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CONTROLLING PERENNIAL RAGWEED

TO
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PASTURES



OKLAHOMA AGRICULTURAL EXPERIMENT STATION
Oklahoma A. & M. College, Stillwater

W. L. Blizzard, Director

Louis E. Hawkins, Vice Director

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S U M M A R Y

Pastures in some areas of Oklahoma are producing perennial ragweeds at the rate of 1,000 pounds dry weight per acre. Grass yield in the heavily infested pastures is reduced as much as one-half or more.

The shallow ragweed roots are in direct competition with grasses for moisture and plant food. A dense growth of ragweeds may cause considerable shading of lower-growing grasses.

2,4-D will eradicate perennial ragweeds at a cost of less than \$1.00 per acre for the chemical. Experiment Station tests show the best time to treat ragweed is when it is four to six inches high, and growing rapidly. Recommended rate of application is $\frac{1}{2}$ to 1 pound of 2,4-D per acre. The rate is recommended on the basis of actual 2,4-D in the commercial material.

2,4-D can be used near susceptible crops — such as cotton, legumes and vegetables — **but precautions are necessary.**

Best prevention of perennial ragweeds is a heavy stand of grasses properly managed. Overgrazing and burning result in a widespread stand of the weed.

Mowing to control ragweeds is not very effective. The weed, with its shallow root system, can re-sprout quickly and grow again with the grasses.

Ragweeds in lespedeza were reduced to only a trace in Station tests by using 1 pound of 2,4-D per acre, and without severe crop injury. However, ragweeds should be killed in pastures one year before lespedeza is planted.

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Controlling Perennial Ragweed To Make Better Pastures

By **W. C. ELDER**
Assistant Agronomist

Native grasses are found in most of the 18,000,000 acres of pasture land in Oklahoma. Some of this land still permits maximum grazing after a half-century or more of use; however, a greater part is far below its original production.

Several factors contributed to losses in pasture production. One of the chief factors is the increased amount of inedible weeds that compete strongly with the grasses for existence. Increase of inedible vegetation usually is the result of overgrazing, poor management and loss of fertility, and little effort to use preventive or control measures.

Much attention is being given to improvement of eastern Oklahoma native pastures by adding fertilizers and legumes. An important step in this program should be the eradication of perennial weeds.

Ragweed — Enemy of Good Pastures

The most harmful weed in Oklahoma pastures, by far, is the perennial or Western ragweed.* Most of the 18,000,000 acres of grassland throughout the state, especially in the central section, are infested by perennial ragweed.

MENACE TO PRODUCTION

Weeds are higher in nitrogen, phosphorus, and calcium than grasses, according to a previous study.** In this study, perennial ragweeds ranked high in the weed list for nitrogen content, and were especially high in phosphorus and calcium. These chemicals are being used by the weeds and therefore are not available to the desired forage plants. Also, plants grown on good soil were higher in nitrogen than similar plants on poor soil.

Perennial ragweed plants are "bushy," which causes considerable shading of lower-growing grasses. Many weeds found in pastures have a deep taproot that does not interfere much with grasses, but **roots of ragweeds are in the same zone with grasses, and are in direct competition with grasses for moisture and plant food.**

**Ambrosia psilostachya*.

***Proceedings of Oklahoma Academy of Science*, Vol. XIV, 36-44, by Horace J. Harper, Harley A. Daniel, and H. F. Murphy.

Good, native grass meadowlands are capable of making about one ton of hay per acre. Where the grass is grazed, as in pastures, total dry matter would be much less. Native grass pastures requiring more than six acres per animal are producing less than 1,000 pounds of edible dry forage per acre.

The Experiment Station recently conducted surveys in central and eastern Oklahoma to determine growth habits of perennial ragweed. Small areas of the plant in a large number of pastures along highways were counted and cut for dry weights. Some of the heavily infested pastures had five to eight ragweeds per square foot, and 1,000 pounds dry weight per acre. Average was 500 to 600 pounds dry ragweeds per acre for all pastures sampled. It can be readily seen, then, that **if a pasture has to support 500 pounds of dry ragweeds per acre the carrying capacity may be cut in half.**

A total of 2,280 pounds of dry ragweeds per acre was cut from an ungrazed area at the Southeast Oklahoma Pasture Fertility Research Station, Coalgate.*

Weed counts on the Lake Carl Blackwell area west of Stillwater averaged three to four ragweeds per square foot in 1944.**

Perennial Ragweed Described

The green-colored weed may grow from one to four feet high. Its outstanding identifying feature is the shallow, creeping root system. Lateral roots from one to three inches deep extend several feet from the plant. New plants may arise any place along this lateral root system, often causing dense patches. The plant blooms and produces seed in the late summer and fall months.

