



"Status and Distribution of Herbicide Resistance in Arkansas"

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Introduction

- ❖ 1956 – Idea of herbicide resistance in weeds published by J.L. Harper.
- ❖ Not taken seriously
- ❖ 1968 first resistant weed found

Herbicide Resistant Weeds in AR

<u>Goosegrass</u> <i>(Eleusine indica)</i>	cotton	K1/3 - Dinitroanilines (trifluralin)	1989
<u>Common cocklebur</u> <i>(Xanthium strumarium)</i>	cotton	Z/17 - Organoarsenicals (MSMA)	1989
<u>Barnyardgrass</u> <i>(Echinochloa crus-galli)</i>	rice	C2/7 - Ureas and amides (propanil)	1990
<u>Palmer Amaranth</u> <i>(Amaranthus palmeri)</i>	soybean	B/2 - ALS inhibitors (chlorimuron-ethyl, diclosulam, imazaquin, imazethapyr, pyriproxyfen)	1994
<u>Redroot Pigweed</u> <i>(Amaranthus retroflexus)</i>	soybean	B/2 - ALS inhibitors (imazaquin)	1995
<u>Perennial Ryegrass</u> <i>(Lolium perenne)</i>	wheat	A/1 - ACCase inhibitors (chlorsulfuron, diclofop-methyl, fenoxaprop-p-ethyl)	1995

Herbicide Resistant Weeds in AR

<u>Common cocklebur</u> <i>(Xanthium strumarium)</i>	soybean	B/2 - ALS inhibitors (imazaquin)	1995
<u>Barnyardgrass</u> <i>(Echinochloa crus-galli)</i>	rice	C2/7 - Ureas and amides (propanil, quinclorac)	1999
<u>Barnyardgrass</u> <i>(Echinochloa crus-galli)</i>	rice	O/4 - Synthetic Auxins (propanil, quinclorac)	1999
<u>Horseweed</u> <i>(Conyza canadensis)</i>	cotton	G/9 - Glycines (glyphosate)	2003
<u>Common Ragweed</u> <i>(Ambrosia artemisiifolia)</i>	soybean	G/9 - Glycines (glyphosate)	2004
<u>Palmer Amaranth</u> <i>(Amaranthus palmeri)</i>	soybean	G/9 - Glycines (glyphosate)	2006

Introduction

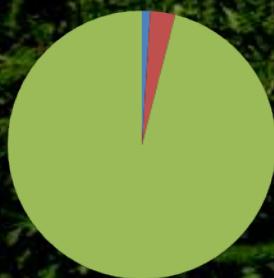
- ❖ Glyphosate used in combination with Roundup Ready® technology provided effective weed control for seven years (1996-2002) following introduction.

Glyphosate Resistance as We Know In Arkansas

- ❖ 1996 - Roundup Ready® soybeans
- ❖ 1998 - Roundup Ready® cotton
- ❖ 2003 - Horseweed, currently in all cropping counties
- ❖ 2004 - Common ragweed (one county)
- ❖ 2005 - Giant ragweed, suspected in three counties
- ❖ 2006 - Palmer amaranth
- ❖ 2007 - Johnsongrass

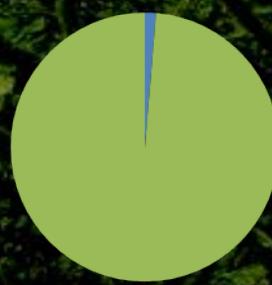
Estimated Glyphosate Tolerant Crops in 2008

Cotton



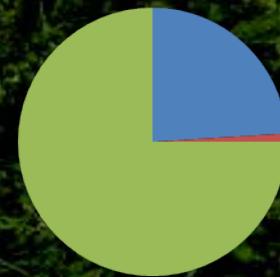
- Conventional
- Other Tech
- Glyphosate

