

# SALT CEDAR CONTROL

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Salt cedar (*Tamarix pentandra*), a native to the Mediterranean region, has become a problem in the Southwest. Why is salt cedar a problem?

(1) Its aggressive spreading along streambeds and the flood plains creates dense stands that are a flood hazard.

(2) It is a phreatophyte, or water-loving plant, that wastes large quantities of water. Salt cedar problem areas in Arizona, such as the lower Salt River, lower and upper Gila River, and lower Colorado River bottoms, are almost jungle-like in appearance. Salt cedar is appreciated by sportsmen for its dense thickets which furnish a habitat for wildlife, such as doves and rabbits. Its usefulness for soil erosion control or for wood and pulp products is extremely limited.

## Problem Noted By Government

In the past fifteen years the salt cedar problem has aroused the interest of both state and federal agencies interested in irrigation and flood control. Several programs of salt cedar control by mechanical methods have been undertaken along southwestern rivers.

In 1958 the Bureau of Reclamation and the United States Army Corps of Engineers contracted with the University of Arizona to study the salt cedar problem. In the initial study, a University of Arizona graduate student was to observe the salt cedar clearing operations undertaken by the Wellton-Mohawk Irrigation and Drainage District on the Gila River.

The clearing operation involved removal of salt cedar from a 55-mile by 400-foot strip along the Gila river bed to reduce the danger of flooding. Crawler-type tractors with dozer blades and 10-foot rear-mounted undercutting blades were used to cut the salt cedar crown and roots 30 inches below the soil surface. Tractors with front-mounted rakes then piled the debris, which was later burned.

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**BEFORE AND AFTER**—The picture at top shows salt cedar plants growing on a study area along the Gila River before plant removal was begun in 1958. Below that view is one of the same area, showing salt cedar regrowth one year after removal.

The cost of clearing, the effectiveness of mechanical clearing, and the succession of new vegetation into the cleared area were the main topics studied. The relationship between the removal of salt cedar and the level of the groundwater was also investigated.

## Cost Is Considerable

Costs per acre for undercutting salt cedar ranged from \$6 to \$30 per acre, depending on the amount of vegetation present. Costs per acre ranged from \$7 to \$16 per acre for raking and stacking salt cedar debris.

In 1959, one year after the clearing operation, regrowth counts showed a 92 percent reduction in the vegetative cover of salt cedar. Most regrowth occurred from disturbed salt cedar crowns left in the soil. Undercutting, 30 inches below the soil surface, with the complete removal of the crowns resulted in a minimum of regrowth. If a disturbed portion or a whole crown remained in the soil its chances for survival were much better

when a high (four feet or less from the soil surface) water table was present.

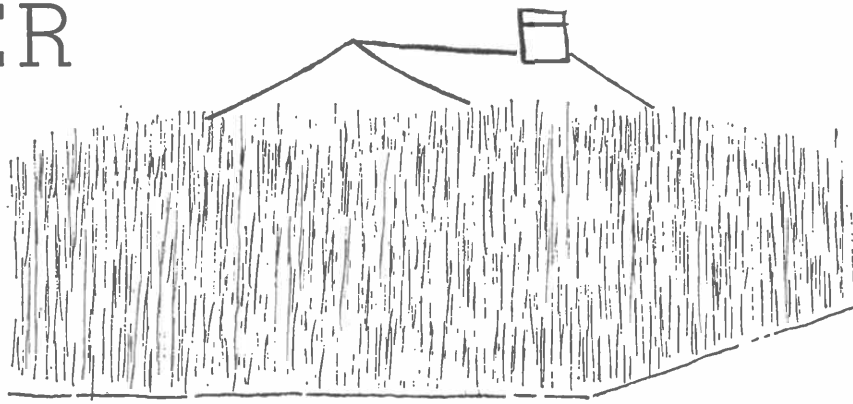
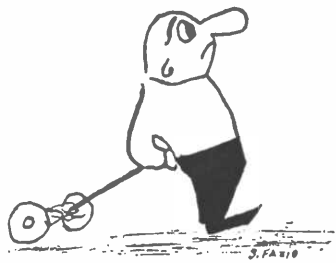
There was no reinfestation of the area by any woody or brushy species other than salt cedar or arrowweed. These plants were the most abundant before the clearing operation. Surface water and a high water table in some areas produced a large amount of salt cedar seedlings. Annual weeds pioneered in a few areas after rainfall and river flow.

