Competition Control in Forest Stands

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Let's not get lost in the weeds…

- We spend a lot of time applying herbicides.
- We generally know why we apply herbicides.
- Let's review some of the data on exactly what happens if we don't apply herbicides.

Outline

- Why hardwood control?
- Why herbaceous weed control (HWC)?
- Why use both hardwood control and HWC?
- Why use herbicides with fertilizer?

Why Hardwood Control?

- Fayette Alabama site prep study
  - Planted in 1959 at 807 TPA (6 x 9 ft)
  - ***ESTABLISHMENT*** treatments
    - Untreated
    - Stem injection (> 1 in DBH)
      - 50:50 mix of 2,4,5-T and 2,4-D
        - » aka Agent Orange 2 years before deployment in Vietnam
      - 1:12 ratio with diesel
  - Tracked until 1985

Glover, G. R., & Zutter, B. R. (1993). Loblolly pine and mixed hardwood stand dynamics for 27 years following chemical, mechanical, and manual site preparation. *Canadian Journal of Forest Research*, *23*(10), 2126-2132.

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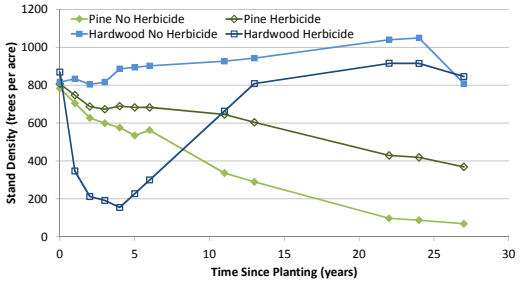

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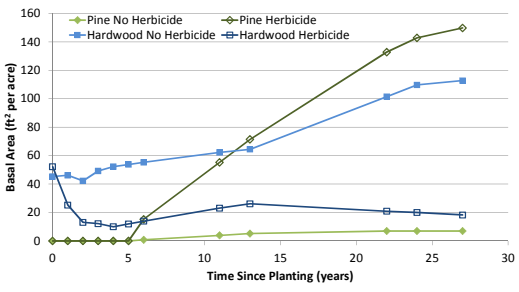

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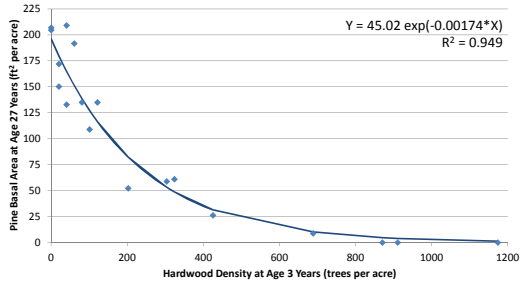

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Why Hardwood Control?

Photo Credit: James H. Miller, USDA Forest Service, Bugwood.org

Yaupon Control in Texas

- Untreated Check
- 5 qt. Garlon 4

Why Herbaceous Weed Control?

- Auburn Alabama site prep study
- Uniform site prep spray in July '82
  - 1.1 lbs/ac ai picloram
  - 4.0 lbs/ac ae 2,4-D
  - 4.0 lbs/ac ae triclopyr
- Planted at 681 TPA (8 x 8 ft) in Jan '83
- ***ESTABLISHMENT*** treatments
  - High herbaceous (untreated)
  - Medium herbaceous (6 oz/ac ai Oust)
  - Low herbaceous
    - Same 6 oz/ac ai Oust in April '83
    - Additional 3.5 oz/ac ai Oust in March '84
- Tracked until December '85

Zutter, B. R., Glover, G. R., & Gjerstad, D. H. (1986). Effects of herbaceous weed control using herbicides on a young loblolly pine plantation. *Forest Science*, *32*(4), 882-899.

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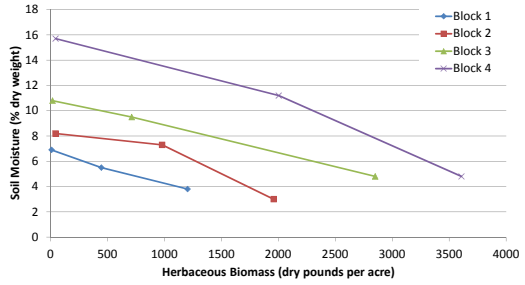

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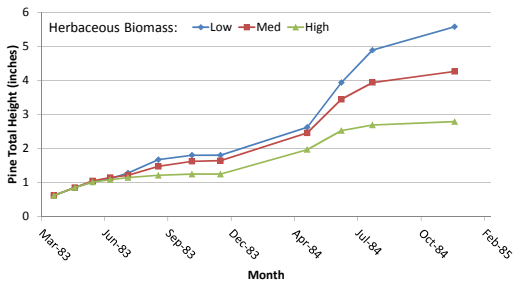

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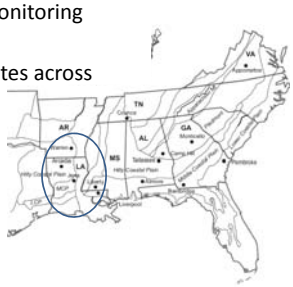
Why Both Hardwood & HWC?

