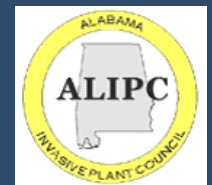
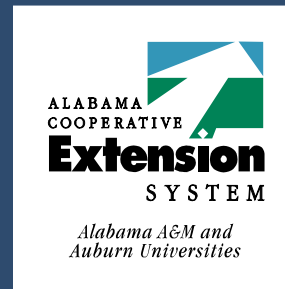


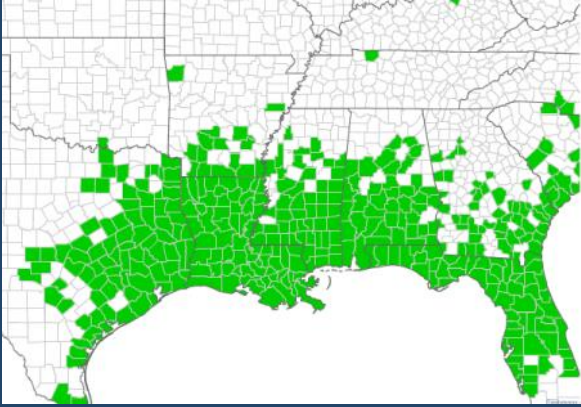


# Chinese tallowtree ecology and control efforts at Auburn

Nancy Loewenstein and  
Stephen Enloe



# Chinese tallowtree, popcorn tree (*Triadica sebifera*)





**Impacts:  
Conversion of wetlands to tallowtree forests**





# Impacts: Conversion of CRP hardwood plantings to tallowtree forests







**Impacts: Conversion of pastures to tallowtree forests**



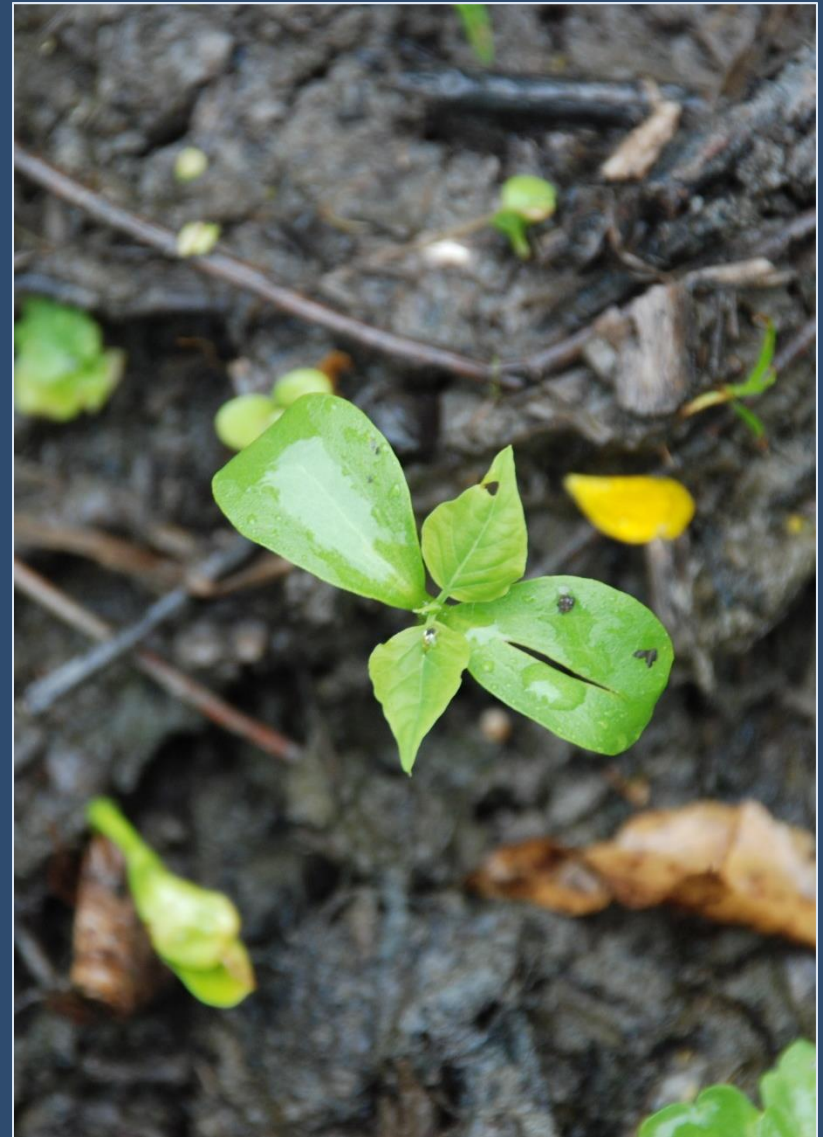


**Invasion along agricultural field margins**



# Seed Ecology

- Mature trees may produce 100K seeds per year
- Seeds are spread by birds and water
- Seed bank estimates of over 3 million per acre
- Seeds may be viable for at least seven years
- Seedlings emerge from spring through fall







