PROGRESS IN CHEMICAL CONTROL OF BRUSH

Growth of brush of various kinds on many millions of acres of range and pasture land in the Southwest have reduced the carrying capacity and have created serious problems for livestock raisers. In the past, farmers and ranchers have had to rely principally upon the use of hand labor for the removal of these undesirable plant growths, but rising wages during the war and postwar periods have made brush eradication by this method extremely costly. Within the last few years, large machinery has been used to uproot these plants; however, this method, although more economical, tends to damage the native sod. More recently, the introduction of certain chemical compounds for use in killing various types of plants has stimulated interest in chemical control of brush. There are a number of such materials now being produced for plant eradication which may prove to be the answer to the needs of farmers and ranchers in controlling brush on grazing lands.

The effectiveness of several of these new materials, including 2,4-D and Ammate, has been studied during three years of experimentation by the Oklahoma Agricultural Experiment Station. The results of these experiments are reported by Harry M. Elwell, soil conservationist, Red Plains Soil Conservation Experiment Station, Guthrie, Oklahoma, in Mimeo Circular M-172 of the Oklahoma Agricultural Experiment Station.

In these tests it was found that a rather coarse mist of the chemical materials applied to green, growing brush by spraying at a pressure of about 100 pounds gave the best results. Since it is essential that the leaves and twigs be uniformly covered with the spray solution, it is highly important that the solution contain adequate spreader-sticker materials. If such materials are not available, says Mr. Elwell, a small quantity of powdered soap or similar substance may be added to the solution.

Tests were made of the effectiveness of several forms of 2,4-D. This compound may be obtained in tablets, powder of sodium or ammonium salts, liquid of esters, or ammine salts. A spray solution containing 2,000 parts of 2,4-D per million parts of water was found to be most effective on brush ranging from four to seven feet high but ineffective on large trees. The solution proved more effective on some species of trees than on others, while some species showed little or no effect after the second application.

In tests with powdered forms of 2,4-D, sodium salt applied to scrubby oak 3 to 10 feet high affected only about 15 to 20 percent of the plants, while application of the same material to oak and persimmon sprouts affected about 50 percent of them. Ammonium salt applied to small oaks and oak and persimmon sprouts affected about 80 to 90 percent of the plants treated.

In tests with the commercial liquids of 2,4-D on scrubby oak, best results were obtained with Weed-away, Weed-no-more, 46 Percent Ester, and Tufor 40. In tests on persimmon, Weedone and Esteron were found to be effective in killing the tops, but 90 to 91 percent of the plants sprouted from the roots.
In general, the application of 2,4-D appears to cause a gradual drying of the trees and brush. The leaves turn brown, and often the twigs curl and twist in two to three weeks. The plants most readily affected soon develop an abnormal knotty growth of the cambium layer along the main stems. This condition causes cracking, splitting, and deterioration of the wood.

In tests made with Ammate solution containing one pound of the powder to each gallon of water, practically all the trees, brush, grass, and other plants sprayed were affected and began to turn brown within 24 to 48 hours. Scrubby oaks, elms, dogwoods, hickorys, and persimmons are susceptible to Ammate, and about 80 to 98 percent of such plants treated in 1947 were affected. The terminal twigs were generally killed by one application, but clusters of new leaves often appeared along the main stems, and sometimes, as with persimmons, a few sprouts appeared from the roots. The new leaves or sprouts remained green unless the trees were treated a second time, and sometimes a third application was necessary to kill the growth.

Mixtures containing 1.50 to 1.75 gallons of 2,4-D stock solution and about 10 gallons of diesel oil were applied to land covered with approximately 20,000 scrubby oak shrubs per acre. This solution, which affected about 95 percent of the plants treated, was developed so that the 2,4-D would cling to the leaf surface for a longer period and thus be absorbed into the plant tissue in more effective amounts. Furthermore, such a solution is less likely to blow to nearby fields to endanger crops susceptible to 2,4-D.

Other mixtures, containing from 1/3 to 1/3 pound of Ammate and from 1,000 to 3,000 parts of 2,4-D per million parts of water, were tried on oak sprouts and mesquite. In these tests, from 70 to 95 percent of the sprouts were affected, with best results being obtained where the spray was applied on mesquite. A small quantity of Ammate was apparently sufficient to weaken the woody plants and thus give the 2,4-D a better opportunity for an attack without damage to the grass intermingled with the brush.

