

# **Glyphosate-Resistant Palmer Amaranth**

## **A Threat to Cotton and Soybean Production**

**Robert Nichols**  
**Cotton Incorporated**

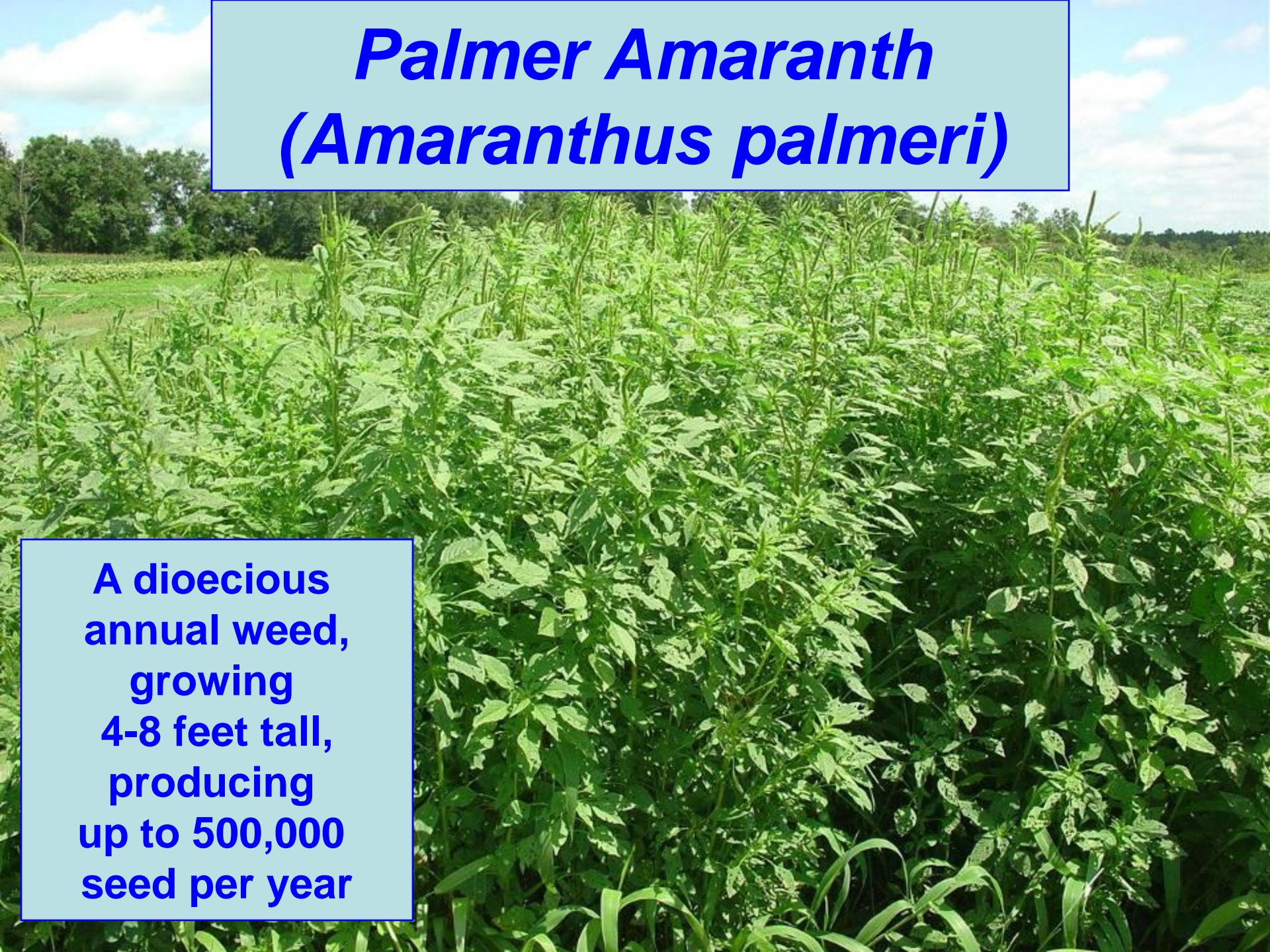


# Common Pigweed Species (*Amaranthus* spp.) in North America



# *Palmer Amaranth* (*Amaranthus palmeri*)

**A dioecious  
annual weed,  
growing  
4-8 feet tall,  
producing  
up to 500,000  
seed per year**



# Changing Pest Status of Palmer Amaranth

- **Wilcut et al. 2003. Weed Management in Transgenic Cotton. NCSU Tech. Bull. 319**
- **Results of a Cotton Incorporated supported study – 22 sites years done in the states of FL, GA, LA, MS, MO, NC, TN, TX**
- **Data for 15 most common weeds reported. No data published for Palmer amaranth**