WHERE PERENNIAL RAGWEED IS FOUND

The perennial ragweed is found throughout the State, but probably is most common in the central section. It grows in native grass pastures and along fence rows. The weed may be found on sandy soils; however, it thrives best on heavier soils. Unlike many weeds, it will grow on soils of all fertility levels. The plant gets its start in pastures where the grasses are grazed closely for several years.

Livestock eat many weeds, but most animals avoid ragweeds if possible. Cattle will graze young ragweeds in early spring, but after

*Okla. Agri. Exp. Sta. Bul. No. B-348, **Progress Report, 1945-49, Southeast Oklahoma Pasture Fertility Research Station**, by Horace J. Harper, W. C. Elder and O. B. Ross.

**Experiment Station unpublished data obtained by Hi W. Staten and W. C. Elder.



Perennial Ragweed

The green-colored perennial, or Western, ragweed may grow from one to four feet high. It has a shallow, creeping root system with lateral roots from one to three inches deep. New plants can develop any place along this lateral root system and cause dense patches.

the plants grow higher than the grass they are very careful to graze around them. Conditions favorable for weed growth result when live-stock graze around the weeds.

Control of Perennial Ragweed

PREVENTION IS BEST

METHOD

By far the best method of keeping ragweeds out of pastures is maintenance of a good turf of grasses that is properly grazed. This method can be clearly observed by examining native pastures in the summer months. Amount of ragweeds, and other weed species present are in directly reverse proportion to the amount of grass. Experiment Station surveys on ragweed growth in central and eastern Oklahoma clearly showed that some pastures had few plants, while across the fence there were ragweeds growing at the rate of one-half ton per acre.

2,4-D TREATMENT IS

SUCCESSFUL

Perennial ragweeds are easily eradicated with 2,4-D. (Precautions for using 2,4-D are given on Page 9.) Tests were conducted at the Main Station at Stillwater and other areas in the state during the past four years. Results showed **ragweed can be completely eradicated with 2,4-D at a cost of less than \$1.00 per acre for the chemical. Complete ragweed eradication was achieved after the first treatment when 2,4-D was properly used.**

Use of 2,4-D Improves Pastures 20 Percent.

Native grass pastures infested with ragweeds definitely could be improved 20 percent or more by the proper use of 2,4-D. Carrying capacity of some pastures could be increased 75 percent.

Ragweed treatment with 2,4-D increased grass and lespedeza production three-fold on an overgrazed pasture at the Coalgate Pasture Fertility Research Station.

Time to Apply 2,4-D

Best time to treat ragweed is when the plants are four to six inches high, and growing rapidly. June usually is a good month for treating ragweeds in Oklahoma. The plants can be killed in July or August, but more 2,4-D is required and kills may not be complete. If treatment is made earlier than June, some plants may not be above ground, or else be so small that spray coverage would be poor. Attempts should not be made to kill ragweeds in pastures with 2,4-D after the blooming period.

Rate of Application

A rate of $\frac{1}{2}$ to $\frac{3}{4}$ -pound 2,4-D per acre is recommended when the weed is four to six inches high, and growing rapidly. In dry weather, or if the weed is more mature, 1 pound of the chemical per acre should be used. The ester form of 2,4-D is more effective than the amine form when used at the same rates. The rates recommended are on the basis of actual 2,4-D in the commercial material. Commercial ester and amine types of 2,4-D usually contain about 4 pounds per gallon. In this case, it would require $1\frac{1}{2}$ pints per acre for treatment at the $\frac{3}{4}$ -pound rate. For ground equipment, 8 to 10 gallons of spray per acre are necessary to give good coverage.