Chinese tallowtree Stump Sprouting

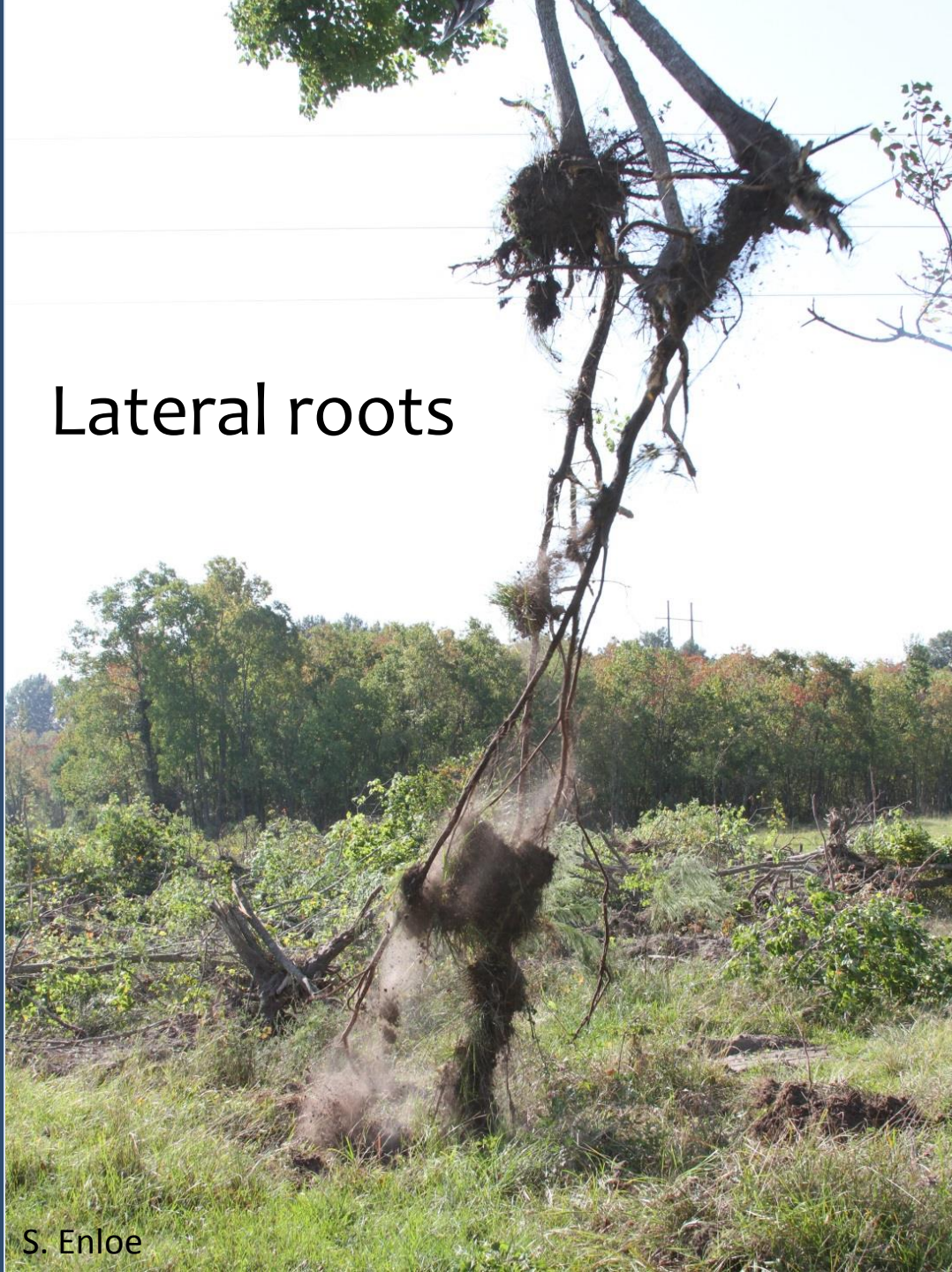


# Chinese tallowtree Root Crown





# Lateral roots





Tallowtree  
Lateral Roots (~36 ft)





# Control Options





# Standard Foliar Herbicide Treatment Options for Tallowtree

- **Triclopyr ester** (Remedy, Garlon 4, Generics)
  - 2% v/v for spot treatment (high volume)
- **Triclopyr amine** (Garlon 3A, Generics)
  - along water
  - 2% v/v for spot treatment (high volume)
- **Imazapyr** (Arsenal or Habitat)
  - 1% v/v (high volume)
- **Imazamox** (Clearcast)
  - 0.5-2%v/v for spot treatment
- Timing for all: after full leaf out through early fall



# Standard basal bark treatment options for tallowtree

- **Triclopyr ester** (Garlon 4, Remedy)
  - 20% v/v in oil carrier
- **Triclopyr ester** (Pathfinder II)
  - Ready to use product for basal treatment
- Size
  - Tallowtree  $\leq 6$  inches in ground line diameter
- Timing
  - Anytime ... but late fall is easiest



# Standard cut stump treatment options for tallowtree

- **Triclopyr amine** (Garlon 3A, Generics)
  - 10-50% v/v
  - Fall or winter
- **Glyphosate**
  - variable cut stump control of Chinese tallowtree
- **Imazapyr** (Arsenal)
  - 10% v/v
