Hardwood Weed Control

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This follows the outline of a paper in your folder.

Weed Management in Southern Bareroot Hardwood Nurseries

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Abstract

Managers in the southern United States rely on chemicals and non-chemical methods of weed control. Chemical treatments include fumigation with methyl bromide and chloropicrin in combination with selective herbicides. At nurseries were methyl bromide is not used, managers

In the past, some hardwood nurseries required more than 1,600 hours of handweeding per acre.

Weeding sweetgum seedbeds 40 years ago

Weed Identification is important
Know your weeds

Table 1. Typical weed species in southern hardwood nurseries.

Common name	Scientific name
Grasses	
bermudagrass	*Cynodon dactylon* (L.) Pers.
crowfootgrass	*Dactyloctenium aegyptium* (L.) Ritcher
hairy crabgrass	*Digitaria sanguianlis* (L.) Scop.
sourgrass	*Digitaria insularis* (L.) Mez ex Ekman
barnyardgrass	*Echinochioa crus-galli* (L.) Beauv.
goosegrass	*Elusine indica* (L.) Gaertn.
Sedges	
flathead sedge	*Cyperus compressus* L.
yellow nutsedge	*Cyperus esculentus* L.
purple nutsedge	*Cyperus rotundus* L.
Broadleaves	
prostrate pigweed	*Amaranthus bitoides* S. Wats.
redroot pigweed	*Ameranthus retrofelus* L.
spiney amaranth	*Amaranthus spinosus* L.
sicklepod	*Cassis obtusifolia* L.
eclipta	*Eclipta alba* (L.) Hassk.
dogfennel	*Euportorium capillifolium* (Lam.) Small
spurge	*Chamaesyce maculata* (L.) Small
tall morning glory	*Ipomoea purpurea* (L.) Roth
carpetweed	*Mollugo verticillata* L.
white clover	*Trifolium repens* L.

Integrated weed management

Efficient weed management systems for hardwoods involve a combination of methods which may include:

sanitation,
Fall sowing,
living mulch,
fumigation,
herbicides
and handweeding.

Less efficient systems usually rely on just one or two methods of weed management.

Sanitation

One year’s seeding makes seven years of weeding

Don’t let the weeds go to seed!!!

Sanitation

Irrigation water can contain weed seed. Keep irrigation pond free of weeds and use screens to filter weed seeds.

Sanitation

Use certified cover-crop seed to keep out problems weeds.

Sanitation

Use dense cover-crops to shade out weeds.

Sanitation

Clean machinery to avoid spreading rhizomes and weed seed.

