Chemical Side Trim

About the treatment:

Trees can pose a special challenge for vegetation managers. Whether your objective is to provide safe and reliable electric energy to customers or keep public or forestry roadside areas clear and visible, maintenance must be conducted on the vegetation in these areas. For power companies, trees growing near or adjacent to power lines present the risk of a power outage from fallen tree limbs. Along roadsides, trees that are encroaching into the right-of-way can make it difficult for motorists to see signs and around corners. Forest roads, if not maintained, can become very difficult to use, a fire hazard and a hazard to crews and equipment.

In these areas, vegetation managers have several options: cut the tree down; mechanically side trim the tree; or use herbicides to either partially control growth (chemical side trim) or control the entire tree. Mechanical cutting can present safety issues to the person performing the maintenance in some cases and can be very time-consuming and expensive.

An alternative to mechanical cutting is the use of herbicides to control the growth of portions of tree limbs that could affect power lines or roadside access, safety and visibility. Certain herbicides, when used correctly, can effectively "prune back" only the treated tree limbs and not control the tree completely. This is called a chemical side trim application — the herbicide is only applied to the branches of the trees that pose a threat to the right-of-way. This keeps the tree alive, healthy and more aesthetically pleasing, while removing only the problem area of the vegetation.

How applications are made:

The public is very familiar with tree trimmers in bucket trucks performing tree trimming along power lines or roadsides. When cutting tree branches, the tree crews must clean up the removed branches and often will bring a wood chipper, trailers or trucks to haul debris and other support equipment to the site.

Chemical side trim programs generally require much less equipment and fewer people, and are a safer, more cost-effective alternative to mechanical trimming programs. A key safety aspect is that chemical side trim applications are much quicker to perform than mechanical, so there is less exposure to risky situations, such as traffic on roadside rights-of-way.

Chemical side trim applications can be made from the ground, from truck-mounted sprayers or from bucket trucks either as a foliar or dormant-stem spray application. Foliar applications are made by spraying the herbicide spray mixture directly onto the leaves and branches of encroaching limbs and branches when the tree is actively growing. Dormant applications are similar to foliar, but applications are made to limbs and branches during the winter when deciduous trees are without foliage.

These applications affect only the area that is sprayed, leaving the rest of the tree alive and healthy as long as lower and/or midcanopy branches are treated. Spraying over the top of trees (the terminal growing tips or crown) or spraying more than half of the canopy should be avoided as this could injure the tree too much. If this is necessary, mechanical trimming should be considered.

Recommendations:

Growing-season foliar side trim applications — The most widely used herbicide mix is Garlon® 3A specialty herbicide for growing-season foliar side trim applications on both roadsides and electric utility rights-of-way. Garlon 3A provides excellent side trim results without damage to desirable grasses on rights-of-way, a key advantage with this treatment strategy. Also, Garlon 3A is an amine formulation that is not prone to vapor movement during warm weather — a potential concern in densely populated areas or around broadleaf crops. The use rate for Garlon 3A depends on several factors, including the tree species, side trim density and amount of desired "burn-back" of the target limbs and branches.

Typically, a rate of 1 to 1.5 gallons of Garlon 3A per acre should be used to provide a successful side trim. Milestone® VM specialty herbicide can be tank-mixed with Garlon® 3A specialty herbicide at up to 7 fluid ounces per acre for wider-spectrum and improved control. Additional detail is provided below, but it is always best to consult with your local Dow AgroSciences sales representative on specifics for your area before you treat.

There are many methods for growing-season foliar side trim applications, but the most common are truck-mounted manifold sprayers; handgun application either from the ground, a truck or a bucket truck (lift truck); or aerial application from helicopters, usually on utility rights-of-way. See the Equipment section for suggested rates and spray volumes.

Aerial applications — Aerial applications for side trim are very effective and can produce more precise side trim results when done properly. The use of aerial applications for side trim are usually done on utility right-of-way transmission lines. Applications are made only

by helicopter and must be applied with a controlled droplet nozzle boom, such as an Accu-flo™, TVB® (Thru Valve Boom®) or Microfoil® Boom. Only experienced and highly qualified aerial applicators should be considered for side trim programs. Also, aerial side trim programs are seldom done in highly populated areas due to public concern and public pressure relative to aerial spraying of herbicides.

