

MAINTENANCE CONTROL FOR MESQUITE

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Mesquite control reduces competition to native forage plants and results in increased production. Both chemical and mechanical methods are useful tools in mesquite control, but a well-developed grassland management program is necessary for long-term range condition improvement.

During the past 20 years, more than 20 million acres of mesquite have been controlled by chemical and mechanical methods. Eradication, however, is not possible with current methods because of resprouting and seedling establishment. Therefore, a complete control program must be carried out over a 10 to 15-year period or longer to keep forage production high and control mesquite.

MAINTENANCE CONTROL PROBLEMS

Mesquite will continue a major problem on infested rangelands because of the many seeds dormant in the soil. Experiments at the TAMU Agricultural Experiment Station at Spur show mesquite's ability to reproduce, following complete removal of the existing infestation.

Mesquite was first removed at the Station in 1940 by handgrubbing. Subsequent seedlings were removed by grubbing before large enough to produce beans. The area was kept free of mesquite bean seed except for those brought in by wildlife and those dormant in the soil before removal of the original stand. The re-infestation of mesquite by seedlings per acre over a 25-year period is listed below:

- 1940 - 213 trees removed.
- 1945 - 109 seedlings removed.
- 1952 - 185 additional seedlings removed.
- 1957 - 75 additional seedlings removed.
- 1964 - 107 additional seedlings removed.

A total of 689 mesquite plants per acre were removed in 25 years, with 473 being seedlings plants. This points out the necessity for a continued, long-term mesquite control program.

The germination and establishment of new mesquite plants are high when the seed are passed through the animal's digestive tract. Therefore, keep animals grazing mesquite-infested rangelands in confinement from 3 to 6 days. This allows animals to expel the beans from their digestive tract before grazing an area where mesquite is controlled.

Some reasons why mesquite-controlled areas require a planned program are:

To control sprouts from roots and stems and regrowth of plants not killed completely by the initial treatment.

To control seedling plants. Mesquite seed may remain dormant in the soil or may be carried into the treated area by livestock, wildlife or water.

To control other noxious woody plants. Other brush may be released by the original treatment, creating a secondary problem as serious as mesquite. Problem species are: lotebush, pricklypear, tasajillo, sand sagebrush, sand shinnery oak, yucca, catclaw, juniper, sumac, skunkbush, whitebush, agarito, live oak, blackbrush, granjeno and Texas persimmon.

To maintain a low level of brush and weed competition. The area remains open to invasion by other noxious plants until a vigorous stand of perennial grass vegetation is restored to the treated area.

To control annual and perennial weed invasion following chemical or mechanical control. Problem species are those common to a specific range site. These include: annual broomweed, perennial broomweed, sunflower, coneflower, ragweed, bitterweed, snow-on-the-prairie, Russian thistle, bitter sneezeweed and others.

To provide improved range conditions, regulate deferment of grazing and intensity of use to provide favorable conditions for the development of better grasses. Ranch operators must recognize

problems encountered with the grazing management of specific range sites. Some problems are: length of deferment, season of deferment, degree of use, re-establishment of desirable species by natural and artificial seeding, proper kinds and numbers of grazing animals.

Primary objectives in carrying out an effective mesquite control program must be control of mesquite and its seed source and improvement of range condition.

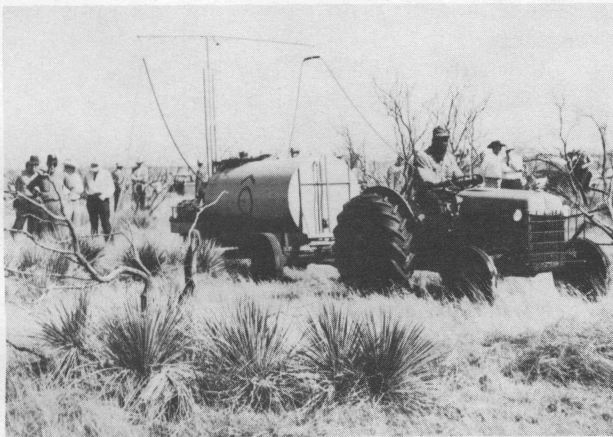
This program should be carried out in conjunction with sound grazing management. Cost of the various treatments should be amortized over the program duration. Since long-term programs are necessary to cope with the mesquite problem, each step must be well planned and carefully carried out.

MAINTENANCE CONTROL GUIDELINES

To maintain effective control of mesquite where basal sprouts, root sprouts, branch flagging or seedling development is a problem, the following methods have proved successful:

Individual plant treatments by hand application using basal pour of kerosene or basal spray of 2,4,5-T in diesel oil to begin 2 years after initial control. Apply when soil is dry for penetration of the solution around the bud zone.

Foliage spray treatments with ground or aerial equipment using 2,4,5-T at a rate to obtain both mesquite and weed control. Regrowth mesquite should have about 4 seasons of growth or be about 4 feet tall for the herbicide to be most effective.



A type of power sprayer that has proven successful for treating individual plants by the trunk basal or foliage wetting sprays. Knapsack handsprayers are useful tools also.

Removal by uprooting of individual live plants using a tree grubber. Undercut below the bud zone of these plants for maximum mesquite kill. Seed pits to adapted native forage species at the time of uprooting.