- Homeowners: OrthoMax Poison Ivy and Tough Brush Killer Concentrate (8.8% Triclopyr amine)
  - 100% product



**Common problem:**

...

Resprouting following  
treatment.



5392570



# “New” herbicides

- **Imazamox (Clearcast)**
  - Veg control in and around aquatic and non-cropland sites including ROWs, wildlife openings
  - Labeled for Chinese tallowtree (64 – 128 fl ozs/A)
- **Aminocyclopyrachlor (Streamline, Prospective, Viewpoint)**
  - Selective for broadleaf weeds, woody species, vines and grasses (possible damage to pines)
  - ROWs, turf and lawns, wildlife areas
- **Fluroxypyr (Vista XRT)**
  - Broad spectrum control of annual and perennial broadleaf weeds
  - ROW, non-irrigation ditch banks, pine plantations (with care), industrial sites, grazed areas
- **Aminopyralid (Milestone)**
  - broadleaf weeds, kudzu, wisteria, black locust, mimosa, Japanese stiltgrass
  - Rangeland, pastures\*, CRP, non-cropland, ROWs, non-irrigation ditch banks, natural areas



# Auburn Tallowtree IPT Herbicide studies

- Techniques
  - Cut stump
  - Basal bark
  - Foliar
- Habitat
  - CRP hardwoods
  - Pastures
- Locations
  - Wetumpka, AL
  - South Montgomery, AL
  - Pineville, LA