With this in mind, only lightly populated and rural areas should be considered for aerial side trim programs. Total volume rates (15 to 25 gallons per acre) for aerial applications are generally less than for ground-applied. Garlon 3A should be mixed at 1 to 1.5 gallons in the volume of water to be applied per acre plus 0.25 percent (8 fluid ounces per 25 gallons) of a nonionic surfactant. The higher rate should be used for higher-density sites, and larger limbs and branches. Milestone VM at up to 7 fluid ounces per acre also can be tank-mixed with Garlon 3A for wider-spectrum and improved control.

Aerial applications allow the option to use the full boom width to treat the right-of-way and side trim at the same time or to use a narrow spray pattern to perform a chemical side trim only.

Dormant-season (dormant-stem) side trim applications — Dormant-season applications are an excellent alternative to growing-season foliar side trim programs and have several desirable features and benefits over traditional foliar programs. Applications are made during the winter and very early spring so spray drift to desirable crops and sensitive foliage is generally not a concern. Because applications are made to hardwood limbs and branches that have dropped their leaves, there are minimal brownout issues; only limbs and branches of conifers or other evergreens show brownout.

A key benefit of dormant-season treatments is that they extend the spray season for controlling unwanted vegetation beyond the traditional application window. These applications can be made during less busy winter months when work crews potentially have more available time for these activities. Applications should be made during mid- to late winter and very early spring — typically from early January through late March. Depending on geographic location, this timing can vary. The bottom line is that all dormant applications should be completed before foliage begins to emerge on deciduous trees. The ideal application timing is about six weeks prior to bud break up to the beginning of bud break. Applications must be done during dry conditions — bark, stems and branches must be dry. Applications made when bark is wet will cause the spray mix to emulsify (turn milky white) on the stems, and side trim efficacy will be significantly reduced.

Only emulsifiable concentrates/oil-soluble herbicides can be used for dormant side trim treatments. Garlon 3A cannot be used and will **NOT** be effective. Garlon® 4 Ultra specialty herbicide is an oil-soluble formulation and is the key to a successful dormant side trim program. Typically, 2 gallons of Garlon 4 Ultra (see specific recommendations in the table below) plus 2 to 3 gallons of crop oil concentrate (COC) are mixed per 100 gallons of water. Applications are made to limbs and branches — similar to a foliar program except there is no foliage to spray (except conifer foliage) Applications are made to thoroughly wet all portions of targeted limbs and branches, but not to the point of runoff.

Equipment options for making applications are basically the same as foliar programs. Truck-mounted manifold or controlled droplet sprayers are very effective, but total volume per acre is generally higher to achieve thorough wetting of the dormant target stems and can go as high as 100 gallons total solution per acre for high-density sites, and large limbs and branches. Also, handgun applications applied from ground, truck or bucket truck provide excellent side trim control (see details below); again higher total volumes are generally needed to achieve complete coverage. Aerial dormant side trim applications are not recommended because the volumes required to get coverage are typically not possible from helicopter applications.

Treatment of conifer species in the Pacific Northwest:

In the Pacific Northwest, use the higher rates suggested in the chart below for optimum use of chemical side trim on conifers and treat when the conifers are actively growing.

Equipment:

Truck-mounted manifold sprayers — These spray systems are typically mounted on the side of the truck or off the back and spray to one side. Sometimes the spray head is mounted on an articulated arm. Manifolds mounted on articulated arms are very effective for side trim programs where target limbs and branches are higher off the ground, such as on utility distribution power lines.

The spray head is usually a set of nozzles (combinations of straight stream, OC and flat fan) mounted in a shielded manifold and designed to spray a wide-even swath. Other very effective spray heads can be controlled droplet sprayers, such as Widecast™ 1554, Radiarc®, Directa-Spra™, Mini-Wobbler™ or similar. Truck-mounted sprayers typically apply a set volume of spray mix per acre — trucks travel at prescribed speed and spray volume is delivered at a precise per acre rate. Optimum total volume per acre for a side trim application is about 25 gallons per acre. See recommendations below, but a typical prescription is Garlon 3A at 1 to 1.5 gallons in 25 gallons of water plus 0.25 percent (8 fluid ounces per 25 gallons) of a nonionic surfactant. The higher rate should be used for higher-density sites, and larger limbs and branches.

