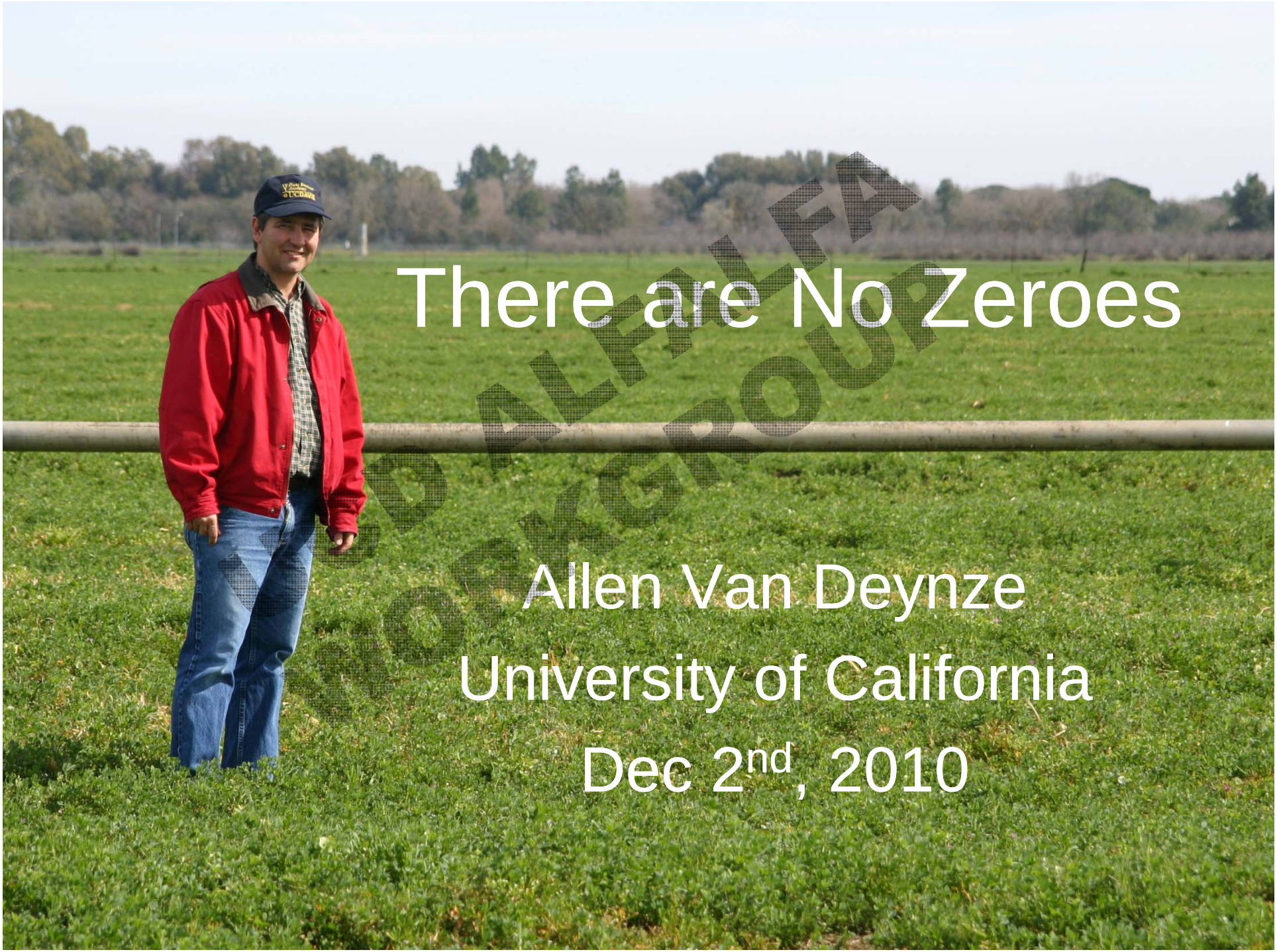