Soybean



- Conventional
- Other Tech
- Glyphosate

Corn

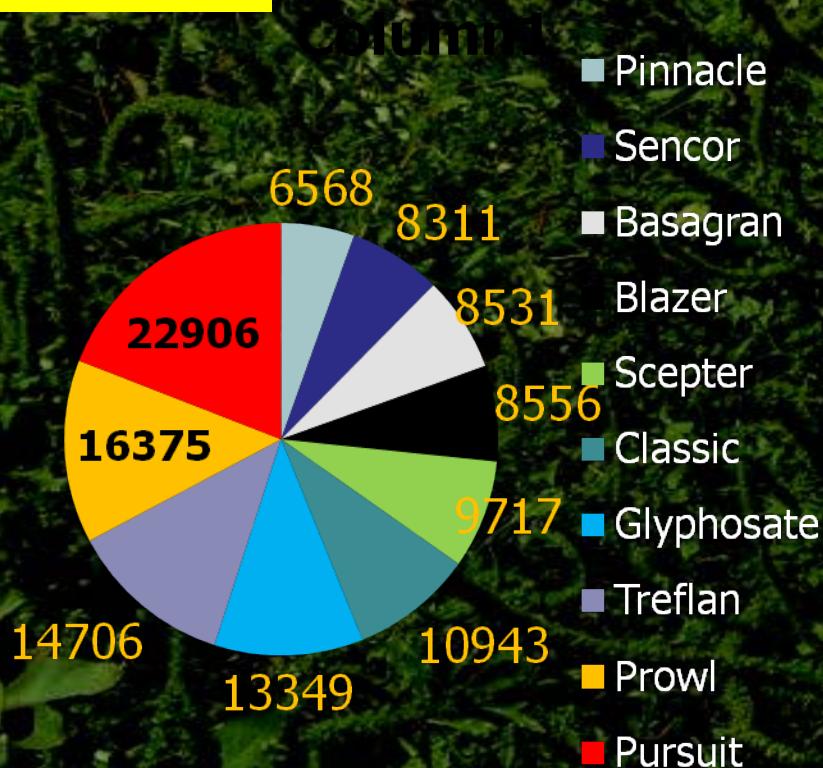


- Conventional
- Other Tech
- Glyphosate

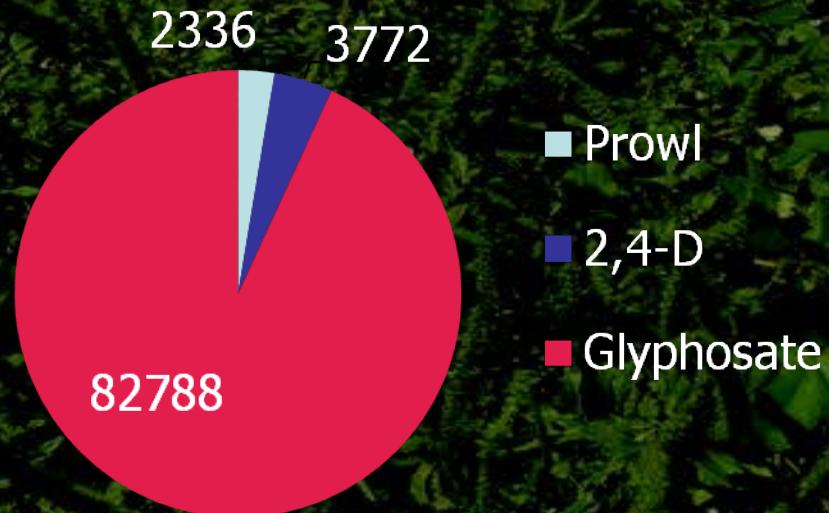
Soybean Herbicides

Acres X 1,000

1996



2005



- Pinnacle
- Sencor
- Basagran
- Blazer
- Scepter
- Classic
- Glyphosate
- Treflan
- Prowl
- Pursuit

