

WHY USE BIOPESTICIDES IN AN IPM PROGRAM?

MICHAEL BRAVERMAN

IR-4 PROJECT, Rutgers University

BARRIERS TO BIOPESTICIDE DEVELOPMENT / ADOPTION



- Snake oil image.
- Small companies. Recognition, Prestige \$
- Don't necessarily stand out in university trials.
- Why risk an unknown?
- Lack distribution network –Handle small volumes

DO BIOPESTICIDES WORK OR ARE THEY JUST SNAKE OILS?



Products do fail.....

Excerpts from biopesticide reports

- Phytophthora following _____ and _____ treatment were not different than the untreated control.
- Botrytis infection was similar to the control when treated with _____ or _____.
- _____, _____, _____ did not control blueberry midge

Can you guess the product names-Fill in the blanks?



Products Do Fail.....

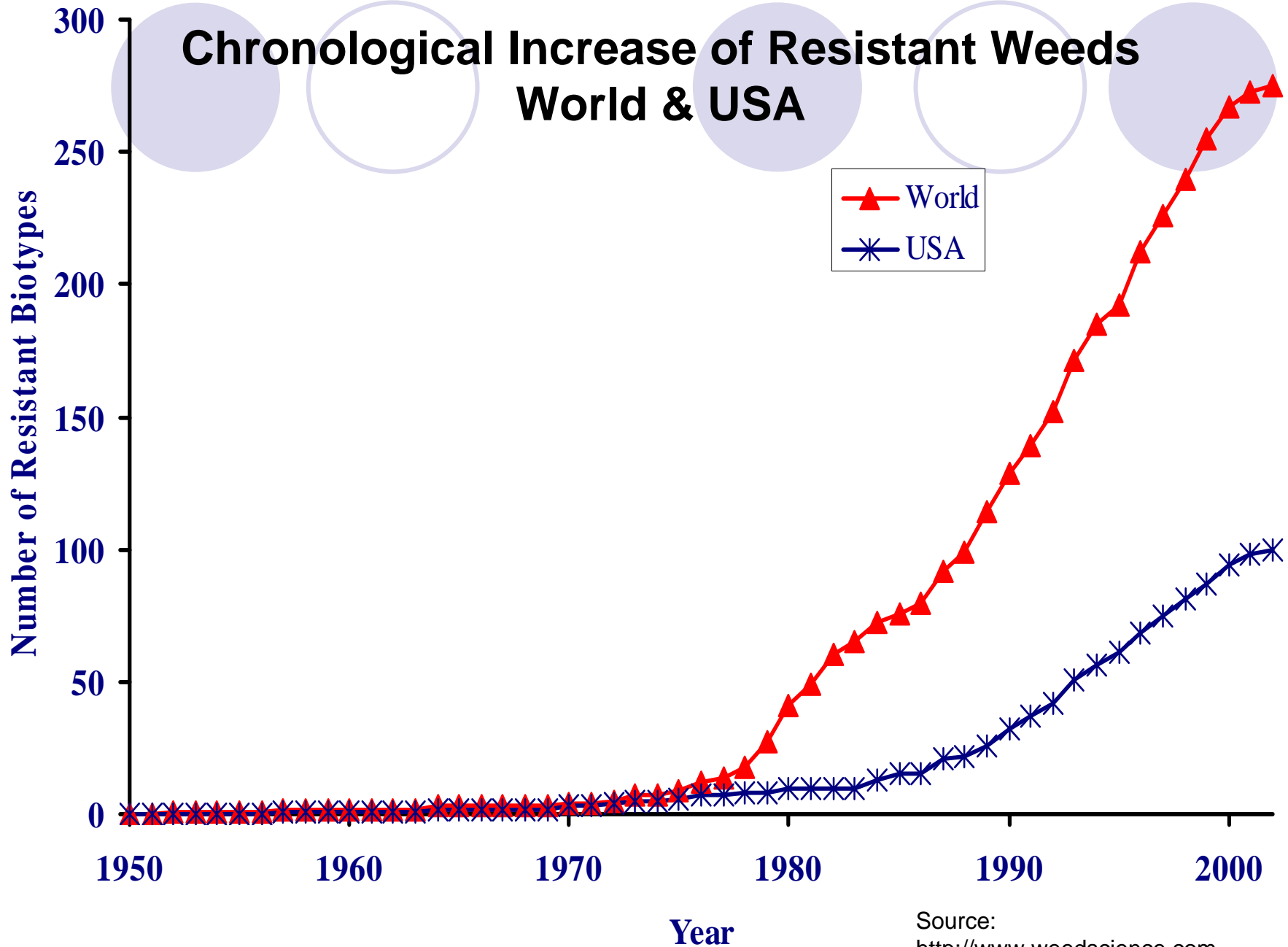
- Phytophthora following **Subdue** and **Truban** treatment were not different than the untreated control.
- Botrytis infection was similar to the control when treated with **Daconil** or **Insignia**.
- **Malathion, Thiamethoxam, Spinosad** did not control blueberry midge.