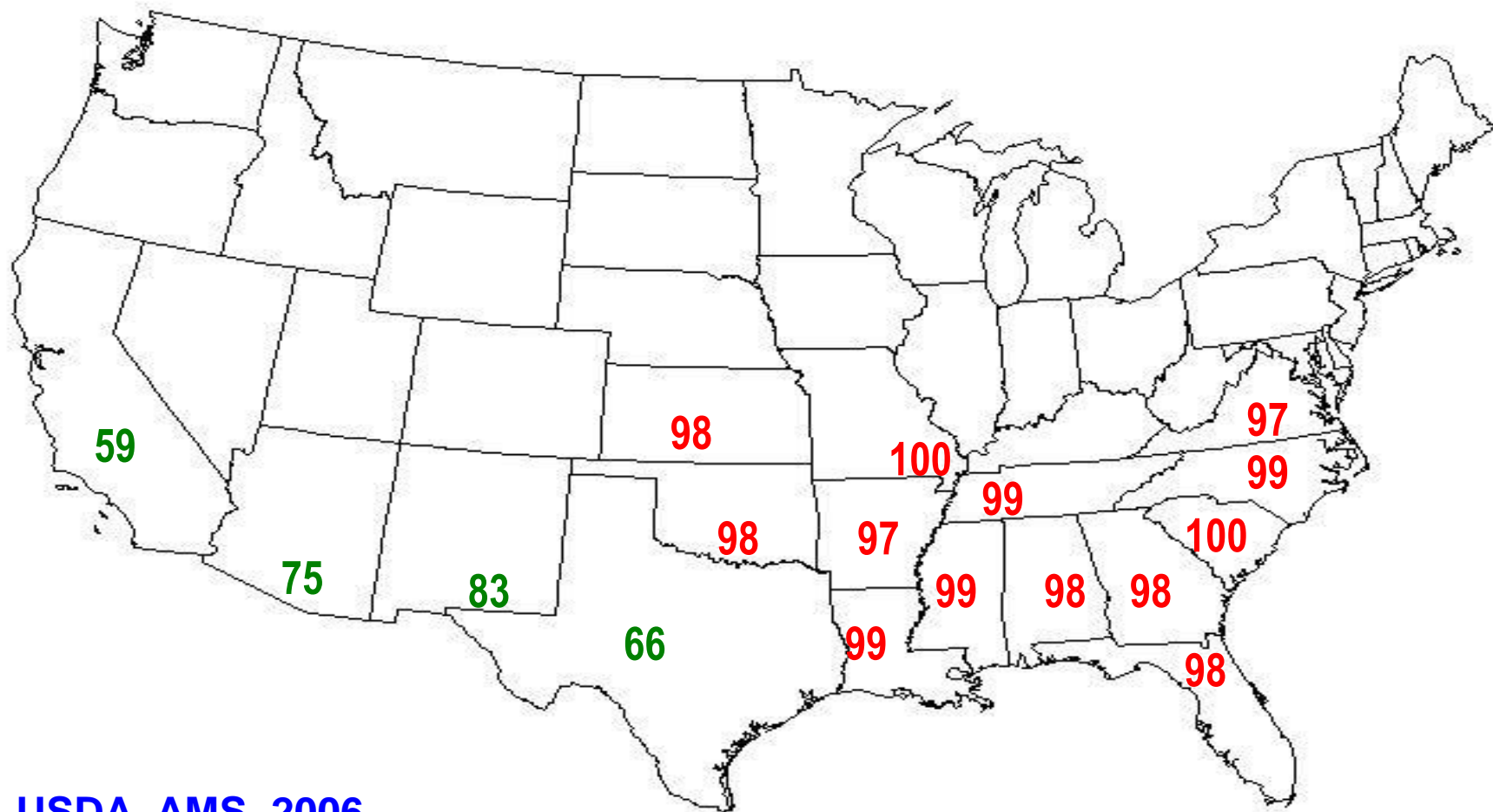
# Relative Growth of Pigweeds

	<u>Weeks Growth</u>		
	2	4	6
	----- inches -----		
<b>Palmer amaranth</b>	<b>4</b>	<b>10</b>	<b>38</b>
<b>Red Root Pigweed</b>	<b>3</b>	<b>7</b>	<b>24</b>
<b>Common Waterhemp</b>	<b>2</b>	<b>4</b>	<b>16</b>