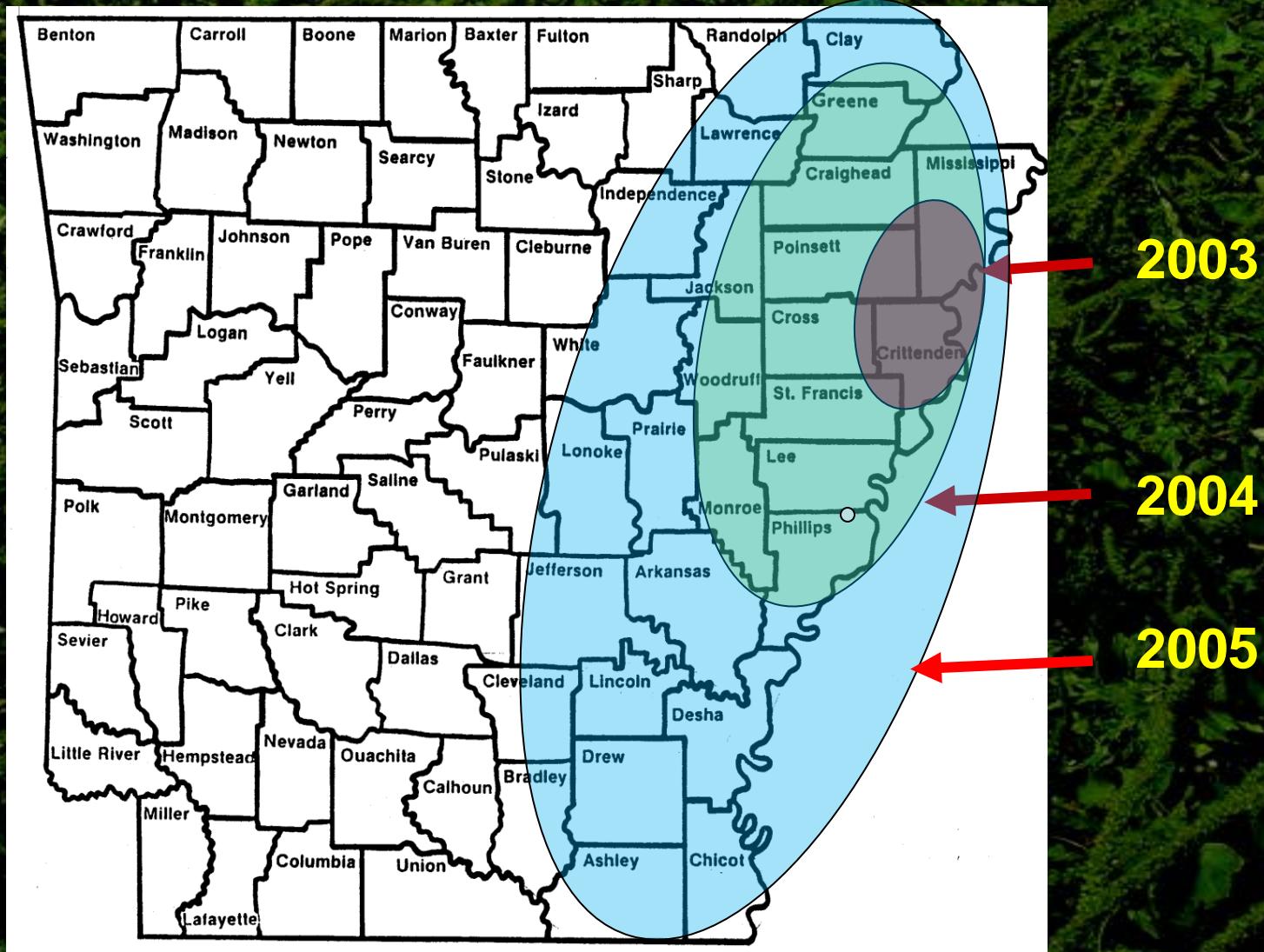
New Chemistry

– Year	# New Chemistry
❖ 1946 – 1955	23
❖ 1956 – 1965	62
❖ 1966 – 1975	74
❖ 1976 – 1985	80
❖ 1986 – 1995	96
❖ 1996 – 2006	<20

