Greenbrier (Smilax bona-nox L.) is a native woody vine or shrub. It is a member of the Smilacaceae, formerly Liliaceae, family which includes approximately 12 to 15 species in the Smilax genus. Most of these species are woody, climbing vines armed with sharp spines or prickles. Other common names include catbrier, bullbrier, chinabrier, saw greenbrier and tramp's trouble. Its natural distribution ranges from eastern Mexico to central Texas north to southeastern Nebraska, east to Maryland and south to Florida. It is common in woodland understories, open edges, fencerows and rangeland settings. When allowed to persist in open areas, it may form large, dense thickets or mottes.

**Identification**

Greenbrier is a warm-season perennial woody vine or shrub. The stems are climbing with tendrils and tend to form tangled masses. Within these tangled masses, or mottes, the individual vines may be more than 20 feet long. These mottes may become so intertwined and matted that they become virtually impenetrable to livestock. Greenbrier leaves are deltoid or heart-shaped, with new foliage emerging in the early spring. The new foliage is tender and succulent early, but soon toughens and develops a thick waxy cuticle. The young, tender shoots and stems make excellent forage for both wildlife and livestock.

*Top photo: A mature greenbrier motte with densely tangled vines*
*Bottom photo: Mature greenbrier leaves, note the shine from the waxy cuticle*
with crude protein content as high as 40 percent. Perhaps the most notable characteristic is the sharp prickles or stiff spines that are scattered across the stems and branches. These prickles are typically short in length and capable of inflicting shallow cuts and scratches. Greenbrier flowers from spring through early summer and produces clusters of small, shiny red or black berries when mature. These berries stay on the vine throughout the winter. Greenbrier reproduces from seed, tubers or rhizomes. Large rhizomes and ligneous tubers, up to 12 inches in diameter, capable of storing large carbohydrate reserves, may be produced.

**Management Considerations**

Greenbrier management depends on the goals for the property. If livestock or herbaceous forage production is the primary goal, then greenbrier is detrimental due to reduced herbaceous forage production and limited access to the forage that is produced. If wildlife management is the primary goal, greenbrier is highly valued as a food source and for cover. It is a highly preferred browse for white-tailed deer, while wild turkey, raccoons, squirrels and many song birds consume the fruit. The dense cover provided by greenbrier mottes provides excellent cover for bobwhite quail and many small mammals such as eastern cottontail. If managing for wildlife is a goal of the property, maintaining greenbrier as part of a diverse plant community can be very beneficial.

*Top left photo: Greenbrier prickles on a mature stem*  
*Top right photo: Greenbrier berries ripening in the late fall*  
*Bottom photo: A small greenbrier root mass with rhizomes and tubers*
on greenbrier. Visual control ratings for one year after the first and second applications as well as live stem counts at the conclusion of the trials are summarized in Table 1. The visual control ratings were an estimate of greenbrier plant mortality, growth reduction on surviving stems and evidence of resprouting. In addition to visual control ratings, live stem counts were taken at the conclusion of these trials. There were no statistical differences in stand counts among herbicide treatments, although the counts in the mown plots were lower than their corresponding unmown plots in almost every case.

If a greenbrier control program using herbicides is chosen, the following strategies are recommended. These are not intended to be exclusive of all other options, but based upon our research represent what we believe to be the best herbicide-based approaches.

For foliar treatment of greenbrier mottes, apply 0.5% to 1.0% triclopyr (example: Remedy®) or 1.0% to 2.0% triclopyr and fluroxypyr premix (example: PastureGard®) in enough volume to obtain thorough coverage of the foliage and stems. Include 0.25% to 0.5% high quality nonionic surfactant in the mix. Apply in the late spring to early summer, after the spring flush is complete, but before

Another management consideration is the topography and location of the greenbrier infestation. Due to its adaptability to forest understory, fence lines and open areas, management options must be selected accordingly.

Management Methods
Mechanical methods
Greenbrier may be managed by mowing when terrain and other surrounding tree and brush species permit, or may be hand-cut in localized areas. In two trials conducted by the Noble Foundation from 2007-2009 and 2008-2010, stem numbers were reduced 44 percent to 49 percent by a mowing in mid to late April for two consecutive years. In addition to the reduction in stem numbers, the native grasses in these plots were able to make significant growth and the greenbrier resprouts were small enough that they would not have interfered with grazing. These resprouts were also tender enough that white-tailed deer browsing was plainly evident. If greenbrier is in a location where mowing is an option, it may be the most cost-effective choice even though the greenbrier will grow back each year.

Chemical control
There are several herbicides labeled for greenbrier control or suppression. Unfortunately, due to its ability to resprout from rhizomes and the fact that there is a limited amount of herbicide absorption once the leaves are mature, long-term or consistent control is difficult to obtain.

In the previously mentioned Noble Foundation trials, six herbicides or tank mixes were tested as foliar treatments and compared to untreated greenbrier. Half of each plot was mown in mid to late April each year in 2007 and 2008 for Trial 1 and in 2008 and 2009 for Trial 2. Herbicide applications were made to both the mown and unmown plots in late May or early June of each year when there was approximately 12 inches of regrowth in the mown plots. In the unmown plots, greenbrier leaves were fully expanded, but had not yet developed their characteristic thick waxy cuticle. The application method simulated spot treatment applications at labeled concentrations. Due to the greater amount of foliage, the unmown plots required approximately twice the spray volume as the mown plots.