The point is that all products have variable performance.

Top Pesticide Resistant Arthropods

Rank	Common name	# of pesticides	chem. groups	first report
1	Two-spotted spider mite	70	7	1943
2	Diamond-back moth	68	8	1953
3	Peach/Potato aphid	67	4	1955
4	Colorado potato beetle	40	8	1955

Chronological Increase of Resistant Weeds World & USA



Source:
<http://www.weedscience.com>

Documented cases of disease resistance to turf fungicides

Dollar spot	Rubigan, Bayleton, Banner, Chipco 26019, Vorlan
Pythium	Subdue and related products
Pink snow mold	Dicarboximides (Chipco 26019, Vorlan)
Anthracnose	Heritage, Compass, thiophanate-methyl (Cleary's 3336, Fungo)
Gray leaf spot	Heritage, Compass

AF36- Atoxigenic *Aspergillus flavus* reduce aflatoxin in cottonseed



Growers Aren't Interested in Biopesticides



Arizona Cotton Research and Protection Council- Registrant , Manufacturer and Distributor of AF36

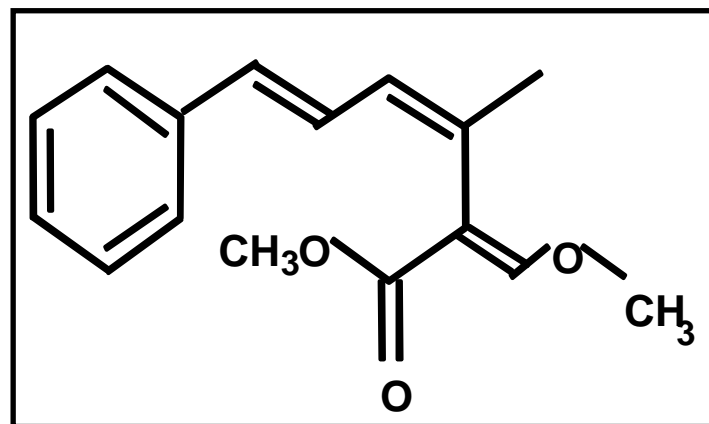
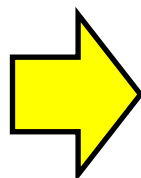
MANUFACTURED
BY GROWERS -
FOR GROWERS





