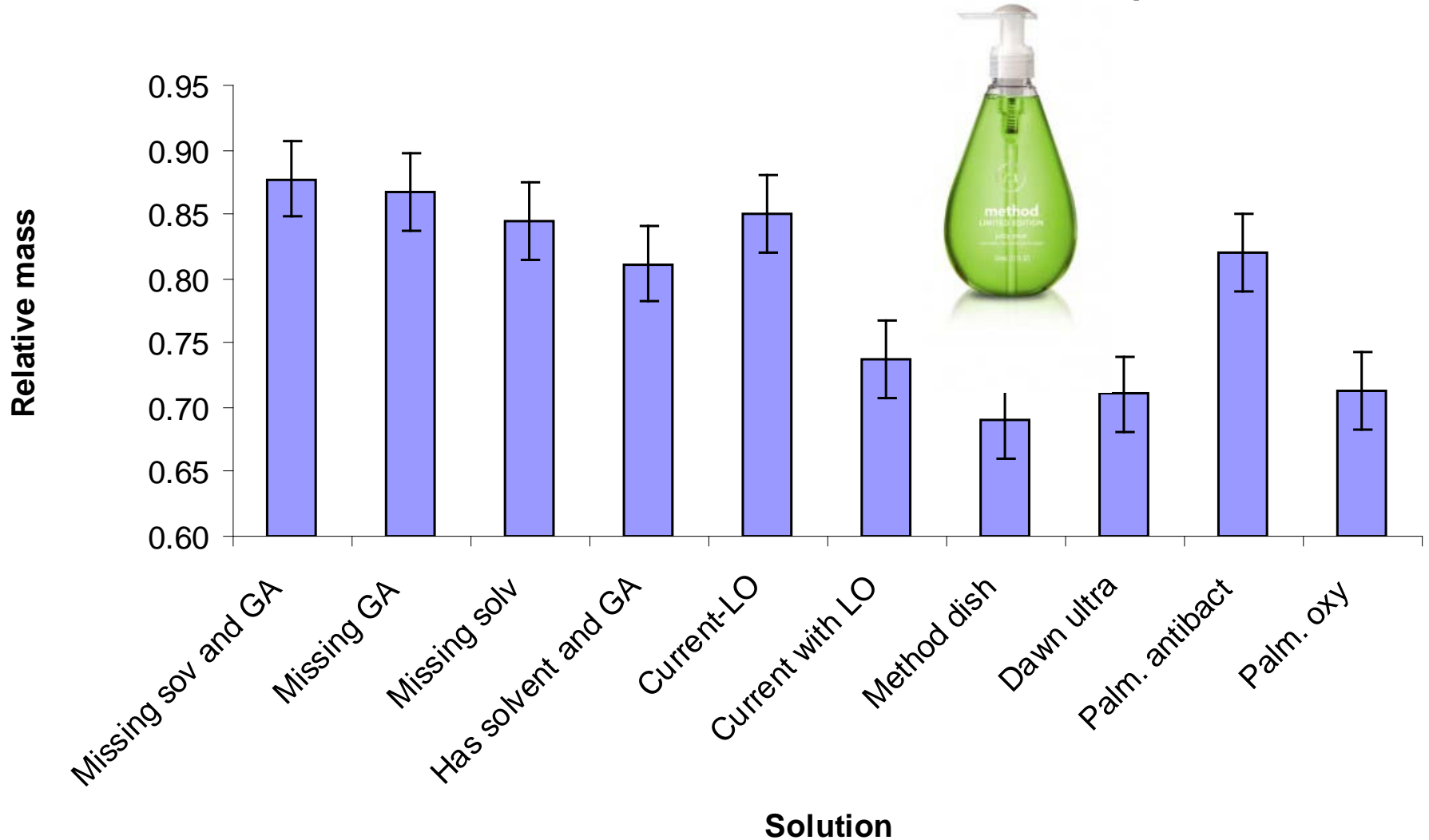
Digestion is cheaper than fermenting sugars