Milestone VM at up to 7 fluid ounces per acre can be tank-mixed with Garlon 3A for wider-spectrum and improved control. The boom, ground speed and pressure must be adjusted so only the limbs and branches targeted for side trim are sprayed and so the spray is not allowed to penetrate into the main crown of the desirable trees. The application should be adjusted so only lateral limbs growing toward the right-of-way are treated and so the tops of trees, where injury cannot be tolerated, are avoided.

Handgun applications — Handgun applications are made using high-pressure-powered pumping systems, a hose reel and an adjustable handgun sprayer (Gunjet® type or equivalent). When applied from the ground, the applicator pulls hose off of the reel and usually walks next to the target vegetation. Applications using a handgun also can be made directly from a truck as long as the truck can be driven close enough to the target vegetation.

Handgun applications are basically directed spray applications — the handgun is directed to the limbs and branches that are being targeted for side trim. Gaps between trees, low-growing species and open areas, etc., are not treated. Hence the rate (and total volume) per acre is variable based on target vegetation, density, etc. Because rate is variable, spray mixtures are recommended based on a percent mix or herbicide mix per 100 gallons of spray mix.

Typically for most handgun applications for side trim, Garlon 3A is mixed at 1 to 1.5 gallons in 100 gallons of water plus 0.25 percent (32 fluid ounces per 100 gallons) of a nonionic surfactant (see specific recommendations below). The higher rate should be used for higher-density and larger target limbs and branches and for conifers in the Pacific Northwest. Tank-mix Milestone VM at up to 7 fluid ounces per 100 gallons of water with Garlon 3A for wider-spectrum and improved control.

Application with the handgun is made to completely cover all foliage, stems and branches, but not to the point of runoff. The key for a good handgun application is to keep the gun moving and to adjust the spray pattern correctly for the distance to the target vegetation. The key is to have even coverage without runoff, similar to spray painting. Extreme care must be taken when using a handgun from the ground or a truck so only the lateral limbs and branches for side trim are treated and so the spray is not allowed to penetrate the main crown of desirable trees.

Handgun applications from the ground or truck can be very effective for side trim programs up to about 25 feet high. This is usually within target guidelines for roadside right-of-way programs. For programs requiring side trim higher than 25 feet — such as some more aggressive roadside programs and many electric utility programs — other options, such as articulated arm manifold, bucket truck application or, in certain situations, aerial applications on utility rights-of-way, should be considered.

Bucket truck (lift truck) applications — Applications from bucket trucks or lift trucks can be accomplished with a handgun or a controlled droplet hand-held unit such as Widecast 1554. Use of a bucket truck with directed spray applications helps to increase precision of the applications because most of the spray pattern is being directed across and down on top of the targeted limbs and branches. This approach is ideal for programs requiring side trim higher than 25 feet, such as some roadside programs and many electric utility programs — especially on distribution lines. Rates and mixtures are the same as described above with handgun applications. When done properly, lower total volume mixtures can be used because top-down applications typically provide better coverage with lower volumes than applications made from below or made from the ground. With this in mind, adjustment to the above “handgun” rates are possible. Garlon® 3A specialty herbicide is mixed as high as 2 to 3 gallons in 100 gallons of water plus 0.25 percent (32 fluid ounces per 100 gallons) of a nonionic surfactant and is sprayed to lightly cover the targeted foliage. Total volume application rate should be about half of the high volume rate described above for ground or truck handgun application. The higher rate should be used for higher-density and larger target limbs and branches and for conifers in the Pacific Northwest. Tank-mix Milestone VM at up to 7 fluid ounces per 100 gallons of water with Garlon 3A for wider-spectrum and improved control.

