BRUSH MANAGEMENT GUIDELINES AND CONSIDERATIONS
Livestock – Wildlife – Water – Aesthetics

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Experienced ranchers know the long-term implications of brush control especially in terms of economics, livestock production and wildlife habitat. Additionally, brush control can affect future land value, aesthetics and water resources. The amount of brush control done and the way in which it is done will determine to what extent these things are affected positively or negatively. With this much at stake, careful planning and full consideration of the impacts, cost and benefits is important.

Although many agencies and organizations offer generic brush control recommendations, there are no reliable all-purpose recipes for how to do brush control. Each ranch is different and each landowner has different land management goals; therefore, brush control decisions must be customized and site specific. To help guide your brush control plans, rank the following factors and priorities for your ranch as high, medium or low. The “right way” and the “wrong way” to do brush control will be determined by how you prioritize these six factors.

1. Improvement in livestock grazing
2. Maintaining or improving deer habitat
3. Maintaining or improving quail habitat and quail hunting
4. Achieving a balance between livestock grazing, deer habitat and quail habitat
5. Maintaining aesthetic appeal and future land values
6. Enhancing water yields

For those factors which are a high priority for your ranch, find the corresponding section below to find out how brush control can be conducted to be most beneficial for your goals. These guidelines were developed based on 38 years of field experience and with the support and assistance of numerous well-respected range and wildlife professionals across Texas. The guidelines are not meant to replace on-site consultation from experienced professionals. The information is meant to provide a general framework to begin planning brush control to achieve specific objectives.

IMPROVEMENT IN LIVESTOCK GRAZING

If improvements in livestock grazing are the highest priority and if wildlife considerations are not important, 90 percent or more of the brush can be removed on flat or rolling topography. However, since brush provides protection and browse for livestock, it is usually advisable to leave some tree and shrub cover. Wooded groves and clusters of shade trees should be left, as well as brushy windbreak areas for winter protection. Trees and shrubs should be left in draws and creek bottoms and on steep sites. A reduction in deer habitat will occur at this level of clearing; however, quail habitat and aesthetic value can be maintained if clumps or stringers of low mixed brush and scattered trees are left within cleared areas. Land value and wildlife habitat will suffer if large scale aerial spraying is used; however, herbicides are often the most economical method, especially for mesquite.

The residual brush that is killed during mechanical operations may leave the pasture rough and cluttered. If gathering and working of livestock by horseback or four-wheelers is important,

This manner of brush control is conducive for livestock grazing objectives but is detrimental to deer habitat.
dead brush may be raked and piled to give a cleaner appearance. However, this is very expensive, and the restoration of native grasses is enhanced when woody slash remains scattered. If extensive re-seeding is to be done, these cleanup operations are needed to allow adequate seedbed preparation and seeding.

**IMPROVEMENT IN DEER HABITAT**

If deer are the most important consideration and if livestock grazing is not a priority, it may be advisable not to do any brush control at all, depending on brush density. Deer usually thrive very well when brush cover is moderate to dense. However, if brush is excessively thick over large areas and if hunting visibility is poor, some patterned brush control can improve habitat. Removing 25 percent to 40 percent of the thick brush in upland areas while leaving heavy brush along draws and creeks will usually improve deer habitat. If topography is rough, if pastures are large, or if hunting pressure is light, a somewhat higher percentage of brush control may be appropriate. If nearby hunting pressure is heavy, or if pastures are small, more brush should be retained.

For deer habitat, the key is to ensure that openings are small or narrow and that deer are always within about 50 yards of protective cover. In rolling and rough terrain, leave a band of cover on ridges, saddles, hilltops, headers, canyons and draws, and clear numerous small openings between these features. In flatter terrain, clearings can be straight or contoured strips 50 to 100 yards wide with adjacent brush strips about twice the width of the cleared strip. Brush control may also be conducted with a series of irregular shaped clearings five to 10 acres in size surrounded by brush.

Selective mechanical methods are recommended, such as excavating, grubbing or shearing. Aerial spraying will often harm desirable forbs and shrubs. All desirable shrubs and trees such as bumelia, hackberry, oak, sumac, granjeno, coma, brasil, colima, guayacan, etc. should be left within the clearings as well as a few large mesquite or cedar. Setting aside undisturbed “buck sanctuaries” with large areas of thick brush is recommended if production of mature quality bucks is the goal.
The proper amount of brush control is determined by the objectives of the landowner. Here, the landowner in west central Texas wishes to manage the ranch for a combination of livestock, deer and quail and has removed about half of the brush in patterns.

IMPROVEMENT IN QUAIL HABITAT
If improvement in quail habitat and quail hunting are the highest priority, open up 70 to 80 percent of the upland areas, yet be careful to leave plenty of low mixed brush clusters for loafing cover or “quail houses.” Leave low brush such as algerita, lotebush, braisal, granjeno, plum, sumac, prickleash, wolfberry, catclaw and scattered large mesquite within cleared areas. Mechanical brush control is preferred since the soil disturbance will stimulate the production of desirable quail food plants such as creton, spurge, pricklypoppy, buffalograss and others. A reduction of deer habitat and the ability to retain mature bucks will occur at this rate of clearing; however, grass production and grazing capacity will increase. Since quail require an abundance of large, lightly grazed bunch grasses for nest cover, livestock grazing will need to be managed accordingly.

Quail can thrive equally well in many different densities of brush including moderately thick brush, but hunting is more difficult in thick brush. In many cases brush control is more for the enhancement of quail hunting rather than the improvement of quail habitat.

