

Broadcast Treatments for Site Preparation and Conifer Release

Forest landscapes contain diverse topography, conifer species and vegetation. Broadcast applications by helicopter, and in some cases backpack sprayer or ground equipment, can be the most effective and often least costly way to cover steep ground or tall vegetation. Uniform applications of precise herbicide rates per acre can result in good vegetation control during site preparation and safe conifer release with minimal injury potential.

Timing is critical for both site preparation and conifer release. Most site preparation occurs during the growing season at times when conifers are growing and can be injured. Site preparation herbicides like glyphosate, imazapyr, metsulfuron and aminopyralid are applied mid-summer through fall often mixed with soil residuals like sulfometuron, indaziflam or Cleantraxx. Conifers are sensitive when actively growing and release treatments are limited to

lower rates of products when they are dormant before budbreak in the spring or after budset in the fall. glyphosate, triclopyr, 2,4-D, imazapyr, clopyralid and at times soil residuals like atrazine or sulfometuron can be applied in relative safety to trees.

Calibrated spray equipment is necessary for effective and legal rate applications as listed on the label. Helicopters are often adjusted by the spray contractor. Backpack sprayers using booms or waving wand methods and ground based spray rigs with booms or boomless nozzles also need calibration to provide effective weed control and safe release treatments over conifers. Many herbicide products also stipulate the drop sizes that need to be sprayed by the equipment based on the volume median diameter (VMD). Coarse and extremely coarse droplets are specifically defined and are often mandated for certain herbicide products for both air and ground applications. Users should carefully read the labels of the product in use and adjust nozzles as needed to achieve the required size.

Recommendations for Broadcast Spraying For Control of Listed Species

This table lists herbicide rates for site preparation and conifer release. In most instances release rates are for Douglas-fir before bud break in spring or after bud set in the fall. Users should check tolerance of other conifer species in the table “Effectiveness of Major Forestry-registered Herbicides” earlier in this chapter and the product label.

Species	Herbicide	Active chemical/a	Carrier	Expected control	Application and remarks
Alder, red <i>Alnus rubra</i>	2,4-D ester	2 lb ae	Water	Good	Release during early foliar timing. Best on trees under 10 yr. old.
		2 lb ae	Oil	Good	Dormant spray before conifer bud break, Feb and March release
	picloram + 2,4-D	0.5 lb + 2 lb ae	Water	Good	Foliage spray. Badly injures conifers. Site prep only.
	glyphosate	0.75 to 1.5 lb ae	Water	Good	Release in Sept. Best on trees under 10 ft tall.
	glyphosate	2.25 to 3 lb ae	Water	Good	Site prep July-August
	triclopyr amine	3 to 6 lb ae	Water	Good	Midsummer foliage spray. Site prep only at this time.
	triclopyr ester	1.25 ae	Oil/Water	Good	Severely injures pines. Release. Use oil for dormant treatment. Use water only for early foliar treatments. See label for higher rates for site prep.
Birch <i>Betula</i> spp.	glyphosate and imazapyr	2 lb + .25 ae	Water	Good	Site prep summer- fall
Blackberry	triclopyr ester	1.0 lb ae	Water	Excellent	Fall release.
Bracken Fern	metsulfuron	.6 to 1.2 oz ai	Water	Excellent	Summer-fall site prep.
	glyphosate	1.1 to 1.5 lb	Water	Good	Fall release.
Broom, Scotch <i>Cytisus scoparius</i>	2,4-D ester	2 lb ae	Water + 5% oil	Good	Early spring release spray. Will reproduce from seed; some sprouting.
	2,4-D ester	2 lb ae	Oil	Good	Feb.–March dormant release spray. Will reproduce from seed; little sprouting.
	picloram + 2,4-D	0.5 lb + 1 to 1.5 lb ae	Water	Good	Site prep only; summer to fall.
	triclopyr ester	1.25 lb ae	Water	Good to excellent	Douglas-fir release, spring
	aminopyralid + metsulfuron (Opensight)	0.11 ae + 0.31 ai (3.3 oz product/a)	Water	Good	Site prep only or directed spray. Manages germinants. Planting sooner than 4 months may injure conifers.
	aminopyralid + triclopyr amine (Capstone)	0.075 to 0.11 + 0.75 to 1.12 lb ae (6 to 9 pints product/a)	Water	Good to Excellent	Site prep only or directed spray. Keep spray from contacting trees.

