BRUSH MANAGEMENT SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE

CONDITIONS WHERE THIS PRACTICE APPLIES

Brush Management **will be applied** only to sites:

1. With soils having the potential to produce the desired plant community
2. When brush invasion/infestation exceeds the treatment threshold. The control priority is considered high when the presence of woody species is significantly affecting wildlife habitat values and forage production or invasive or noxious species have become established and are significantly altering the character of the natural plant community and its ecological functions. Control priority is considered medium when invasive species have become established and are beginning to spread. Control priority is considered low when treatment to control brush is not needed to protect the health of the ecological site, desired plant community, or land use. However, treatment may be necessary to manipulate the cover and structure of woody vegetation in order to create the desired plant community, enhance aesthetic values, and reduce wildfire hazards.
3. That will receive appropriate grazing management and/or other maintenance measures needed to ensure success of the treatment
4. Where treatment will not adversely affect habitat for threatened or endangered species.

Brush Management **will not be applied** to sites:

1 Where removal of woody plants will result in sustained accelerate erosion
2 Where benefits are not commensurate with the cost and objectives of the landowner
3 Where removal of woody plants will adversely affect the long-term productivity or optimal uses of the land.
4 Where control of grazing/browsing animals is inadequate to prevent degradation of the plant community and other resources following treatment.
5 In areas where removal of woody stems and stumps may constitute a violation of the Food Security Act

TREATMENT METHODS Chemical: Assist landusers to make an herbicide selection based on its suitability to control the target species, impact on nontarget organisms, and the environment. Select only those materials recommended for use in the LSU Agricultural Center's *Suggested Chemical Weed Control Guide* for the current year. Any herbicide listed in this publication is acceptable. Verification of registered pesticides labeled for use in Louisiana may be obtained from the Environmental Programs Division of the Office of Agricultural and Environmental Science, Louisiana Department of Agriculture and Forestry.

Mechanical: For mechanical treatment methods, plans and specifications will include types of equipment and any modifications necessary to enable the equipment to adequately complete the job.

EQUIPMENT DESCRIPTIONS

1) **Rootplows**
   a. Description - A rootplow is a heavy-duty, V-shaped,, horizontal blade, 10 to 16 feet wide pulled by a large crawler tractor at a depth of 12 to 14 inches to sever tree roots. Tractor horsepower required to pull the integral mounted plows varies from 170 to 400. Fins are attached to the top of the blade to dislodge roots and stumps and move them near the soil surface.
   b. Application - The rootplow severs roots to prevent sprouting of most brush species, although it is not effective on those with shallow root systems. Plant mortality is usually 85 to 99%, but care must be taken to determine where and how it should be used. Chaining or raking following rootplowing helps to smooth the soil surface and remove sprouting species or stumps. Rootplows have been used to clear dense stands of hard-to kill species in preparation for seeding to grass.

2) **Rollerchopers**
   a. Description - Roller choppers are large drums with a series of longitudinally mounted blades. As the drums rotate they chop and crush brush debris, small trees, and slash. They also form small trenches or pits in the soil to capture rainfall, increase infiltration, and provide a seedbed. The drums are hollow and are usually filled with water to increase their weight and chopping action. Drum diameters vary from 24 to 60 inches. Choppers can be pulled in single, duplex, triplex, or tandem configurations. Width can vary between 5 to 16 feet and required horsepower for pulling varies from 60 to 350.
   b. Application - Roller choppers are popular for treating brush species that produce regrowth valuable for goats and wildlife. Choppers can cut brush up to 5 inches in diameter. The faster the choppers are pulled the more they bounce, increasing chopping effectiveness, but the vibration is detrimental to the equipment. Hitches often use springs to absorb the vibration.