DEER-QUAIL-LIVESTOCK COMBINATION
If a ranch is interested in managing for a combination of deer, quail and livestock, a compromise will be required. With multiple and competing objectives, each will suffer some reduction relative to its maximum potential. For this triple objective, open up about 40 percent to 60 percent of the uplands but leave thicker brush in draws, bottoms, ridges and saddles. Clearings can be strips or blocks no more than about 100 to 200 yards wide. A reduction in the deer population should be expected and a decreased potential to retain mature bucks, especially if neighboring ranches have more cover. Quail habitat and hunt-ability will be enhanced in proportion to the amount cleared as long as low mixed brush coverts and shade trees are left within the clearings. Aerial spraying will favor grass production over wildlife habitat, while mechanical methods will favor wildlife.

Livestock gathering will be easier if a series of strips are planned which can help funnel livestock to fence lines, traps and pens. Clearing of narrow strips on both sides of interior fences is often recommended to aid in livestock management. Leaving a buffer of brush adjacent to outside perimeter fences is often recommended as a visual barrier.

An alternative to traditional brush control, is to thin the existing brush canopy by selectively removing a given percentage of trees and shrubs to attain the desired canopy density. This can be accomplished by selective mechanical or chemical IPT methods (Individual Plant Treatment).

Aesthetic Appeal and Future Land Value
Brush control can be done in a natural and visually appealing manner to enhance aesthetic value. To a large extent, aesthetic beauty is in the eye of the beholder. Land value is closely tied to aesthetic appeal as defined by the prospective buyer. In recent years, the value of ranch land is being driven more by wildlife habitat than livestock grazing value. Most land buyers are interested in quail and/or deer habitat and are willing to pay more for moderately to heavily wooded property.

Aesthetic appeal can be maintained if brush is removed in a more natural and irregular mosaic pattern. For greater aesthetic value, avoid straight line clearing and leave plenty of scattered trees and shrub clumps within cleared areas. “Feathering”
the edges of clearings to mimic natural soft openings will also add to aesthetic appeal.

After a plan of brush control has been established, be certain to communicate very clearly ahead of time with contractors and equipment operators regarding your specific wishes. Check the progress and status of any brush control projects on a daily basis to ensure your intentions are being carried out. Many horror stories can be told of brush control projects gone awry when contractors did not understand or comply with the wishes of the landowner.

**ENHANCING WATER RESOURCES**

There has been a great deal of recent attention directed to brush control and water. A good deal of myth and misunderstanding still persists on this topic despite new and compelling scientific research. There are two opposing approaches being promoted with the intent of increasing water supplies. The most traditional approach is to conduct brush control with the goal of improving the grass cover so that more water will soak in and eventually find its way into aquifers and/or the base flow of springs or creeks. Intuitively, this approach makes sense; however, in most cases that have been measured and studied, there has been little or no lasting increase in flow. The reasons for this lack of meaningful hydrologic response are complex, but suffice it to say that most brush control projects should not be expected to materially increase water supplies via increased rainfall infiltration and base flow. However, in some cases, in the right geologic settings, small localized seeps and springs have been revitalized following brush control. Where this occurs, it is beneficial to wildlife, livestock and land value.

The second approach to increased water yields from brush control is to generate increased storm runoff. Runoff is increased when there is an increased amount of bare ground. Unfortunately, this also results in accelerated erosion, flash flooding, sedimentation and land degradation. Runoff can be increased by a combination of aggressive brush control, especially on shallow or steep sites or with heavy grazing. When bare ground, sparse vegetation or short grasses are the predominant cover, there will be increased runoff during and after heavy rainfall events. The result is faster short-term runoff and the increased loss of water from the land. With some exceptions, this approach is not compatible with good overall land management, livestock production or wildlife management, and is the antithesis of responsible land stewardship.

During prolonged periods of very heavy rainfall, there will be large amounts of runoff, no matter what kind of ground cover there is. These are the times when lakes and reservoirs are refilled and when aquifers are recharged. If the ground cover in the water catchment is good, runoff will be more slow, gradual and prolonged; the quality of water entering the reservoir will be good, and erosion and sedimentation will be minimized. This is the approach preferred by conservation-minded landowners.

**OTHER CONSIDERATIONS**

In addition to these differing priorities and purposes for brush control, there are several other important considerations. The initial cost of brush control and the ongoing expense to maintain brush control are major concerns. In most cases, investments in brush control and follow-up maintenance cannot be recovered on an economic basis. Landowners usually conduct brush control in order to achieve desired ranch objectives, not necessarily to generate an economic return. Doing the least amount of brush control that will satisfy ranch objectives is a common sense way of reducing costs. Likewise, choosing less expensive methods that still provide adequate results is usually a smart business decision. For example, grubbing followed by raking and piling of dead brush and re-seeding with natives can provide impressive results, but can triple the cost of basic brush control.

The myriad of financial, agricultural and ecological considerations associated with brush control is daunting and requires skill, patience, forethought and wisdom. Brush control is never a stand-alone practice; it is just one piece of a complex puzzle with many other interlocking pieces. TWA member and ranch manager Rory Burroughs says it best: “Brush control is a process, not a project.”

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Brush clearing in straight lines detracts from aesthetic value and potential land value. Soft edges and contour clearing can be done in a way to retain visual appeal.

Hydrologic research in Texas has shown that the flow of creeks, rivers and springs is usually not affected by the presence of brush or by brush control.