

An Overview of Competition Control Methods in Hardwood Management

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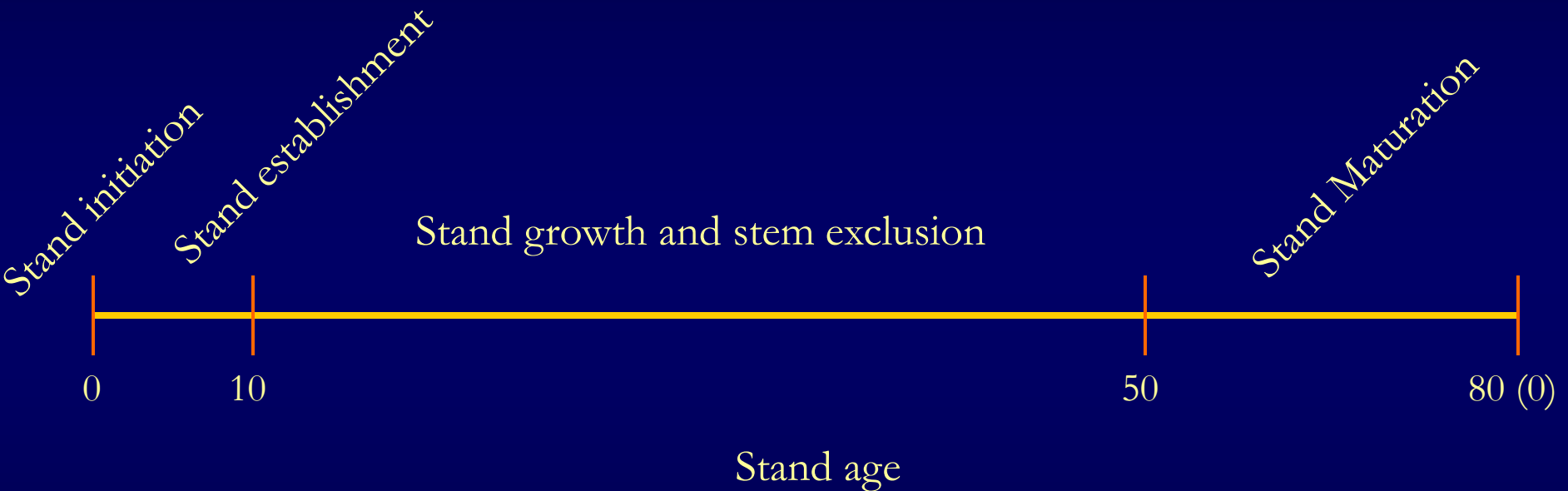
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Why manage for hardwoods?

- Timber
- Wildlife
- Recreation
- Aesthetics
- Water and air quality



Hardwood Stand Development



Overview

- Site factors to consider prior to planting
 - Soils
 - Drainage
 - Restrictive layers
 - Vegetation types present
 - Will dictate need for chemical site prep and method

Overview

- Scenarios for competition control
 - Row crop
 - Old fields
 - Cutover sites
 - Natural regeneration
 - Invasive species

Control Options

- **Mechanical**
 - Chainsaw
 - “Mowing”
 - Bulldozer
- **Chemical**
 - Foliar spray with herbicides
 - Basal bark applications
 - Injection

Importance of Herbicides

- ❑ Useful on all terrain
- ❑ Ease of application
- ❑ Quick
- ❑ Economical vs. mechanical operations
- ❑ Low disturbance to a forest site
 - ❑ Leaves vegetation and litter

Considerations Prior to Application

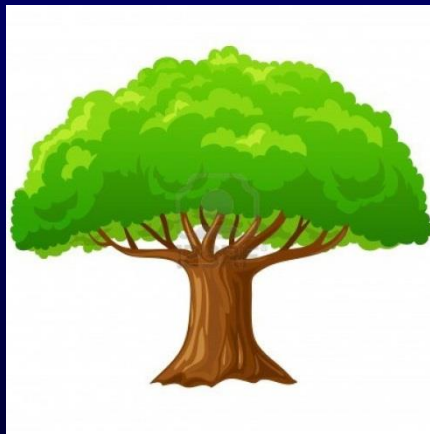
- ❑ Crop species
- ❑ Primary competitors
- ❑ Application types
- ❑ Timing concerns
- ❑ Environmental factors
- ❑ Sensitive areas
- ❑ READ THE LABEL!!!!!!!!!!

Pines vs. Hardwoods

- Comparative caution must be taken when using herbicides in hardwood settings
 - Both immediate and residual effects
- Labeled post-plant products for hardwoods
 - Far and few.....