3) **Offset Disks**
   a. Description - Disks used in brush control are the heavy-duty, offset type. They chop and turn surface debris and uproot shallow-rooted, sprouting brush species. Offset disks consist of two gangs of disks set at angles to each other. Each gang has a separate frame and axle assembly. On some models gang angles can be adjusted for varying soil conditions or desired disking action. Blade may be notched or straight-edged and vary from 24 to 36 inches in diameter. Disks range from 8 to 15 feet in width and require tractors with 70 to350 drawbar horsepower. These disks usually have rubber tires that are raised and lowered hydraulically for transport or depth control.
   b. Application - Disks with 36-inch blades are used for brush control on undisturbed soil while units with blade diameters less than 30 inches are used for seedbed preparation following rootplowing. In both situations, disks bury much of the surface debris and form a desirable seedbed. Farm-type disks are not suited for the rigors of debris-littered rangeland

4) **Brush Rakes**
   a. Description - Brush rakes are mounted on the front of crawler tractors or front-end loaders to pile or stack trees and shrubs prior to revegetation. Evenly spaced teeth across the front of the rake trap debris and prepare relatively soil-free piles. Multi-application rakes can penetrate into the soil to remove roots and stumps. These rakes

are about 12 feet wide. Stacker rakes slide on the soil surface for fast shearing and stacking. A shearing plate is often welded to the teeth to improve performance. Widths of stacker rakes vary from 14 to 19 feet. Root rakes are towed behind the tractor and designed to remove roots and stumps following rootplowing. These rakes vary in width from 18 to 24 feet. Horsepower recommended for both stacker and root rakes vary from 140 and 350.

b. Application - Rakes are used in land clearing for debris removal to allow follow-up brush control, traversing of the landscape, and primary tillage. Piles of debris may be burned or saved for wildlife habitat depending on goals of the project. A skillful operator can build piles relatively free of soil. In some situations, soil disturbance is sufficient for seeding. Root rakes are used to clear land for farming operations.

5) Grubbers

a. Description - Grubbers are sharp, U-shaped blades mounted on the front of crawler tractors, wheel loaders, excavators, or farm tractors to uproot individual trees. Smaller tractors (65 horsepower) often use hydraulically assisted blades that enhance the output by tearing roots loose as the blade is rotated. Width of the cutting blade is usually 3 or 4 feet. Tractor size and type depend on the size of trees to be grubbed and the type of terrain. Tractor horsepower varies from 65 to 170.

b. Application - Grubbing is an excellent method to selectively thin brush-infested land. This technique is called “sculpting” and it is very effective in protecting wildlife habitat while providing cleared areas for grazing. Wheel or track loaders or excavators give the operator excellent vision during plant uprooting. “Low-energy” grubbing is the use of small tractors on small trees, and it is cost efficient and effective. These units often use hydraulically assisted blades. Farm tractors with small, three-point-hitch grubbers are popular for use on limited acreages of previously cleared areas. Grubbing techniques can vary depending on sprouting characteristics of the targeted plant’s roots. Grubbing is not practical when tree densities are more than 250 per acre over extensive acreages.

6) Hydraulic Shearing Blades

a. Description - Hydraulic shears are use to sever tree trunks near the ground. Two horizontally mounted blades are forced through the tree trunk by hydraulic cylinders attached to the blades. The shearing units can be front-mounted on skid-steer loaders, wheel loaders, or excavators. Skid-steer loaders equipped with 14 inch shears are commonly used for clearing non-sprouting brush species. Attachments include brush guards, push bars, and spray nozzles to treat sprouting species as they are sheared.

b. Application - Skid steers with shears are highly maneuverable and move quickly between trees. They are valuable in sculpting brush infested land to provide cleared area while protecting wildlife habitat. Tree saws are constructed of hydraulically operated cutting device used to severe trees. Tree saws have ability to cut trees at different heights and positions than tree shears. Some tree saws will allow the operator to cut the tree below the soil surface. Some trees saws are mounted on the boom of tracked vehicles, while others are mounted on the front of a wheeled vehicle.

