SYCAMORE SEEDLING PRODUCTION

By

Al Mickelson
Union State Tree Nursery, Jonesboro, Illinois

The Union State Tree Nursery at Jonesboro, Illinois has been growing Sycamore for the last twenty years. However, what we do at this nursery may or may not be applicable to your nursery. This paper will outline our methods and procedures as we do them from collecting the seed, seed storage, seeding, cultural practices, grading, storage and packaging for distribution.

Seed collections are made in late January or early February usually from fallen trees. If collections are postponed until late February or March, the balls will shatter too much and make collection a little more difficult. Collections should be on a dry day following a period of 3-5 days of dry weather so that the balls need not be dried after collection. Our experience has been that seed collected in late winter gives us better germination than seed collected in early fall. This may be due to some after ripening that takes place in early winter while the seeds are still on the trees.

The seed is cleaned on a day when a slight breeze is blowing. The balls are run thru a small hammer mill with 1/2 the hammers , the screen, and dust collector removed. The seed is blown against a 1/2" hardware cloth screen set about six feet from the discharge end of the mill. The hardware cloth screen will catch quite a few of the buttons and stems and the seed will drop just beyond the screen and the fuzz will blow all over the countryside. There will be some buttons and fuzz in the seed that is collected beyond the screen and this is removed by passing the seed over a 1/4" shaking screen in front of an electric fan. Of course all this work is done outside and the fuzz can become a little irritating.

The clean seed is placed in tight fibre or metal drums and placed in storage at 34° - 38° F. until seeding time. Our experience has been that this seed can be stored for up to three years. Perhaps it could be stored longer but we have not had occasion to use this old a seed and we have not made any tests to determine how long this seed can be stored without loosing appreciable viability.

The seeding rate is one pound to 100 feet of 4' bed. Seeding is done by hand. We have tried using it in the two types of mechanical seeders that we have but it is just impossible to get the seed thru the machines . Great care must be taken to uniformily scatter the seed over the area allocated and it can not be done very well on a breezy day. The optimum density is for 40-45 plants per lineal foot of 4' bed.

The seed beds are prepared in the usual way and the top of the bed is left rough. Our soil is a silty clay loam with 20-30% sand which probably is heavier than most nursery soils. The beds are prepared by first ridging the bed, then tilling with a rotary tiller and then leveling with a bedformer. The bedformer leaves minute ridges and valleys running lengthwise of the bed and the seeding is done on this surface. The beds are not rolled after seeding as this practice leaves a lot of seed on a smooth surface and it is then blown away by the wind. No mulch is used.

Immediately after seeding, the beds are thoroughly irrigated. After the third day, the beds are lightly irrigated every day, until the first true leaf is well developed. The amount of water applied in these irrigation is less than 1/4 inch and is usually done in the middle of the day. Irrigation amounts are increased but intervals less frequent until several true leaves are formed and then the plants fit into the regular irrigation schedule.

The time of seeding is vitally important. Sycamore seed seems to germinate best on warm, moist soils with soil temperatures around 60 F. Under these conditions, germination is evident within 48 hours after seeding. Time of seeding is also important in controlling the size of stock. This year we had some real warm days early in spring and we got in a hurry to get our seeding done. We finished most of our other seedings early so on April 20 we seeded our sycamore. On July 12 we went over our sycamore beds with a rotary mower and cut them back to 12". Topping is a standard procedure with sycamore even with seedings made as late as June 1. We try to keep the stock to 18"-24" size and if it were not topped we would have plants 3'-4' which would be difficult to package for distribution.

The pH of the soils on which sycamore is seeded range from a few points under 6 to 6.5 The fertility level is maintained at 125+ pounds P_2O_5 and 200+ K_2O as determined by soil tests . Small deficiencies in phosphate and potash are made up by adding complete fertilizers before seeding which provide up to 30 pounds nitrogen. Large deficiencies in phosphate and potash are made up with elemental fertilizers.

At the Union Nursery a large part of hardwood stock is lifted in late fall and early winter and kept in cold storage until shipped out in the spring. Sycamore seedlings store well and so far we have not had any special problems with it. The sycamore stock is lifted as soon as the leaves drop in the fall. It is loaded on 3' x 6' x 6' warehouse trucks with tops overlapping in the middle and roots to the outside. Roots are covered with damp pieces of burlap salvaged from spaghnum moss bales and then placed in storage rooms . This stock is graded during the adverse weather during the winter. It is tied in bunches of 26 and again laid on the warehouse truck as before and kept there until shipped in the spring. The burlap covering the roots is dampened once a week while in storage.