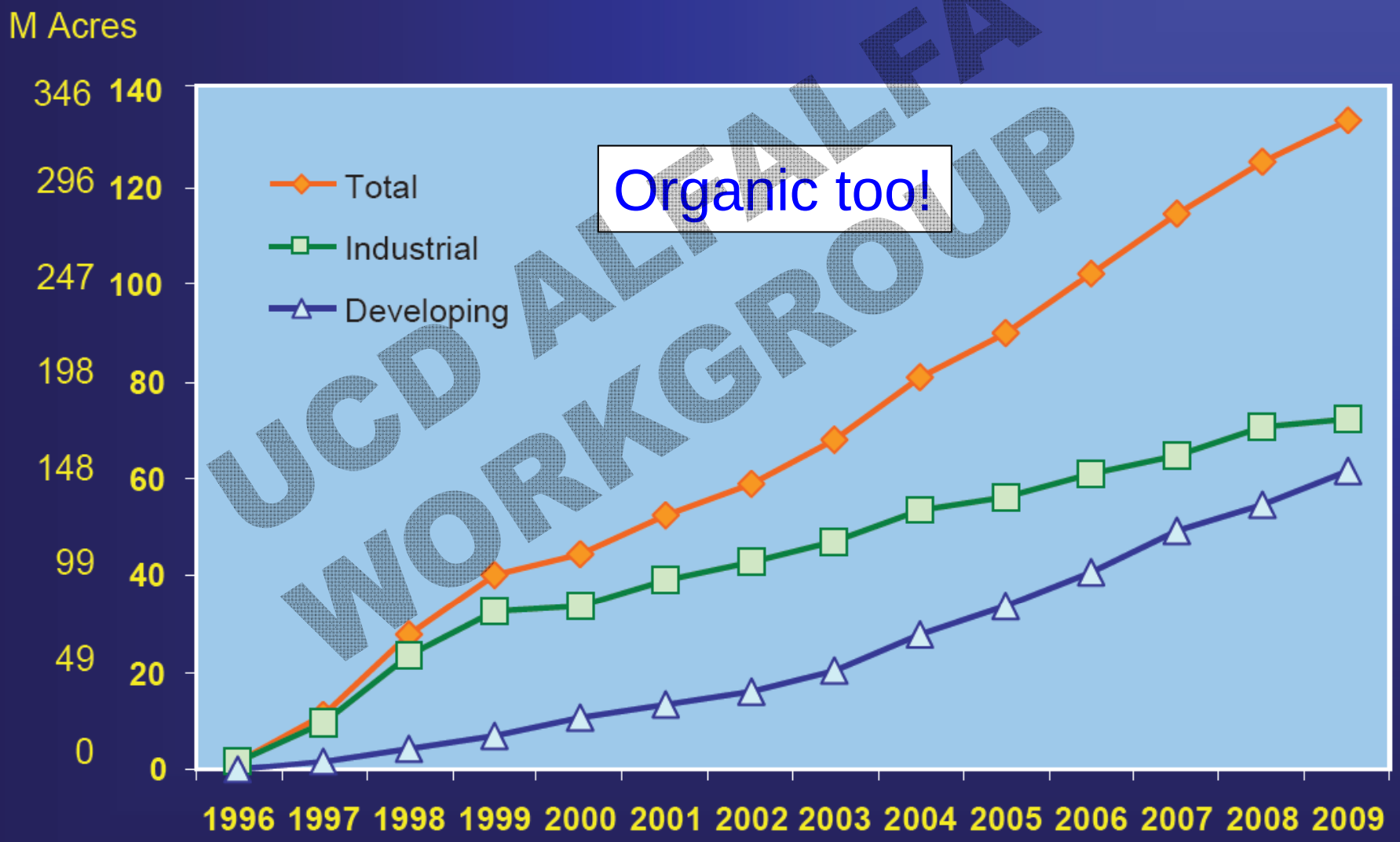