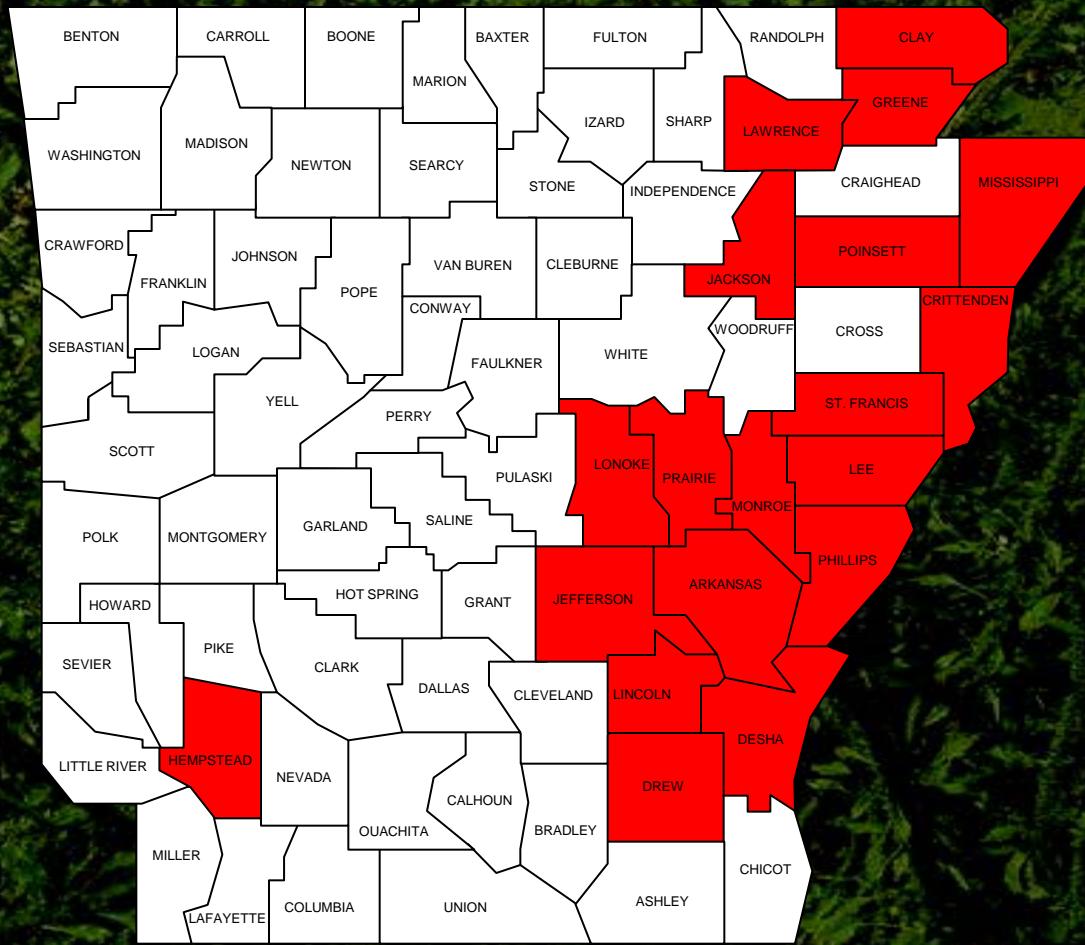


UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE

Glyphosate Resistant Horseweed Distribution



2006 Palmer a. Distribution



❖ Glyphosate Resistant