Sycamore is graded into two grades and placed on separate warehouse trucks . The minimum grade is 1/8" stem caliper 1" above root collar which gives a 3/16" or better root collar caliper. The two grades are determined by height with the small grade having 20"-24" top, and the large grade being any uninjured plants over 24" with some plants with 20" top with extra large root collar caliper. The small stock is packaged in the regular manner and the large stock is jellyrolled with tops one way with usually 250 plants per package. These larger plants usually are used for "will call" orders and for planting special areas .

Sycamore seedlings give excellent field survival when out planted and plants have a tendency to maintain a dominant leader and seldom develop multiple stems. This species is gaining in popularity for planting on the better hardwood sites .

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

CONNECTICUT
STATE

Species	Age	Treatment of Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Pines	1-0	Savasol #1	28-31% aromatic hydrocarbon	15 gal/acre	every	weeds
Spruces	1-0	same		15 gal/acre	10	should be
N. white-cedar	1-0	same		11 gal/acre	days or	less than
Larch	1-0	same		11 gal/acre	as	1" tall.
Hemlock	1-0	same		11 gal/acre	weather permits	
All conifers	2-0	same		15 gal/acre	same as above	only if beds are open enough to allow spray reach ground
Hardwood & shrub stock	1-0	hand-weeding only same				

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Union State Tree Nursery
JONESBORO, ILLINOIS
STATE

Species	Age	Treatment of Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All	-	Methyl Bromide	Full	1-1/2# - 100 sq. ft.	Soil temp. 60° 48 hrs. prior to seeding	Under plastic cover
All	-	Vorlex	Full	45 gal. per A	Fall and early winter prior to spring seeding	Chisel applicator
Pine and Cypress	1-0	Amoco Weed killer (Stanisol)	Full	20 gal. per A	Just past crook	Spray
Pine and Cypress	1-0 & 2-0	Amoco Weed Killer (Stanisol)	Full	40 gal. per A	Full growth	Spray
None	None	Dow General	1/2 gal. + 30 gal. diesel + 120 gal. H_2O	Used on headlands and pipe lines	Post emer-	Spray

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Mason State Tree Nursery
TOPEKA, ILLINOIS
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All conifers & most Hard-woods	Preplant	Methyl Bromide	100%	1 lb/100 sq.ft.	Usually fall	Standard
Most Hard-woods & all conifers	Preplant	Mylone	50D	400#/acre	Usually fall	Drenched in
Most Hard-woods & all conifers	Preplant	Vorlex	100%	35 gal./acre	Usually fall	Injected - usually tarped
Conifers	All	Mineral Spirits	100%	40 gal/acre	When needed	No longer needed

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

INDIANA
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine		Dowfume Mc-2		2 lbs/100 sq. ft.	Prior to sowing	
Red Pine		" "		1.5lbs./100sq. ft.	Prior to sowing	Spanish-French only
Scotch Pine		Dowfume Mc-2		1.5lbs/100sq.ft.	Prior to sowing	
Shortleaf		" "		1lb/100 sq.ft.	" " "	
Virginia		" "		" " "	" " "	
Jack		" "		" " "	" " "	
Pitch		" "		" " "	" " "	
Loblolly		" "		" " "	" " "	
Cypress		" "		" " "	" " "	
Tulip Poplar		Dowfume Mc-2		1 lb/100sq ft	Prior to sowing	
Black Walnut		" "		" " "	" " "	
Red Gum		" "		" " "	" " "	
Sycamore		" "		" " "	" " "	
Alder, Eur.		" "		" " "	" " "	
River Birch		" "		" " "	" " "	
Cottonwood		" "		" " "	" " "	
Black Locust		" "		" " "	" " "	
Red Oak		" "		" " "	" " "	
White Oak		" "		" " "	" " "	