Full Cycle Bioplastics

# If our missions align, we aim to help.....

Relative mass of soil after treatment with solution and aq. wash



# Partnerships: Single use items

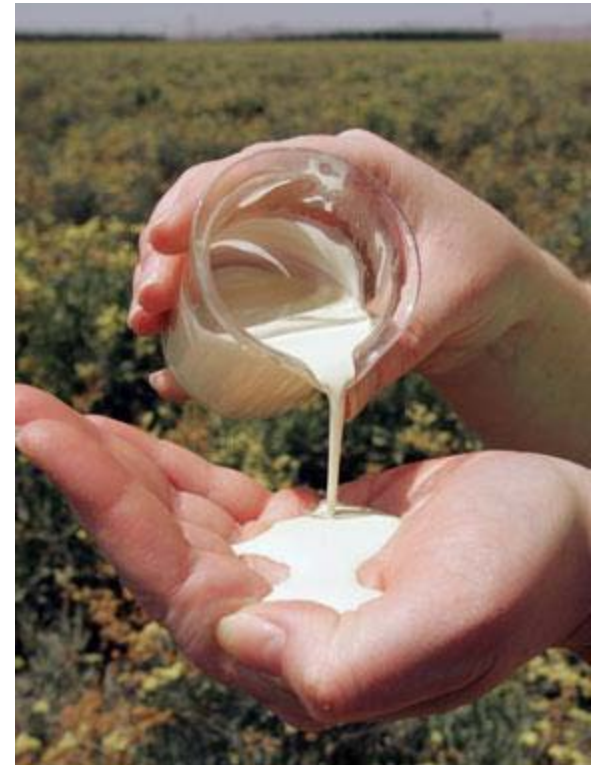




# Domestic Rubber



**Guayule Field**



**latex**

**Patagonia has partnered with eco-friendly biomaterial firm Yulex to create the first plant-based wetsuit material.**



*Patagonia environmentally friendly wetsuits*



**The New York Times**

# **Making Tires From a Desert Shrub Found in the U.S.**

By DIANE CARDWELL AUG. 18, 2015



# Greener Diesel Alternative



Using nanotechnology to transform the renewable industry

Vegetable oil based  
surfactant

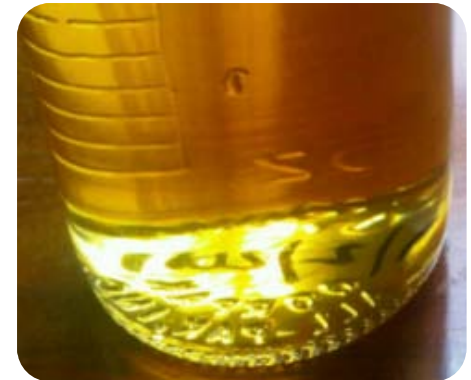
<15nm



➤ Expands the  
ethanol "blend  
wall"

Ethanol & H<sub>2</sub>O

Diesel/Ethanol  
MicroBlend







Using nanotechnology to transform the renewable industry

## Partnership & Relationships



Nanotech  
Laboratory



Biomass (Low CI)  
Feedstocks  
Scale-up R&D



Emissions  
testing



Commercial Relationships with Ethanol Producers

# Adding Biogas Capacity: An ongoing story.....



SALINAS VALLEY  
SOLID WASTE AUTHORITY  
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# CR<sup>3</sup> Autoclaves:

- Pressurized hot water treatment.
- Reduces volume.
- Isolates recyclables
- Fractionates components



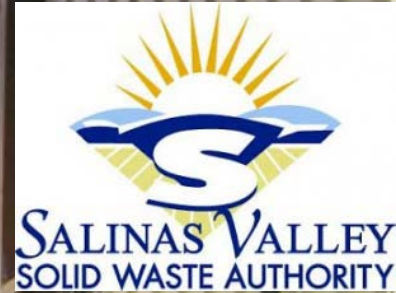


# Salinas Crazy Horse Landfill





# Conveyor loading MSW to autoclave



# MSW in the autoclave prior to steaming





# MSW after autoclaving



# Post-Autoclave MSW Sorting



3/8"

