

Huisache Ecology and Management

Megan K. Clayton, Robert K. Lyons, and Joshua A. McGinty*

Huisache (pronounced WE-satch) is a tough, invasive tree that is native to Texas rangelands. It grows well on deep, poorly drained soils and can quickly dominate a landscape where the soil has been disturbed.

Because huisache easily crowds out other plants, it creates problems for landowners who want to produce forage for livestock or maintain a variety of plants for wildlife. To reduce huisache on your property most effectively at the least cost, follow these steps:

- Understand the characteristics of huisache that enable it to easily take over a pasture or rangeland.
- Use the control method that fits your purpose for the property and the amount and size of huisache on it.
- Avoid practices that encourage huisache to dominate a site.
- Check the land often and treat invading huisache plants when they are most vulnerable.

Identifying huisache

Huisache (*Acacia farnesiana* (L.) Willd.) is shaped like a cone and has sprawling branches (Fig. 1). It varies from a small, multi-stemmed shrub to a 30-foot-tall tree with stems up to 15 feet long. Although huisache is a deciduous tree, it usually loses its leaves only after a hard frost.

The leaves are twice compounded, being divided twice (Fig. 2). They provide poor grazing for wildlife and livestock and contain chemical compounds that may deter browsing by wildlife or livestock. Huisache

is also called sweet acacia because of its fragrant flowers, which bloom in February and March (Fig. 3).

Huisache also bears thorns that are straight and paired (Fig. 4). When the top of the plant is removed, the thorns on the regrowth stems may grow larger than those of seedlings or single-stemmed plants. The thorns provide protection for the wildlife that use the tree for nesting and to hide from predators.



Figure 1. Huisache tree.



Figure 2. Huisache leaf.

* Assistant Professor and Extension Range Specialist, Professor and Extension Range Specialist, and Graduate Assistant, Soil and Crop Sciences Department; The Texas A&M University System

The bean pods are green at first, turning dark brown or black at maturity (Fig. 5). They are about 1/8 inch wide and 1 1/2 to 3 inches long. Wildlife and livestock eat the beans and spread the seeds via their feces.

Huisache ranges from South America to Texas, and Arizona to Florida. In Texas, it has spread over 2.7 million acres of rangeland, primarily in the Gulf Coast Prairies and South Texas Plains ecoregions.

Huisache can easily be confused with its close relative, twisted acacia, or huisachillo, especially in southwestern Texas, where they both thrive. To tell the difference, check:

- ♦ **The tree's overall shape:** Twisted acacia is more rounded; huisache limbs tend to sprawl out.
- ♦ **The bean pods:** On huisache, the bean pods are short and stout; those of twisted acacia are long and narrow.
- ♦ **The gland near the bottom pair of leaflets on the leaf stem:** If the huisache tree has this gland, it will be slightly below the bottom pair of leaflets. On twisted acacia, the gland is between the leaflets (Fig. 6).



Figure 3. Huisache flowers in bloom.

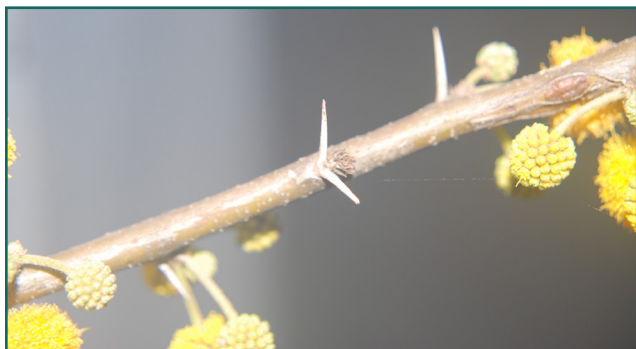


Figure 4. Paired thorns on a huisache stem.



Figure 5. Huisache bean pod.