There are No Zeroes
Allen Van Deynze
University of California
Dec 2nd, 2010

Global Area of Biotech Crops, 1996 to 2009: Industrial and Developing Countries (M Has, M Acres)



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Source: Clive James, 2010

2009 Biotech World stats

Crop	Biotech (%)
soybean	77
cotton	49
maize	26
canola	21
Sugarbeet (US)	95
Alfalfa (2005 US)	5-10

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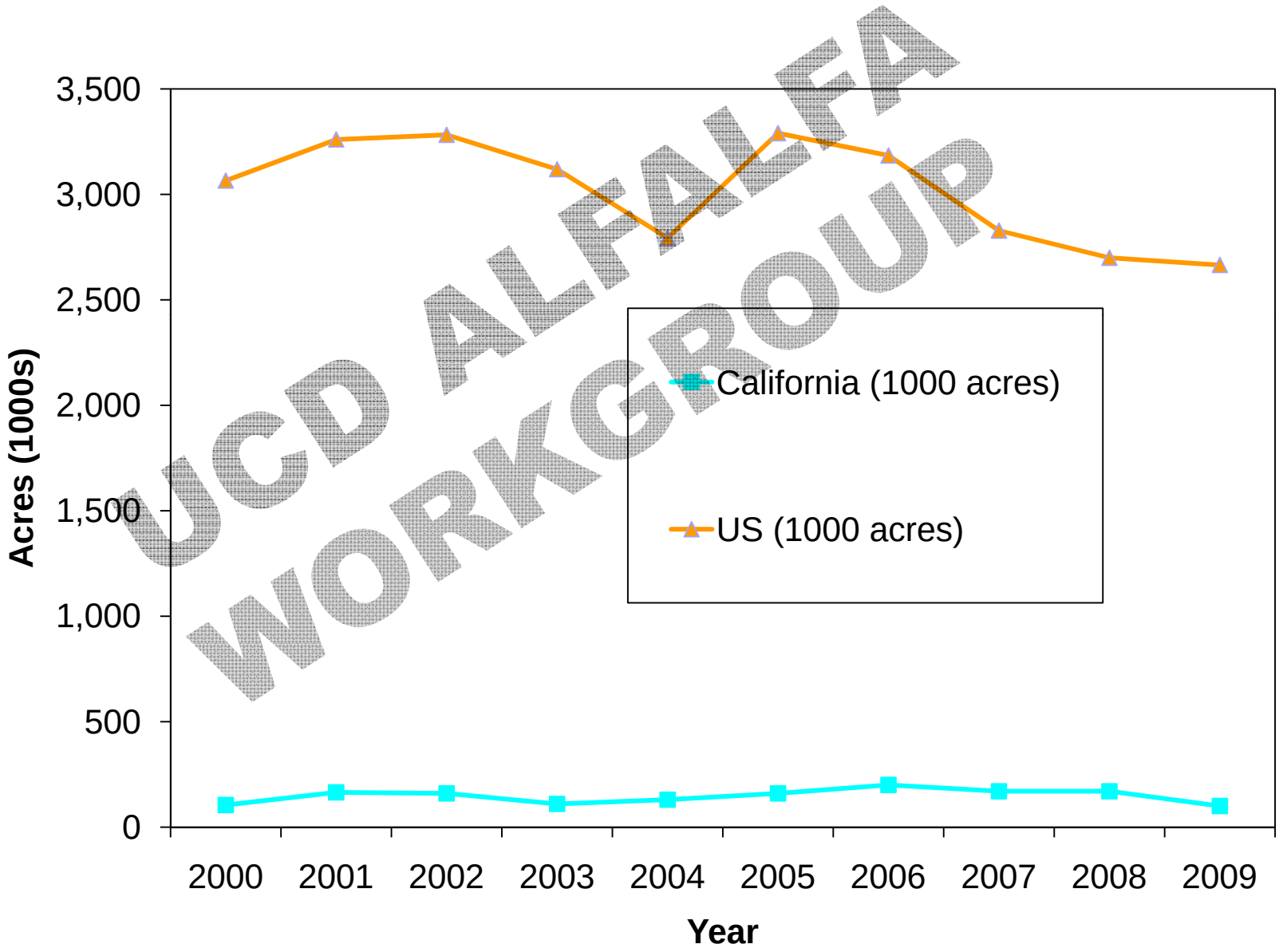
Organic = 0.51% of US cropland,
Biotech = 31%(USDA 2007)

Production of alfalfa



Alfalfa & Alfalfa Mixtures (2009)

	1000 acres	Organic acres*	% organic
California	170	37	21.5
United States	2828	534	18.9