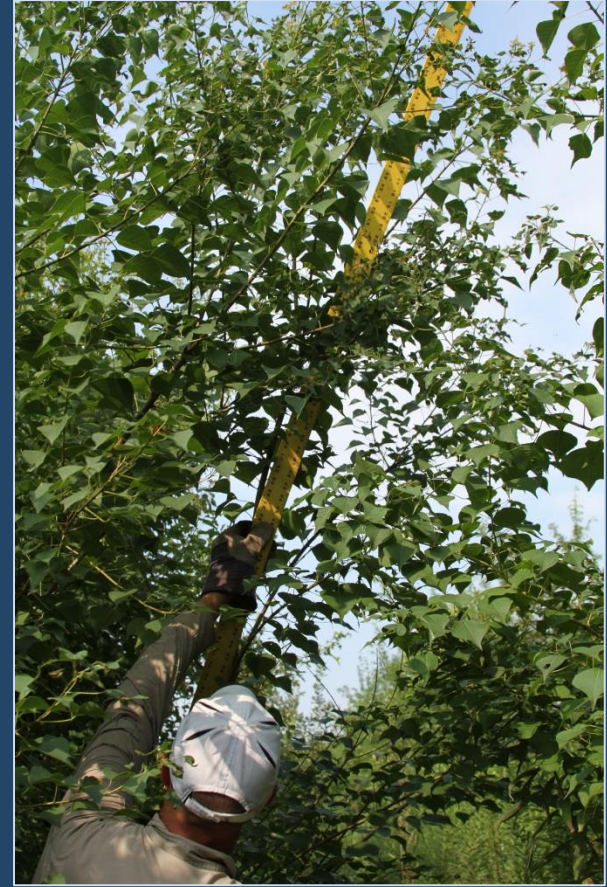
# Cut Stump Treatments

## Applied December 2011

- **Garlon 3A**
  - 25% v/v
- **Clearcast**
  - 25% v/v
  - 50% v/v
- **Aminocyclopyrachlor (MAT)**
  - 20% v/v
- **Milestone**
  - 10% v/v
- **Vista XRT**
  - 10% v/v
  - 25% v/v
- **Untreated**