VS



=



New Ideas Impacting Competition Control

- Mixed species stand development
- Lack of “usable” site prep herbicides
 - Soil active “pine” herbicides
- Need for site preparation in hardwood plantings?
- More options for post-planting control

Competition Sources

- **Common grasses**

- Bermuda grass
- Bahiagrass
- Johnson grass
- Fescue
- Broomsedge

- **Woody species**

- Persimmon
- Blackgum
- Sweetgum
- Ash
- Hickory
- Sumac



- **Broadleaf weeds**

- Fireweed
- Goldenrod
- Curly dock
- Horsetail
- Ragweed
- Smartweed
- Pigweed

- **Vines**

- Trumpet creeper
- Poison Ivy
- Virginia creeper

Site Preparation

- *Any silvicultural treatment applied to debris, groundstory vegetation, forest floor, or soil to make a site more suitable for regeneration.*
- **Mechanical**
 - Bushhogging/mowing
 - Shearing
 - Chopping
 - Disking
 - Subsoiling
 - Drainage Manipulation
 - Scalping
 - Bedding
 - Combination Plowing
 - Combinations of Methods
- **Prescribed Fire**
- **Chemical**

Chemical Options

- Single Product
- Tank Mixtures
- Products used include glyphosate, imazapyr, triclopyr, dicamba and others
- Chemical site prep will not provide residual herbaceous weed control during the first growing season



Site Preparation – Mowing and Spraying



Clearcuts

- Planting in cutover sites can be successful
- Harvest needs to be “complete”
- Mechanical site prep helpful
- Herbaceous and vines are the major concern
 - Can spray a pre-emergent herbicide to help control

Artificial Hardwood Regeneration

- Thousands of acres of abandoned agricultural fields are being re-established in hardwood forests annually
- Many of these plantings have been considered unsuccessful

Artificial Hardwood Regeneration

- In bottomland sites competition a major factor
- Lack of implementation of weed control a major factor

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Competition Control

- Herbaceous weed control
 - Pre and post emergent options
- Improper application = high risk of damage
- Must use the proper chemical at the proper time

Application Timing

- Pre-emergent = high success
 - Avoid damage potential of crop trees
- Post emergent is feasible
 - Oxyfluorfen
 - Red oaks
 - Clopyralid
 - Grass herbicides
- Combination of treatments
 - May need to reduce application rate

A photograph of a dirt path winding through a field of tall, green grass and weeds. The path is light brown and sandy, with some small plants growing along its edges. The vegetation is dense and lush, with some taller trees visible in the background under a clear sky. The overall scene suggests a natural, uncultivated area.

May

A photograph of a garden path in July. The path is a narrow, sandy trail winding through dense, lush green foliage and weeds. The plants on either side are tall and leafy, with some showing signs of being overgrown. In the center of the path, a small blue flag is planted in the ground. The lighting is bright, suggesting a sunny day, and the overall scene is one of a well-maintained but slightly wild garden.

July



Year After Treatment

Herbicides for Herbaceous Weed Control

- Sulfometuron methyl – Oust XP
- Oxyfluorfen – Goal 2XL
- Clopyralid – Transline
- Glyphosate – Accord XRT II
 - Directed spray
- Grass Herbicides
 - Clethodim – Envoy or SelectMax
 - Fluazifop-butyl – Fusilade DX
 - Others

Herbaceous Weed Control

- Standard: Oust XP
 - 2oz/ac @ 10-15 gpa preemergent
 - Up to 4oz/ac
 - Adjust for pH
 - High pH (may have adverse affect)
 - Low pH (may get by with less)
 - 5-6ft bands or broadcast
- Other options:
 - Pre-emergent
 - Goal 2XL (64 oz/sprayed ac)
 - Post-emergent
 - Select (8 – 16 oz/sprayed ac)
 - Fusilade DX (16 – 24 oz/sprayed ac)
 - Goal 2XL (32 oz/sprayed ac)
 - Transline (21 oz/sprayed acre)



Always pay attention to label!!!