Species	Herbicide	Active chemical/a	Carrier	Expected control	Application and remarks
<i>Ceanothus</i> spp., evergreen	picloram + 2,4-D	1 gal (0.54 + 2 lb ae)	Water	Good	Foliage spray. Site prep only.
	triclopyr ester	1.25 to 1.5 lb ae	Water/oil	Fair to excellent	Release. See label for rates above 1.5 lb and for timing for dormant applications. Do not use on pines.
	2,4-D ester	2 to 2.75 lb ae	Water	Fair to excellent	Early foliar release. 2,4-D rates above 2 lb may injure some conifers.
	2,4-D + triclopyr ester	2 lb + 1 lb ae	Water	Good to excellent	Can control some associated species; spring, late summer. See label for timing. Do not use on pines. Good conifer release treatment in spring.
	fluroxypyr	7.7 oz ae	Water	Excellent	Site prep for pine only. Reduced rates suitable for release.
<i>Ceanothus</i> spp., deciduous	glyphosate	1.1 lb ae	water	Good to Excellent	For deerbrush and redstem. Fall release rate for Douglas-fir and other conifers
Cherry, bitter <i>Prunus emarginata</i>	imazapyr + glyphosate	.25 to .4 + 1.5 to 2 lb ae	Water	Excellent	Site prep only.
Elderberry <i>Sambucus</i> spp.	picloram + 2,4-D	1 gal (0.54 + 2 lb ae)	Water	Excellent	Foliage spray. Site prep only.
	glyphosate	0.75 to 1.1 lb ae	Water	Excellent	Sept. foliage release spray. Higher rate for site prep. Add 2 to 2.5 oz/a imazapyr to broaden spectrum.
	triclopyr ester	1.25 lb ae	Water	Good to excellent	Site prep. See label for application timing. Do not use on pines.
	clopyralid	4 to 5 oz ae	Water	Good to excellent	Use when plants are actively growing. June - September release.
Gorse <i>Ulex europaeus</i>	picloram + 2,4-D	2 gal (1.08 + 4 lb ae)	Water	Good	Good enough control for reforestation but not for eradication. Site prep only.
	metsulfuron	2 oz ai	Water + 0.15% silicon-based surfactant	Excellent	New Zealand data. Site prep only. Wait at least 6 mo before planting.
	triclopyr ester	1 to 1.5 lb ae	Water	Excellent	Spring release.
Madrone <i>Arbutus</i> spp.	2,4-D ester	2.75 lb ae	Water	Good to excellent	Associated species may be difficult to control. Rates above 2 lb (1 lb 2,4-D for pines) may injure conifers. Spring treatment best. Release
	triclopyr ester	1.25 lb ae	Water	Fair to excellent	Use lower rate before conifer bud swell for release. Do not use over 2- or 3-needle pines.
	picloram + triclopyr ester	1 lb + 1 to 2 lb ae	Water	Good to excellent	Site prep only. Not recommended in ID.
	triclopyr ester + 2,4-D	1 lb + 2 lb ae	Water	Good to excellent	Early spring before conifer budbreak. Can control some associated species. Do not use on pines.
	fluroxypyr	7.7 oz ae	Water	Excellent	Pine plantations only; use highest rates only for site prep.
Manzanita <i>Arctostaphylos</i> spp.	2,4-D	2 lb ae	Water	Good	Release. See label for timing.
	triclopyr ester	1.25 lb ae	Water	Poor	Early foliage spray release. Erratic. See label for timing. Do not use over pines.
	fluroxypyr	7.7 oz ae		Good	Highest rates for site prep only. Should be safe at reduced rates on pine plantations.