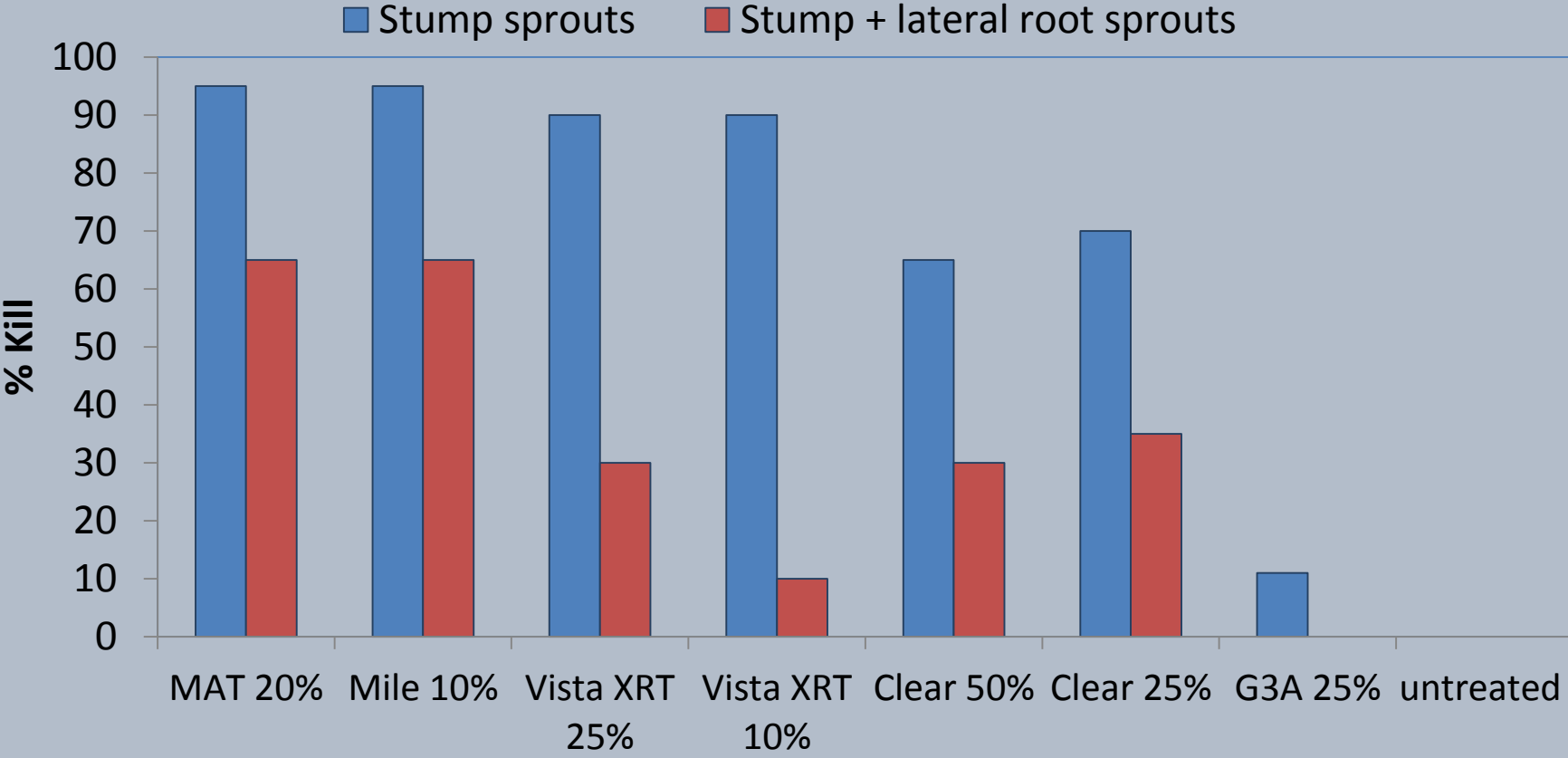




Untreated cut stumps  
avg ht=11.8 ft



# Chinese tallowtree response to cut stump treatment at 21 months – Wetumpka site





## Average height of stump sprouts

Garlon 3A – 7.2 ft

Clearcast (25%) – 4.5 ft

Clearcast (50%) – 4.1 ft







Examples of successful cut stump