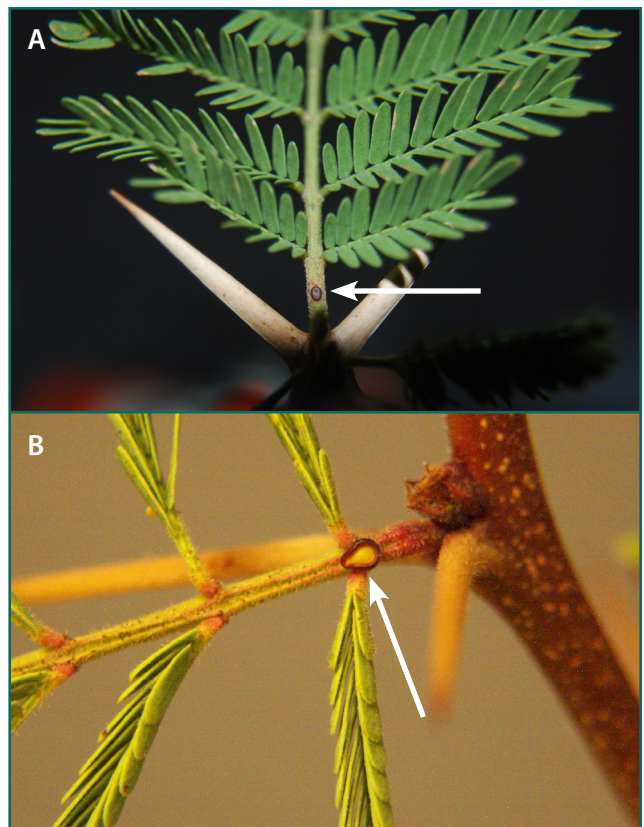


Figure 6. (a) Huisache petiolar gland below the bottom pair of leaflets and (b) twisted acacia petiolar gland between the bottom pair of leaflets.

Characteristics

Huisache thrives on acid sands, sandy loams, and clays. It has spread across Texas because of overgrazing by livestock, the spread of seeds by livestock and wildlife, and the reduction of fires previously caused by lightning or set by humans.

Like other legumes, huisache can fix, or convert, nitrogen through nodules on its roots. This characteristic gives it an advantage over plants that cannot fix nitrogen, enabling it to thrive on disturbed and degraded soils that have little nitrogen.

Over time, many types of legumes benefit other plants by adding nitrogen to the soil when the plant parts are eaten and defecated. However, huisache often grows so fast that it shades the ground before it contributes enough nitrogen to enable other plants to establish. Although fallen leaves can later supply soil nitrogen, they contribute less than half the nitrogen that mesquite (*Prosopis* spp.) leaves add.

A study in 1989 found that bermudagrass (*Cynodon dactylon*) grew better in pastures that had some huisache than in pastures with bermudagrass only. A possible reason was the tree's ability to fix nitrogen, which bermudagrass needs for growth.

Areas that have been disturbed greatly, such as plowed fields, are prime sites for huisache germination. In optimum conditions, 70 percent of huisache seeds germinate, usually within 24 hours.

Huisache seeds must be scarified in order to germinate. This typically happens through natural weathering or as the seeds pass through an animal's digestive tract whole.

More seedlings will emerge on sites that are sunny and mowed often. Huisache seeds need significant amounts of moisture to germinate and do best when temperatures are in the high 80s.

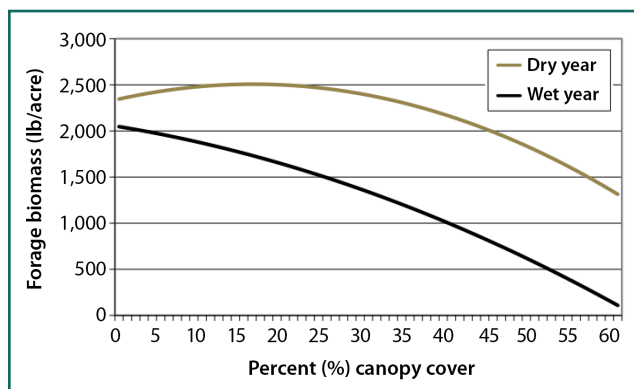


Figure 7. Relationship between forage biomass in pounds per acre and the percent of huisache canopy cover in dry versus wet years (adapted from Scifres et al. 1982).

The seedlings' fast growth enables them to quickly shade out other species, displacing plants and other brush species that deer, quail, and other wildlife rely on for food. The production of warm- and cool-season grasses drops if more than 30 percent of a site is covered by huisache trees. This problem worsens in wet years when the trees grow faster (Fig. 7). Huisache may promote the growth of cool-season grasses over warm-season grasses even if it covers less than 30 percent of a site.

Another problem is that huisache can quickly sprout back up after the portion of the plant above the soil surface is killed or removed. It resprouts from many buds on the stems and in the bud zone underground (Fig. 8).