Species	Herbicide	Active chemical/a	Carrier	Expected control	Application and remarks
Maple	imazapyr	0.25 lb ae	Water	Good	Release late summer. May injure conifers.
	imazapyr	0.25 to 0.5 lb ae	Water	Good to excellent	Site prep summer. Add glyphosate to broaden spectrum.
	glyphosate	0.75 to 1.5 lb ae	Water	Fair to good	Sept. foliar release for vine maple. Adding imazapyr will improve control but may injure conifers.
Bigleaf <i>Acer macrophyllum</i>	glyphosate	2 to 3 lb ae	Water	Good	Summer–fall site prep
	imazapyr	0.25 lb ae	Water	Good to Excellent	September release for Douglas-fir.
Vine <i>A. circinatum</i>	glyphosate + imazapyr	0.75 to 1.5lb ae + 0.1 to 0.4 lb ae	Water	Excellent	Summer - fall site prep.
Rocky Mountain <i>A. glabrum</i>	picloram+ 2,4-D	2 gal (1.08 + 4 lb ae)	Water	Fair	Site prep only.
	triclopyr ester	1.25 to 1.5 lb ae	Oil	Excellent	Dormant release spray, spring. Do not use on pines. Higher rate may injure Douglas-fir.
	picloram + triclopyr ester	1 lb + 1 to 2 lb ae	Water	Good to excellent	Site prep only, summer. Not recommended in Idaho.
Ninebark <i>Physocarpus</i> spp.	glyphosate	1.5 to 3 lb ae	Water	Excellent	Summer – fall site prep.
Poison-oak <i>Toxicodendron diversilobum</i>	imazapyr	0.2 lb/a	Water	Excellent	Apply in fall for release. Erratic, may injure conifers
	glyphosate	0.75 to 1.5 lb ae	Water	Excellent	Aug. -Sept. release. May be mixed with imazapyr but increases risk of conifer injury.
	aminopyralid + triclopyr amine (Capstone)	6 to 9 pints product (0.075 + 0.75 to 0.11 + 1.12 lb)	Water	Good	Site prep or directed spray only. Keep spray from contacting conifers.
Salmonberry <i>Rubus spectabilis</i>	picloram + 2,4-D	1 gal (0.54 + 2 lb ae)	Water	Good	Site prep only.
	glyphosate	0.75 to 1.1 lb ae	Water	Excellent	Aug.–Sept. release spray.
	metsulfuron	0.5 oz ai	Water	Excellent	Site prep.
Sword fern <i>Polystichum munitum</i>	metsulfuron	0.6 to 1.2 oz ai	Water	Good	Summer – fall site prep only.
Tanoak <i>Lithocarpus densiflora</i>	triclopyr ester	1.25 lb ae	Water/Oil	Good	Apply prebud swell for conifer release. Do not use on pines.
	2,4-D	2 to 2.75 lb ae	Water	Fair	Spring. Summer treatment may injure conifers after bud burst.
	picloram + triclopyr ester	1 lb + 1 to 2 lb ae	Water	Good	Site prep only, summer. Not recommended in Idaho.
Willow <i>Salix</i> spp.	2,4-D	2 lb ae	Water	Fair to good	Release. Retreatment of sprouts necessary. See label for release timing.
	glyphosate	0.75 to 1.5 lb ae	Water	Good	Release Aug-Sept.
	imazapyr + glyphosate	0.2 to 0.4 lb + 1.5 to 3 lb ae	Water	Excellent	Site prep only.

* 10% oil in carrier

Grass and Herb Control for Conifer Plantation Establishment

Planting conifers on fields or harvest units with heavy grass and weeds usually reduces plantation survival and growth. A moderately dense stand of grass in an open field in western Oregon can be expected to remove virtually all available moisture in the top 12 inches of soil by the end of June. Removing the grass and weeds gives seedlings much of the water that the grass would have trans-

pired. Tillage may be used, but mechanized equipment must be able to negotiate the terrain. The advantage of herbicides is that a single treatment can give complete weed control during the first season after planting and may give partial weed control in later seasons.

The method chosen should apply herbicide evenly for uniform weed control near planted seedlings. Many products can be applied over the top of existing conifer seedlings for release applications when done in a calibrated broadcast manner. Hand application equipment or aircraft such as helicopters are the only types of