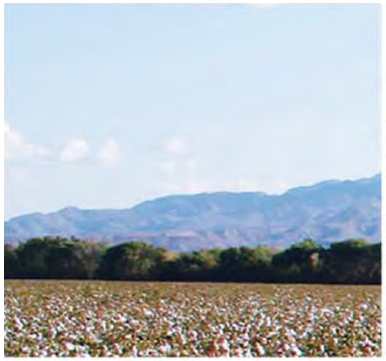








STEWARDSHIP OF HERBICIDES

Robert Loring Nichols - Senior Director

Mississippi Row Crops Short Course
Starkville, MS
November 30, 2015

STEWARDSHIP OF HERBICIDES

Auxin Traits & Herbicides Biggest Issues
Resistance & Off-Site Movement

WEEDS ARE A HUGE CONCERN

Results of Cotton Incorporated Survey of Growers' Concerns

How would you rate the following cotton production concerns or challenges on your farm?	Major	Moderate	Not an Issue	2011 Rank	2015 Rank
Cotton production input costs	81%	16%	3%	1	1
Weed resistance to herbicides	69%	25%	6%	5	**2**
Weed control	64%	31%	5%	4	**3**
Cottonseed value	51%	40%	8%	7	4
Spread of plant diseases and weeds	42%	43%	14%	New	**5**
Seedling vigor and stand establishment	42%	40%	18%	6	6
Consumer attitudes about Ag's impact on the environment	40%	38%	22%	31	7
Cotton's tolerance to heat and drought	39%	48%	13%	3	8
Efficient use of fertilizer	37%	43%	20%	19	9
Adequate water supply	37%	35%	28%	15	10
Variety selection	34%	43%	23%	2	11
Plant bug control	32%	44%	24%	9	12

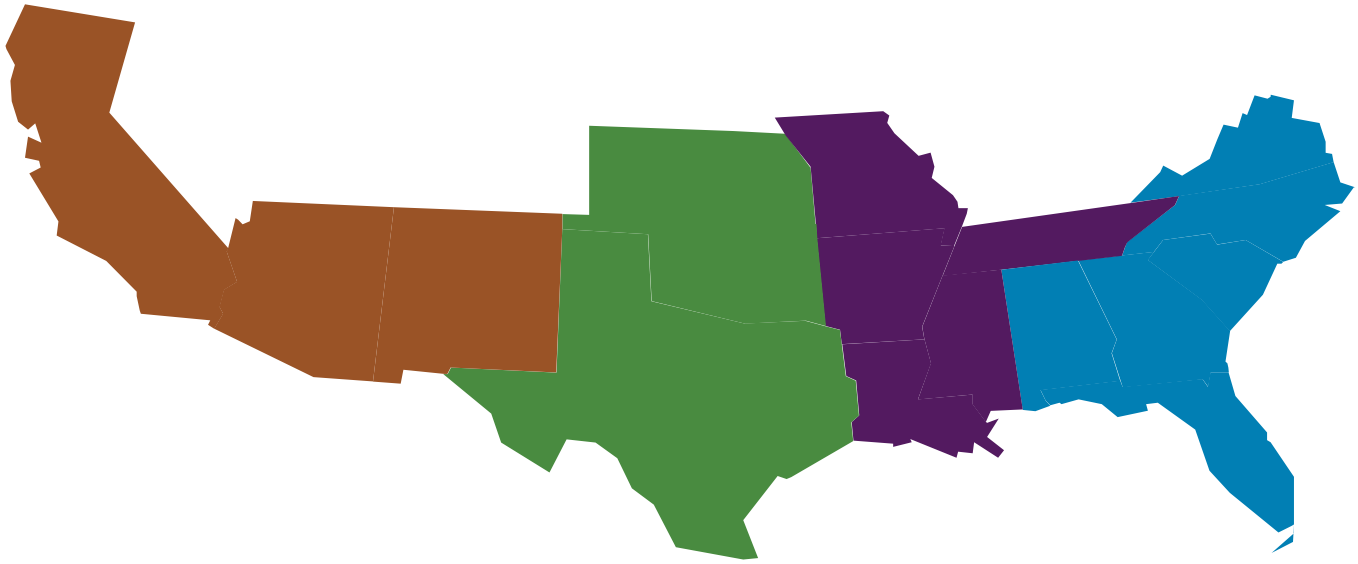
TOP 5 MAJOR PRODUCER CONCERNS

Far West:
1. Input costs
2. Adequate water supply
3. Tolerance to heat and drought
4. Weed control
5. **Herbicide resistant weeds (tied with) variety selection**