**Why don't the
major
companies
work with
Natural
products?**

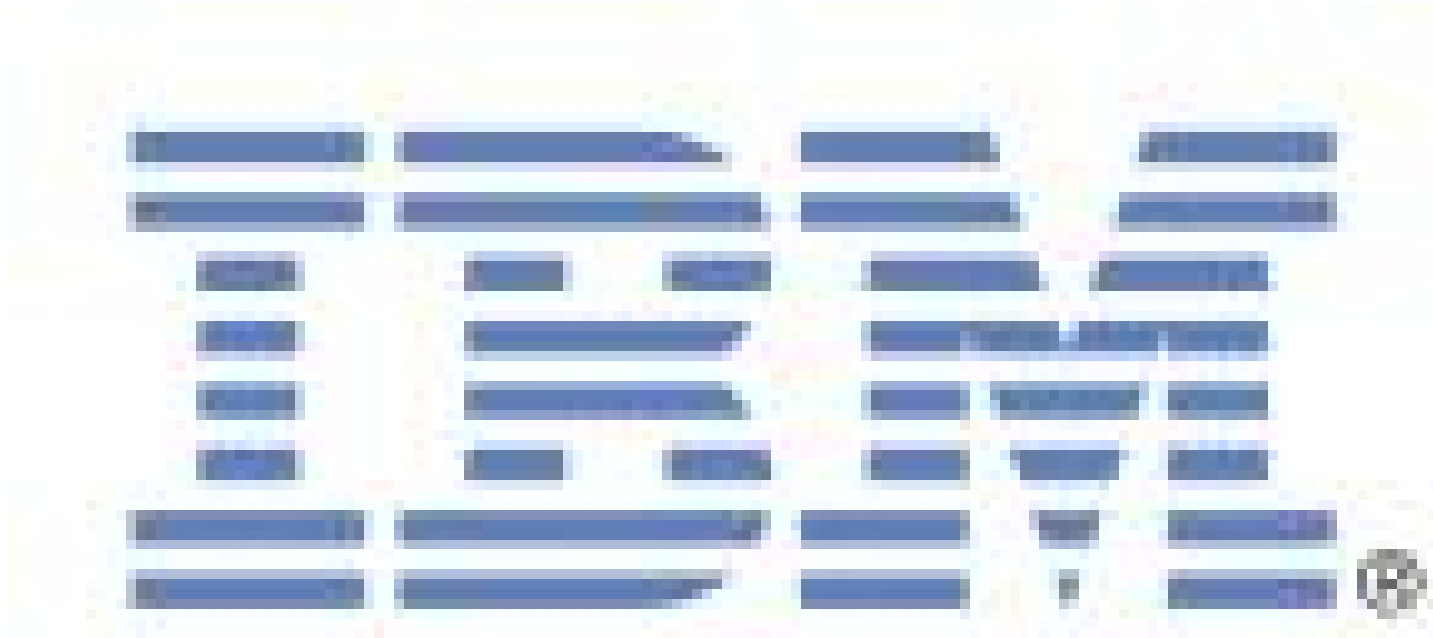
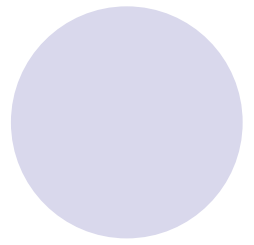
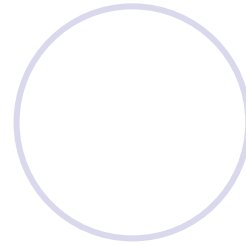
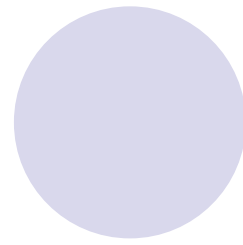
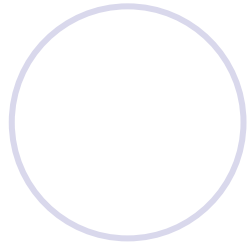
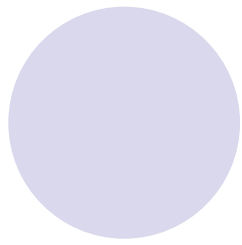
Major companies work with natural products- Natural leads

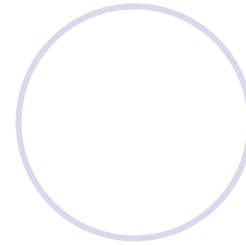
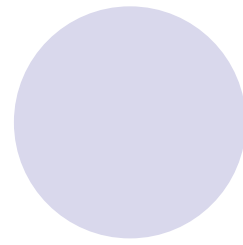
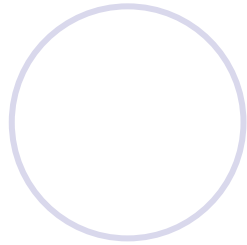
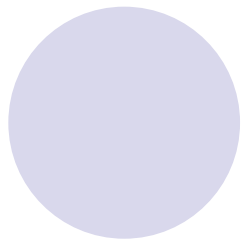