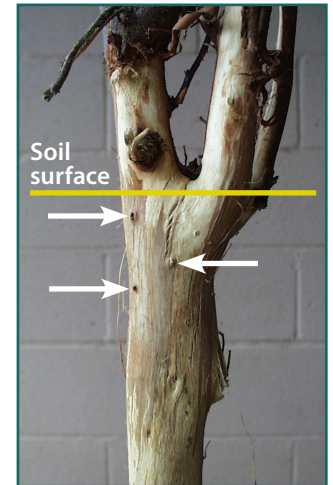


Figure 8. Huisache bud zone on the stem underground. The arrows point to the buds.

Prevention

To keep huisache from invading a pasture, maintain healthy stands of grass. Because huisache grows best on sites where the soil is exposed or has been disturbed, manage grazing to promote grass cover, which will also help rain filter into the ground and stabilize the soil.

Huisache management

Choose the treatment method that is best for the number and size of huisache on your property:

- For areas with more than 400 plants per acre, broadcast treatments take less time and money per tree.
- For areas with fewer than 400 plants per acre and for plants that are less than 6 feet tall, the best control method is individual plant treatment (IPT).

Both chemical and mechanical control methods have broadcast and IPT options. For instance, broadcast methods include mowing, plowing, or spraying herbicide from an airplane, helicopter, or tractor. IPT

To estimate the number of huisache per acre:

1. Mark off a representative area 66 feet by 66 feet.
2. Count all the huisache in this square.
3. Multiply this number by 10 to get the number of plants per acre.
4. Repeat the process on two more squares.
5. Average the results.

methods include grubbing, the cut-stump method, or spraying herbicide on plant leaves or stems using backpack/hand sprayers or ATVs or other vehicles.

See *Chemical Weed and Brush Control Suggestions for Rangelands* for herbicide control methods or pestman.tamu.edu for mechanical and chemical control options.

Herbicide control considerations

The goal when applying herbicide to control huisache is to ultimately have the chemical reach the bud zone, killing the plant. This can be accomplished by three methods, all of which have been tested for maximum effectiveness and personal and environmental safety:

- Leaf spray method
- Stem spray method
- Cut-stump method

Leaf spray method

The leaf spray method takes advantage of the plant's natural process of storing carbohydrates in the roots. If you cover the leaves with herbicide, the plant will move it to the bud zone, where it will kill the tree.

Timing is critical for this method. Spray in the fall when the leaves are mature and the plant is transporting carbohydrates from the leaves to the roots. Leaf sprays are less effective while the tree is growing new (light green) leaves. At that time, the tree is using the carbohydrates for the new growth, not moving them to the roots.

Huisache trees need enough leaf area to take the chemical down to the root. For the leaf spray method to work best on regrowth huisache, the plant should be at least 3 feet tall and have healthy leaves.

Also, the herbicide will be more effective if you spray when the soil is moist or rain has fallen recently (Fig. 9).

To use the leaf spray method:

1. Mix the chemical in water (for instructions, see *Chemical Weed and Brush Control Suggestions for Rangelands*). Always add a non-ionic surfactant, crop oil, or methylated seed oil at a 0.25 to 0.5 percent rate (32 to 64 ounces per 100 gallons of water).
2. For IPT treatments, add 0.25 to 0.5 percent blue dye; spray it on the leaves using a backpack or garden pump-up sprayer or a UTV or tractor with a spray wand fitted with a 5500-X8 adjustable cone nozzle.

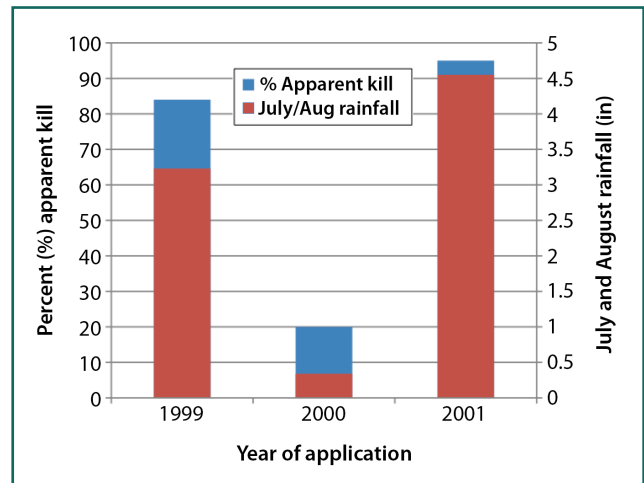


Figure 9. Huisache control results from Kinney County, TX, using the individual plant treatment leaf-spray method compared to the amount of rainfall in July and August 1999–2001. Applications were made in September each year using Grazon P+D®, the current chemical standard.