*Organic includes all hay

But Seed only 1-2% and <1% organic

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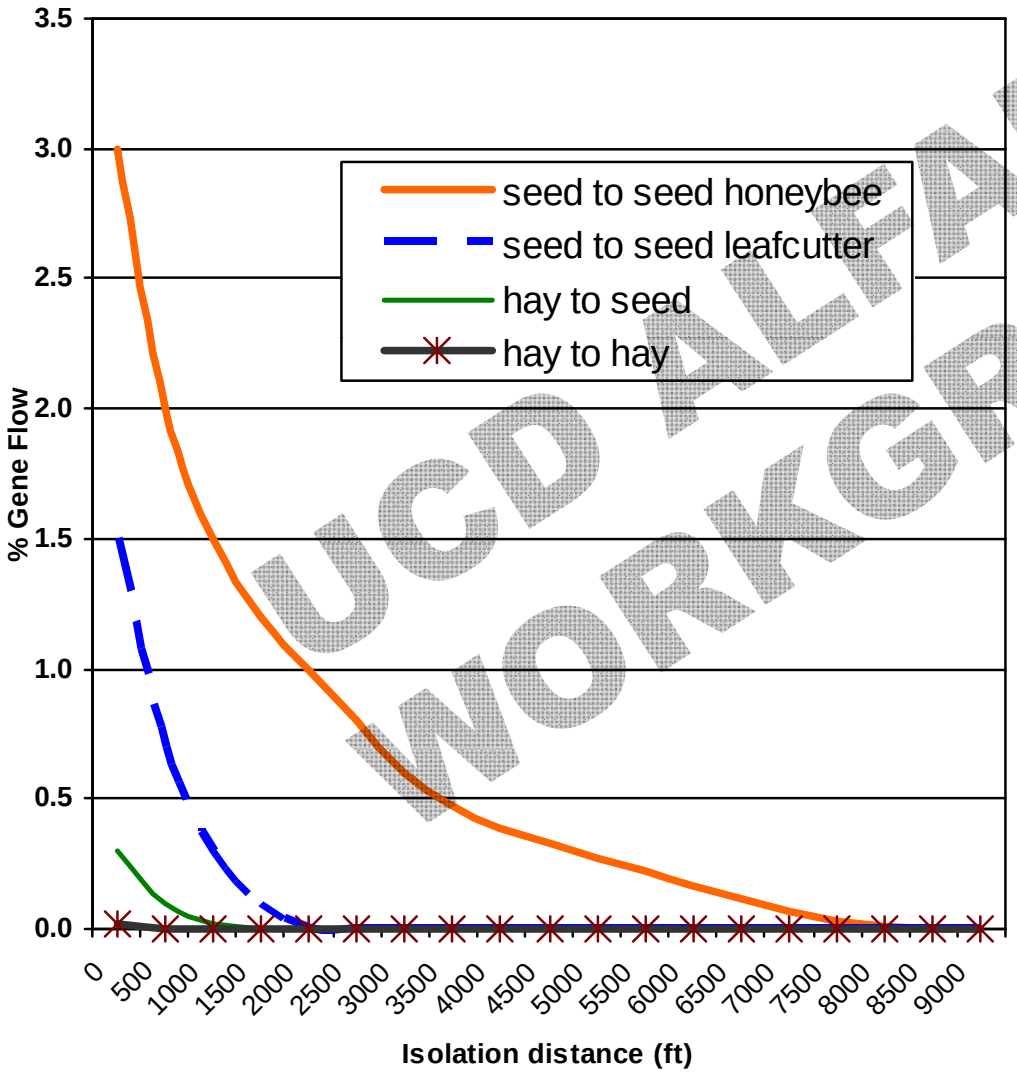
Co-existence is essential



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There are no zeros!

Co-existence is Feasible

- AOSCA-89 years old, 70 countries
  - Alfalfa Seed Stewardship Program (ASSP)
- OECD- 49 yrs old - 33 countries
- ASTA-Stewardship
- NAFA-alfalfa stewardship papers

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All practical coexistence strategies have no zero tolerances

Coexistence failures

- Starlink
- Rice LL604
  - Partial approval- feed only
  - Not a safety issue
- Leonardo Sustainability committee-ANSI standards
  - Super-organic
  - Denounced by USDA
  - All Production Agriculture representatives left
- All of the above had zero thresholds

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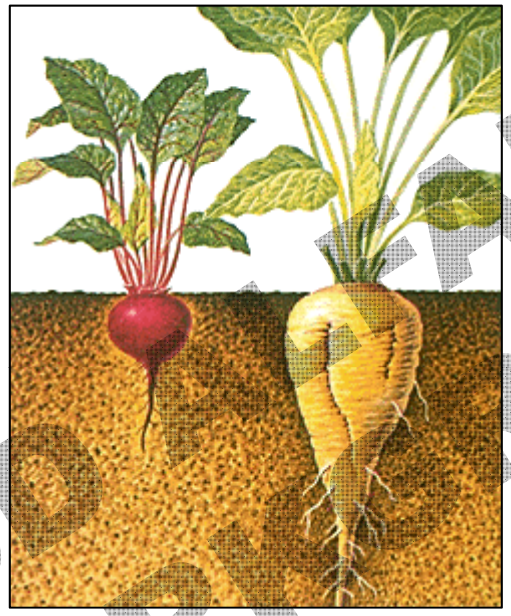
Beets and chard