1/2"

1"

>1"

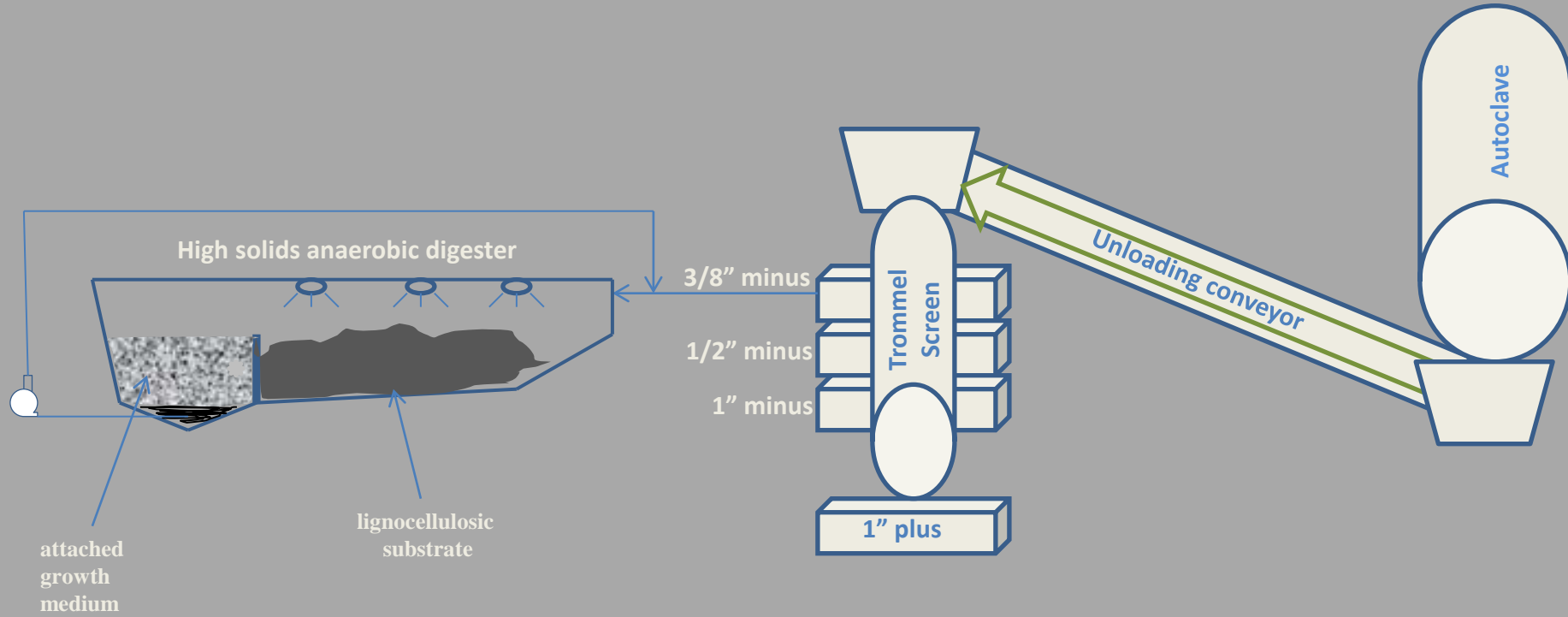
**Trommel Screen  
Side View**



**Trommel Screen  
Frontal View**



# Anaerobic digestion $\Leftrightarrow$ Biogas



# The BioPreferred Program

<http://www.biopREFERRED.gov/>

**The BioPreferred program gives vendors a significant advantage in filling federal contractors. This can be HUGE when filling military contracts, etc.**