Foliar — Growing-season recommendations for chemical side trim:		
Region	**Herbicide rates per acre and tank-mix rates per 100 gallon mix**	**Rationale — Specific Recommendation**
Southeast	Garlon® 3A specialty herbicide at 1 gallon	General hardwood and light conifer/evergreen control. Can be used on sites with standing water.
	Garlon 3A at 1½ gallons	Heavy hardwoods, scrub oaks, droughty sites, short needle pines. Can be used on sites with standing water.
	Garlon 3A at 1 gallon + Milestone® VM specialty herbicide at 7 fluid ounces	Heavy conifer component; applications during mid- and late summer, and dry conditions.
	Forestry Garlon® XRT specialty herbicide at 42 fluid ounces per acre in 25+ gallons per acre	Forestry segment — General hardwood, waxy leaved species, and pine control.
	Forestry Garlon XRT at 64 fluid ounces + Milestone VM at 7 fluid ounces per acre in 25+ gallons per acre	Forestry segment — Sites with larger hardwood root stocks, waxy and legume species, and pine.
Northeast	Garlon 3A at 2 to 3 quarts per 100 gallons	
Midwest	Garlon 3A at 2 to 3 quarts per 100 gallons	
Pacific NW	Garlon 4 Ultra specialty herbicide at 2 to 6 quarts per acre + methylated seed oil (MSO) at 0.5% to 1%	Good to excellent chemical pruning of most woody plants, including waxy leaf evergreen hardwoods. Use highest rate for conifer pruning and treat while trees are actively growing. Addition of 2 to 4 quarts per acre 2,4-D LV4 may improve results on certain species.
	Garlon 4 Ultra at 2 to 4 quarts per acre + Milestone VM at 7 fluid ounces per acre + MSO at 0.5%	Good to excellent chemical pruning of most woody plants, including waxy leaf evergreen hardwoods. Limit treatment to the lower one-third of desirable conifer trees to minimize injury above treatment zone. Avoid treating desirable sensitive trees, such as locust, redbud and linden.
	Garlon 3A at 3 to 8 quarts per acre + 0.5% nonionic or MSO surfactant	Good to excellent chemical pruning of most woody plants, including evergreen hardwoods. Use rates of 6 to 8 quarts per acre use for conifer pruning and treat while trees are actively growing. Addition of DMA® 4 IVM herbicide at 2 to 4 quarts per acre may improve results on certain species, including oak, cherry, alder, madrone and manzanita.
	Garlon 3A at 3 to 6 quarts per acre + Milestone VM at 7 fluid ounces per acre + MSO at 0.5%	Good to excellent chemical pruning of most woody plants, including waxy leaf evergreen hardwoods. Limit treatment to the lower one-third of desirable conifer trees to minimize injury above treatment zone. Avoid treating desirable sensitive trees, such as locust, redbud and linden.
	Accord® XRT II herbicide at 2 to 3 quarts per acre + MSO at 0.25%	Good to excellent chemical pruning and foliar control of most woody plants, including evergreen hardwoods. Younger trees with smooth bark may be injured at higher use rates. Addition of DMA 4 at 2 to 4 quarts per acre, Garlon 3A at 2 quarts per acre, Forestry Garlon XRT at 30 to 40 ounces per acre or Milestone VM at 7 fluid ounces per acre may improve results on certain species. Use only in areas where grass control can be tolerated.
Dormant-season recommendations for chemical side trim:		
Region	**Herbicide and tank-mix rates**	**Rationale — Specific Recommendation**
Southeast	Garlon 4 Ultra at 2 gallons + crop oil concentrate (COC) at 2 to 3 gallons	General hardwood and conifer/evergreen control.
Northeast	Garlon 4 Ultra at ½ gallon + Tordon® K specialty herbicide at 1 pint + Milestone VM at 7 fluid ounces per acre + COC at 2 to 3 gallons	
Midwest	Garlon 4 Ultra at ½ gallon + Tordon K at 1 pint + Milestone VM at 7 fluid ounces per acre + COC at 2 to 3 gallons	
Texas/ Oklahoma	Garlon 4 Ultra at 2 gallons + COC at 2 to 3 gallons	Hardwoods and conifers.
Pacific NW	Garlon 4 Ultra at 4 to 8 quarts per acre + 2,4-D LV4 at 2 to 4 quarts per acre + 2% to 3% COC or 1% to 2% MSO	Good to excellent chemical pruning of most woody plants, including waxy leaf evergreen hardwoods. Not effective for conifer pruning (except pines) while trees are dormant.
	Garlon 4 Ultra at 4 to 8 quarts per acre + 2% to 3% COC or 1% to 2% MSO	Good to excellent chemical pruning of most woody plants, including waxy leaf evergreen hardwoods. Not effective for conifer pruning (except pines) while trees are dormant.

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