- ✓ Crop species
 - ✓ Conifer and hardwood
- ✓ Resistant species
- ✓ Application timing
- ✓ Susceptible species
- ✓ Application rates
- ✓ Restrictive use information
- ✓ Other information

HWC

- **We expect:**
 - Up to 75% greater survival and increased growth using HWC
 - More typically – 25 – 30%
- **Competition for water**
 - Wet years = less benefit
 - Dry years = more benefit
- **Other considerations:**
 - pH
 - Resistant species
 - Onsite water
 - Oust XP vs Goal 2XL



HWC Findings

- Many research applications have used HWC (Oust XP)
 - cherrybark oak, Nuttall oak, Shumard oak, water oak, willow oak, white oak, post oak, burr oak, overcup oak, swamp chestnut oak, live oak, green ash, common persimmon, red maple, bald cypress, winged elm, sugarberry, sweetgum, and American sycamore (19 spp)
 - No phytotoxic effects observed if label rates and application instructions are followed.
- No injury noted from Goal 2XL or grass herbicides in several studies.
 - Avoid crop oil as an adjuvant

Competition Control for Natural Regeneration Methods

- Shelterwood
- Clearcut
- Group selection
- Individual tree selection



Midstory control



Remove all non-oaks between 1" DBH and 6" DBH

Key Factors in Oak Natural Regeneration

- ✓ Seed source
- ✓ Seed crop
- ✓ Soil fertility
- ✓ Soil moisture
- ✓ Sunlight

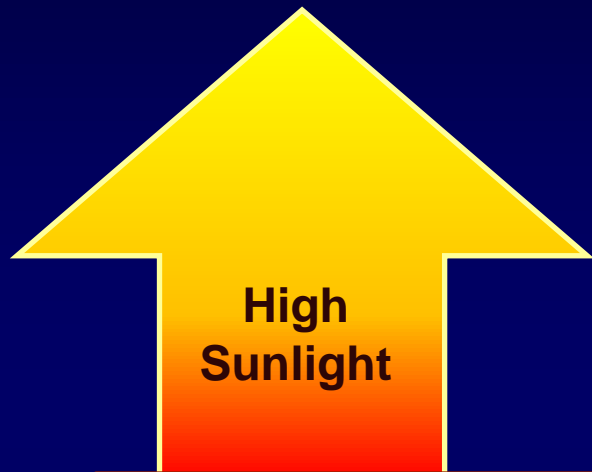


Components of Natural Regeneration

- New seedlings
- Advanced reproduction
- Stump sprouts



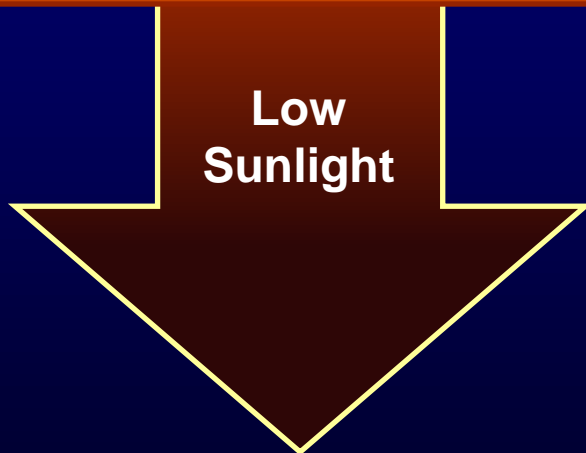
First few years post harvest



High
Sunlight

Fast growing shade
intolerant species and
development of any
large advanced oak
reproduction