7) Shredders/Rotary Cutters

a. Description - Use a crawler or rubber tired tractor equipped with a rotary or flail mower, shredder or mulcher. These machines use hydraulically operated drums, flails or blades that grind woody material into mulch. They easily cut brush, trees stumps, and brush piles down to ground level. They can shred any material into a variety of textures, from course to fine. Some manufacturers classify their shredders according

to the diameter of trees or shrubs they can cut: up to 1 inch, light duty (pasture); 2 inches, medium duty; 3 inches, heavy duty; and 4 to 6 inches, extra-heavy duty. A few models that can cut from 6 to 12 inch diameter trees are built for excavators or loaders.

b. Application - Brush shredders and rotary cutters reduce brush and brush piles quickly and safely. The size of the trees and brush that can be mulched is dependant upon the size of the machine.

MECHANICAL BRUSH CONTROL FOR SELECTED BRUSH SPECIES

Chinese Tallow - Rootplow, grubber or bulldozer can result in good control. Rootplow to a sufficient depth to undercut plants with a rootplow equipped with fins that bring roots to the surface. Fins should be attached at a 22 degree angle, not over 30" apart and long enough to project through the soil. The plow should be equipped with fins spaced not over 30" apart which will bring the plant roots to the surface. Grub to at least a 14" depth. The grubber is applicable when stems are 3" or more in diameter at breast height (dbh). Stack and/or burn top growth as needed. A rotary cutter can also be used to grind and/or shred the stacks. Control sprouts as needed with acceptable chemicals or mechanical methods.

Common Persimmon, Huisache, Yaupon, Wax Myrtle - Grubbing will provide high control of individual trees

Palmetto -Root plowing will provide a high level of control on palmetto. With this brush control method, most existing forage plants are destroyed so the majority of forage grown during the year of treatment is annual vegetation. Shredding or roller chopping will provide an overall low response for controlling palmetto. Although shredding will provide only short term control of most undesirable plants, the time may be sufficient to allow grass growth that will provide fine fuel for prescribed burning.

Cherokee Rose - Shredding will result in low control of Cherokee rose. Top growth will be reduced, but the cane segments will be scattered and regrowth of these segments can increase the brush problem. Follow shredding with an application of the appropriate herbicide after adequate regrowth to obtain a higher degree of plant kill.

Eastern Red Cedar -A high level of control of individual plants can be expected by using an axe, saw, hydraulic shearing blades, or a grubber. Removal of all green growth and above ground foliage is essential for control. Prescribed burning when this plant is 3 feet tall or less will also offer a high level of control.

Honey Locust -A high level of control of individual plants can be expected by utilizing a power grubber. This is a root sprouting or rhizomatous species. Grubbing may remove parent plant, however, roots or rhizomes will sprout resulting in an overall low level of control. Shearing the tops with a dozer may result in significant regrowth of the problem plant. In addition, there will be some soil disturbance, which will vary depending on the plant density and equipment operator.

Eastern Baccharis, Marsh Elder, Salt Cedar - Where soil conditions permit, a high level of control of individual plants can be expected by utilizing a grubber.

Rattlebox - Shred plants less than one year old. Scattered plants can be hand grubbed or sheared. Repeat treatment may be necessary to get new plants that sprout from seed.

BIOLOGIAL

Small ruminant animals such as goats can be used effectively to control woody vegetation. Under

normal conditions it is not uncommon for woody shrubs and trees to decline in areas where small ruminants are allowed to forage. However, it is difficult to eradicate or fully suppress woody vegetation and maintain high animal production levels. Small ruminants are most effective when used as a follow-up treatment after mechanical, prescribed burning, chemical treatments, or for initial treatment of low growing woody vegetation. If herbicides are used it is important to ensure that they are not toxic to animals that may use the area.

Multi-species stocking is best used to suppress woody vegetation. Multi-species stocking entails grazing an area with a mixture of animal species with complimentary diet preferences. This method is traditionally used in situations where the woody vegetation comprises a small portion of the plant community. Attention must be given to ensure the proper stocking rate is maintained.