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Sanitation

Wind introduces weed seeds

Sanitation

Straw mulches introduce weed seed

Sanitation

Agrilock does not introduce weed seed

Sanitation

Straw mulches introduce weed seed

Sanitation

Straw mulches introduce weed seed

Sanitation

Some organic amendments can introduce weed seed

Sanitation

Handweeding

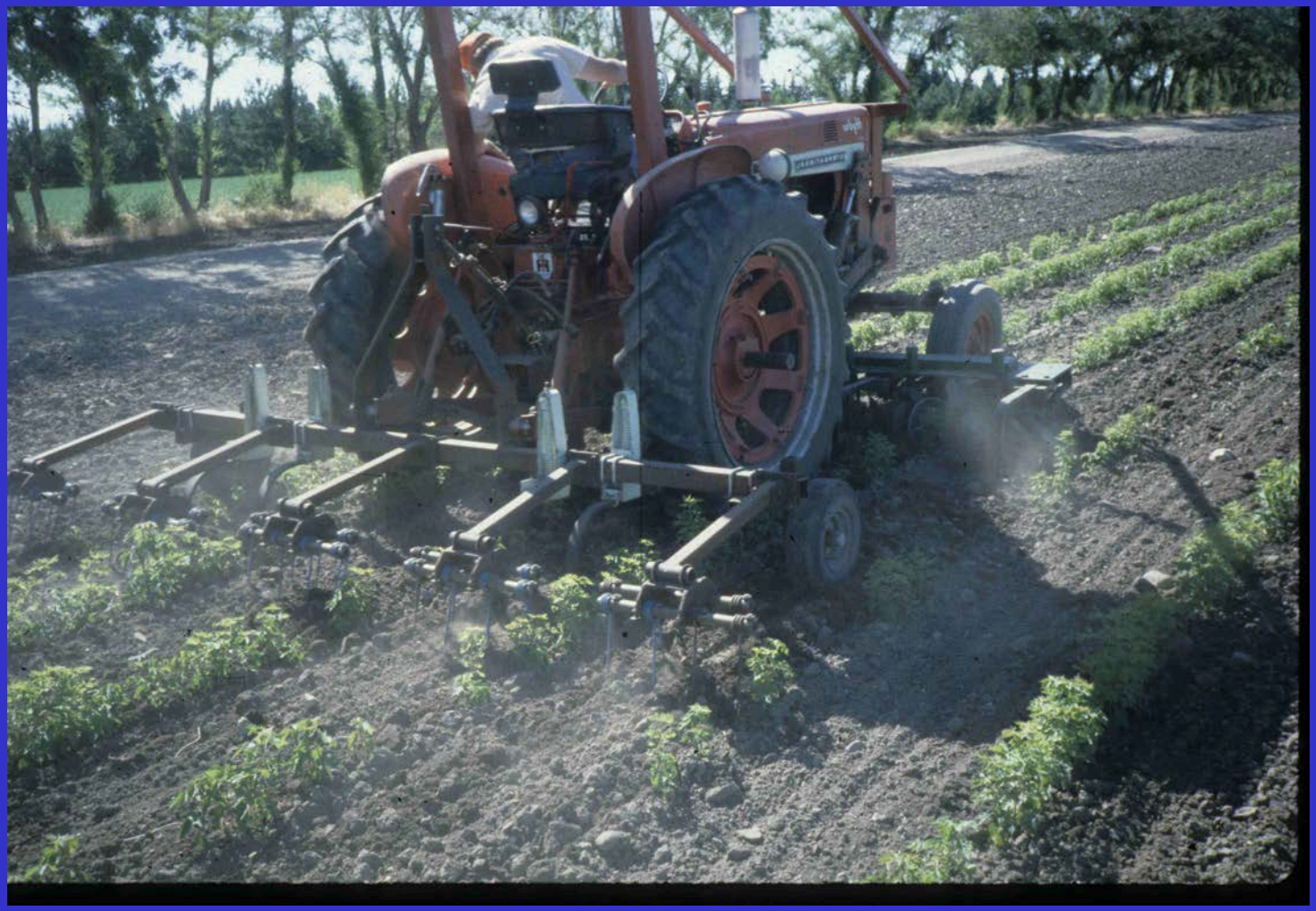
Handweed when weeds are small.
Frequent weeding reduces handweeding times

Handweeding in hardwood seedbeds 2003

- 100 + hrs/acre
- 100 hrs/acre
- 30 hrs/acre
- 20 hrs/acre
- 12.5 hrs/acre

Mechanical cultivation

Mechanical cultivation



Living mulch

Living mulch

Living mulch

Fall Sowing

Soil fumigation

Important for some troublesome weeds.
Ineffective for morningglory, clover and sicklepod

Herbicides

Table 2. Common names and trade names of selected herbicides used in southern hardwood nurseries.

Common Name	Product Names	Comment	WSSA group	REI* hours
After sowing for oaks, walnut, hickory				
oxyfluorfen	Goal, Galigan, Goaltender	Field-grown	14	72
Very selective grass herbicides				
clethodim	Clethodim, Select, Shadow	Grass control only	1	24
fluazifop	Fusilade	Grass control only	1	12
sethoxydim	Segment, Sethoxydim	Grass control only	1	12
Herbicides with some selectivity when applied over established hardwoods				
DCPA	Dacthal	Found in groundwater	3	12
dithiopyr	Dimension	Established plants only	3	12
oryzalin	Surflan	May cause galls	3	24
pendimethalin	Pendulum (Aquacap)	May cause galls	3	24
prodiamine	Barricade	May cause galls	3	12
trifluralin	Trifluralin HF	Certain labels only	3	12
clopyralid	Lontrel	Will injure legumes	4	12
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napropamide	Devrinol	Some grass control	15	12