Strobilurin A

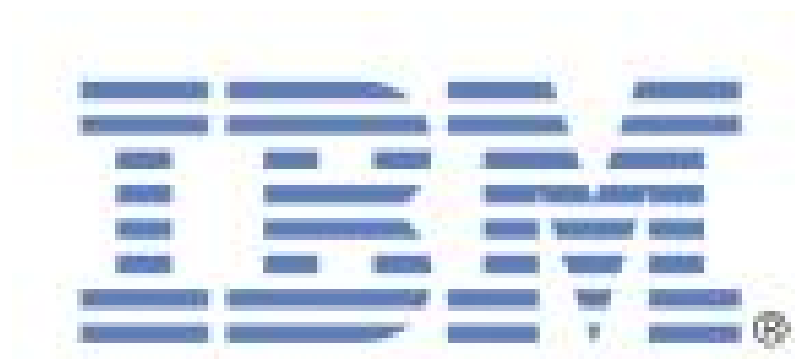
Strobilurus tenacellus

Wow. All of the newer strobilurin fungicides are
based on a mushroom!





INTEGRATED BIOPESTICIDE MANAGEMENT





GROWER CONCERNS ABOUT BIOPESTICIDES

DOES IT WORK?

HOW MUCH DOES IT COST?

DOES IT WORK?

Maybe the real question is..... **DO WE
KNOW HOW TO MAKE THEM WORK?**

DO WE KNOW HOW TO MAKE BIOPESTICIDES WORK?

FACT: Biopesticides work best in rotational programs.

If you test them as head to head comparisons versus conventional products, most may not perform as well as conventional products. This is misinterpreted as they are not useful.