# Basal bark treatments

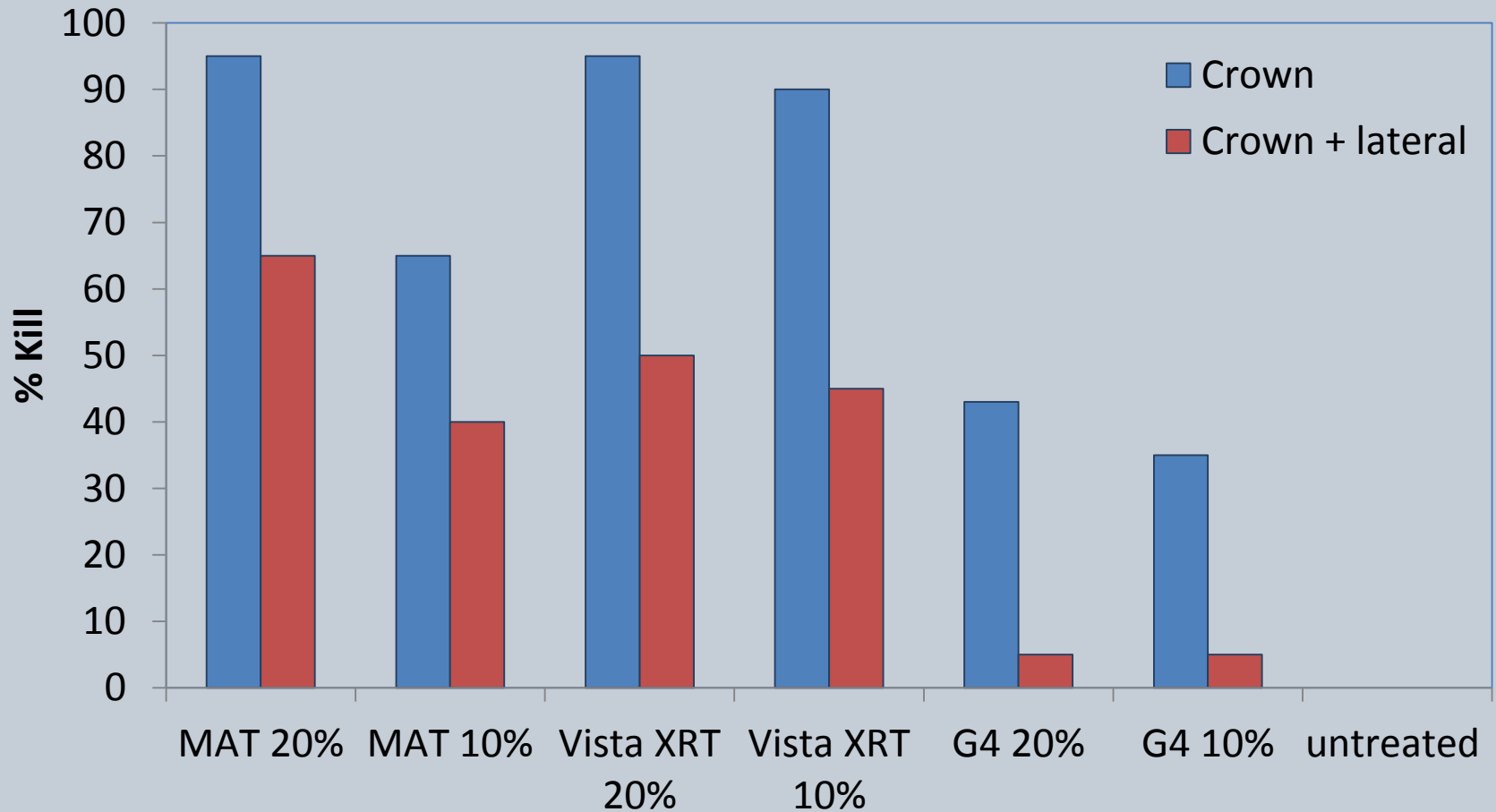
## Applied December 2011

- **Garlon 4**
  - 10% v/v
  - 20% v/v
- **Vista XRT**
  - 10% v/v
  - 20% v/v
- **Aminocyclopyrachlor (MAT)**
  - 1 lb ae/gal oil soluble formulation
  - 10% v/v
  - 20% v/v
- **Untreated**