ALFA
GROUP

http://www.howstuffworks.com/

Sugar beet

- 2005: RR sugar beet de-regulated in US
- 2009: 95% US sugar beets RR
- July, 2010: CFS sues USDA- sugar beet planting injunction
- Aug. 2010: USDA issues permits for 11 sites in AZ, OR
- November – Center for Food Safety sues USDA again for allowing regulated trials in AZ
- Shooting for a zero standard.

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Recent Successes

- AB541 CA, 2008

.The bill would provide that a farmer is not liable based on the presence or possession of a patented genetically engineered plant when the farmer did not knowingly buy or otherwise knowingly acquire the genetically engineered plant, acted in good faith and without knowledge of the genetically engineered nature of the plant, and when the genetically engineered plant is detected at a de minimis level, as specified.

- Practical threshold

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Recent successes-International

Cartegena Protocol on Biosafety

- CPB Article 15 states that a lack of information *per se* does not imply risk
- Liability clause-2010-an administrative regime and not a civil liability regime, which means that only the Government can act in case there is alleged damage to biodiversity i.e. not the courts.

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Co-existence Workgroups

- Safflower
- Alfalfa

National Alfalfa and Forage Alliance

CAST
The Science Source for Food, Agricultural, and Environmental Issues

Gene Flow in Alfalfa:

Biology, Mitigation, and Potential Impact on Production

UNIVERSITY OF CALIFORNIA
vision of Agriculture
d Natural Resources
://anrcatalog.ucdavis.edu

PUBLICATION 8153

Roundup Ready Alfalfa: An Emerging Technology

ALLEN VAN DEYNZE, Biotechnology Specialist, Seed Biotechnology Center, University of California, Davis; **DANIEL H. PUTNAM,** University of California Cooperative Extension Alfalfa Specialist, University of California, Davis; **STEVE ORLOFF,** University of California Cooperative Extension Farm Advisor and County Director, Siskiyou County; **TOM LANINI,** Cooperative Extension Weed Specialist, University of California, Davis; **MICK CANEVARI,** University of California Cooperative Extension Farm Advisor and County Director, San Joaquin County; **RON VARGAS,** University of California Cooperative Extension Farm Advisor and County Director, Madera and Merced Counties; **KURT HEMBREE,** University of California Cooperative Extension Farm Advisor, Fresno County; **SHANNON MUELLER,** University of California Cooperative Extension Farm Advisor, Fresno County; **LARRY TEUBER,** Professor, University of California, Davis

www.alfalfa.org

ICD ALFALFA WORKGROUP

Alfalfa progress

- 2005-deregulated
- 2007 re-regulated –EIS
  - Gene Flow and weed resistance
- 2010- Court ruling reversed on all counts in 7:1 decision
- 2011 – planting again?

What was the cost of this decision to the industry?

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Co-existence principles

- Well established in the seed industry
- Communication
- Person with different standard bares the responsibility to meet it
- Practical thresholds
- Rules have changed
  - Public now involved
  - Courts involved
  - Science doesn't matter?
  - Neither are informed or understand effect of zeroes

