

lands, pastures, and natural areas. This shrub readily invades prairies, savannas, open woodlands, and forest edges. It also may occur in dense forests, particularly near disturbances such as treefall gaps. It is a thorny, bushy shrub that can form impenetrable thickets or "living fences" and smother other vegetation. It is a serious pest species throughout the eastern United States.

Multiflora rose is named for the clusters of many white flowers born on this perennial bramble during May or June. The flowers develop into small, hard fruits called hips that remain on the plant throughout winter. The great majority of plants develop from seeds remaining in the soil relatively close to plants from which they were produced. Birds and mammals also consume the hips and can disperse them greater distances. Rose seeds may remain viable in the soil for 10 to 20 years. Multiflora rose also spreads by layering, i.e., where tips of canes touch the ground and form roots, and by plants that arise from shallow roots.

In high quality natural areas, multiflora rose can be controlled by removing individual plants, prescribed burning, repeated cutting, or cutting followed by cut-stem treatment with herbicide. Pulling, grubbing, or removing individual plants from the soil are effective when all roots are removed or when plants that develop from severed roots are subsequently destroyed. These approaches are most practical for light, scattered infestations. In fire-adapted communities, a routine prescribed burn program will hinder invasion and establishment of multiflora rose.

Research indicates that three to six cuttings or mowings per growing season for more than one year can achieve high plant mortality. Such treatment may need to be repeated for two to four years. Increased mowing rates (6+/season) did not increase plant mortality. In high quality communities, repeated cutting is preferred over mowing, because repeated mowing will damage native vegetation as well as multiflora rose.

Cutting stems and either painting herbicide on the cut stem with a sponge applicator (sponge-type paint applicators can be used) or spraying herbicide on the cut stem with a

low-pressure hand-held sprayer, kills root systems and prevents resprouting. Roundup herbicide (a formulation of glyphosate) has effectively controlled multiflora rose when used as a 10–20% solution and applied directly to the cut stem. Although the Roundup label recommends a higher concentration for cut-stem treatment (50–100%), the lower concentration has proven effective. With this technique, herbicide is applied specifically to the target plant, reducing the possibility of damaging nearby, desirable vegetation. Cut-stem treatment is effective late in the growing season (July–September), and also during the dormant season. Dormant season application is preferred because it will minimize potential harm to nontarget species. Glyphosate is a nonselective herbicide, so care should be taken to avoid contacting nontarget species.

In addition, triclopyr (trade name Garlon 3A) can be applied to cut stems or canes for selective control of multiflora rose. Use a hand sprayer to spray Garlon 3A, diluted in water at a rate of 50%, on the cut surface; application should be within a few hours of cutting. Use of Garlon 3A is best done in the dormant season to lessen damage to nontarget species. Great care should be exercised to avoid getting any of the herbicide on the ground near the target plant since nontarget species may be harmed. Avoid using triclopyr if rain is forecast for the following one to four days; otherwise runoff will harm nontarget species. By law, herbicides must be applied according to label directions and by licensed herbicide applicators or operators when working on public properties.

For large populations on severely disturbed areas, mowing can be substituted for cutting of individual plants. However, mowing multiflora rose can result in flat tires; filling mower tires with foam is recommended.

On degraded areas, fosamine (trade name Krenite) can be applied as a foliar spray in a 2% solution plus 0.25% surfactant (2.5 ounces of Krenite plus 0.5 ounce surfactant per gallon of water). The Krenite S formulation contains the appropriate amount of surfactant. Coverage of foliage should be complete. Krenite should be applied only during July–September. No effects will be

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## VEGETATION MANAGEMENT GUIDELINE: MULTIFLORA ROSE

(*Rosa multiflora* Thunb.)

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Multiflora rose, originally introduced from eastern Asia for wildlife cover and food, has become a serious invader of agricultural

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observed during the autumn season following application. Slight regrowth may occur the following season but canes will die during summer. Fosamine kills only woody species, is nonvolatile, and therefore is the preferred foliar spray treatment.

Dicamba (trade name Banvel) is an effective foliar spray that can be used in severely disturbed sites, though Krenite is preferred. Banvel is selective against broadleaf plants, so care must be taken to avoid contacting desirable, broadleaf vegetation. It can be applied as a foliar spray in a 1% solution (1.3 ounces of Banvel per gallon of water). Though this solution can be applied any time during the growing season, best results are obtained during May and June when plants are actively growing and flowering, following full emergence of leaves. One-half ounce of a surfactant should be added when treating dense foliage; complete coverage of all green leaves will enhance control in late season applications.

Do not spray Krenite or dicamba so heavily that herbicide drips off the target species. Foliar spray of herbicides should only be used in less sensitive areas because of problems with contacting nontarget species. By law, herbicides must be applied according to label directions and by licensed herbicide applicators or operators when working on public properties.

Glyphosate (trade name Roundup) is an effective foliar spray when applied as a 1% solution to multiflora rose plants that are flowering or in bud. Roundup is not a recommended chemical treatment, however, since it is nonselective and the selective herbicides mentioned above are effective. Nevertheless, Roundup can be used as a foliar spray during the growing season on severely disturbed sites if care is taken to avoid contacting nontarget plants. Roundup should not be used as a foliar spray during the growing season in high quality natural areas because it can result in damage to nontarget species. Roundup is useful as a foliar spray for target plants that remain green and retain their leaves after native vegetation is dormant or senescent. Multiflora rose does not fit this description adequately and is controlled most effectively when treated during the growing season.

No effective biological controls that are feasible in natural communities are known. Rose rosette disease is a sometimes fatal viral disease that attacks multiflora rose and other roses. It is not considered a useful biological control at this time because it also may infect native roses and plums, as well as commercially important plants in the rose family such as apples, some berries, and ornamental roses.

#### GENERAL REFERENCES

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