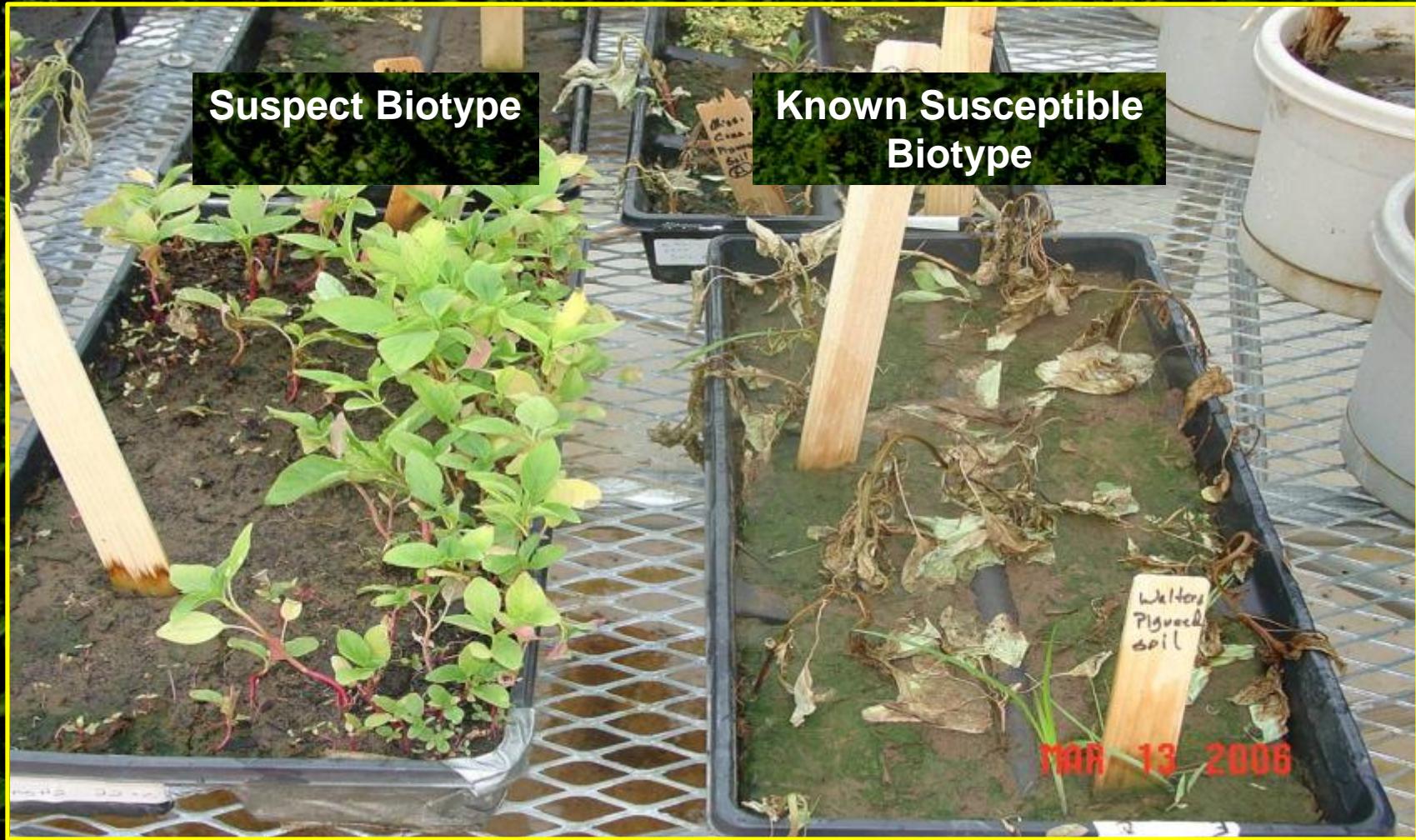
Palmer amaranth

- ❖ Prolific under almost any growing condition
- ❖ Crossing with first cousins is acceptable
- ❖ This assures genetic diversity!