REPEAT: Biopesticides work well in rotational programs.

So **rotate-rotate-rotate.**

ACTION: If you run field trials try biopesticides in rotational programs.

It's not Conventional versus Biopesticide.

It's Biopesticides and Conventionals

How should I interpret results? *The glass is half **empty**. Hypothetical data*

- Conventional alone - 83% a
- Conv-Biopest rotation - 79% a
- Control - 0% b

There was no advantage to rotating the conventional treatment with a biopesticide

How should I interpret results? *The glass is half full*

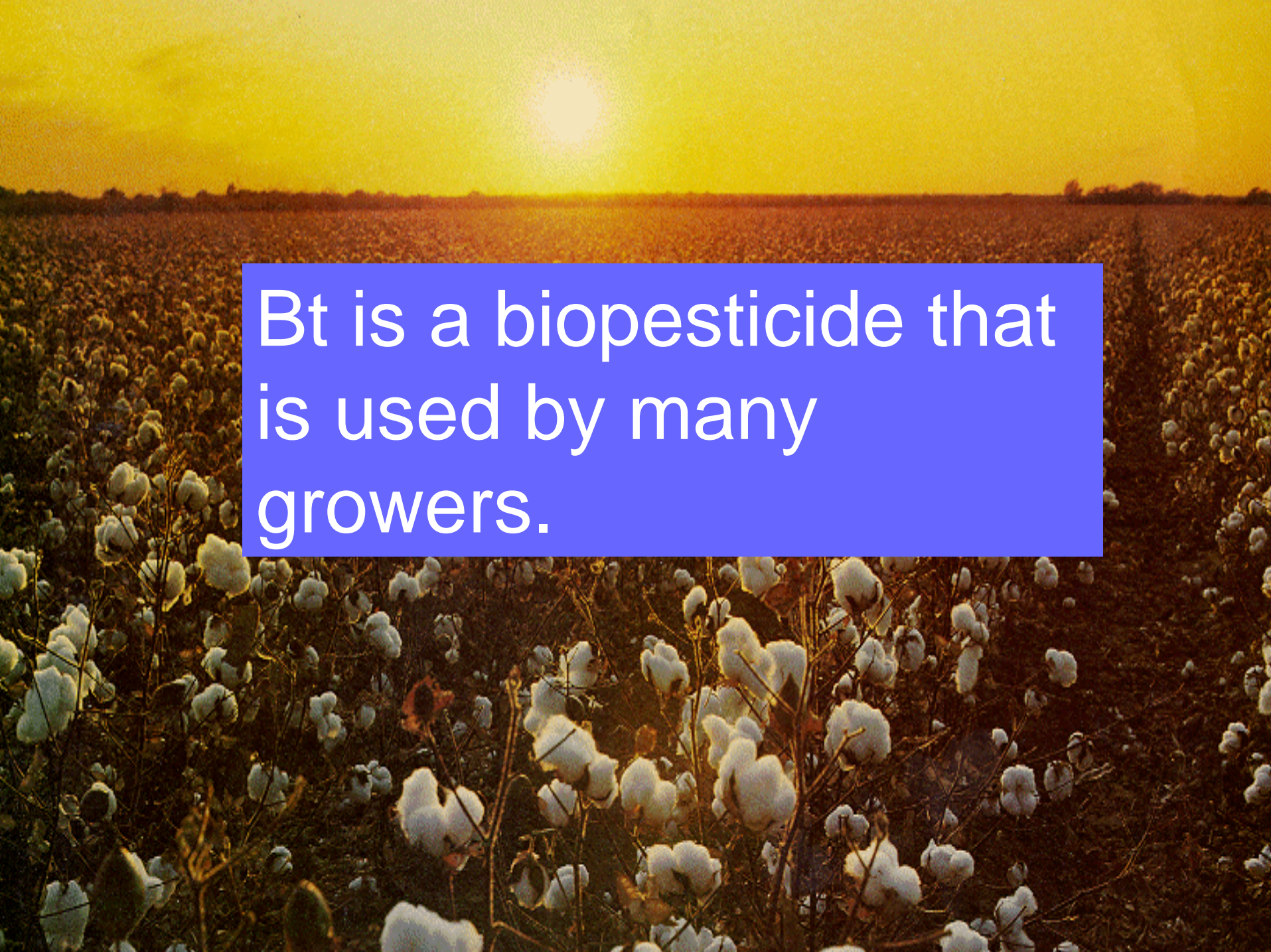
- Conventional alone - 83% a
- Conv-Biopest rotation - 79% a
- Control - 0% b