# Chinese tallowtree response to basal bark treatment at 21 months- Wetumpka



Treatments applied December 2011 to trees < 6 inches dbh





Examples of successful basal bark treatments





Sprouting following basal bark treatment



# Foliar treatments

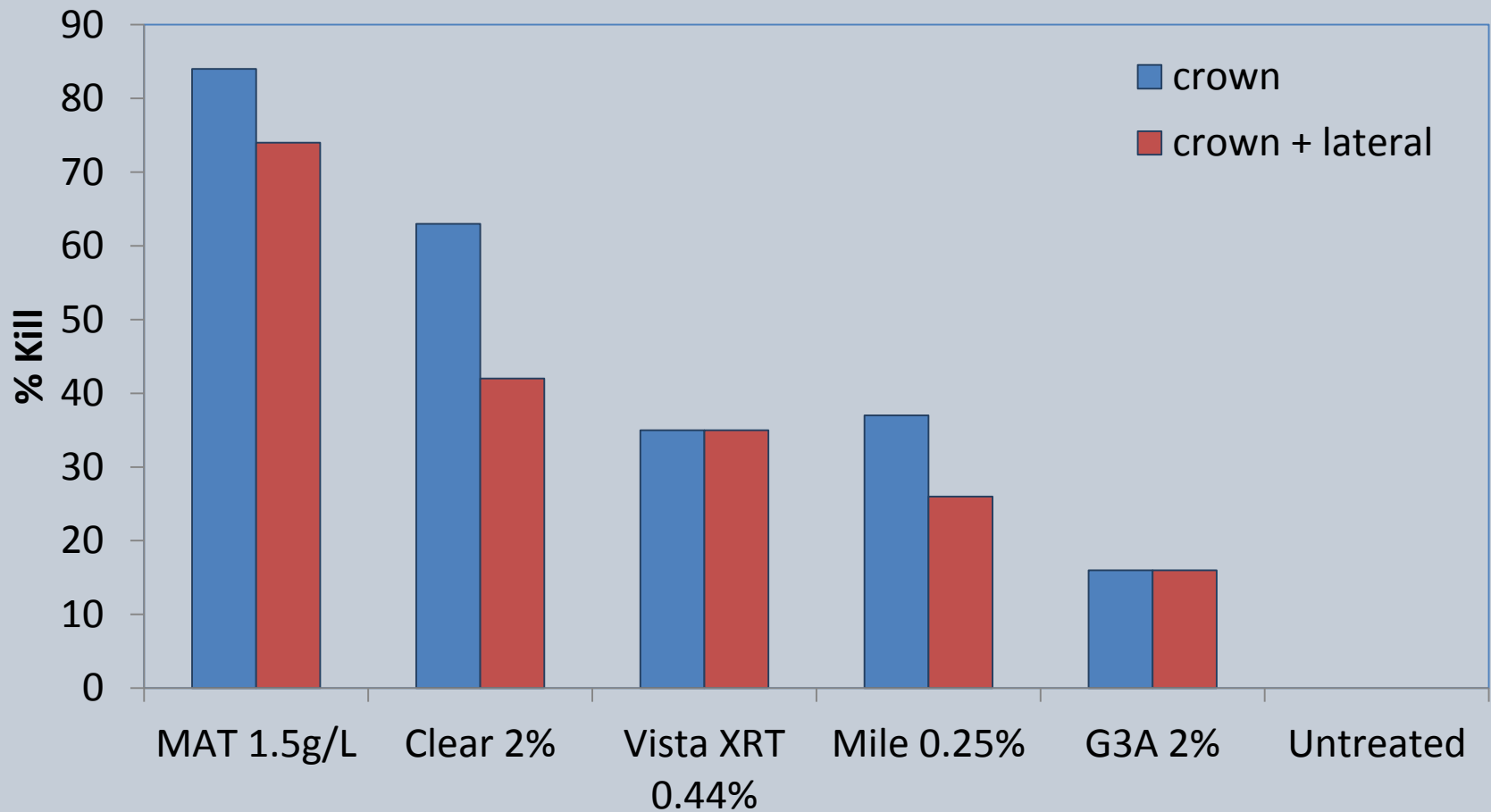
Applied June 2012 ... after about 50 inches (4.5 ft) of regrowth

- **Garlon 3A**
  - 2% v/v
- **Clearcast**
  - 2% v/v
- **Milestone**
  - 0.25% v/v
- **Vista XRT**
  - 0.44% v/v
- **MAT**
  - 1.5 g/L
- **Untreated**