3. Cover all the leaves on the plant until they are wet but not dripping. The herbicide must remain on the leaves for 1 full hour to reach maximum rain fastness.
4. With current chemistries, the tree must be left intact for at least one growing season before removing the top growth to allow the chemical to reach the entire bud zone.

Stem spray method

The stem spray method works best on stems that are less than 4 inches in diameter. These stems have smooth bark, which absorbs the chemical more easily.

Do not use this method on plants with more than three stems. Those trees will need more mixture, which increases the cost. Also, the herbicide is less likely to move uniformly into the bud zone, and the tree will be able to resprout.

Although you can use the stem spray method any time of year, it works best during the growing season.

To use the stem spray method:

1. Mix 25 percent triclopyr ester and 75 percent diesel fuel oil.
2. Use a backpack or garden pump-up sprayer with a wand. A 5500-X1 adjustable cone nozzle will apply the mixture to the stem effectively and efficiently.
3. Cover each stem all the way around the trunk from 12 to 15 inches high all the way to the soil surface. You will not need to add so much mixture that it pools up at the base of the trunk.

4. Leave the tree intact for at least one growing season before removing the top growth to allow the chemical to reach the entire bud zone.

For more information on the stem or leaf spray method, see *Brush Busters: How to Control Huisache* and *Chemical Weed and Brush Control Suggestions for Rangelands*. These publications are available at the Texas A&M AgriLife Extension Service Bookstore at www.agrilifebookstore.org.

Cut-stump method

Although the cut-stump method works well for trees of any stem size, it requires less labor and works best on trees that have three stems or less. The cut-stump method is almost 100 percent effective if done correctly:

1. Make a flat cut directly through the trunk as low to the ground as possible without getting soil on the cut surface. Use pruning shears, a chain saw, a brush cutter/saw, or a skid-steer with a wheel saw or a shear attachment.
2. Remove all dirt and debris from the cut surface to allow the chemical to absorb.
3. Mix 15 percent triclopyr ester and 85 percent diesel fuel oil.
4. Add 0.25 to 0.5 percent blue dye to help you ensure that the stump is sprayed completely.
5. Spray the mixture on the entire cut surface and the remaining part of the stem(s) immediately after cutting.

For more information on this method, see *How to Avoid Lumps When Treating Cut Stumps*, available from the Texas A&M AgriLife Extension Service Bookstore.

Mechanical control considerations

Many tools have been used throughout the years to try to control huisache. Most have undesirable side effects.

An efficient individual plant treatment method for removing huisache trees is grubbing (Fig. 10). This method removes the plant below the first lateral root, which will be 5 to 20 inches underground, depending on the age of the tree.

Two common practices that worsen huisache problems are mowing and root plowing. Land managers commonly mow huisache with shredders or roller-choppers. But the huisache quickly regrows many stems from a single plant. This practice may also encourage more seedlings because more sunlight will reach bare ground. With enough rain, the



Figure 10. Root grabbers.

huisache can regrow to half its previous height within 5 months of top removal.

If you remove the top repeatedly—either by mowing or by other failed attempts at control—you will end up with many huisache that are small above ground but have huge root systems. Top removal encourages huisache dominance on the site. A study of huisache sprouts in South Texas in 1972 found that huisache remained the dominant shrub for at least 3 years after mowing before any other species became established.

Root plowing also disturbs the soil, making it more favorable for huisache growth. A study on Texas brushland found that root plowing was one of the main causes of the spread of huisache on Blackland Prairie. Huisache can dominate previously plowed fields for decades.

Prescribed fire

Prescribed fire reduces the top growth of huisache. Unless the tree is very young, the fire probably will not heat up enough to reach the bud zone underground to kill the tree. The tree will quickly regrow from the root with multiple stems. If enough rain falls, the huisache can grow to its pre-burn height within two growing seasons.

If only a few huisache are growing in a field that primarily has nonwoody plants, it could be beneficial to burn the field and follow up by applying herbicide on the huisache regrowth. Wait to apply herbicide until the resprouts are at least 3 feet tall, when they have established enough leaf area to absorb the herbicide.