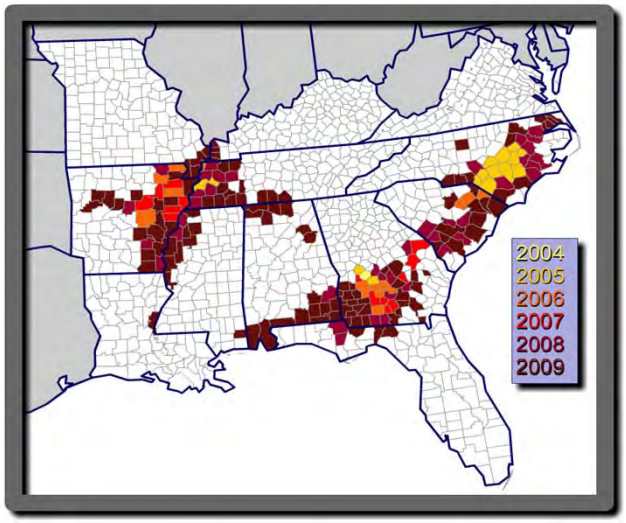
Southwest:
1. Input costs
2. **Herbicide resistant weeds**
3. **Weed control**
4. Cottonseed value
5. Adequate water supply

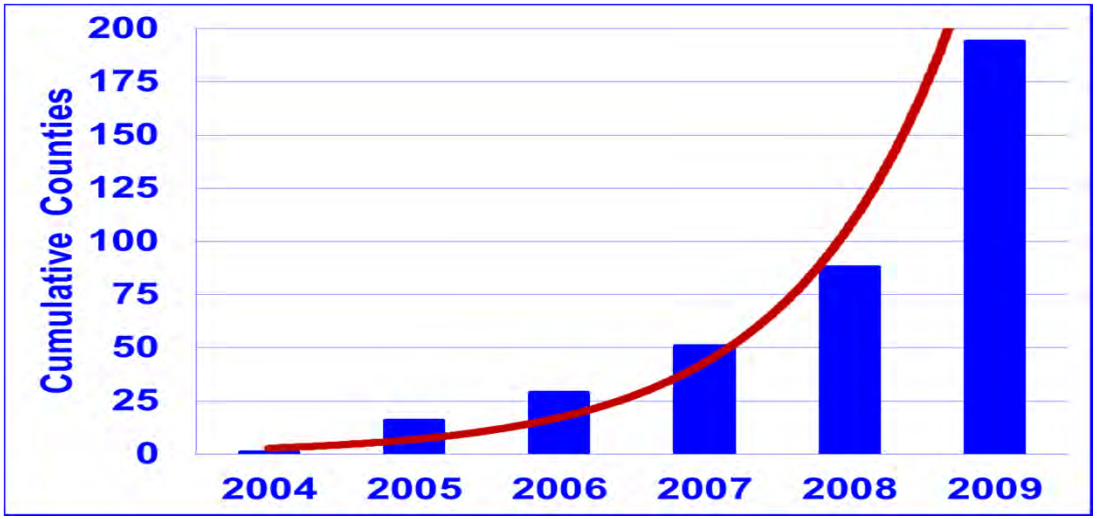
Mid-South:
1. Input costs
2. **Herbicide resistant weeds**
3. **Weed control**
4. Plant bug control
5. Cottonseed value

Southeast:
1. Input costs
2. **Herbicide resistant weeds**
3. **Weed control**
4. Cottonseed value
5. Spread of plant diseases and weeds



COUNTIES WITH CONFIRMED POPULATIONS OF GLYPHOSATE-RESISTANT PALMER AMARANTH - 2009





2015 DEMONSTRATION NO-TILL DRIP FIELD

(Confirmed glyphosate resistant pigweed in 2014)

TOTAL COST TO CONTROL RESISTANT PIGWEED IN COTTON THIS YEAR

Slide Credit: Shane Osborne, OSU

AUXIN TECHNOLOGIES
2015 (HALF SYSTEMS)

DICAMBA RESISTANT VARIETIES

BOLLGARD II® XTENDFLEX™ COTTON

2,4-D + GLYPHOSATE PREMIX (SOME STATES)

Enlist Duo™ Herbicide with COLEX-D TECHNOLOGY

AUXIN TECHNOLOGIES

2016 (FULL SYSTEMS ANTICIPATED)

DICAMBA SYSTEM	2,4- SYSTEM
VARIETIES	VARIETIES
BOLLGARD II® XTENDFLEX™ COTTON	Enlist™ Weed Control System
HERBICIDE	HERBICIDE
ROUNDUP READY PLUS™	Enlist Duo™ Herbicide with COLEX-D TECHNOLOGY