Partial sun/ partial shade allows oak seedlings time to grow



Low
Sunlight

Shade tolerant species
and small oak
seedlings

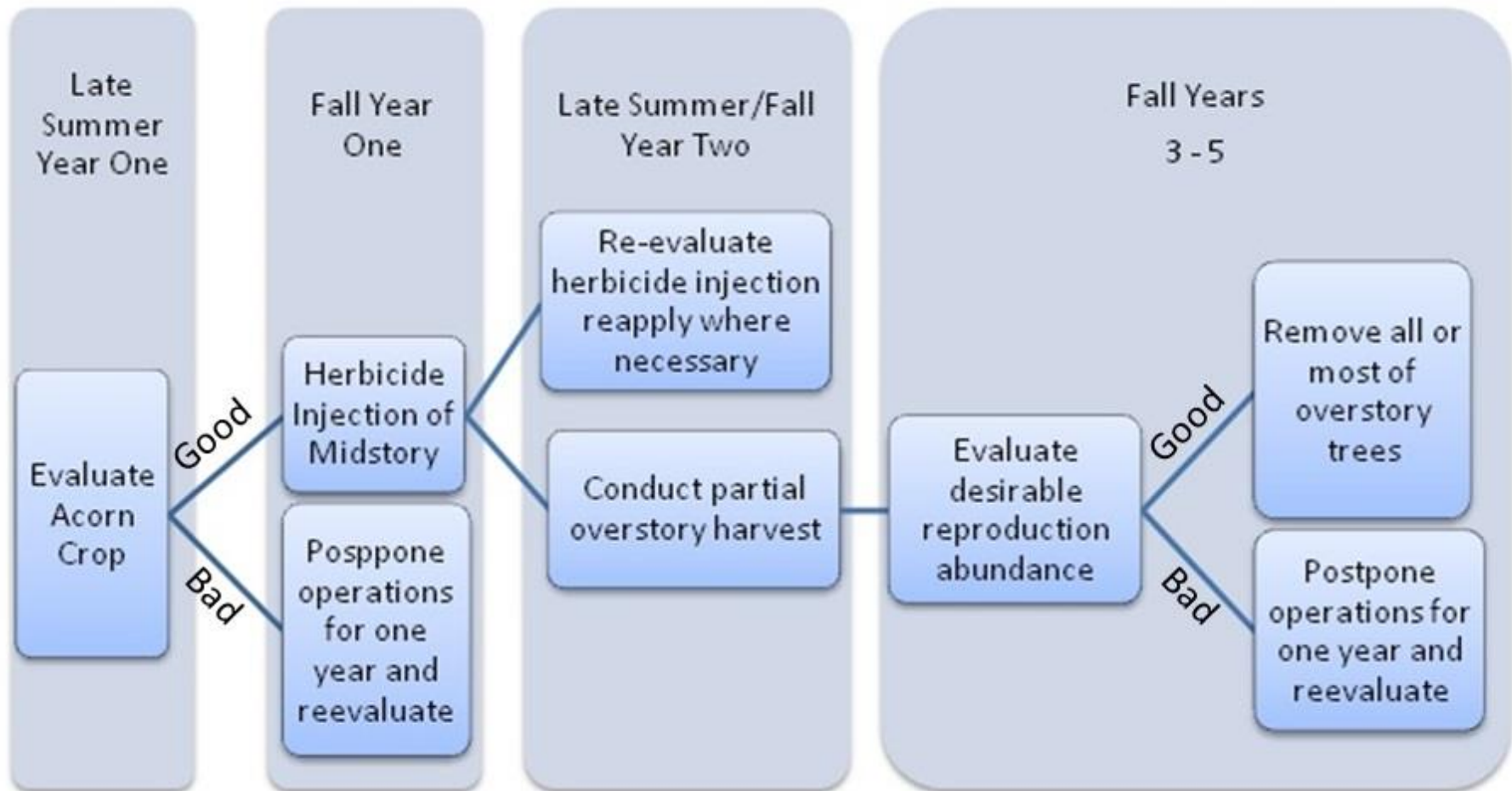
Shelterwood Harvest



Common Chemicals

- Triclopyr – (Garlon 3a)
 - 50% concentrate and 50% water
 - Apply in a continuous frill around stem, 1 ml per 3 inches DBH
- Glyphosate –
 - 5.4 lbs./gal, 40% percent concentrate and 60% water
 - Apply in a continuous frill around stem
 - Growing season best
- Imazapyr – 4lb./gal. a.i.
 - Up to 25% concentrate and 75% water
 - Apply 1ml solution per 3 inches DBH
 - Year round except during green up, fall best

Modified Shelterwood Timeline



Basal Bark Applications

- Timber Stand Improvement
 - Mid-rotation hardwood stands
 - Goal – improve species composition
- Garlon 4 herbicide
- Apply to first 12 to 15 inches of stem
- Mix with oil (follow label directions)

Kudzu Control

- Escort at 4 oz/ac, July – Sept
 - 20-40GPA min (80 -100GPA recommended)
- Transline at 21 oz/ac, July – Sept
 - 100GPA, most selective (use in hdwds)
- Garlon 4 at 20% in basal oil with penetrant, Jan - April
 - Basal spray vines ≤ 1 " diameter
- Tordon 101 @ 3% solution



Chinese Privet Control

- Recommended:
 - 3% glyphosate
 - Spray to wet – Feb - March
- 1% Arsenal AC (spray to wet) w/ adjuvant
- 2% Garlon 3A and 4 (spray to wet)
- 20% Garlon 4 in basal oil w/ penetrant
- Treat cut stems w/ 10% Arsenal Ac or Velpar L, or 20% Garlon 3A or glyphosate



Cogongrass

- Arsenal AC as 1% solution in Sept-Oct
- Glyphosate as 2% solution
- Combination of these
- Repeat application!
 - Spring-fall
 - Subsequent years



Acknowledgement

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Thank You!

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