In these trials, triclopyr (example: Remedy®) and a triclopyr and fluroxypyr premix (example: PastureGard®) provided the most consistent activity on greenbrier. Visual control ratings for one year after the first and second applications as well as live stem counts at the conclusion of the trials are summarized in Table 1. The visual control ratings were an estimate of greenbrier plant mortality, growth reduction on surviving stems and evidence of resprouting. In addition to visual control ratings, live stem counts were taken at the conclusion of these trials. There were no statistical differences in stand counts among herbicide treatments, although the counts in the mown plots were lower than their corresponding unmown plots in almost every case.

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### Table 1

<table>
<thead>
<tr>
<th>Treatment</th>
<th>% Control one year after Application 1</th>
<th>% Control one year after Application 2</th>
<th>Stem count</th>
<th>% Control one year after Application 1</th>
<th>% Control one year after Application 2</th>
<th>Stem count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial number</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1.5% PastureGard</td>
<td>72 a</td>
<td>75 a</td>
<td>85 a</td>
<td>65 a</td>
<td>10.0 b</td>
<td>25.7 a</td>
</tr>
<tr>
<td>0.5% Remedy</td>
<td>70 ab</td>
<td>63 ab</td>
<td>80 a</td>
<td>80 a</td>
<td>13.7 b</td>
<td>13.0 a</td>
</tr>
<tr>
<td>0.75% Weedmaster</td>
<td>50 abc</td>
<td>62 ab</td>
<td>72 b</td>
<td>53 ab</td>
<td>10.7 b</td>
<td>18.3 a</td>
</tr>
<tr>
<td>1.0% Surmount</td>
<td>50 abc</td>
<td>62 ab</td>
<td>55 c</td>
<td>50 ab</td>
<td>13.0 b</td>
<td>45.3 a</td>
</tr>
<tr>
<td>0.25% Remedy + 0.5% Tordon</td>
<td>48 bc</td>
<td>53 b</td>
<td>58 c</td>
<td>63 ab</td>
<td>13.3 b</td>
<td>34.3 a</td>
</tr>
<tr>
<td>1% Tordon</td>
<td>37 c</td>
<td>33 c</td>
<td>30 d</td>
<td>15 bc</td>
<td>14.7 b</td>
<td>58.7 a</td>
</tr>
<tr>
<td>Untreated Control</td>
<td>0 d</td>
<td>0 d</td>
<td>0 e</td>
<td>0 c</td>
<td>27.0 a</td>
<td>48.0 a</td>
</tr>
</tbody>
</table>

Means within a column followed by a different letter are significantly different according to Least Significant Difference test at the 5% significance level.
the leaves have fully matured or developed a thick, waxy cuticle. Do not apply herbicides if the greenbrier motte has been mown or burned within the previous 12 months or the level of control will be reduced.

Foliar broadcast treatments are not typically recommended for greenbrier control due to high cost and limited or inconsistent control.

For basal bark treatment of individual greenbrier plants, apply a mixture of 25% triclopyr (example: Remedy®) and either 75% diesel or 75% sprayable vegetable oil to the bottom 12 inches to 18 inches of the stems. The spray should be applied to give good coverage completely around the stem, but not to the point of runoff, in order to obtain the best results. This is often easiest to accomplish during the winter months when there is less foliage to intercept the spray. Although this treatment has not been tested by the Noble Foundation on greenbrier, it is recommended by the Texas AgriLife Extension Service Brush Busters program and has worked very well on a number of other smooth-barked species. This method may be impractical where greenbrier is present in large quantities.

**Prescribed fire**
A well planned and executed prescribed fire will top-kill greenbrier, but it will readily resprout from seeds, underground tubers and rhizomes. Maintaining a regular prescribed burning program will often prevent greenbrier from developing into a significant problem, but will not eliminate it from the landscape. If fire can be followed with mowing or intensive grazing activity of the regrowth, the severity of greenbrier infestations can be significantly reduced. On the occasions that greenbrier represents a significant portion of the fuel load, the oils in greenbrier will fuel a very hot, short-lived fire. If the greenbrier is in the understory of normally fire-tolerant tree species, the incidence of top-kill in these species may be increased due to the extreme heat generated by the burning greenbrier. Prior to initiating a prescribed burning program, obtain all necessary training and become familiar with laws pertaining to prescribed burning in a specific locality.

**Biological control**
Intensive stocking with browsing species, such as goats, can reduce greenbrier density as well as open up areas to sunlight and allow desirable grasses to become established. Goats demonstrate a high preference for greenbrier. They will aggressively consume the leaves and young, tender stems. Depending on stocking rate, goats may be able to provide significant control of greenbrier within three years. Considerations for using goats for greenbrier management include proper installation and maintenance of goat fencing, predator control, parasite management, shelter and adequate handling facilities.

**Summary**
Greenbrier is a native vine that is a normal part of many landscapes. It can be a positive or a negative component, depending on the goals for the property. Each property manager must decide if, or how, greenbrier can fit into those goals. If it is determined that control is necessary, careful planning is required before initiating a management program. When using pesticides, always read and follow label directions. No discrimination is intended and no endorsement is implied for any specific products. References to specific products or trade names are for educational purposes only.

**References:**
Cadenhead III, J.F. 2009. How to Take the Green Out of Greenbrier, L-5456. Texas AgriLife Extension Service Brush Busters program and has worked very well on a number of other smooth-barked species. This method may be impractical where greenbrier is present in large quantities.


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