# The BioPreferred Program



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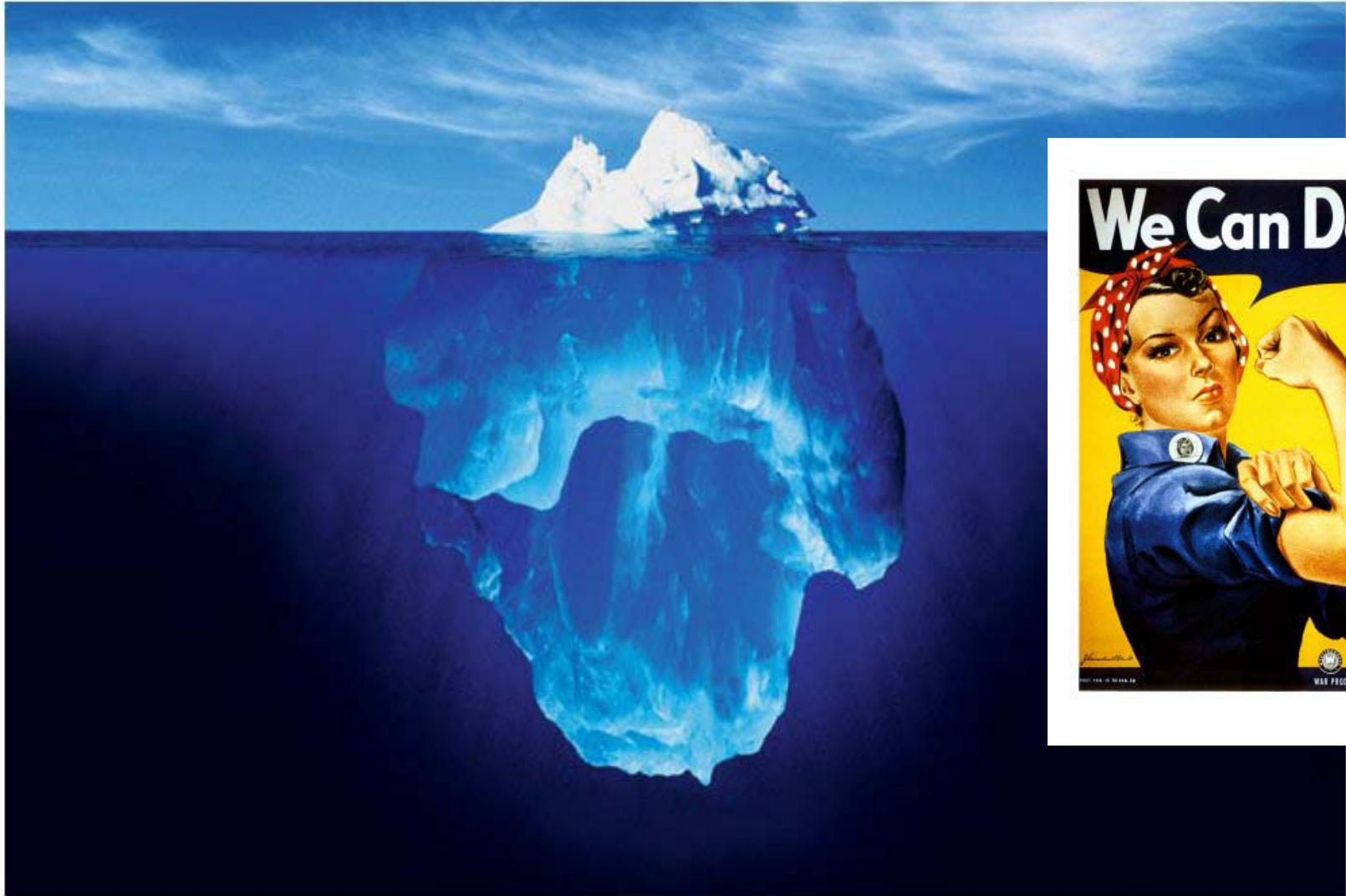
# Summary....



- The mission of ARS Scientists includes partnering to promote Tech Transfer.
- If our mission aligns with a company's ⇔ we can help!
- The USDA's BioPreferred Program gives contractual preference to green products
- We are not limited to helping small companies.



# Can you do that research...?



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Illustration by Y. Rook.