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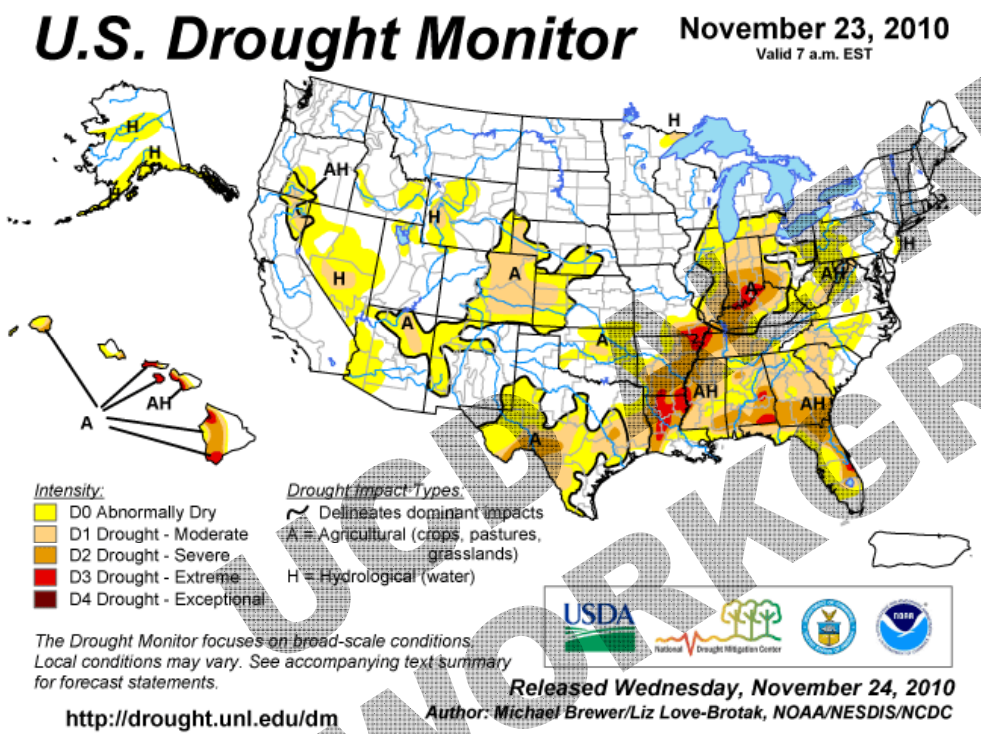
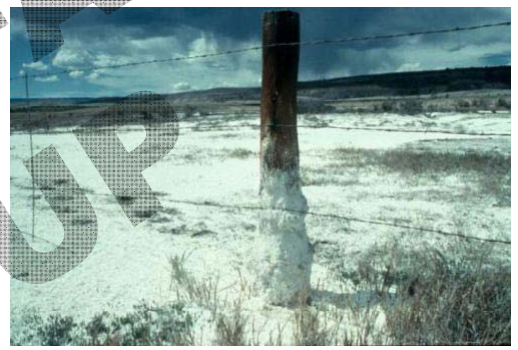
Can we ignore solutions to sustainability?





Salinity

Nitrogen use efficiency

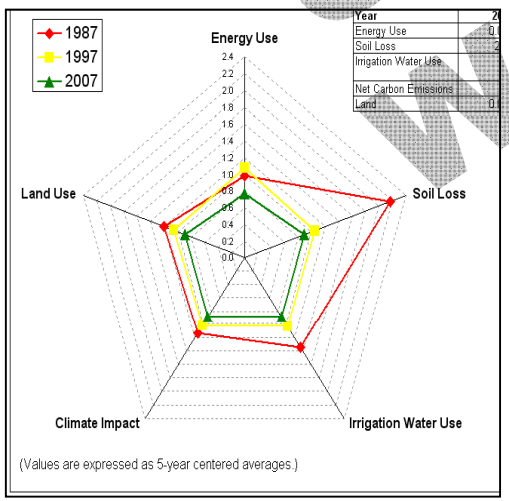
USDA-ARS WORKGROUP

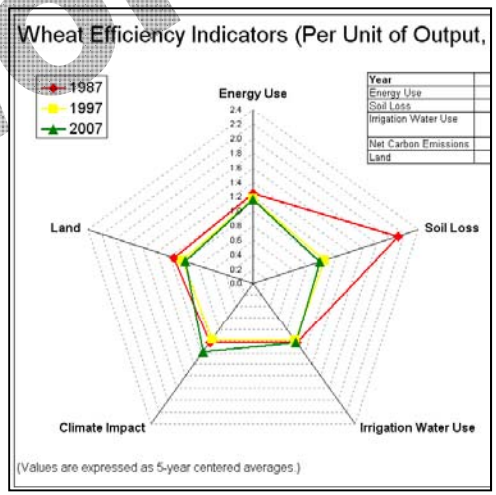
Keystone Alliance for Sustainibility

USDA ALFALFA WORKGROUP

Corn Per bushel findings:

- **Productivity** (yield per acre) increased 41 percent
- **Land use** decreased 37 percent
- **Soil loss** decreased 69 percent
- **Irrigation water use** has been variable, with an average 27 percent decrease
- **Energy use** decreased 37 percent
- **Greenhouse gas emissions** decreased 30 percent



