

WEED AND BRUSH CONTROL IN OKLAHOMA PASTURES AND RANGELANDS

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There are undesirable plants on most of the 26 million acres of pastures and rangelands and about 11 million acres have a serious woody plant problem. These plants are considered undesirable since they are not utilized by the livestock and the water, nutrients, and sunlight used by them is not available for growth of desirable plants. The term "weeds" will be used to refer to the undesirable grass and broadleaf plants. The discussion will be broken into weed control and brush control since the competitive nature and control of the two groups are quite different.

WEED CONTROL

The primary weed problem on rangelands and pastures is common broomweed and the ragweeds. In the western half of the state, the problem is dominated by western ragweed and common broomweed. While in the eastern half, the problem is dominated by western ragweed and lanceleaf ragweed. Both common broomweed and lanceleaf ragweed are annuals so they have to start from seed each year. These annual weeds are particularly a problem following drought years. Most areas are overgrazed during periods of low production and this allows open spaces for the annuals to germinate and establish. Also the overgrazed desirable plants are not as competitive as they would be normally. Western ragweed is a perennial that spreads both by seed and vegetative underground stems, so once the plants become established, the problem tends to increase each year.

Most of the herbaceous weeds have about the same requirement for growth as the native desirable plants so there is about one pound of desirable forage loss for every pound of weeds produced. Weed production on pastures and rangelands varies considerable throughout the state but 1000 lb/A of weed produced is very common and 2000 lb/A of weeds is not uncommon. Introduced forage plants such as bermudagrass, lovegrass, and tall fescue are more efficient than the weeds in use of nutrients and moisture so 1 1/2 to 2 lb of forage can be obtained for each 1 lb of weeds controlled. There is another major difference in response of nativegrasses and introduced grasses to weed control. The introduced grasses quickly respond to the release from competition and forage increases result immediately. Nativegrass, on the other hand, is slow to respond and it

and April applications of 1 and 2 lb/A have been very effective. However, there are currently grazing restrictions that will limit its usefulness. Treated areas cannot be grazed for 3 months following spring applications and these areas can not be hayed. We are optimistic that we can get these restrictions reduced. We currently have samples being checked and hope to know soon what can be done.

Control of various weed species varies and it is necessary to adjust herbicide and rate according to the problem. Also timing is important. For a detailed listing of weeds and control practices, you are referred to OSU Extension Fact Sheet 2758 (Weed Control in Rangeland with Herbicides) and Fact Sheet 2771 (Weed Control in Pastures).

BRUSH CONTROL

The primary brush problem on rangelands and pastures are the oaks. In the extreme western area of the state, sand shinnery oak is the dominate vegetation on sandy soils and nativegrass production on some of these areas is less than 500 lb/A. Blackjack oak and post oak are the dominate vegetation on the sandy soils of the cross-timbers area and grass production from these infested areas varies from 100 to 900 lb/A depending on moisture condition, amount of brush in area, management of grass, and location in the state.

The amount of grass release after spraying depends on the amount of desirable grass in the treated area, amount of brush controlled, productivity of site, and amount of effective moisture available for plant growth. The highest yield of grass obtained two or three years after spraying for brush control was about 4000 lb/A and this represented a four-fold increase in grass production. Actual advantage of brush control on range operation usually results in enough increase grass production to allow a doubling of carrying capacity in addition to an increase in calving percent and weaning weight of calves.

Brush is constantly invading the Oklahoma grasslands since environmental conditions are favorable for brush. It is estimated that there are more acres of rangeland infested with brush now than at any time since statehood. Much of this has been attributed to the large increase in eastern redcedar. Some 10 years ago there was a problem on some 1 million acres and today they are becoming a problem on some 4.5 million acres of cross-timbers. This increase is attributed to the lack of burning coupled with the large number of seed trees scattered throughout the state. It is also worth noting that the major brush herbicide, 2,4,5-T, which has been used for the past 30 years, did not control cedars nor do the newer herbicides such as Graslan.

e. is often the second year before the increased forage production is noted.

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r There are normally three control options for controlling weeds. Grazing is one option that is often overlooked. It can be a very effective and economical alternative. To be successful requires using heavy stocking rates for short time periods when weeds are palatable and then removing to allow regrowth of desirable grass. Fair results have been obtained with prairie threeawn, broomsedge, sandbur and western ragweed but results with species such as bitter sneezeweed, western ironweed, common broomweed and late eupatorium have been poor. The major problem with grazing is that some plants are not eaten so they tend to increase.

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ms The second option for controlling weeds is mowing but I would rate it primarily a cosmetic operation. Although it can be effective in preventing weeds from producing seed, most of the competition has already resulted. In addition mowing is not selective so a lot of desirable forage is lost from mowing. About the only time mowing has a place is for harvesting excessive forage for hay.

The third and probably the best all-around option is use of herbicides to control weeds. Most of the weeds currently found in pastures and rangelands can be selectively controlled with herbicides.

The primary herbicide used for weed control is 2,4-D. It is effective on many of the broadleaf weeds and is available in a number of formulations. These are marketed under various trade names. The formulations can be grouped into the high volatile esters (propyl and butyl), low volatile (LV) esters (octoyl and other long chain esters), amines and oil soluble amines. The LV ester is the preferred formulation. It is the most effective on many of the perennial weeds and volatility problems are not a serious problem. Historically 2,4-D has been used at 1 lb/A for weed control but excellent control of common broomweed and the ragweeds is possible with 1/2 lb/A applied when weeds are small in early spring.

Another herbicide that has been doing an excellent job in combinations with 2,4-D is dicamba (sold under trade name Banvel). Adding Banvel to the spray mixture has increased the activity on several weeds, increased kill of larger weeds, and increased kill of weeds growing under stress. A commercial mixture called Weedmaster is available in most areas.

Atrazine is also approved for use on rangelands. Its primary advantage is its activity on annual grasses such as annual bromes and prairie threeawn. Rainfall after application is necessary to move the atrazine into the root zone. March

Brush control optimums are available but limited. Mechanical clearing has become very expensive and most desirable sites have already been converted. The requirement that these sites be "farmed" for two seasons to control sprouts puts a site limitation on this optimum. Mowing is possible on level areas but is not effective on most woody species. In fact, mowing usually increases the number of stems. There is also a decrease in top to root ratio with mowing and this results in less effective control with any follow up foliar sprays used for control. Burning has essentially the same limitations as mowing. However both can be effective on trees that don't resprout such as eastern redcedar. In fact, burning may be the only economical control optimum available for cedar control.

Herbicides are the most selective and in most cases the most economical brush control optimum available. The major limitation is that there are currently only a few herbicides that have label clearances for use on rangelands. 2,4,5-T has been the major brush control used for 30 years for brush control but its economic advantage may be coming to an end. As recently as 1970 a standard 2 lb/A application would cost only \$6.00 to \$7.00/A. However the cost has tripled in the last 10 years. If one must apply 2,4,5-T in two consecutive years then that means that brush control is costing some \$40.00/acre. Graslan, a new soil applied herbicide has been tested in the state since 1972 and first received label clearance in Oklahoma and Texas on December 13, 1979. It has proven to be an excellent herbicide for control of blackjack oak, post oak and winged elm on shallow sandy soils. Tree kill from Graslan has been good and it is projected that retreatment intervals will be longer than for 2 applications of 2,4,5-T. However its cost is more than \$40.00/A and going up. This is especially concerning with the current cattle prices, since it takes at least 8 acres of brush converted rangeland to provide enough forage for one cow for one year.