<b>Smooth Pigweed</b>	<b>2</b>	<b>6</b>	<b>12</b>
<b>Spiny Pigweed</b>	<b>1</b>	<b>6</b>	<b>10</b>
<b>Tumble Pigweed</b>	<b>1</b>	<b>2</b>	<b>9</b>

Sellers et al. *Weed Science* 51:329-333.



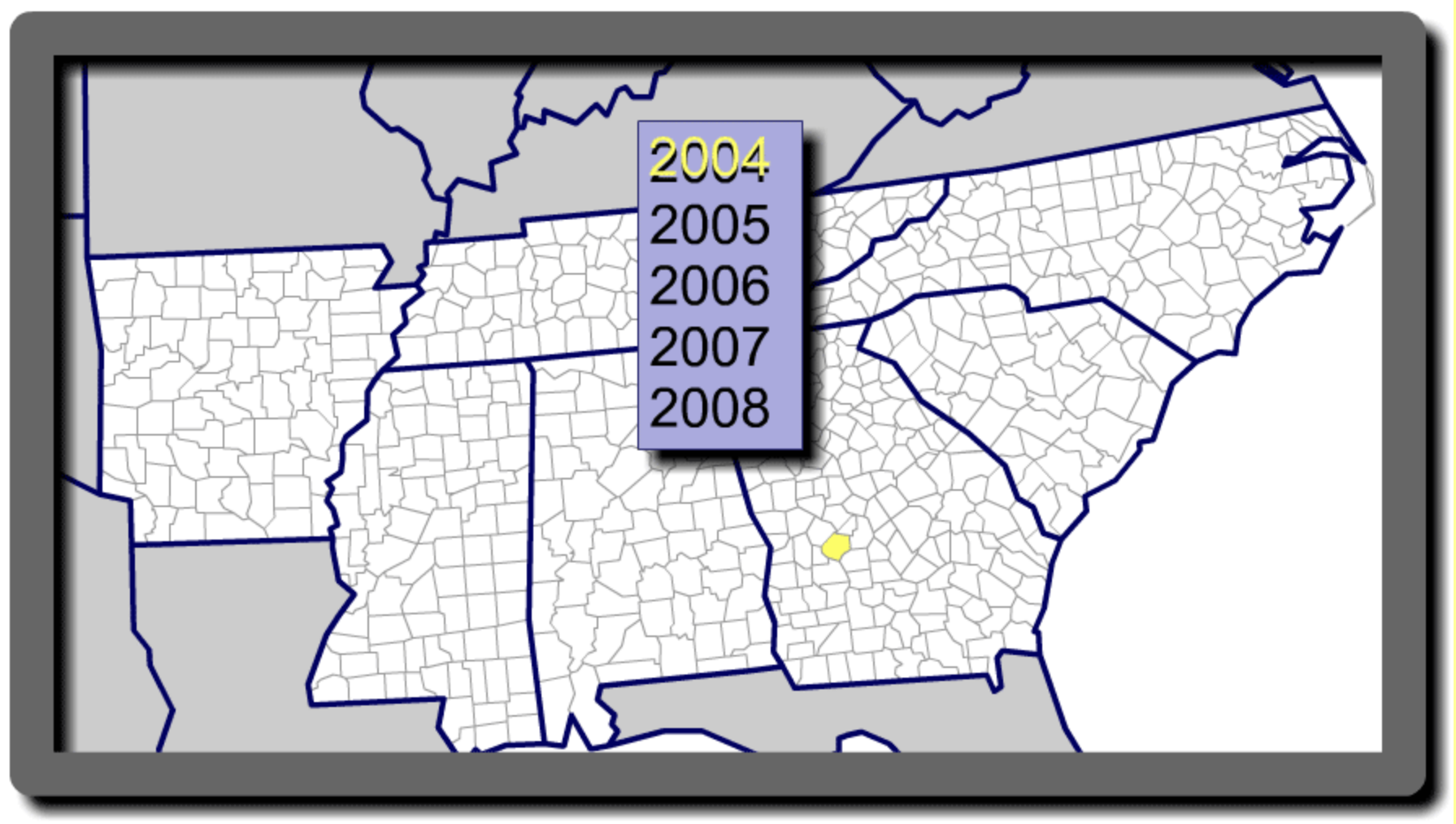
# Percent of Glyphosate-Resistant Cotton Cultivars