For information on prescribed fire, see *Planning a Prescribed Burn* and *Prescribed Range Burning in Texas*, available from the Texas A&M AgriLife Bookstore at <http://www.agrilifebookstore.org/>.

General management considerations

- Leaving a few huisache on your property can provide limited benefit to wildlife as long as you manage the property to maintain a diversity of plants. The amount of huisache should reflect your long-term management goals. In general, keep huisache canopy coverage to less than 30 percent of the property to allow the growth of nonwoody plants (forbs and grasses) for wildlife and livestock.
- Younger huisache plants are easier to control.
- Management techniques that only kill or remove the aboveground part of the plant—such as mowing, prescribed fire, shredding, or roller chopping—will create a multistem plant and leave a growth form that is more difficult to control.
- To discourage huisache seedlings from becoming established, manage livestock grazing to leave enough grass stubble for maximum soil coverage.
- No matter which method you choose for controlling huisache, you'll need to make follow-up treatments.

For more information

Publications

Bottom Line Chemistry of Acacias from South Texas. Texas A&M AgriLife Research and Extension Center, Uvalde, Texas. By T. D. A. Forbes and B. A. Clement. 1998.

Brush Busters: How to Control Huisache. EL-5348. Texas A&M AgriLife Extension Service. By Robert K. Lyons and C. Wayne Hanselka. 2012.

Brush Busters Mixing Guide. EL-5446. Texas A&M AgriLife Extension Service. By Robert K. Lyons, Charles R. Hart, and Allan McGinty. 2012.

Brush Management Methods. E-44. Texas A&M AgriLife Extension Service. By Tommy G. Welch. 2000.

Chemical Weed and Brush Control Recommendations for Texas Rangelands. EB-1466. Texas A&M AgriLife Extension Service. By Wayne T. Hamilton, Robert K. Lyons, Charles R. Hart, Barron S. Rector, Jim Ansley, Larry Redmon, and Kent Ferguson. 2012.

“Competitive Interactions between *Cynodon dactylon* and *Acacia smallii* Seedlings at Different Nutrient Levels.” *American Midland Naturalist*. By E. J. Cohn, O. W. Van Auken, and J. K. Bush. 1989.

Ecology and Management of Huisache on the Texas Coastal Prairie. Texas Agricultural Experiment Station. By C. J. Scifres, J. L. Mutz, and D. L. Drawe. 1982.

“Growth Rate of Sprouts after Top Removal of Huisache (*Acacia farnesiana* (L.) Willd.) (*Leguminosae*) in South Texas.” *The Southwestern Naturalist*. By J. Powell, T. W. Box, and C. V. Baker. 1972.

How to Avoid Lumps When Treating Cut Stumps. EL-5421. Texas A&M AgriLife Extension Service. By D. Ueckert and A. McGinty.

Planning a Prescribed Burn. E-460. Texas A&M AgriLife Extension Service. By C. Wayne Hanselka. 2009.

Prescribed Range Burning in Texas. E-37. Texas A&M AgriLife Extension Service. By Larry D. White and C. Wayne Hanselka. 2000.

“Salient Aspects of Huisache Seed Germination,” *The Southwestern Naturalist*. By C. J. Scifres. 1974.

Texas Plants: A Checklist and Ecological Summary. Texas Agricultural Experiment Station. By F. W. Gould. 1969.

Videos

Brush Busters 2009: Huisache Basal Treatment. Texas A&M AgriLife Extension Service. By Wayne Hanselka. 2009. <http://www.youtube.com/watch?v=6H6ICZa3XW8>

Brush Busters 2009: Huisache Foliar Treatment. Texas A&M AgriLife Extension Service. By Wayne Hanselka. 2009. <http://www.youtube.com/watch?v=f47UFof3iI>

Brush Busters 2009: Backpack Spray Systems. Texas A&M AgriLife Extension Service. By Allan McGinty. 2009. <http://www.youtube.com/watch?v=LFVb-2j8CbXU&feature=c4-overview-vl&list=PL8B03F-1467DA81057>

Webinars

Brush Control Equipment. Texas A&M AgriLife Extension Service. By Robert Lyons. 2013.

Common Herbicide Use Mistakes. Texas A&M AgriLife Extension Service. By Will Hatler. 2011.

Integrating Fire and Herbicides. Texas A&M AgriLife Extension Service. By Jim Ansley. 2012.

Texas A&M AgriLife Extension Service

AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, sex, religion, national origin, age, disability, genetic information, or veteran status.

The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.