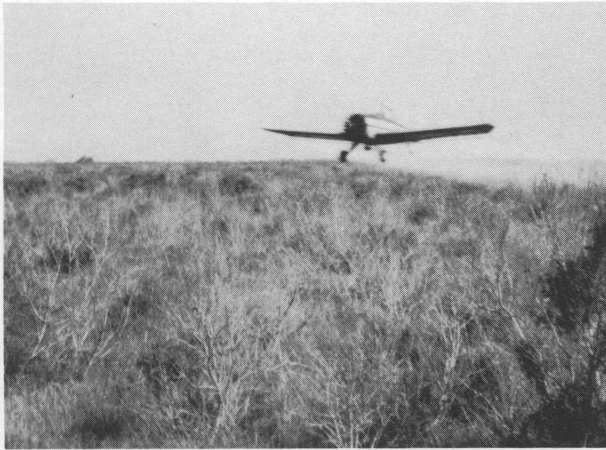


Front-end and rear-end mounted tree grubbers are most effective for control of small mesquite trees and sprouts.



Periodic retreatment by aerial spraying. Apply 2,4,5-T, according to the best specifications known for a specific locality. Retreatment may be necessary every 3 to 7 years to control mesquite and keep regrowth from maturing seed.

Chaining of sprayed areas to clear the land by uprooting large sprouting mesquite and removing



Aerial spraying with herbicides is an economical and fast method to retreat regrowth mesquite at 3 to 5-year intervals. Resistant species of lotebush, algerita, huisache, blackbrush, granjeno and cat-claw are not susceptible to low volume applications using 2,4,5-T.

dead standing top growth. Mesquite can be chained successfully and substantial maintenance control obtained within 2 or 3 years after aerial treatment with 2,4,5-T. Chain the area when the soil is moist for maximum uprooting of mesquite. Mesquite should have from 2 to 4 seasons of growth following chaining before the next scheduled aerial treatment with herbicides. An appropriate follow-up treatment usually is needed following chaining to control seedlings and sprouts from trees not uprooted with the chaining operation.

Treatment combinations may be necessary to cope with mesquite seedlings and sprouts. A systematic program to prevent reinvasion of mesquite on an area is dictated by the intensity of the problem and the type grazing management system involved.

Subdominant species not controlled effectively with the initial application must be treated following mesquite control. Maintenance treatments for this program may include:

Individual plant removal by hand or tree grubbing. Most cactus plants need to be piled or burned to prevent re-establishment.

Individual plant treatment by hand application of 2,4,5-T or other effective herbicides. Basal and foliage spray treatments with ground equipment control many species not susceptible to low volume broadcast spray treatment. Cactus species

are controlled satisfactorily and economically with herbicides. Control Texas persimmon, granjeno and lotebush by individual plant treatment, using herbicides rather than mechanical uprooting, since these plants are prolific root sprouters.

Aerial spray treatment for secondary species not controlled by initial application. Where satisfactory control recommendations are available, the most economic treatment may be with low-volume broadcast sprays. An example is treatment of whitebrush with MCPA following initial treatment of mesquite with 2,4,5-T. Method of application is determined by the density of the subdominant species. Plan maintenance control on subdominant species before applying initial treatment is applied. Lotebush, sand sagebrush, shinnery oak, blackbrush, huisache, granjeno, Texas persimmon and cactus are examples of potential problems of subdominant species invasion following mesquite control.

Annual and perennial weed invasion often follows brush control by mechanical methods which cause soil disturbance. Likewise, this problem may occur following chemical control before a vigorous stand of perennial grass occupies the area released from brush. Effective weed control methods follow:

Chemical control of weeds by aerial or ground application using 2,4-D or 2,4,5-T. There are additional brush control benefits from herbicide use to control or delay the development of sprouts and seedlings of brush species.



Ground broadcast power sprayers are an effective method to control brush sprouts, seedlings and weeds.

Judicious use of livestock and timely deferment may prevent build-up of herbaceous weed plants.

Management of controlled areas. Benefits from mesquite control may be wasted if better grasses present on the treated area are not improved. The presence of a vigorous stand of desirable vegetation is effective in retarding the development of seedlings and sprouts following control. To achieve desirable results from mesquite control, the following practices are effective in the management and grazing use of the treated area:

Defer the treated area following mesquite control to encourage the establishment and growth of better grass plants.

Avoid over-utilization of the treated area for one or more growing seasons or until desirable grass stands are re-established. Evaluate the degree of grazing use on the basis of a key grass on the key site within a grazing unit.

Use other management practices which improve the distribution of livestock on the treated area.

Avoid moving cattle from areas of heavy mesquite seed crops onto treated areas.

Avoid allowing mesquite to mature seed on the controlled area.

Develop and carry out a systematic, deferred-rotation grazing program in combination with brush control maintenance methods.

RANGE IMPROVEMENT AND ECONOMIC RETURNS FROM MESQUITE CONTROL

Returns from control are much more than just increased grass production. Added benefits are:

- Working ease, caring and seeing for livestock, using less labor and decreasing ranch cost.
- Increased offspring numbers.
- Increased offspring weights.
- Less parasite damages.
- Livestock more tame or docile.

- Increased food for deer and increased food and cover for quail.

- Fewer breeding males required.

- Aesthetic value of seeing livestock on open native pastures.

Examples of specific results from mesquite control obtained from result demonstrations are:

Forage production increased by five times over the uncontrolled area.

Calf weights increased by 40 pounds per animal. Stocking rate of mother cows increased by 30 percent. Better forage grasses increased. Labor saved in working livestock.

Cleared pastures returned 81 cents per acre per year more than brush-infested pastures at Spur.

Range improvement speeded up four times with brush and weed control, combined with deferred grazing, as compared to deferred grazing alone.

Sprayed pasture produced 65.8 pounds of weaning calf per acre, while the uncontrolled pasture produced 49.8 pounds per acre.

Pricklypear control following mechanical control of mesquite in the South Texas Plains increased grazing land use from 2½ animal units per 100 acres to six animal units per 100 acres.

Running mesquite control increased stocking rates by 25 percent and increased wildlife habitat and income from hunting leases.

Mesquite control is profitable when carried out as a planned program based on increased forage and livestock production.

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