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

INDIANA (Cont'd)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Red Maple		Dowfume MC-2		1 lb/100 sq ft	Prior to sowing	
Silver Maple		" "		" "	" "	
White Ash		" "		" "	" "	
Chestnut, CH.		" "		" "	" "	
White Pine	1-0 2-0	Mineral Spirits	(2 applications	35 gals/acre	When needed- Sometimes	
Red Pine	1-0 2-0	" "	at ten day in-	" "	once on a 2-0 sometimes	
Scotch Pine	1-0 2-0	" "	terval)	" "	never.	
White Pine	Transplants	Mineral Spirits	(2 applications	35 gals/acre	When ever needed-Generally	
Red Pine	Transplants	" "	at ten day in-		once per year.	
			terval)			
White Pine	Transplants	Dacthal		8-10lbs/acre	Early spring	Pre-emergent
Red Pine	"	"		" "	"	"
White Pine	"	Mylone		350 lbs/acre	Prior to planting	Sterilant
Red Pine	"	"		" "	"	"

Most of our weed problems are taken care of by the initial application of Dowfume MC-2 on the seedbeds prior to sowing we are trying different methods of control in the transplant area are meeting with gratifying success from above. The wind and water borne weed seed are removed mostly by hand labor, but it's of no serious consequence.

Nurseries using the above chemicals are: Jasper-Pulaski State Tree Nursery, Medaryville, Indiana
Vallonia Tree Nursery, Vallania, Indiana

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

GREENBUSH, MAINE
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine	1-0	Savasol #5 (Mineral Spirits)	Full Strength	20 gal/acre	Every week	Results good reduced hand weeding
Red Pine	1-0	Savasol #5	Full	20 gal/ acre	Every week	"
White Spruce	1-0	Savasol #5	Full	20 gal/acre	Every week	"
Norway Spruce	1-0	Savasol #5	Full	20 gal/acre	Every week	"
All Species	2-0 and 3-0	Hand weeded			Twice this summer	
White Pine	3-0	Savasol #5	Full	100 gal/acre	2nd week in August	This was a trial on a patch of heavy grass. 100% kill and no ill effects on seedlings

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

MARYLAND
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine	1-0	Varsol		12 gal/acre	When needed	Spraying is
Loblolly Pine	1-0	Varsol		"	determined by	done late in the
Scotch Pine	1-0	Varsol		"	observation 4	evening or at
Red Pine	1-0	Varsol		"	or 5 applications	night
Virginia Pine	1-0	Varsol		"	a year	
Norway Spruce	1-0	Varsol		12 gal/acre	One application	only at the com-
White Spruce	1-0	Varsol		"	pletion of germination.	

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Amherst Nursery

MASSACHUSETTS
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine	1,2,3, yr.	Stoddard Solvents	--	12 gal./acre	Every 2 to 3 wks.	Schedule hard to maintain due to weather
Red Pine	1,2,3, yr.	Stoddard Solvents	--	12 gal./acre	Every 2 to 3 wks	
White Spruce	1,2,3, yr.	Stoddard Solvents	--	12 gal./acre	Every 2 to 3 wks	
Balsam Fir	1,2,3, yr.	Stoddard Solvents	--	12 gal./acre	Every 2 to 3 wks	
		Simazine	8 oz. in 70 gallon water	32 oz. to acre	Once a season	Early in season best

This program will start on July 17, 1967. Most weed control has been by hand, up to that time at Amherst.

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Southern Michigan State Forest Nursery
MICHIGAN
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Red pine Jack pine Austrian pine	2-0	Stanisol	Standard solvent Gravity API 48.9	50 gal/acre	May June July	Best results on cloudy days. Temp around 70 degrees Slight yellowing of jack pine after application.
White pine	2-0T	Dacthol	75% wettable powder	15 lbs/acre	April	Good weed control.
Norway spruce	2-0T 2-1		15 lbs/100 gal. water		May October	Clover still a problem.
White spruce	2-0T 2-1					
Black spruce	2-0T					
All beds		Mylone	85% 50% by weight	540 lb/acre	Three weeks prior to seeding.	Effective weed control 4 to 6 weeks after seeding.
Under riser pipes and edges		Dow Pon	85% wettable powder. 2 to 3 lbs. in 100 gal. water	10 lb/acre	May June	Must be applied on a calm day to prevent mist drifting into beds.