The level of control was maintained while gaining the following:

- **Resistance management–Conventional weak-resistance prone**
- **Re-entry period- Flexibility labor intensive operations**
- **Reduced time to harvest- Multiple harvest**
- **Residue management- Don't produce illegitimate fruit!**

Rotations/integrations are delivery mechanisms for biopesticides in that they enable their utility-Are delivery mechanisms important to biopesticide adoption?

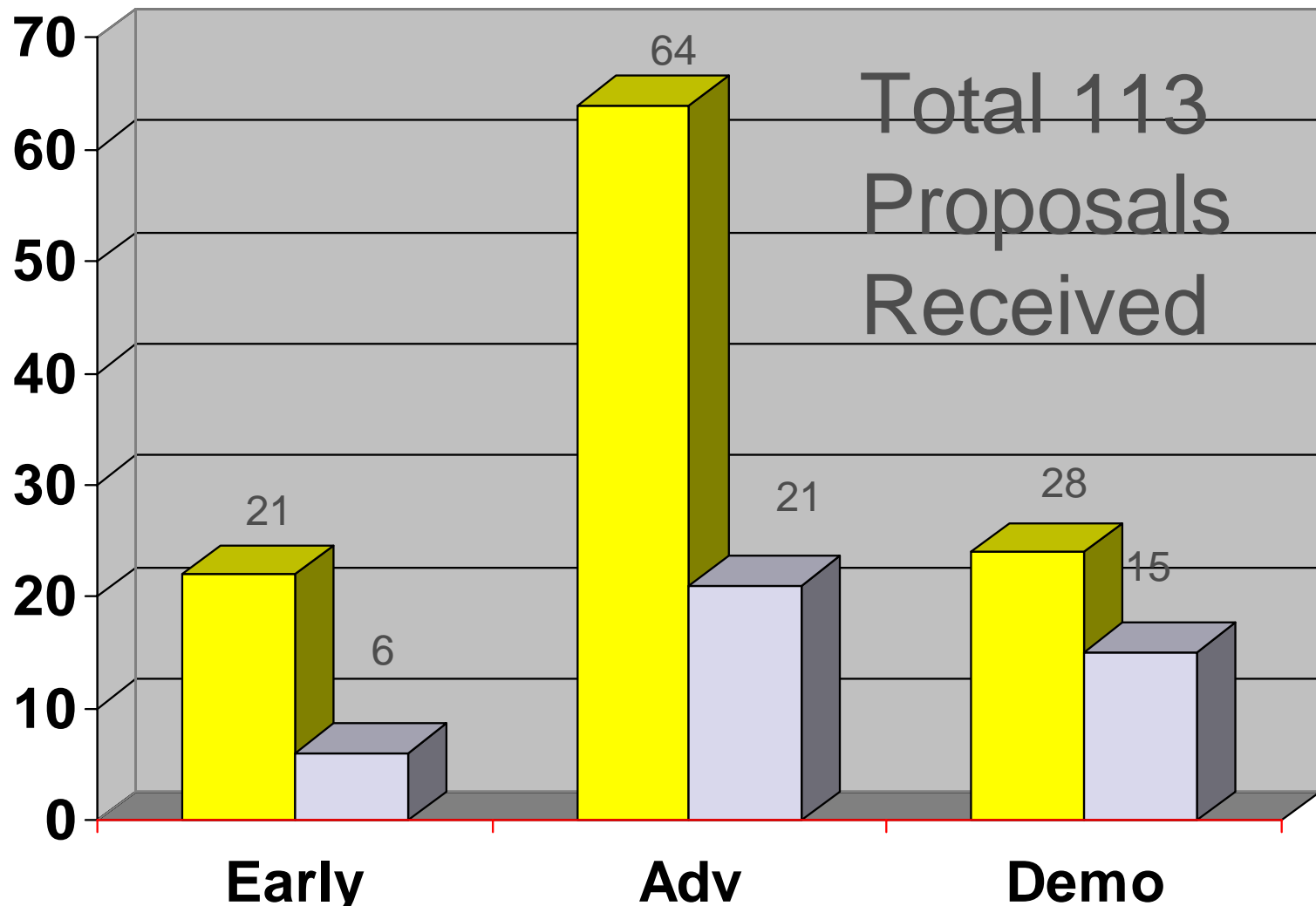
Can delivery mechanisms revolutionize grower adoption?

A photograph of a vast cotton field at sunset. The sun is a bright, glowing orb in the upper center of the frame, casting a warm, golden light across the sky and the field. The cotton plants are in the foreground and middle ground, with their white, fluffy bolls clearly visible against the darker stems and leaves. The field extends to a flat horizon line. A semi-transparent blue rectangular box is overlaid on the right side of the image, containing white text.

Bt is a biopesticide that
is used by many
growers.

Proposal Statistics

Received Funded





[Home](#)

[About IR-4/](#)

[Staff Directory](#)

[News, Events,](#)
[Training, Advisories](#)

[Crop Groupings](#)

[Food Crops](#)

[Ornametals](#)



THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

IR-4 Headquarters,
Rutgers, The State University of NJ
681 US Highway 1 South
North Brunswick, NJ 08902
phone 732.932.9575 / 732.932.8481 fax

Biopesticides Database

General Search

1. Pest [hold Ctrl key to select multiple items]:

2. Crop [hold Ctrl key to select multiple items]:

3. State [hold Ctrl key to select multiple items]:

AK
AL
AR

List only organic products [YES](#) [NO](#)