## No Effect On Water Table

In the first year after salt cedar removal the groundwater level rose three to five feet in the cleared area; however, the water level also rose in the adjacent areas. There was no indication that limited removal of salt cedar contributed to the rise in groundwater.

Satisfactory control of salt cedar was obtained throughout most of the cleared channel. However, adequate maintenance measures on regrowth must be carried out to retain this control. Maintenance by mechanical methods, such as undercutting

# SUMMER



# LAWN CARE

**Steve Fazio**

"Regardless of the lawn you start with, you will eventually end up with Bermuda." Many long time residents of Arizona have adopted this slogan in connection with the growing of summer lawns. The humor associated with this statement has considerable merit in view of our growing conditions and our experience with cool season grasses in southern Arizona.

Bermuda grass was introduced into the United States from India many years ago. It eventually found its way to the Southwest, where it became one of the best adapted grasses. Bermuda is a warm season grass and will go into a dormant condition during frost periods and prolonged drought. Its ability to grow under conditions of temperature extremes, high daytime and low night time temperatures, makes it difficult for other grasses or lawn covers to compete if Bermuda grass has infested the seedbeds.

## Can Take Abuse

Bermuda grass withstands considerable abuse and is able to survive under conditions of heavy traffic, lack of water and

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or brush cutting, might be used in limited areas. However, mechanical maintenance measures would be impractical in places with surface water or a high water table.

A herbicide might be used to control regrowth if applied at the correct time and with the right wind conditions to avoid crop damage. Revegetation of cleared areas with forage species may be a partial answer to the problem of chan-

nel maintenance. Bermuda grass and blue panicum are possibilities for revegetation.

More Study Needed

It is probable that large infestations of salt cedar along the Salt and Gila Rivers will be removed by flood control programs. Further research is needed to determine the most effective methods of vegetation removal, maintenance of cleared areas and the effect of vegetation removal on groundwater.

Water Thoroughly, Evenly

Uneven watering will have a telltale effect on any lawn and can create serious problems if the condition is not reme-

## Water Thoroughly, Evenly

diated. Make sure that the entire lawn surface has been watered and that no dry spots are occurring. Dry spots are often encountered with stationary sprinkler systems, if the heads are located improperly or if the water pressure drops to a low level.

Moisture stress in Bermuda lawns can be detected by observing the color of the foliage. A change of color from brilliant green to a blue green is an advance warning that the grass is beginning to stress for water and an application should be made immediately.

Fertilization of Bermuda grass at rather frequent intervals is necessary since it is a heavy nitrogen feeder. The feeding of Bermuda begins during the latter part of October, just prior to the frost season. The second application is applied in early spring, just prior to emergence of new growth. Additional applications are made if the grass begins to show signs of going "off color" during the summer months.

Avoid Fertilizer 'Burning'

Ammonium sulfate is generally used as the source of nitrogen and is applied at the rate of one pound per 100 square feet of lawn surface. Burning can occur if the fertilizer is applied on a wet leaf surface. Make sure that the leaves are dry before broadcasting this material.

## Avoid Fertilizer 'Burning'

Mowing can cause severe setbacks in Bermuda lawns if it is not done at frequent intervals. Bermuda grows rapidly during warm weather and the leaves form a canopy of shade over the lower portion of the plants. The growth in the shady area becomes soft and tender and is subject to sunburning shortly after the top is mowed. Frequent mowing prevents this shading effect and the incidence of sunburning is eliminated or reduced. The frequency of mowing depends upon the growth of the grass, so no one rule can apply to all lawns. The grass should be mowed each time it grows one inch after a mowing and this may vary from every two to three days to longer periods. The clippings should be removed to prevent molding if they are over half an inch in length.

Flat growing weeds form shade over Bermuda lawns and cause the grass to die out if such weeds are not eradicated. Weeds can be avoided by proper fertilization, watering and mowing. If weeds are present in a Bermuda lawn, many of these can be eliminated by using chemical weed killers. Care should be exercised in using these chemicals since they are harmful to broadleaf plants including trees. Such chemicals should be applied according to direction and on windless days to prevent any possibility of wind drift.

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