A National Summit on

Strategies to Manage

Herbicide-Resistant Weeds

Charles Arntzen
Member, U.S. National Academy of Sciences

May 10, 2012
Welcome to this Summit…

- The idea grew out of a 2010 NRC/NAS report.
- Report topics: environmental, economic and social dimensions of the sustainability of GE herbicide-resistant and insect-resistant crops.
- One finding – weeds resistant to glyphosate are an emerging problem.

We are here today to readdress this finding.
Putting today’s problem in perspective – personal recollections

• 1940’s – with my dad as he planted corn
• He used the Check Method to get a “checker board” field
• Followed by many cultivation cycles (time and labor!)
• In the 1950s – Triazines made my life easier.
• Summer employment instead of riding a tractor
For 20 years I forgot about herbicides….

- Late 1970’s – Atrazine resistant weeds!
- A protein binds atrazine, and binding causes death.
- One change in the gene for this protein was responsible for resistance.

A National Summit on Strategies to Manage Herbicide-Resistant Weeds

May 10, 2012
If the weeds can evolve, we can engineer our crops the same way....

- In the 1980’s Dupont and Monsanto and multiple European crop protection companies launched crop genetic engineering programs.
- Goal – match superior chemistry with the best crop genetics.
- 1996 – Roundup Ready Soybean
- ‘97 – RR Cotton, Canola
- ‘98 – RR Corn
What would my dad have done....?

- Glyphosate doesn’t get into ground water (environmentally friendly)
- Can be applied easily with time flexibility
- Controlled all weeds with no mixing of chemicals.

I think he’d have said – this is a “no brainer”

(and so did tens of thousands of farmers)
What happens when tens of thousands of farmers use the same weed control....?

- The National Cotton Council has kindly prepared a video to help us understand....

Project consultant: David R. Shaw, Vice President for Research and Economic Development, Mississippi State University

A National Summit on Strategies to Manage Herbicide-Resistant Weeds

May 10, 2012