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Wyman State Nursery
MICHIGAN
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Red, White, Jack Pine White Spruce	0-0 to 1-0	Amosol Stoddard Solvent	100%	50 gal. A.	Before seedling emergence, to before seed coat is shed or, & after some hardening of tissue	Application usually in morning or evening
As above	1-0 & 2-0 2-1	Geigy Simazine 80 W	3lb. in 50 gal. per Acre. (Water)	50 gal. per Acre.	Early spring before weeds germinate	Effects good control and fall seed cover crop germinates satisfactorily after trees are lifted
White Spruce	2-0 to 2-2	Weedazol Aminotriazol	3 lb per 50 gal. water	50 gal per Acre	When trees are not growing rapidly	For spot treatment of quack grass

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

MICHIGAN (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
		Dalapon	10 lb. in 50 gal of water	Drench grass	6 to 8 weeks minimum before planting	Quack grass control on fallow ground
		Weedazol (Aminotriazol) Geigy Simazine	4 lb. of each in 50 gal of water	50 gal./A.	When grass & weeds are growing well	For grass & weeds-no crop

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

MINNESOTA
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Spruce	1-0, 2-0, 3-0, & 2-1	Amiben	2 lbs. per Gal.	2 lbs. per A.	2 Treatments - 1st applied after May 15 2nd applied 2 weeks after first treatment	The earlier the treatments are started the better the results. The treatments that were started after June 1 showed less control. Heavy rains right after application also lesson the control.
Black Spruce	1-0, 2-0, 3-0					
Colo Blu Spr.	1-0, 2-0, 3-0, 1-3, 2-1, 2-2, & 2-3					
Norway Pine	1-0, 2-0, 3-0, 2-1, 2-2					
Scotch Pine	1-0					
Balsam Fir	2-0, 3-0					
White Cedar	2-0, 3-0, 2-3					
Caragana	1-0, 2-0, 3-0					
Honeysuckle	1-0					
Siberian Elm	1-0					
Cottonwood	Cuttings planted June 1967					
Maple	1-0, 2-0					
Lilac	1-0					
All Species	Preplant	Mylone - 85	85% active Ingred.	300lbs./acre	Last part of Aug.	Good Control

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Carlos Avery Nursery
MINNESOTA

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Spruce, black		Mylone 85W		337 lb Acre	At least 3 weeks	prior to seeding
colorado	1-0	"		"		
norway	1-0	"		"		
white	1-0	"		"		
Pine, jack	1-0	"		"		
norway	1-0	"		"		
ponderosa	1-0	"		"		
scotch	1-0	"		"		
white	1-0	"		"		
Cedar, red	1-0	"		"		
white	1-0	"		"		
Ash, green	1-0	"		"		
Caragana	1-0	"		"		
Cherry, sand	1-0	"		"		
Hackberry	1-0	"		"		
Maple, silver	1-0	"		"		
Plum, American	1-0	"		"		
Russian olive	1-0	"		"		
Butternut	1-0	"		"		
Walnut	1-0	"		"		
All above hand weeded at 1-0, 2-0 & 3-0						
Hardwoods and shrubs cultivated with tractor & cultivator						

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
General Andrews Nursery
WILLOW RIVER, MINNESOTA
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Spruce	2-0	Amiben	1 gal. -12 water	4# active Ing. per acre (26 gal/acre total)	May 22	Amiben is a pre-emergent. It is effective if applied following hand weeding
Norway Pine	2-2	Amiben	"	"	May 22	
Norway Pine	2-0	Amiben	"	"	May 22	
Norway Pine	1-0	Amiben	"	"	June 9, 30, July 3	
White Pine	1-0	Amiben	"	"	June 8	
White Spruce	1-0	Amiben	"	"	June 8	
Black Spruce	1-0	Amiben	"	"	June 8	
Scotch Pine	2-0	Amiben	"	"	May 23	
Jack Pine	2-0	Amiben	"	"	May 23	
Ponderosa Pine	2-0	Amiben	"	"	May 23	
Colo. Spruce	1-0	Amiben	"	"	June 8	
All seed beds	Before seeding	Vapam	100%	100 gal/acre	Sept. 12	Applied with a soil injection method to control fungi & weeds.

Amino Triazole is used as a weed control under the pipe lines - mixed at a ratio of 4lbs. to 25 gals. H_2O.
Simazine 80W is used in the wind breaks and on the roads for weed control * mixed at a ratio of 15 lbs. to 100 gals. H_2O.

