Managing Prickly Pear Cactus

Is prickly pear cactus native to the Texas Hill Country?

There are several species of cactus commonly called prickly pear or "pear" that are native to the Hill Country. These guidelines can be applied to all types of prickly pear cactus, including tasajillo or "turkey pear", which is closely related, but instead of broad flat pads, has slender, brittle "pencil cactus" leaves and stems.

Do prickly pear and tasajillo contribute anything beneficial to the landscape?

The fruit, young pads, roots, and flowers all provide food for wildlife, including deer, coyotes, javelina, and rabbits, as well as livestock. The Rio Grande turkey and many other birds enjoy the fruit, and pollinators, including hummingbirds, are attracted to the flowers. A number of insects also feed upon the plant, and are in turn eaten by other birds and animals. It has been observed that turkeys and quail often utilize big clumps of prickly pear as places to hide their nest. In hard-used rangeland, cactus clumps often protect remnant grasses growing among the pads from being completely grazed out. In this way, a small seed bank is preserved to provide a source for natural recovery when conditions improve. Large colonies of cactus left to grow along waterways can help slow down run off and reduce erosion, although perennial native grasses are preferred and do a superior job.

Why is prickly pear considered a problem in some locations?

Prickly pear and tasajillo, like certain other native plants, such as honey mesquite, white brush, Ashe juniper ("cedar"), and catclaw, have the capacity to aggressively colonize fields and pastures, especially disturbed or degraded sites that are the result of over-grazing, drought and wildfire.

Prickly pear has many ways to self-propagate. Its fruit (called a "tuna") is loaded with seeds that readily germinate after being consumed by animals and birds. A dropped pad, or even part of a pad, can easily form roots on the surface and form new colonies. Hogs, deer, livestock, and equipment are the primary distributors of both seeds and pads. Without a management plan to periodically thin or reduce areas covered with prickly pear, some fields may quickly become covered with dense stands of cactus. Re-encroachment of the cactus will gradually restrict the movement of livestock and wildlife, as well as reducing the area available for grasses and forbs to grow.

What is the best way to go about getting rid of cactus?

Successful reducing or thinning dense stands of cactus will depend on several factors:

1. The investment of time to plan a thoughtful, strategic approach that matches the specific conditions of the property.
2. Removal or reduction of factors that contribute to the spread of cactus, such as over-grazing or year-round feeders that boost the hog, deer, and raccoon population.

3. The proper tools, time, energy, and resources the landowner can employ to address the problem.
4. The capacity and commitment of the landowner to follow the initial thinning effort with an on-going management plan.

What are some of the tools and methods used to control the spread of prickly pear?

Mechanical Removal

Keep in mind that no matter what the method, both the crown (or "base trunk") of the plant growing a few inches below the soil surface will have to be removed to prevent re-growth. It's important to have a "ground crew" on hand to collect any dropped pads or pieces of pads. Try to avoid excavating too much soil when digging. Gathering the removed cactus into numerous smaller piles rather than fewer large, heavy mounds mixed with dirt will make them easier to burn and or dispose of once dried. Building a "brush platform" such as a stack of cedar as a base helps air circulate under the pile, and can hasten drying. Finally, burn pile sites as well as bare spots where cactus has been removed can offer opportunities to introduce native grass seed to improve the rangeland.

Tactics for Mechanical Removal

1. In situations of small infestations, using a pick, grubbing hoe or garden fork to lift the plant is a straightforward way to begin. You will want to dig 2-4" below the plant to make sure you have removed most of the crown and roots. This is the most labor-intensive method, but it also results in the least disturbance to the site. Shake as much dirt as you can off of the cactus before placing in the piles as described above.
2. Heavy, wall-to-wall cactus fields that limit access will first have to have a "road" cut in by a tractor, skid-steer, or bulldozer. However, heavy equipment can sometimes exacerbate the problem if too much soil is removed, or if there is no ground crew following the machine to retrieve dropped pads, and to place the material in a pile. Crushed or macerated cactus that is still rooted will have to be sprayed, or lifted out later to limit re-sprouting.
3. Relatively small, nimble tractors fitted with rock rakes that have narrow tines are very efficient ways to remove cactus without creating big dirt piles.

Front-mounted rock rake, manufactured by MDS. Tines are close together for lifting big clumps while still allowing the dirt to sift through. This makes it easier to haul cactus to piles.

Rear-mounted rake is less expensive option, but does not have the capacity to lift and haul the cactus, but rather rakes it into piles with less dirt accumulation than a front end loader bucket.

4. Some tractors can be outfitted with “fork” attachments clamped onto the bucket that can lift heavy clumps of cactus. The effectiveness of these devices is dependent on the skill of the operator. Like a skid-steer or tractor bucket, even these types of rakes can result in too much soil being gathered with the cactus, which then makes them hard to burn or dispose of.

5. Some landowners have had success reducing dense stands of cactus by repeatedly mowing the field using a roller/chopper or heavy duty shredder and putting stress on the plant through regular maceration, especially during hot weather. Keep in mind that a single pass will not do the job, as the mowed plants will still have intact roots and "trunk" or root crown, and thus will re-sprout. Some landowners have had success using the one-two punch of first shredding then spraying with herbicide.

Chemical Treatment

Until the last few years, most herbicides approved for use on prickly pear contained the active ingredient picloram, and required an applicator's license to purchase them. These products include the trade names Surmount, Tordon22K, and Grazon P+D. Studies showed that after 2 years, cactus treated with Surmount and Tordon 22k, between 70 and 80% of the plants had died. Tordon 22K usually takes about three years for full control.