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Preemergence herbicides - soil activity

Postemergence herbicides - foliar activity

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Preemergence herbicides - soil activity – WSSA group 3 (may be applied after emergence of hardwood seedlings)

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Postemergence herbicides - foliar activity – WSSA group 1 (should be applied after emergence of grasses)

Herbicides – cover crops

Controlling nutsedge with herbicides

Hardest

Easiest

Seedbeds

cover-crop

fallow

Herbicides – cover crops

Herbicides – cover crops

Permit in corn

Herbicides – fallow land

Permit in fallow ground

Herbicides – fallow land

Herbicides – fencerows

Herbicides – riserlines

Herbicides – riserlines

Herbicides – at sowing

Several nursery managers use no herbicides at time of sowing (especially on large-seeded spp.)

Herbicides – at sowing

Several “group 3” herbicides can be applied after sowing; except for small seeded, sensitive species like sycamore

Herbicides – after true leaves

Several “group 3” herbicides may be applied to established seedlings

Herbicides – after true leaves

Most “group 1” herbicides may be applied to established seedlings

Herbicides – granular formulation

In 2003, only one manager (out of 14) used a granular herbicide.

Herbicides – shields

Herbicides – shields

Herbicides – shields

Herbicides – shields

Herbicides – wicks

A rope-wick applicator may be used
if the weeds are taller than the hardwoods

Herbicide injury

To reduce phytotoxicity, some managers irrigate after applying herbicides

Herbicide injury

Herbicide injury

Herbicide injury

Use check plots to detect herbicide injury

Herbicide injury

No Agrilock = Goal Injury - 2004

RESEARCH REPORT 05-01

SYNTHETIC BED STABILIZERS COST EFFECTIVELY
INCREASE SEED EFFICIENCY

by
Bill Carey, Scott Enebak, Ken McQuage, Doug Shelburne and Ralph Bower

Rate of soil stabilizer

0X

1X

2X

Stabilizer Rate	Weed/ft^2 May	Pines/ft^2 May
0X	0.00 a	18.3 a
1X	0.04 b	31.7 b
2X	0.07 b	34.2 b
lsd	*0.03*	*3.0*