# Chinese tallowtree response to foliar treatment at 15 months- Wetumpka site



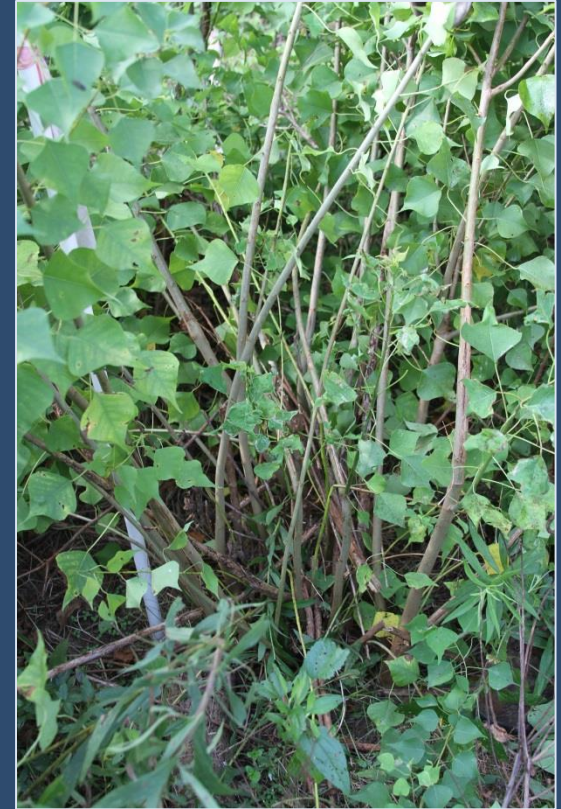




**Milestone**  
avg ht=3.8'



**Vista XRT**  
avg ht =6.7'



**Garlon 3A**  
avg ht=6.9'

Untreated control avg ht=11.2'



# Herbicide Costs

Herbicide	Active ingredient	Cost / gallon	Rate	Cost in one gallon of solution
Garlon 4 Ultra	triclopyr ester	\$95	20% v/v	\$19
Element 4	triclopyr ester	\$62	20% v/v	\$12
Garlon 3A	triclopyr amine	\$85	25% v/v	\$21
Element 3A	triclopyr amine	\$59	25% v/v	\$15
Vista XRT	fluroxypyr	\$213	10%	\$21
			20%	\$43
			0.44%	\$1
Milestone	aminopyralid	\$357	10%	\$36
			0.25%	\$1
Clearcast	imazamox	\$235	25%	\$59
			50%	\$118
			2%	\$5



# Summary

- Chinese tallowtree is a growing, expensive-to-deal-with problem
- Promising new herbicides for tallowtree control
  - MAT and Milestone for cut stump
  - MAT and Vista XRT for basal bark
  - MAT for foliar
- Please share reports of tallowtree impacts and treatment success stories or dismal failures ...

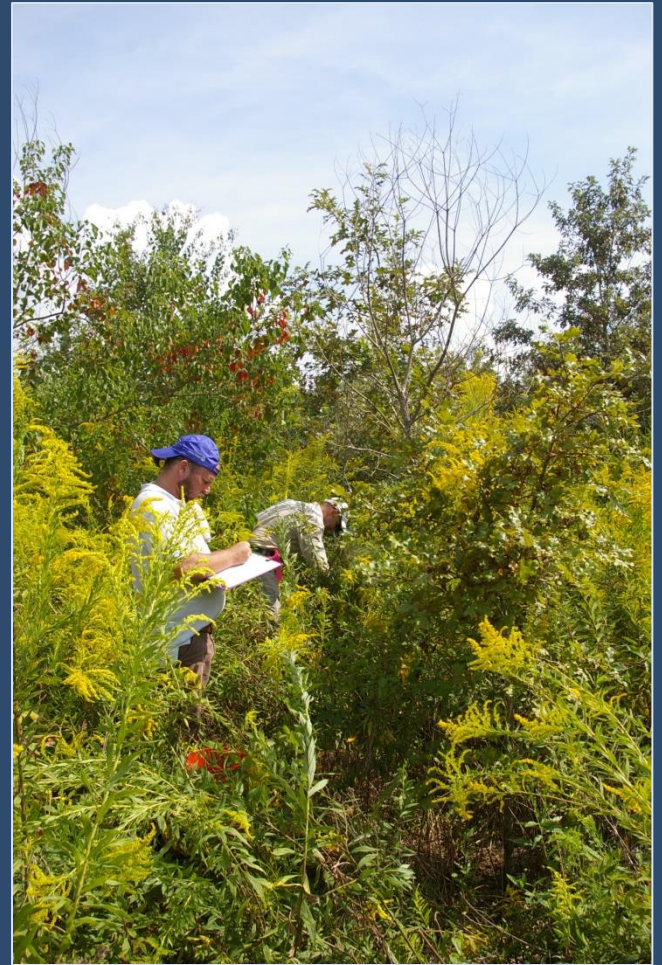
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Questions?