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

MISSOURI
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Hardwoods	1-0	Methyl Bromide	1lb/100 sq. ft.		August	Late fall or spring planting
Mult. Rose & & Wildlife Shrubs	1-0	Methyl Bromide	1lb./100 sq.ft.		August	Late fall or spring planting
Conifers	1-0	Methyl Bromide	1lb/100 sq.ft.		August	Late fall or spring planting
Conifers	1-0	Stanisol	20-50 gal/acre		Beginning when pines are out of Cotyledon State	
Conifers	2-0	Stanisol	60 gal/acre		When weeds begin growth in spring - April.	

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

NEW HAMPSHIRE
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All	Pre-sowing	Vapam	Mix 10 gal. w 300 gal. H_2O for 2 beds	100 gal/acre	4 weeks prior to fall sowing	Seems to help weed and insect and fungus control
All except Hardwoods	1-0, 2-0	Mineral Spirits (Stoddard Solvent) Savasol	#5	25 gal/acre approx.	When possible as needed	Seems to help and slows down larger weeds for hand weeding crew.

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

NEW JERSEY

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine	1-0	Mineral Spirits		Per acre 18 - 20 gal.	Weekly	10 times 7 day span
Austrian Pine	1-0	Mineral Spirits		"	"	3 times 10
Pitch Pine	1-0	Mineral Spirits		"	"	day span
Norway Spruce	1-0	Mineral Spirits		"	"	1 time 14 day day span
					5/21 - 9/26 16 times 1966 Season	1 time 9 day span
White Pine	2-0	Mineral Spirits		18-20 gal.	Weekly	Same
Austrian Pine	2-0	Mineral Spirits		18-20 gal.	Weekly	as
Pitch Pine	2-0	Mineral Spirits		18-20 gal.	Weekly	1-0
Norway Spruce	2-0	Mineral Spirits		18-20 gal. increased to 20 - 25 gal.	Weekly 5/21 - 9/26 16 times 1966 season	

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

NEW JERSEY (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine	2-0	Simazine	4-G	100 lb. p/a	5/3/67	Approx 1 % of all species show very slight yellowing. as of 7/1/67
White Pine	"	"	"	50 lb. p/a	"	
Norway Spruce	"	"	"	"	"	
Jap. Larch	"	"	"	"	"	

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

SARATOGA, NEW YORK

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
BL	1-0	Mineral Spirits Amsco 46	40% aromatic Hydrocarbons	18 gal/acre	Pre-emergence to trees	Used in case of blow in contamination of fumigated beds
	1-0	Simazine	80 w	1 lb aia in 35 gal water / acre	7/15	Before crown closure and after a light hand weeding to remove the few weeds which escaped the fumigation & mineral spirits treatment
Non-crop areas including irrigation lines, paths, roads, headlands		Amazine		5 lb aia	11/1 & 7/1	If no emerged weeds Simazine instead of Amazine may be used at same rate.

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

SARATOGA, NEW YORK (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Trial Basis Spruce	All	Mixture Simazine Dacthal Amino Triazole	- - -	1 lb aia 4.5 lb aia 1 lb aia		Mixture intended to kill 1) Emerged weeds (Amino Triazole) 2) Annual grasses & some broadleaved pre-emergence (Dacthal) 3) Broadleaved some grasses pre-emergence (Simazine)
All others	All	Mixture Simazine Dacthal	- -	1 lb. aia 4.5 lb. aia		

ai = active ingredient
aia = active ingredient per acre

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

SARATOGA, NEW YORK (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All	0-0	Vapam	100 lb ai/1000 gal. water	300 lb aia in 3000 gal water per acre	After forming Before sowing	Drench
		Trizone	100%	100 lb aia	Same	Trizone rig injects fumigant & lays tarp
WP,SP,RP,NS, WS,AP,BF,DF, JBP	1-0	Mineral Spirits Amsco 46	40% aromatic Hydrocarbons	15-18 gal/A	Pre-emergence trees to 7/1 fall Beds or 8/1 Sp. Beds - 7 day schedule or as needed by inspection.	Used on weeds which blew or were washed in on fumigated beds
	1-0	Simazine	80 w	1 lb aia in 35 gal water	7/1 fall beds 8/1 Sp Beds	
	2-0	Simazine	80 w	1 lb aia in 35 gal water	6/15 & 11/1	Can use 1 1/2 lb/aia on 2-0 & 3-0 beds if hard to get weeds are present. Omit 11/1 spray on shipping stock

