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**VEGETATION MANAGEMENT  
GUIDELINE: Osage orange**  
*(Maclura pomifera (Raf.) Schneider)*

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Osage orange (*Maclura pomifera*) is an aggressive tree that frequently invades prairies and savannas. It also invades forest communities, usually as a result of past disturbances such as grazing. Osage orange typically occurs in open, sunny areas and can grow in a variety of soils. It is most frequently found growing in hedgerows or in pastures, but also occurs in disturbed forests, floodplain forests, and on river banks.

A single female Osage orange can produce many fruits, each containing numerous seeds. Although fruits are quite large, the seeds get dispersed over long distances by animals that eat the fruits. Osage orange can reproduce from root sprouts.

Cutting and/or burning offer solutions for control. Cutting during summer months (June–August) usually provides the best results, and two cuttings in one year are more effective than one. Summer cutting affects the plant when its root resources are low and the possibility of adverse weather during the fall and winter may further harm the plant. Repeated cutting may be necessary to control Osage orange completely because it resprouts from the stump and, by root suckers, may cover large areas vegetatively. Cutting is most feasible with smaller plants.

Although girdling has not been tried on Osage orange, it may prove successful on smaller trees that do not have thick bark.

Older trees have quite thick bark, making girdling difficult. For girdling, the phloem should be removed without damaging the xylem. The girdles should be checked every several weeks at first to make sure that bark does not develop over the cut area. Girdling can be done with an ax, saw, or chainsaw. Two parallel cuts 7–10 cm apart, cutting through the bark slightly deeper than the cambium, are needed. The bark is knocked off using a blunt object like the head of an ax.

All cutting or girdling practices, without herbicide treatment, will result initially in the development of masses of vigorous sprouts that are extremely difficult and hazardous to handle because of their axillary spines. The tips of these spines are brittle and may remain embedded when the spines are extracted from puncture wounds. Workers should take extra precautions to protect their bodies when handling these sprouts. A cut-surface treatment with herbicide, as described below, is recommended to minimize sprouting. Burning or chipping also will be required to reduce the thorny debris following cutting, since the spines as well as the heartwood are decay resistant.

Periodic prescribed burning will hinder establishment of young Osage orange. Burning in conjunction with cutting works well on small plants. Large Osage orange are resistant to fire and will need another control method such as girdling or cutting.

Triclopyr herbicide (trade name Garlon 4 or 3A) is effective as a bark treatment or cut-surface treatment. Cut-surface treatment with Garlon 3A, a selective translocated herbicide, effectively controls Osage orange. A diluted solution of Garlon 3A (50% solution in water) can be sprayed on cut surfaces or wiped on the cut surface using a sponge applicator. Either a stump or girdle can be used for the cut surface. Girdles can be made rapidly using a chain saw. Application should be as soon as possible, but no later than two or three hours after cutting. Cut-surface application can be made during any season of the year, but application during the dormant season reduces the potential for injury to other plants due to drift.

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Undiluted Garlon 4 can be applied in a thin stream to all sides of the stem, 15 cm above the base of the plant. This only works on trees with stems less than 15 cm in diameter. A narrow band of Garlon 4 encircling the stem is needed for control. This method may not be appropriate in high-quality natural areas because of possible runoff that may kill vegetation around the tree.

Basal bark treatment with Garlon 4 also is effective. Two or 2.5 ounces of Garlon 4 is added to 1 gallon of diesel fuel. This mixture is sprayed, using a hand sprayer, to the basal portion of the tree trunk. Spray to a height of 30-40 cm. Thorough spraying is necessary. This method should only be used in less sensitive areas because runoff of diesel fuel and herbicide may harm nearby plants.

Use of triclopyr is best done in the dormant season to lessen damage to nontarget plants. Great care should be exercised to avoid getting any of the mixture on the ground near the target plant. 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. Osage orange seems to be very sensitive to triclopyr, therefore very small amounts can be used, lessening the possible harm to nontarget plants.

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The following general references refer to the vegetation management guideline for leafy spurge (*Euphorbia esula* L.), which appeared in the July 1991 (Vol. 11, No. 3) issue.

The Nature Conservancy. Element stewardship abstract for *Euphorbia esula* — leafy spurge. The Nature Conservancy, Midwest Regional Office, Minneapolis, Minn.

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