- Competition Omission Monitoring Project (COMP study)
- Study established at 14 sites across the South (5 in WG)
- **ESTABLISHMENT** trtmts
  - Untreated
  - Hardwood Control
  - Herbaceous Control
  - Both Hardwood & HWC



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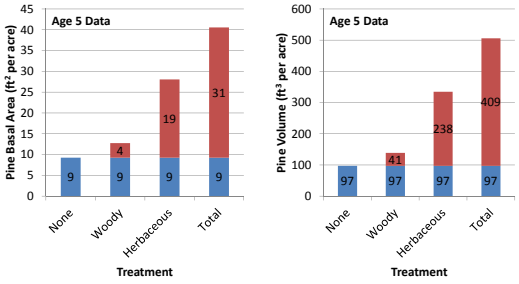

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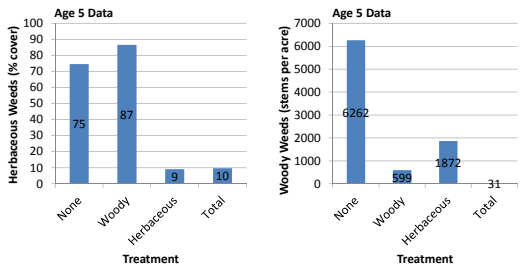

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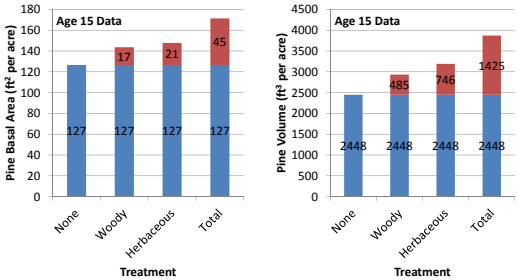

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Why Use Herbicides with Fertilizer?

- Forest Productivity Cooperative Regionwide 17 Trial
- Established at 13 sites across South
  - 10 loblolly (also 3 slash)
- **MIDROTATION** treatments
  - Untreated check
  - Fertilizer (200 lbs. N, 50 lbs. P)
  - Vegetative control (site specific)
  - Both fertilizer and vegetation control

Albaugh, T. J., Stape, J. L., Fox, T. R., Rubilar, R. A., & Allen, H. L. (2012). Midrotation vegetation control and fertilization response in Pinus taeda and Pinus elliottii across the southeastern United States. *Southern Journal of Applied Forestry*, 36(1), 44-53.

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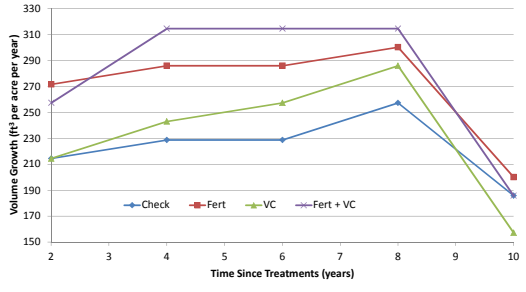

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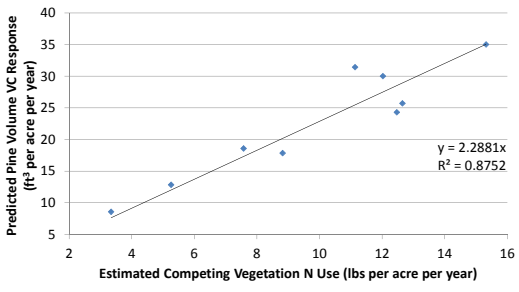

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Why Use Herbicides with Fertilizer?

Why Use Herbicides with Fertilizer?

- Central Louisiana site prep study
- Planted 681 TPA (8 x 8 ft) in Jan '88
- **ESTABLISHMENT** treatments
  - Untreated
  - Herbicide for woody & herbaceous release for 3 years post-plant
    - Hexazinone, sulfometuron, metsulfuron, glyphosate
  - Fertilizer with DAP and urea
    - N (157 lbs/acre) + P (135 lbs/acre)
  - Herb + Fert

Haywood, J. D., & Tiarks, A. E. (1997). Fertilization, weed control, and pine litter influence loblolly pine stem productivity and root development. *New Forests, 14*(3), 233-249.

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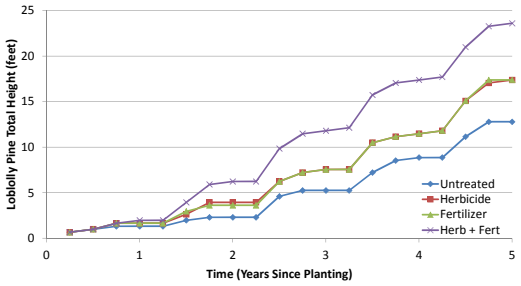

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Central Louisiana – Age 5 data

Herb = Woody & Herbaceous Release w/ Hexazinone, Glyphosate, Sulfometuron, and Metsulfuron
Fert = N (157 lbs/acre) + P (135 lbs/acre) using DAP and Urea

	Total Height	DBH	-------- Volume --------	
	(feet)	*(inches)*	*(ft^3/tree)*	*(tons/acre)*
Control	13.1	2.0	0.17	9.2
Herbicide	17.4	3.1	0.48	23.9
Fertilizer	17.4	3.1	0.44	23.5
Herb + Fert	23.6	4.6	1.17	56.6

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Summary

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Questions?

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