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

SARATOGA, NEW YORK (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
JL	1-0	Mineral Spirits Amsco 46	40% aromatic Hydrocarbons	15 gal/acre	Pre-emergence to trees to seed-caps-off stage	
	1-0	Simazine	80 w	1 lb aia in 35 gal water/A	7/1 fall beds 8/1 spring beds	
	2-0	"	80 w	"	6/15	

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Green Springs Nursery
OHIO
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Basswood, White Oak, Buckeye, Red Oak, Sugar Maple, Green Ash, Black Walnut, Black Alder	1-0	Methyl Bromide		2 lbs. per 400 sq. ft.	30 days before seeding	
Bald Cypress, Silver Maple, Sycamore, Cottonwood, Black Locust	1-0	Vapam	1 gal. to each 5 gal. of water	1 gal. per 400 sq. ft.	15-18 days before seeding	

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

Marietta State Nursery

OHIO

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Maple, Red	2 yr.	Soil Fumigation (Dowfume)	MC-2 Full Strength	1/2 lb./ 100 sq. ft.	Fumigant is applied in fall when temperatures are above 50° F. The areas are then seeded to the species listed after sufficient aeration.	Dowfume applied at this given effective weed control.
Olive, Autumn	1 yr.					
Tuliptree	1 yr.					
Aspen	1 yr.					
Hemlock	3 yr.					
Larch, Japanese	1 yr.					
Pine, Austrian	2 yr.					
Pine, Red	2 yr.					
Pine, Shortleaf	1 yr.					
Pine, Virginia	1 yr.					
Pine, White	2 yr.					
Spruce, Norway	2 yr.					

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

Marietta State Nursery

OHIO (Con't)

STATE

Species	Age*	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Pine, White	2 yr.	Trizone	Full strength	175 lb./acre	Applied in fall when temperatures are above 60° F. Areas are then seeded after sufficient aeration.	Trizone is being used in units containing these species to determine effectiveness of weed and disease control.
Spruce, Norway	2 yr.	Trizone	Full strength	175 lb./acre		

*Denotes age at which seedlings are lifted and sold.

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

Zanesville Nursery

OHIO

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
We have not used any Chemical weed control measures for the past 10 years. With the use of Honor Camp labor we have hand weeded all species. Prior to this time we used Standard Oil Stanisol and sprayed at a rate of 40 to 50 gallons per acre. White Pine, Red Pine, Pitch Pine and Arborvitae. Time of application on hot clear days resulted in quicker weed kill. Age of seedings when treatment was applied was: 1. Pre-emergence 2. Two to three weeks old 3. Five to six weeks old 4. Eight to ten weeks old 5. 14 weeks old 6. First and second year transplants as needed One thing I feel is that the spraying has a definite shocking affect on the trees and holds them back. Consequently I do not like to use it if I possibly can get by without it.						

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

PENNSYLVANIA
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
White Pine Red Pine Austrian Pine Jack Pine Pitch Pine Norway Spruce White Spruce European Larch Japanese Larch Hemlock	1, 2, & 3 yr. seedlings	Mineral Spirits	27% Aromatics	14-17 gal./A	When weeds have just emerged having only one set of cotyledon leaves or (at most) the true leaves have just appeared. (5-10 day intervals)	Primary weed control
Same species as above	1-0	Simazine	80% WP	2 lb. per acre	Late fall or early spring	On trial basis only

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

VERMONT

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All conifers except larch	0-0 to 1-0	Hand and/or Mineral Spirits	Pure	20-25 gal. per acre	1-2 weeks	Choose hand weeding, largely due to use of wooden shades
	1-0 to 2-0 2-0 to plus	Same Hand		Same	1-2 weeks as required	