The downside of using these products is that picloram remains active in the soil for a long period (2 years or more), which means that in certain conditions such as after a heavy rainfall, they can travel through the soil and potentially harm non-target plants such as nearby trees. Picloram is especially hard on hackberry, wolfberry and sumac. As a broad-leaf herbicide, they also kill surrounding forbs, and they leave a residual "dead zone" that can last several years. Forbs and wildflowers are important browse plants for wildlife, and some landowners may not want to negatively impact the availability of forage on their property. (Note: these herbicides do not affect grasses, only broad-leaf plants, so if the landowner's objectives include improving pastures or sowing grasses for livestock grazing, the extended impact on forbs is not a primary concern.)

Recently, several new products have been labeled for use with prickly pear that do not require an applicator's license, and that do not include picloram. Instead, their active ingredients include fluroxypyr, which does not have residual soil activity. This allows for a quicker recovery of forbs and grasses, and poses less risk to non-target species. Studies have shown that these products are just as effective in killing cactus as those containing picloram, and that the cactus dies completely in a much shorter period of time (6 months to a year). Trade names for these products include Vista and PastureGuardHL. Generic formulations of these products are also available. These are applied in a .5% or1% solution with water and a surfactant such as methylated seed oil or diesel. See chart below for application rates.
When using these and all chemicals, it's important to follow all safety and application guidelines provided by the manufacturer. We recommend also that the landowner search the online Texas Agri-Life bookstore (www.agrilifebookstore.org) for the publication ERM-1466 "Chemical Weed and Brush Control: Suggestions for Rangeland". This publication is regularly revised to include updated information.

Other common sense guidelines for spraying include:

1. Spray in the morning when wind is calm. Avoid spraying when temperatures are 90 degrees or more if spraying near desirable trees. Some of these chemicals can volatize at high temperatures, potentially drifting onto non-target species.
2. Prickly pear can be treated any time of year, but best results are often seen in late summer and fall.
3. Avoid spraying near or beneath trees and other high value hardwoods when conditions for drift and volatization are present.
4. Spray the pads until you see a glistening sheen – the chemical does not have to overly drench or heavily drip on the plant to be effective. Careful mixing of the chemical with the adjuvant or surfactant and the properly adjusted spray stream are key to using the right amount of herbicide, and reduces expensive waste or risk of over-spraying.
5. Allow plenty of time for the plant to completely absorb the chemical and die. Repeat spraying should not be necessary.

For some dense large-scale pricklypear infestations on hundreds or thousands of acres, ground application is not feasible. Broadcast application by helicopter or fixed wing aircraft is the only practical way to get control. Helicopter application allows a more precise spray job and the ability to avoid high value trees and shrubs but it is more expensive. Fixed wing application will result in more damage to desirable plants but spraying can be done in strips to minimize large- scale damage to non target vegetation.

TABLE 4. Guide to Quantity of Herbicide Formulation for Total Volume of Spray Mix
ERM 1466

Total Spray Volume Desired	Herbcide concentration desired for individual plant and spot treatment											
	0.25 %	0.5 %	0.75 %	1 %	1.5 %	2 %	3 %	4 %	5 %	10 %	15 %	25 %
	Quantity of herbicide formulation											
1 gal	0.33 oz	0.67 oz	1 oz	1.33 oz	2 oz	2.67 oz	4 oz	5.25 oz	6.5 oz	13 oz	19 oz	1 qt
3 gal	1 oz	2 oz	3 oz	4 oz	6 oz	8 oz	12 oz	15.5 oz	19 oz	38 oz	57 oz	96 oz
5 gal	1.67 oz	3.33 oz	5 oz	6.5 oz	10 oz	13 oz	19 oz	26 oz	32 oz	64 oz	96 oz	1.25 gal
10 gal	3.33 oz	6.5 oz	10 oz	13 oz	19 oz	26 oz	38 oz	51 oz	2 qt	1 gal	1.5 gal	2.5 gal
25 gal	8 oz	16 oz	24 oz	32 oz	48 oz	64 oz	96 oz	1 gal	1.25 gal	2.5 gal	3.75 gal	6.25 gal
50 gal	16 oz	32 oz	48 oz	64 oz	96 oz	1 gal	1.5 gal	2 gal	2.5 gal	5 gal	7.5 gal	12.5 gal
100 gal	32 oz	64 oz	96 oz	1 gal	1.5 gal	2 gal	3 gal	4 gal	5 gal	10 gal	15 gal	25 gal

Fire

Fire can be a good tool for suppressing or knocking back stands of prickly pear, especially the "running" or prostrate forms of cactus. However, unless the fire is unusually hot, as in a wildfire, the roots and crown will not be permanently affected, and the plant will eventually re-grow. Repeated use of prescribed burning will slowly thin out pricklypear after several successive burns. Fire can also be used in combination with herbicides for effective long-term control.

Summary

Prickly pear and tasajillo are important components of the native landscape of the Texas Hill Country. They provide food and shelter resources for many forms of wildlife. Their robust capacity to self-propagate, especially in bare, over-grazed sites often results in a property dominated by cactus that crowds out other plants and limits plant diversity. Fields covered in prickly pear are less desirable for aesthetic enjoyment, hunting or livestock ranching. The spread of prickly pear is further exacerbated by burgeoning populations of hogs, deer and raccoons spurred on by the use of year-round corn feeders. Also remember that livestock readily consume the ripe fruit and disseminate the seed as well as the pads. To successfully reduce the cover of prickly pear, a landowner should look at the whole picture of land use practices, including feeders, inadequate grazing management, and lack of competition such as native perennial bunch grasses and other plants. Finally, no program of cactus eradication is complete without a plan for on going management. As Steve Nelle says, "It's a process, not a project".