POTENTIAL SOURCES OF DAMAGE

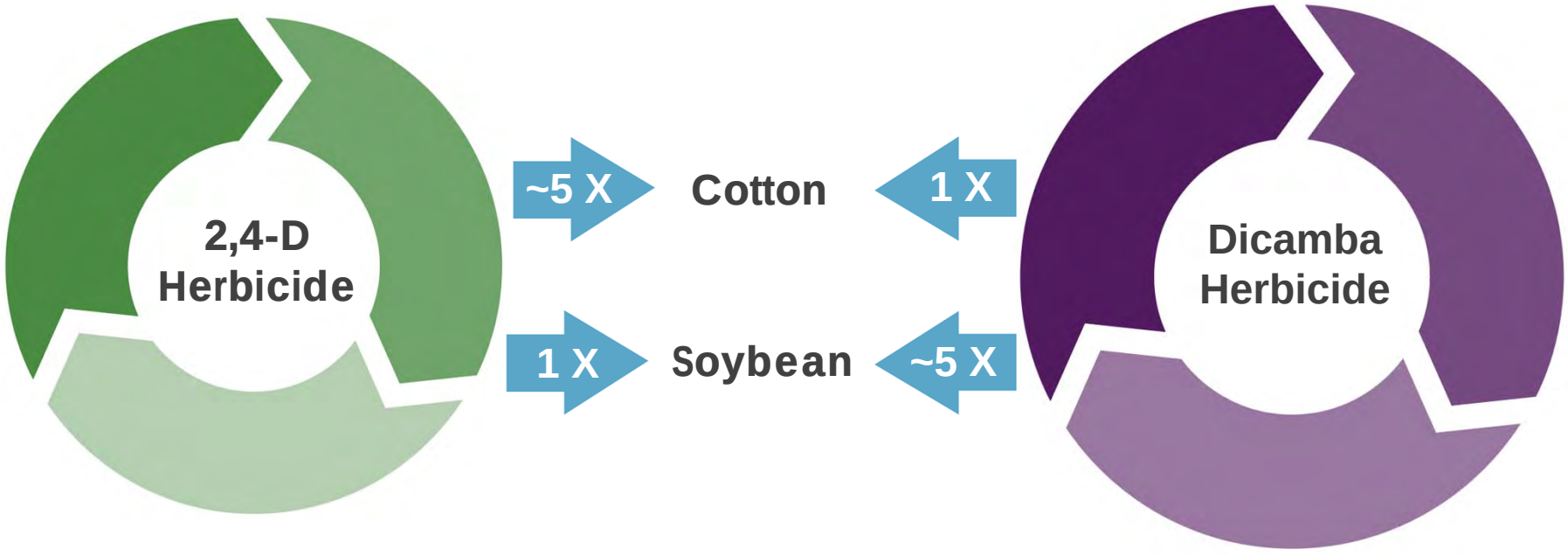
TANK CONTAMINATION

DRIFT

VOLATILIZATION

RELATIVE EFFECTS OF EXPOSURE

EVERYTHING COUNTS: VARIETY, STAGE OF GROWTH, RATE



NO DIRECT RELATIONSHIP OF FOLIAR SYMPTOMS & YIELD LOSS

POTENTIAL DAMAGE

TANK CONTAMINATION

OWN CROP

DRIFT

NEIGHBORS
CROP + OTHERS

VOLATILIZATION

NEIGHBORS
CROP + OTHERS

POTENTIAL DAMAGE

TANK CONTAMINATION

CLEAN OUT - GROWER

DRIFT

APPLICATION - GROWER

VOLATILIZATION

FORMULATION MANUFACTURER

POTENTIAL DOWNSIDES

FORMULATIONS

AS GOOD AS CHEMISTS CAN MAKE THEM

LABELS

GOOD AS THE REGISTRATION PROCESS MAKES THEM

IF THERE IS DAMAGE

SOMEBODY DID IT

WHAT, WHO WILL BE CRITICIZED FOR OFF-SITE MOVEMENT ?

FARMERS

COTTON

PESTICIDES

GMOs

DO IT RIGHT

FOLLOW APPLICATION INSTRUCTIONS

INPUT COSTS ARE GROWER'S TOP CONCERN

How would you rate the following cotton production concerns or challenges on your farm?	Major	Moderate	Not an Issue	2011 Rank	2015 Rank
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COTTON THEME FOR WEED MANAGMENT

Logo - Dr. Neil Rhodes of Uni. TN