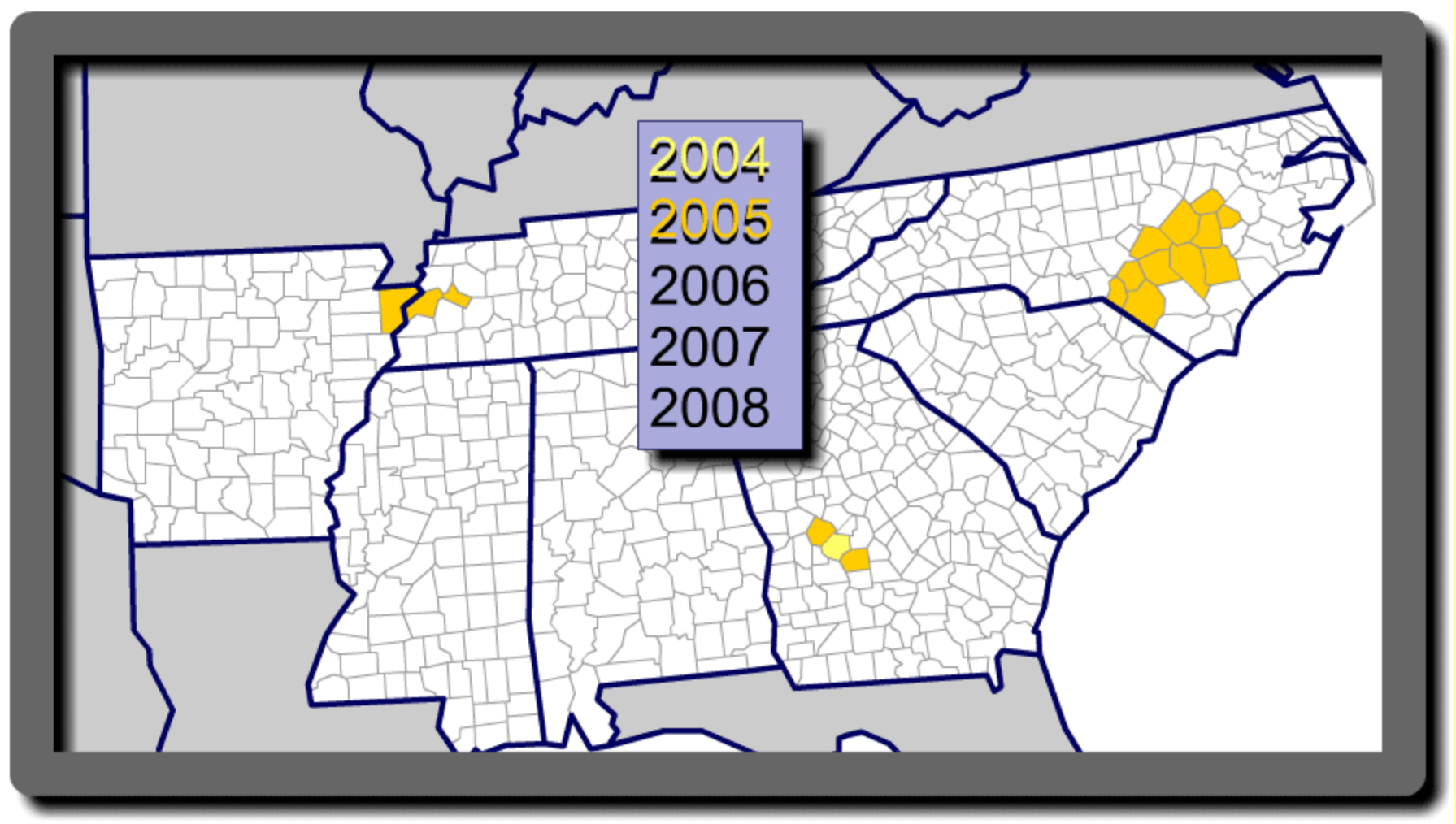
USDA, AMS. 2006



# Counties with Confirmed Populations of Glyphosate-Resistant Palmer Amaranth 2004

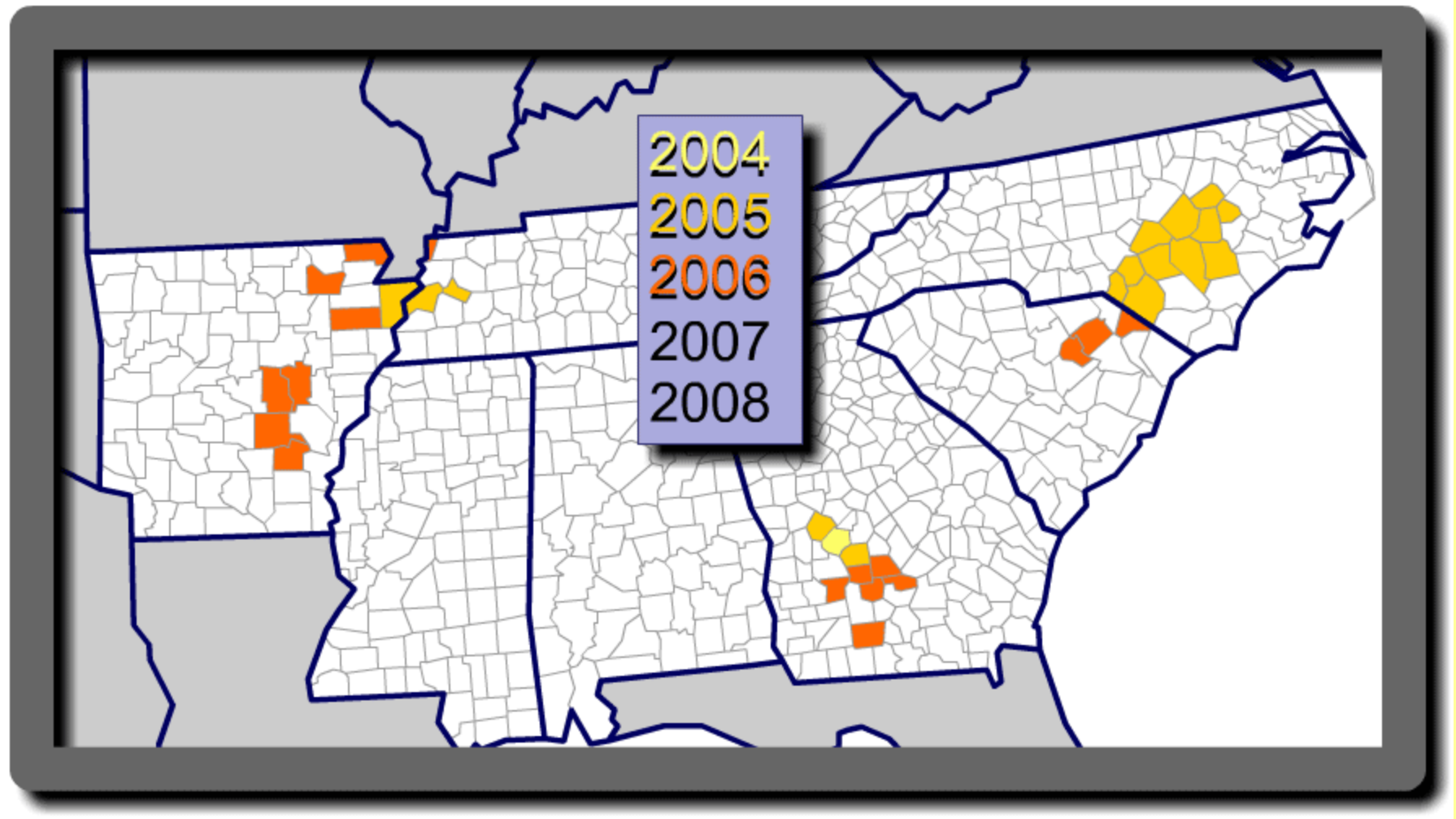


# Counties with Confirmed Populations of Glyphosate-Resistant Palmer Amaranth 2005

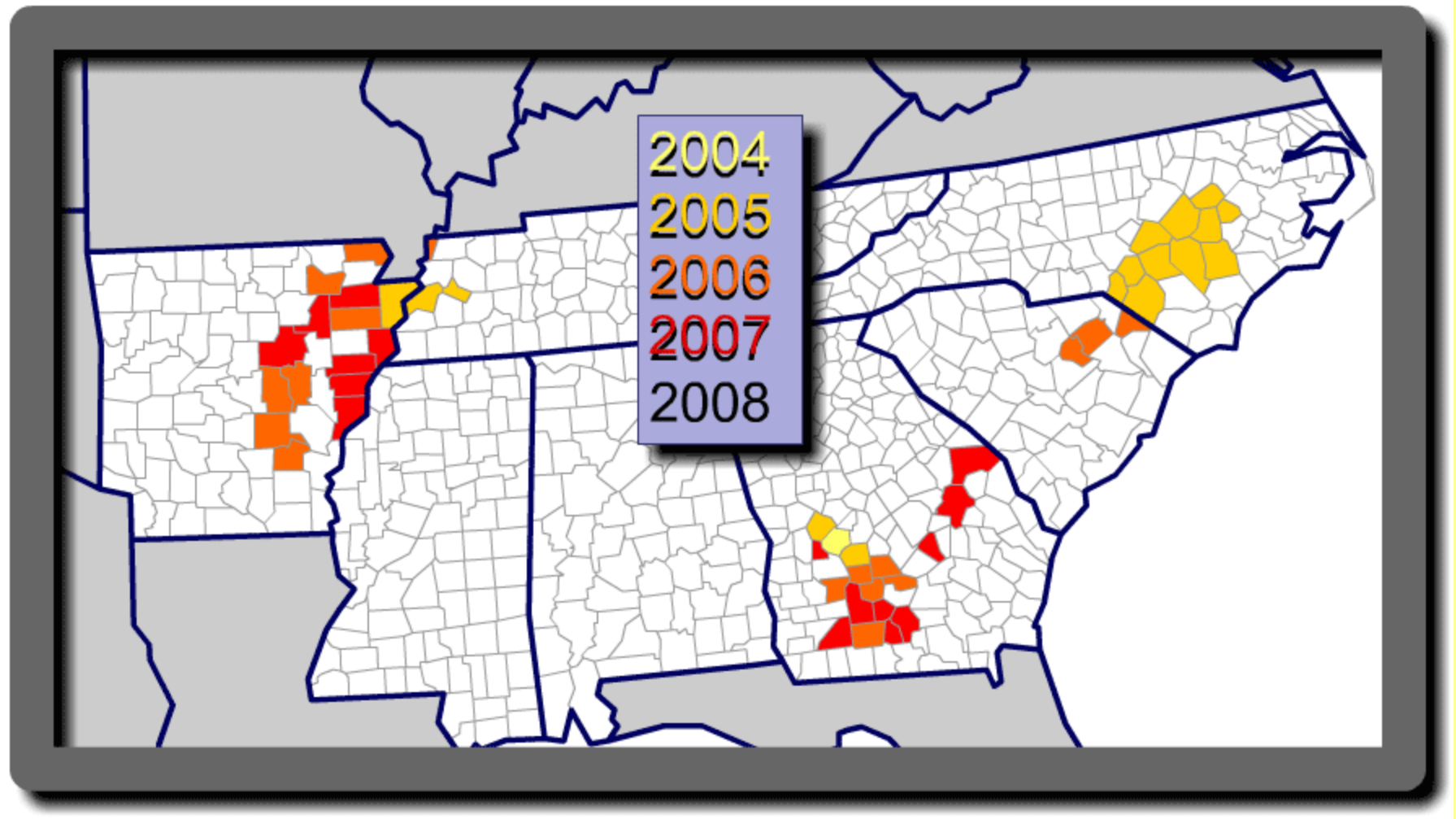




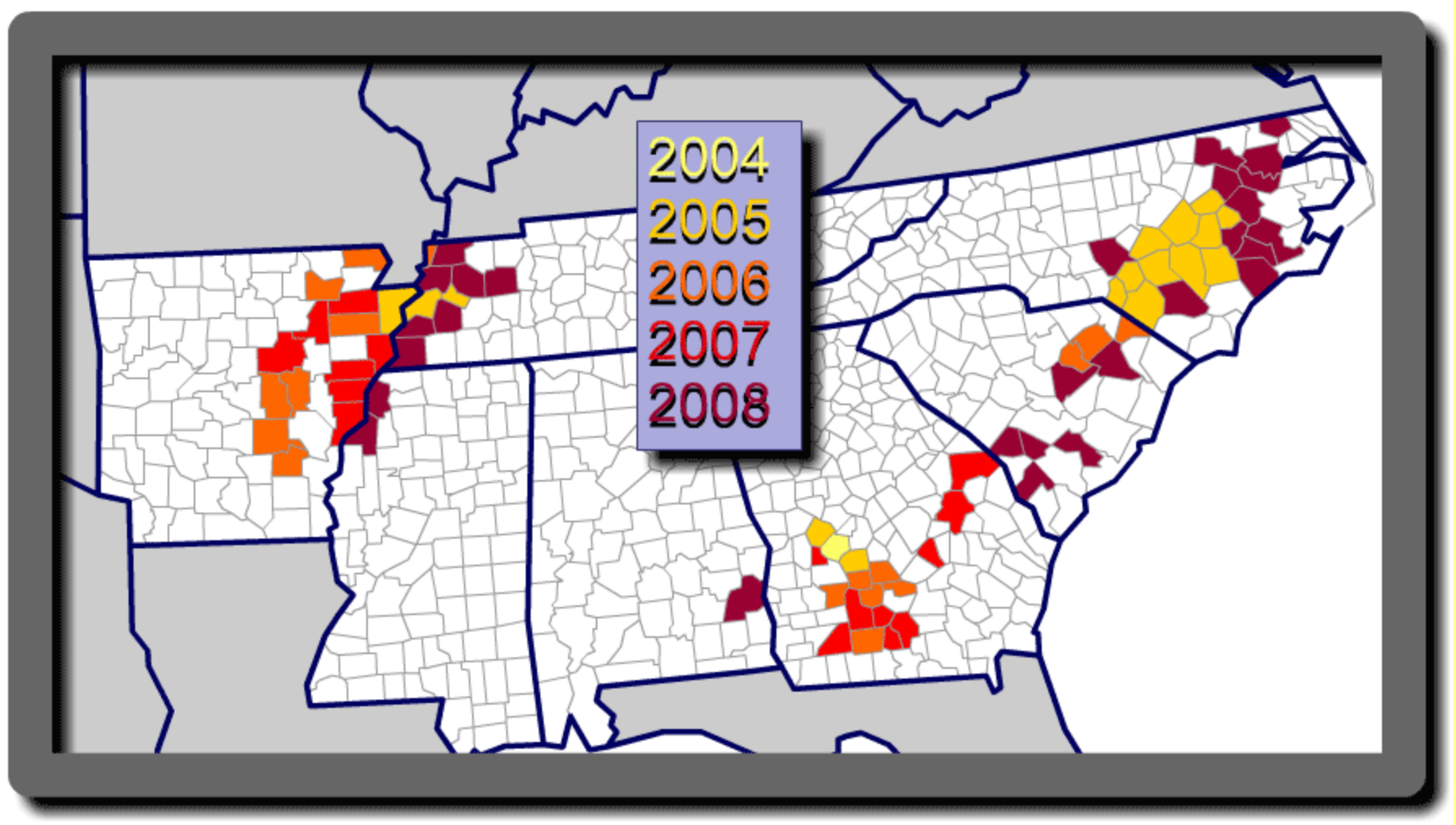
# Counties with Confirmed Populations of Glyphosate-Resistant Palmer Amaranth 2006



# Counties with Confirmed Populations of Glyphosate-Resistant Palmer Amaranth 2007



# Counties with Confirmed Populations of Glyphosate-Resistant Palmer Amaranth 2008



# Glyphosate Resistant Palmer Amaranth

## Economic Threat to Cotton

If ALS herbicides and glyphosate are compromised, and PPO herbicides are not an over-the-top option, there are no selective post emergence options for cotton.

## Economic Threat to Soybeans

If ALS and glyphosate are compromised, then PPO herbicides are the only post emergence option.



# **Glyphosate Resistant Palmer Amaranth**

- **Threatens Conservation of Post Emergence Herbicides in U.S. Agriculture.**
- **If PPO herbicides are heavily used pre-emergence in cotton, and are the only post emergence option in soybean, what is their future?**
- **Need for a General Resistance Management Plan for Herbicide Modes of Action in Broadleaf Agronomic Crops.**