First Population Reported in 2005

6 DAT, 0.75 lb ae/A WM



Typical Pigweed Distribution



Phillips County 2006



Jefferson Co. 2006



Poinsett Co. 2006



Poinsett Co. 2006



Poinsett Co. 2006



Resistance Mechanisms

SEGREGATES

DOES NOT SEGREGATE

Lincoln Co. 2007



Lincoln Co. 2007



Lincoln Co. 2007



2008 Screening



2008 Screening



Johnsongrass 2008



Johnsongrass 2008



Johnsongrass 2008



Johnsongrass 2008



Control methods



UTC



R-up x 4



*Cot fb Dual +R-up fb R-up fb
Sup fb Val*



UTC

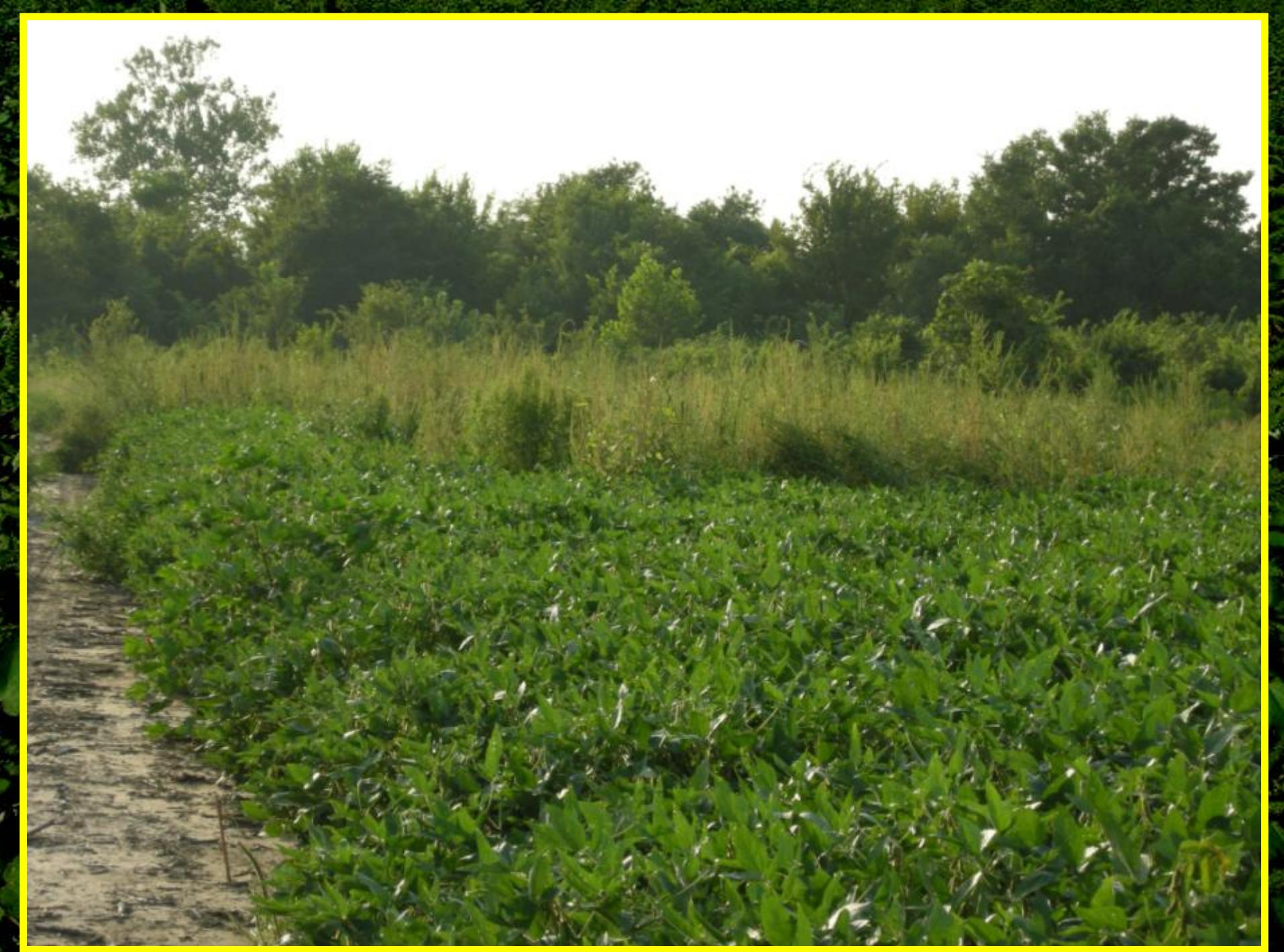


Prefix fb TDT



Valor fb Prefix + TDT







Questions

