

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
Forestry Herbicide Use in Hardwoods Herbaceous Weed Control				
sulfometuron @ 0.047 to 0.23 lb/A	Many herbaceous species.	Oust 75 DF 1 to 5 oz.	Up to 5 oz may be used before transplanting, 1 to 2 oz after transplanting. Early spring after the soil has settled around the base of the transplants (March - April).	Apply while hardwood seedlings, transplants or cuttings are dormant. Application after bud break or leaf-out may cause injury to the hardwoods. Do not add surfactant. Broadcast or band with a ground sprayer. Approved for use on the following species: northern red oak, white oak, chestnut oak, green ash, yellow poplar, red maple, bald cypress, American sycamore. Use 3 oz per acre for tall fescue control. Do not use on marshy sites unless hardwoods are planted on raised beds.
Forestry Herbicide Use in Pines Site Preparation - Foliar Spray				
imazapyr @ 0.5 to 1.0 lb/A	Most brush species except blackberry, elm, cherry, locust and pine. Control many herbaceous plants.	Arsenal A.C. 16 to 32 oz/A.	Late summer to fall before leaves begin to change color.	May be applied by helicopter, ground equipment, and backpack sprayers. Apply as a foliar spray. Add nonionic surfactant at 0.5%. Brownout is very slow with this treatment. Used on sites with dense brush where no burn is planned and mechanical site prep is likely. Do not spray when wind exceeds 5 mph.
imazapyr + metsulfuron @ 0.5 to 0.38 lb/A	Most brush species including vines, elm, cherry, blackberry and legumes and many grasses and broadleaf weeds.	Arsenal Applicator's Concentrate + Escort 1 pt + 1 oz.	Late summer to fall, but before leaves begin to change color.	For loblolly pines only. May be applied by helicopter, ground equipment, and backpack sprayers. Do not spray when wind exceeds 5 mph. Apply as a foliar spray. Add nonionic surfactant at 0.5% or 1 qt/A. Brownout is slow with this treatment. Good choice for sites with heavy vine pressure and species such as elm, cherry, blackberry and legumes.
imazapyr @ 0.75 to 1.25 lb/A	See above.	Chopper 48 to 80 oz/A.	Late summer to fall before leaves begin to change color.	Chopper may be mixed with water, diesel oil or recommended seed oils and penetrating oils. Chopper may be mixed as an emulsion carrier. Mix with water first and then make up the rest of the carrier volume with 12 to 50% seed oil on a volumetric basis. Use a seed oil with at least 50% esterified seed oil by volume.
imazapyr + glyphosate @ 0.5 to 1.0 + 2.0 lb/A	Most woody species and many herbaceous plants.	Arsenal A.C. + Accord 16 to 32 oz/A + 64 oz.	Late summer to fall before leaves begin to change color.	May be applied by helicopter, ground equipment, and backpack sprayers. Apply as a foliar spray. Add nonionic surfactant at 0.5% or 1 qt/A. Do not spray when wind exceeds 5 mph. Considered to be one of the most consistent treatments available over a wide range of conditions.
imazapyr + glyphosate @ 0.64 + 1.5 lb to 1.2 + 3.0 lb/A	Most broadleaf and grass weeds including woody plants.	OneStep 8 to 16 pt/A.	Postemergence. Apply to actively growing weeds.	Contains surfactant. May be applied as a foliar directed spot spray.

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imazapyr + triclopyr @ 0.5 to 1.0 + 0.5 to 1.5 lb/A	Most woody species and many herbaceous plants.	Arsenal A.C. + Garlon 4 16 to 32 oz/A + 16 to 48 oz.	Late summer to fall before leaves begin to change color.	Provides rapid brownout, especially on sites with a high percentage of waxy leaf species.
picloram or (picloram + 2,4-D) + triclopyr @ 1 or (0.8 + 3) + 2 to 3 lb/A	Most brush species and many broadleaf weeds but no grass control.	Tordon K or Tordon 101M + Forestry Garlon 4 2 qt or 6 qt + 2 to 3 qt.	Apply after full leaf development in the spring.	Do not burn or cut treated plants for 6 to 8 weeks after application. Apply by ground or air. Add 0.5% nonionic surfactant. Use on bottomland hardwood sites where there is little grass competition.
picloram + imazapyr @ 1 + 0.5 lb/A	Most brush species including residual pines and many grasses and broadleaf weeds.	Tordon K+ Arsenal Applicator's Concentrate 2 qt + 1 pt.	June to July	Ground or aerial application. Used on sites where there is a high percentage of undesirable pines.
Forestry Herbicide Use in Pines Site Preparation				
hexazinone @ 3 to 4 lb/A	Most woody plants.	Velpar ULW 4.0 to 5.33 lb/A.	In the spring after danger of frost has passed. Apply from bud swell to early leaf out.	Velpar ULW is generally applied by helicopter. Rates depend on soil type and species present. Uniform, accurate application is essential.
Forestry Herbicide Use in Pines Pine Release - Foliar Spray				
imazapyr @ 0.38 to 0.5 lb/A	Most brush species except blackberry, elm, cherry, locust, and pine.	Arsenal Applicator's Concentrate 12 - 20 fl oz.	Late summer to fall, but before leaves begin to change color. Change in leaf color of blackgum is a reliable indicator of when to spray.	May be applied by helicopter, ground equipment, backpack sprayers and injection equipment. Apply as a foliar spray. Add nonionic surfactant at 0.25%. Brownout is very slow with this treatment. Do not spray when wind exceeds 5 mph.
imazapyr + glyphosate @ 0.25 to 0.38 + 1.0 to 1.5 lb/A	Most brush species.	Arsenal Applicator's Concentrate + Accord 12-16 fl oz + 0.5 to 1.0 qt/A.	Apply after pines have hardened off.	Accord improves blackberry control. May be applied by helicopter, ground equipment, and backpack sprayers. Apply as a foliar spray. Add nonionic surfactant at 0.25% or 1 qt/A. Do not spray when wind exceeds 5 mph. Brownout is very slow with this treatment.
imazapyr + metsulfuron @ 0.5 to 0.38 + .038 lb/A	Most brush species including blackberry.	Arsenal Applicator's Concentrate + Escort 12-16 fl oz + 0.75 to 1.0 oz.	Same as above. Escort is safe to use on non-hardened off pines.	Commonly used on sites with blackberry infestation. May be applied by helicopter, ground equipment, and backpack sprayers. Do not spray when wind exceeds 5 mph. Apply as a foliar spray. Add nonionic surfactant at 0.25% or 1 qt/A. Brownout is slow with this treatment.
imazapyr	Most brush species.	Arsenal Applicator's Concentrate 1 to 3 fl oz per gallon of water.	Same as above.	Apply as a directed foliar spray in a low volume backpack application. Add 0.25% nonionic surfactant. See label for instructions for making more concentrated mixtures for hard to kill species.