Herbicide injury

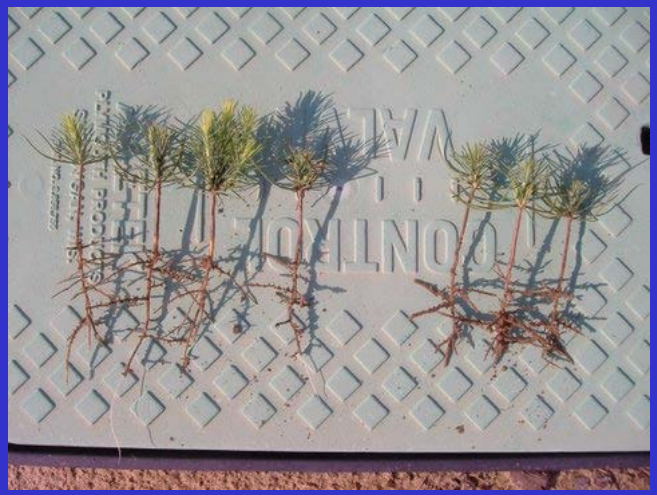
Goal injury from sandblasting

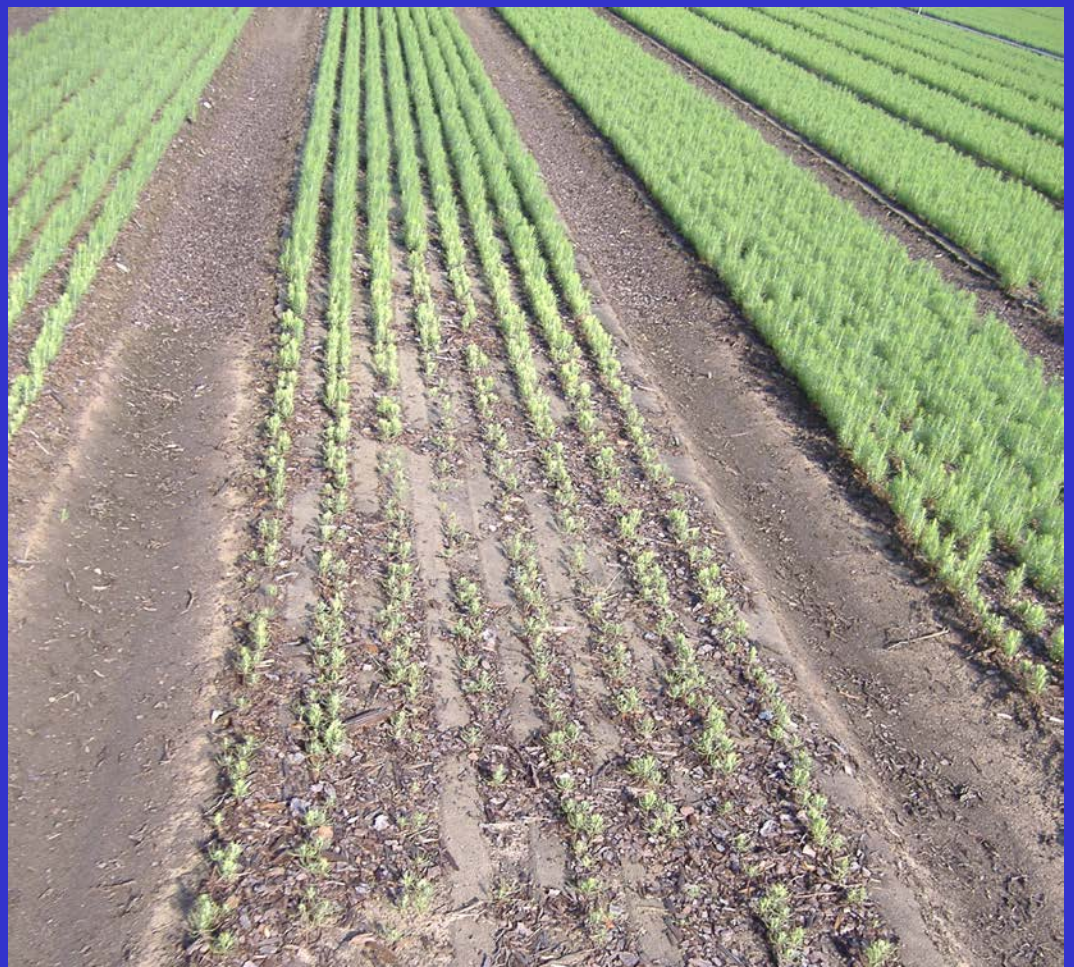
Herbicide injury

Goal injury from co-distillation

Herbicide injury

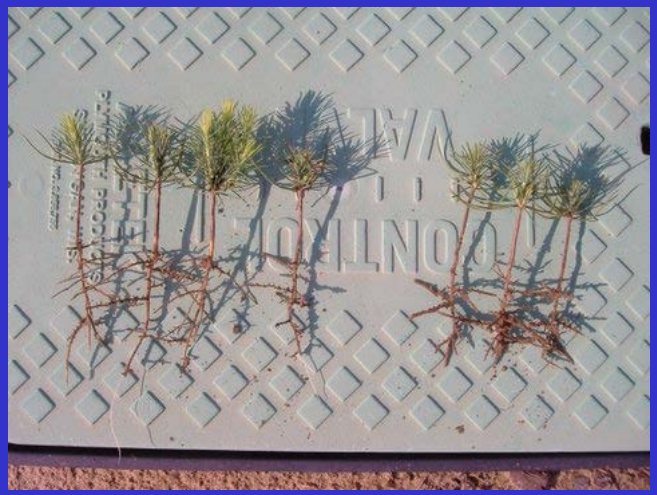
Imazapic injury - water soluble and moves into seedbeds