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

WEST VIRGINIA
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All conifers & Yellow poplar	Pre-planting	Dow Chemical Trizone Fumigant 29106-8457	61.0% Methyl Bromide 30.0% Chloropicrin 6.8% Propargyl Bromide 2.2% Hydrocarbons	200#/A	48hrs. under tarps, 72hrs aeration	Tine application in soil covered immediately
All conifers	Preplanting	MC-2	98% Methyl Bromide 2% Chloropicrin	1# 100 sq. ft.	48hrs. under tarps 72hrs aeration	Surface application 72hrs. under tarps if less than 50°F
White Pine	Pre-planting	Brozone	68.6% Methyl Bromide 1.4% Chloropicrin 30.0% Inert	500#/A	48hrs. under tarps 72hrs. aeration	Experimental Not considered as effective as Trizone

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE

WEST VIRGINIA (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
All conifers	1-0	Stoddards Solvent (Shell)	15.0% Aromatics 37.0% Paraffinic Base 48.0% Naphenic Base 0.0% Olefins	30 to 40 gal/A 10 to 20 gal/A 8 to 12 gal/A 15 to 20 gal/A	Pre-germination In the crook 1-0 seedlings 2-0 seedlings	Application rates based on experience with new needle growth at time of application for different species
All species	1-0, 2-0 & 3-0	Sawdust	100.0% Hardwood	1/4" till mulch builds up to about 1/2" to 1"	Anytime seedlings are high enough to add 1/4" mulch	Also gives winter heaving protection, moisture retention, and bed erosion control Path application also gives erosion control both add organic matter to the soil

OUTLINE

NURSERY WEED CONTROL MEASURES IN USE

WISCONSIN

STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Red Pine White Pine Jack Pine White Spruce Norway Spruce	1-0, 2-0 3-0, 2-1 & 2-2	Mineral Spirits (10-17% Aromatic Content)	Full strength costs from 23¢ to 28¢ per gal.	50 gallons per acre	When necessary throughout the growing season--from one to three applications	
Red Pine White Pine Jack Pine White Spruce Norway Spruce White Cedar White Ash Hard Maple	Newly seeded beds and freshly transplanted seedlings	Dacthal (DCPA)	75% wettable powder, costs roughly $2.50/lb	6lbs. per acre or a spray with approximately 100 gals. of water	Spring and fall seasons	Can be used both in pre-emergence and post-emergence applications. Best results when applied on freshly disturbed soil

NOTE: Some weed control is also received from the use of Mylone, Vorlex, and Vapam soil fumigants at 400 lbs., 45 gals., and 100 gals. respectively.

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Region 9 Forest Service Nurseries
MICHIGAN and MINNESOTA
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Red Pine Jack Pine White Pine White Spruce Black Spruce Yellow Birch Red Oak	0-0 0-0 0-0 0-0 & 2-0 0-0 & 2-0 0-0 0-0	Trizone	61% Methyl Bromide 30% Chloropicrin 6.8% Propargyl Bromide 2.2% Brominated Hydrocarbons	200#/Acre C_3	7/15 - 9/1	Used on all areas prior to sowing or transplanting.
Same as above	Same as above	Dowfume MC-33	67% Methyl Bromide 33% Chloropicrin	250 - 350#/A	7/15 - 9/1	Used on all areas prior to sowing or transplanting. This will replace Trizone which is no longer being marketed

OUTLINE

NURSERY WEED CONTROL
MEASURES IN USE
Region 9 Forest Service Nurseries
MICHIGAN and MINNESOTA (Con't)
STATE

Species	Age	Treatment or Herbicide	Concentration	Rate of Application	Timing of Application	Remarks
Red Pine Black Spruce White Spruce	1-0 1-0 1-0	Standard Oil (Stoddard Solvent) weed killer		25-30 gal./A	As needed after seedlings are 1-2 weeks old.	Controls nearly all weeds except clover if applied immediately after weeds germinate.
Jack Pine Red Pine Black Spruce White Spruce	2-0 2-0 2-0 2-0 & 2-1	Standard Oil (Stoddard Solvent) weed killer		40 gal/Acre 40 gal/Acre 40 gal/Acre 40-60 gal/Acre	As needed	Same as above
Jack Pine Red Pine White Spruce Yellow Birch Red Oak	2-0 2-0 2-2 & 3-0 2-0 2-0	Dacthal 75W	75% Dimethyl Tetrachloroterephthalic Acid 25% Inert Ingredients	6 lbs. of material per acre (4.5 lbs. acid)	As needed pre-emergence spray	Can be applied either in fall or spring.