Reset

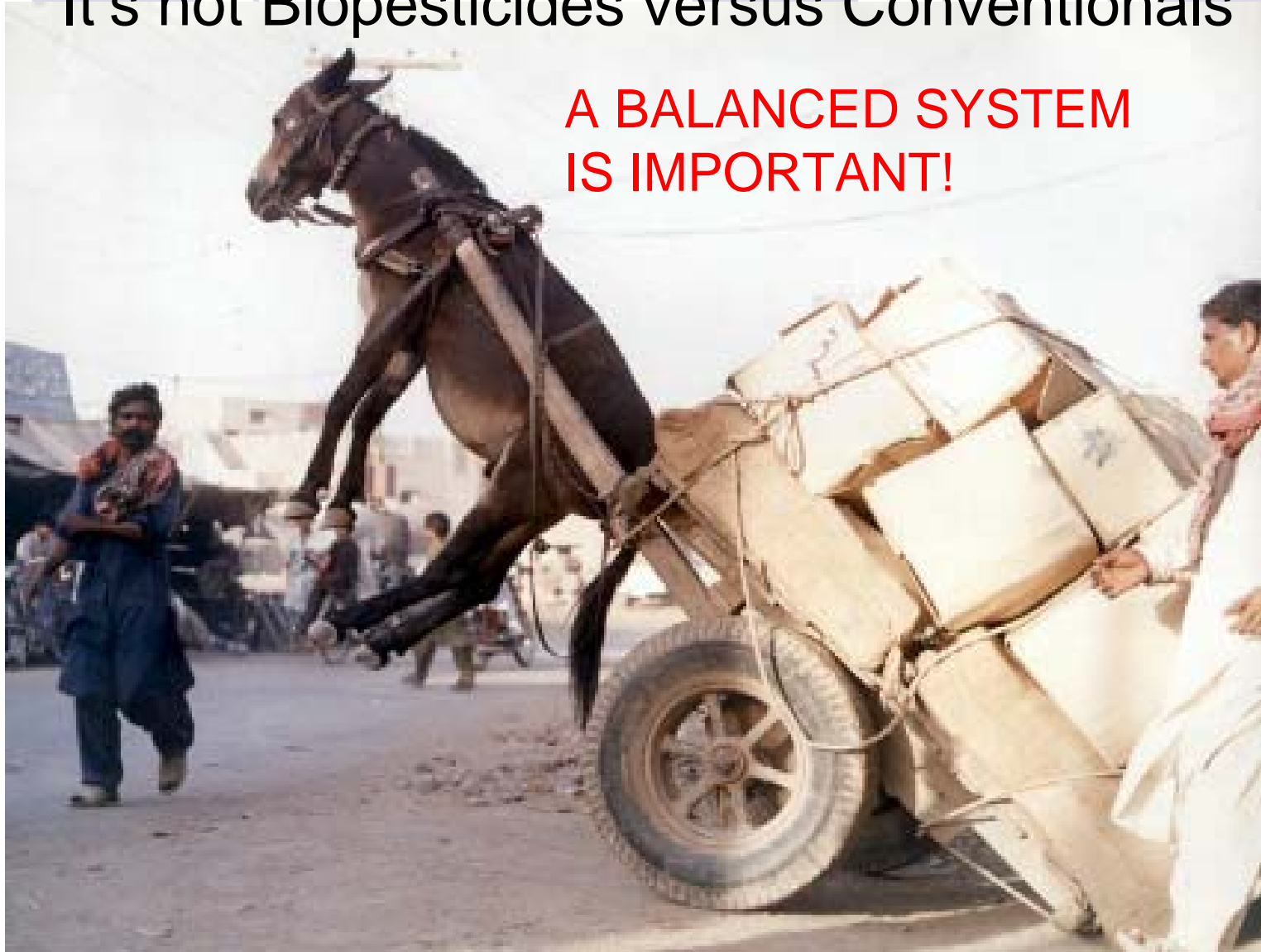
Search

WHY USE BIOPESTICIDES?

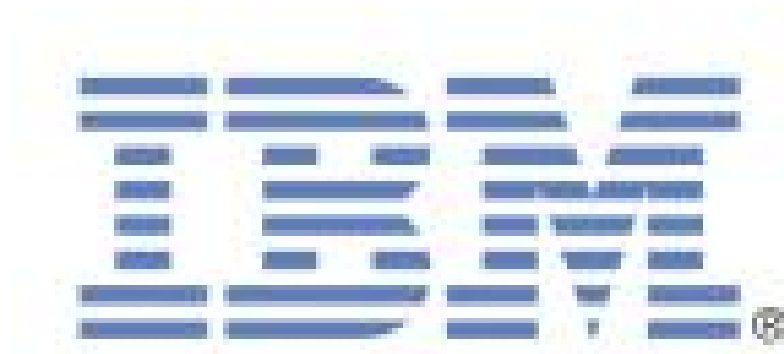
- 1. Resistance management**
- 2. Re-entry period**
- 3. Reduced time to harvest**
- 4. Residue management**

Integrate Biopesticides and Conventional It's not Biopesticides versus Conventional

**A BALANCED SYSTEM
IS IMPORTANT!**



Remember : Think Big Blue



Integrated
Biopesticide
Management