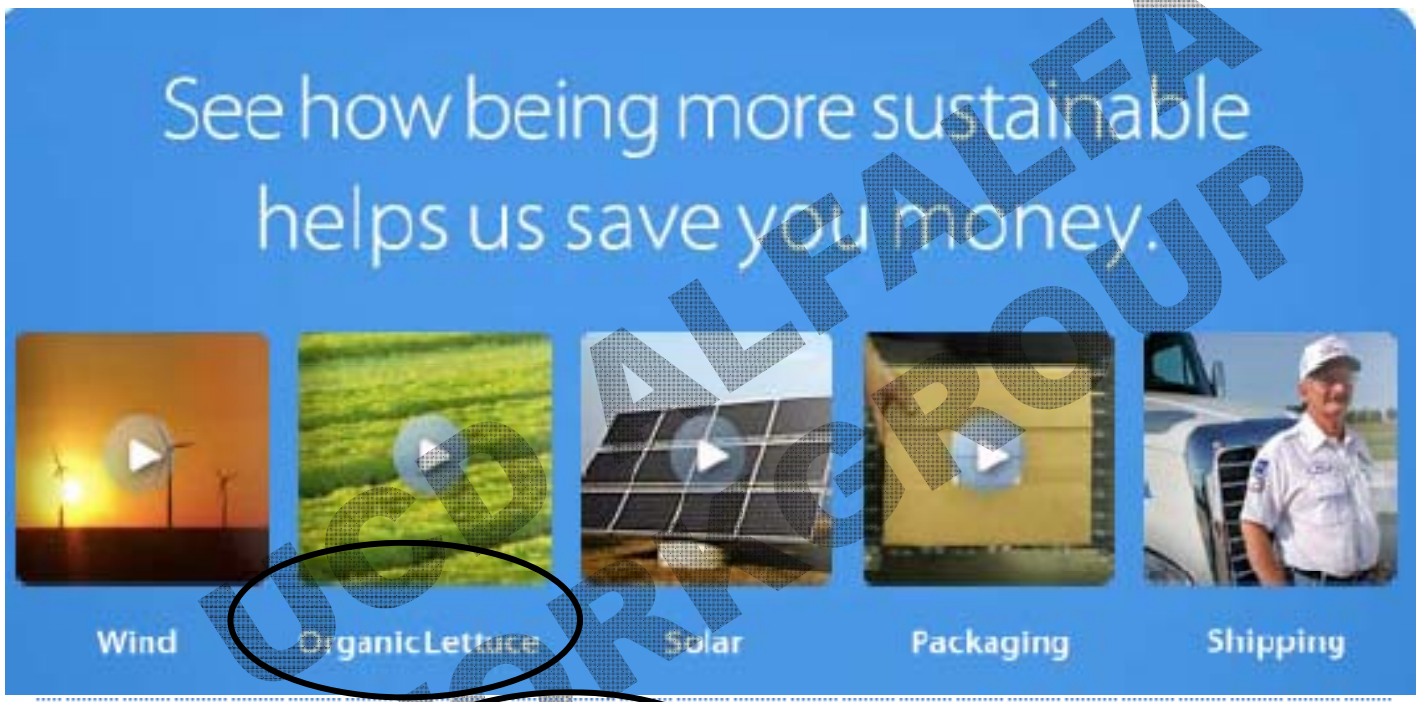


Wheat Per bushel findings:

- **Productivity** (yield per acre) increased by 19 percent
- **Land use** was variable, with an average overall decrease of 17 percent
- **Soil loss** improved 50 percent with most improvements over the first half of the study period
- **Irrigation water use** per bushel produced due to irrigation showed an average flat trend
- **Energy use** decreased 9 percent
- **Greenhouse gas emissions** increased 15 percent, with a larger increase in the latter half of the study period

www.keystone.org

Will Walmart understand?



Eat Organic: Safe, Healthy Fruit Choices

Be sure that you're eating healthy foods that haven't been exposed to harmful chemicals.

View Article

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The only person with zeroes

Andrew Kimbrell $100,000,0..

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"**CFS** seeks to halt the approval, commercialization or release of any new genetically engineered crops until they have been thoroughly tested and found safe for human health and the environment"

"**CFS** Files Legal Action Against USDA on National Organic Standards"

http://archive.centerforfoodsafety.org