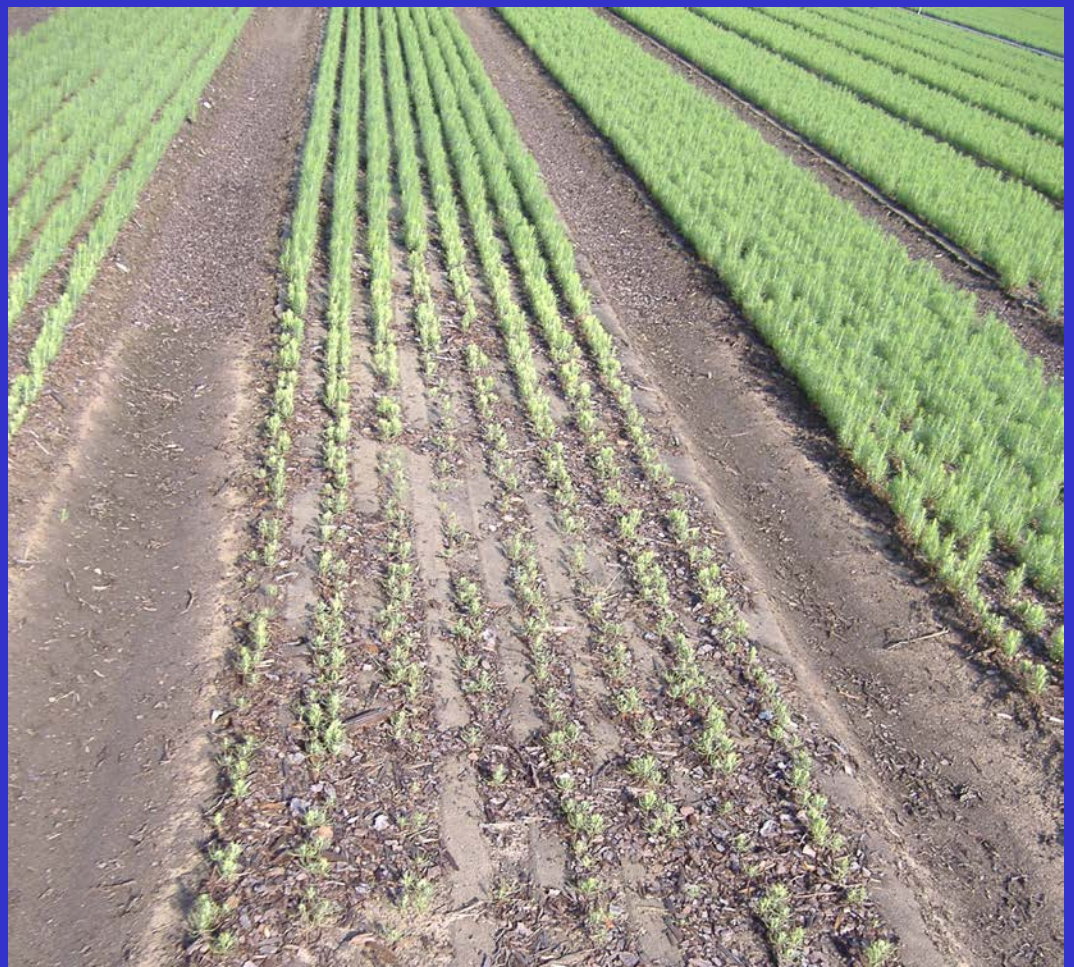




Herbicide injury

Imazapic injury - water soluble and moves into seedbeds





Herbicide injury

Sulfometuron injury - water soluble and moves from riserlines into seedbeds

Herbicide injury

Untarped metham sodium

Herbicide injury

Herbicide injury on sugarberry

Herbicide injury

Reflex carryover on cover crop

Results of an integrated weed management program

Sumary

- Handweeding in hardwood seedbeds is typically higher than in pines… but progress has been made over the past decade.
- Nursery managers are now applying several approaches to keeping weed populations low.

QUESTIONS?

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