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Forestry Herbicide Use in Pines Pine Release - Soil Treatment				
hexazinone @ 1.5 to 2.25 lb/A	Many brush species.	Velpar ULW 2 to 3 lb/A.	Mid-March to early May.	Do not use on a ripped site. For use in natural stands employing all-age management. Excessive injury may occur when applications are made to loblolly pines less than 4 years of age when planted in coarse textured soils and less than 3 years of age when planted in fine textured soils.
hexazinone @ 2 to 3 lb/A	Many brush species.	Pronone 25G 8 to 12 lb.	Same as above.	Do not use on a ripped site. May be used in plantations. Low analysis formulation (10%) is more forgiving in the absence of uniform application. Some mortality (10%) may be expected in conifers less than 5 years old.
Forestry Herbicide Use in Pines Herbaceous Weed Control				
sulfometuron + hexazinone @ 0.047 to 0.094 + 1.0	Many herbaceous species.	Oust + Velpar DF 1 to 2 oz + 1.33 lb/A.	February to April.	Soil and foliar activity. Broadcast, ground or aerial.
hexazinone + sulfometuron @ 0.4 to 0.63 + 0.07 to 0.11 lb/A	Annual grasses and broadleaf weeds.	Oustar 10 to 16 ozA.	Preemergence to weeds.	Loblolly pines only. Use lower rate on coarse textured soils. Rainfall is needed for activation.
imazapyr @ 0.19 to 0.31 lb/A	Most woody plants.	Arsenal A.C. 6 to 10 fl oz.	Early spring to newly emerged weeds.	Broadcast, ground or aerial. Do not use more than 0.25% nonionic surfactant. Some temporary growth inhibition may result.
sulfometuron + atrazine @ 0.047 to 0.094 + 2 lb/A	Sicklepod, morningglory, cocklebur and other species likely to be found on former agricultural land.	Oust + AAtrex 4L 1 to 2 oz + 2 qt.	Early spring after the soil has settled around the base of the transplants (February - April).	Soil and foliar activity. Broadcast aerial or ground application.
imazapyr + sulfometuron @ 0.13 to 0.19 + 0.094	Many herbaceous species including bermudagrass suppression.	Arsenal A.C. + Oust 4 to 6 fl oz + 2 oz.	Early spring to newly emerged weeds.	Soil and foliar activity. Broadcast aerial or ground application.
imazapyr + metsulfuron @ 0.13 to 0.19 + 0.038 to 0.075 lb/A	Bahigrass control and many other herbaceous species.	Arsenal A.C. + Escort 4 to 6 fl oz + 1 to 2 oz.	Late spring (May) when bahigrass is actively growing.	Add 0.25% nonionic surfactant. Arsenal may cause some temporary growth inhibition of young pines.

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Forestry Herbicide Use in Pines Herbaceous Weed Control (cont.)					
sulfometuron @ 0,14 lb/A	Fescue and other herbaceous species.	3 oz.	Oust	Early spring after the soil has settled around the base of the transplants (March - April).	Foliar and soil activity. For fescue pastures planted in pines. Band or broadcast application.
hexazinone @ 0.6 to 0.7 lb/A	Many herbaceous species.	6 to 7 lb.	Pronone 10 MG	March - April.	Soil active. Aerial broadcast. Used mainly in pulpwood applications. Do not use on sites where 10% conifer mortality cannot be tolerated. Apply only to transplant stock that is two years old (loblolly, 1 yr old), then apply only if rainfall has settled the soil around the base of the transplant. Do not use on containerized stock or sites that have been ripped. Higher rates will be required for fine textured soils and soils high in organic matter.
Pine Release - Cut Surface, Frill, Injection					
picloram 5.4% + 2,4-D amine 20.9%	Most woody plants.	Pathway 1 ml undiluted per 1" of stem diameter, or to wet frill completely.	Pathway	Apply during period of active growth.	Hatchet and squirt bottle. Make cuts at a convenient height around stem and evenly distributed around the tree. Completely circle the stem of difficult to kill species such as dogwood, hickory and red maple with overlapping cuts. Avoid treating during periods of heavy sap flow. Do not leave more than 1" between cuts.
imazapyr 4 lb/gal	Most woody plants.	Arsenal A.C. Add 6 fl oz to 1 gal of water and use 1 ml per 1" of stem diameter.	Arsenal A.C.	Apply during period of active growth.	Hatchet and squirt bottle. Make cuts at a convenient height around stem. Completely circle the stem of difficult to kill species such as dogwood, hickory and red maple. Avoid treating during periods of heavy sap flow. Do not leave more than 1" between cuts.