Treatment of ragweed with 2,4-D at the proper time will also kill many other troublesome broadleaf weeds in the pasture.

Ragweed Control in Lespedeza

Ragweeds should be killed in pastures one year before lespedeza is planted. It is possible, however, to kill the weed with 2,4-D where lespedeza is growing without causing severe injury to the lespedeza.

Tests by the Experiment Station in 1949 and 1950 show that perennial ragweeds can be eradicated in lespedeza with 2,4-D, when properly applied. The amine form of the chemical was used in June, when lespedeza and ragweeds were six inches high. The weeds were reduced from 1,500 pounds to 600 pounds per acre by using the $\frac{1}{2}$ -pound rate. Reduction to a trace of weeds was achieved by using the 1-pound rate. In both treatments, the lespedeza was increased from 2,000 to 3,000 pounds per acre.

When lespedeza was treated with 2,4-D at several stages of growth, the most resistant stage was four to six inches high, and growing rapidly. Small lespedeza was completely killed, and plants that were almost mature were severely injured by the $\frac{1}{2}$ -pound rate, or more. 2,4-D will cause lespedeza leaves to turn yellow and some will fall, but the plant will recover quickly and produce new leaves if it is over four inches high. Lespedeza treated at blooming stage does not have time to produce new leaves and becomes "stemmy." In most cases, 2,4-D cannot be used after legumes are established. All in all, it is much better to give some attention to weed control **before** lespedeza is added to the pasture.

PRECAUTIONS FOR USING

2, 4-D

There is a possibility of injury to susceptible crops growing nearby when 2,4-D is used. By taking certain precautions, however, this possibility of injury can be eliminated.



2,4-D Controls Ragweed in Lespedeza

This picture, taken at Stillwater, shows 2,4-D killed a heavy infestation of ragweed without severe injury to the lespedeza. It is recommended, however, that ragweed be killed in pastures one year before lespedeza is planted.

The greatest danger exists at the time of spraying, when fine spray particles may drift to nearby fields. It takes a very small amount of 2,4-D to injure cotton, legumes and vegetables. The possibility of drifting is greater when airplanes are used. Ground equipment can also cause drifting for long distances.

Danger conditions can be avoided by using low pressure sprayers; spraying when wind is not blowing; or by spraying when wind is blowing away from susceptible crops. Practically all pastures can be sprayed with 2,4-D when care is exercised.

Ester type of 2,4-D may volatilize, or give off a gas carried by the wind several hours after application. **Amine type should be used if legume crops or cotton are nearby.**

2,4-D will not injure established native grasses but will affect young grass seedlings that are just above ground.

Spray equipment must be washed thoroughly with washing powder, or household ammonia, before using other sprays on crops that are susceptible to 2,4-D.

Mowing to Control Ragweed

Until a few years ago, mowing was about the only method of control after ragweeds got a start in pastures. However, the mowing machine is not very effective, because perennial ragweeds re-sprout quickly after mowing and grow again with the grasses.

In 1943, a weedy pasture on the Lake Carl Blackwell area west of Stillwater was divided into several uniform plots. A weed count was made in that year. Mowing started on May 1 and successive plots were mowed at 20-day intervals until October 1. Some of the early-mowed plots were re-mowed in July and August. The mowing treatments were repeated in 1944 and 1945. Grazing was not allowed on the area.

In 1946, the plots were not mowed, and a weed count was made on the same area used in 1943. The weed counts of 1943 and 1946, after mowing two years in 1944 and 1945, showed there was no difference in ragweed reduction between the mowed and unmowed plots. Percentage reduction of ragweeds on unmowed plots — 63 percent — was about the same as on mowed plots. In this test, reduction of weeds was not due to mowing; instead, the native grasses made a good growth and crowded out the weeds. If livestock had grazed the grass heavily during the three years, the unmowed plots undoubtedly would have had more ragweed present. However, the native grasses made a strong comeback with the three years' rest from grazing.

Mowing a heavy stand of ragweeds is beneficial, especially to prevent seed production in pastures that are being grazed. However, mowing alone will not eradicate ragweeds. If one mowing a year is done, the best time is in July and August just before blooming time. It is advisable to raise the mowing machine sickle high enough to avoid close clipping of the grass.