Investigations were also conducted to determine the effectiveness of certain chemicals in deadening trees. Completely girdling and separating the cambium layer on large trees usually kills the top, but quite often sprouts develop from the base and roots. In order to prevent this growth, undiluted Weedsone, Esteron, a saturated solution of Dow's (A 510), DuPont's 2,4-D, Ammate, and sodium arsenite were applied individually in the incisions. Arsenite mixed in the ratio of one pound of the powder to one gallon of water was found to be most effective. Some very good results, however, were obtained by applying Ammate powder in gashes on oak, honey locust, elm, and red haw trees. The 2,4-Ds, in general, gave poor results when applied to trees in this manner. On trees 4 to 8 inches in diameter one band of gashes near the ground surface was sufficient, but on trees 8 to 12 inches in diameter two bands were necessary. The second band was made about 8 inches above the one near the ground. On larger trees three bands of gashes proved best. The best time to treat trees with these compounds seems to be during a summer dormant period or about two or three weeks before the leaves drop in the fall.

Estimates on costs of deadening large trees are not available, but estimates based on the present prices of Ammate and 2,4-D show that the cost of chemical brush eradication is relatively high. The quantities of materials used per acre varies according to the density and height of the trees, so that the cost of applying the sprays varied from $20 to $100 per acre. By using mixtures of 2,4-D and Ammate and 2,4-D and diesel oil, however, the cost of applications can be reduced. Moreover, it is expected that if demand for these chemicals and the volume of their production continue to increase, their costs will decline to the point where this method of control will be economically feasible.
Hybrid Corn in Texas on Increase

The acreage in hybrid corn in Texas in 1947 was estimated at 1,106,000 acres, or 36 percent of the total, compared with 750,000 acres, or 22 percent of the total in 1946, according to E. A. Miller, extension agronomist for Texas Agricultural and Mechanical College. If the recent rate of increase is continued, over half of the 1948 corn crop may be of hybrid varieties. Mr. Miller stated that the 7,880 acres of hybrids certified in 1947 for seed should produce enough seed to take care of the normal increase in acreage.

Studies made by the Texas Agricultural Experiment Station have shown that as a general rule, Texas Hybrids No. 8, No. 18, and the new No. 20 are best adapted to the Blackland and Grand Prairie regions and adjoining areas west and south, while Nos. 20 and 12 are well suited to the Brazos River bottoms and the section east of the Blackland. Hybrid No. 12 is also recommended for the northern part of the Blackland and Grand Prairie regions. The Texas White Hybrid 9W has a wide adaptation and is a good corn to grow anywhere in Texas if a white hybrid is desired to meet special demand for meal and grits or for roasting ears.

Control of Cattle Parasites in 1947

Southwest cattlemen, conscious of the heavy cost in damage to herds by cattle lice, grubs, ear ticks, the heel fly, and the like each year, are taking effective steps to bring these pests under control. Satisfactory results were obtained last year in combating the heel fly and cattle grubs through the use of rotenone and sulphur, and cattlemen scattered throughout the Southwest used DDT successfully in controlling house and stable flies. Local banks and other business establishments have cooperated in purchasing power sprayers for use by county agents in demonstrating the use of the sprayers and in affording service to owners of small herds who have not found it economically feasible to purchase sprayers. In New Mexico, 28 counties in the State have demonstration sprayers which are provided by the State Extension Service and operated by committees of ranchers and county agents. Cattle spraying was carried on in New Mexico on a very large scale last year, and it is reported that 530,424 cattle were treated for lice, cattle grubs, ear ticks, and barn flies. In general, the New Mexico ranchers used a mixture of four pounds of 50 percent wettable DDT per 100 gallons of water for lice and house flies and 7½ pounds of 5 percent rotenone per 100 gallons of water for grubs. Mr. Joe Whiteman, assistant state extension animal husbandman in New Mexico, estimates that the spraying program saved cattlemen of his State a quarter of a million dollars in 1947 and that the number of cattle sprayed in 1948 will probably double that of last year.

New Varieties of Corn and Pecans Developed for North Louisiana

A new prolific, white, dent-type hybrid corn especially adapted to northern Louisiana is being released to growers this year by the Louisiana State University Agricultural Experiment Station. Compared with the Louisiana 468, the white hybrid that has been popular in north Louisiana, the new corn has proved its equal in yield and quality, is slightly earlier, which makes it a better corn for hogging off, has a slightly lower ear height, and appears to be more drought resistant. Furthermore, it does well on all north Louisiana soils where corn can be grown. In tests conducted at Baton Rouge and at St. Joseph, Calhoun, and other points in northern Louisiana, the new variety has outyielded Louisiana 468 by from 1 to 6 bushels per acre. Seed of the new corn, Dixie 11, will be available for commercial use this spring.

Three new varieties of pecans now available to north Louisiana growers are the Desirable, the Jennings, and the Sabine, according to John A. Cox, extension horticulturist. The Desirable variety is said to be a fairly early bearer which bears a heavy crop after...
reaching maturity, is a very vigorous grower, is reasonably resistant to diseases, and produces a nut of average size. The nut is easily shelled, attractive, and of moderate quality. The Jennings variety is a heavy bearer, vigorous, and resistant to most diseases. It produces a nut of medium size, the shell is moderately thick, and kernels are attractive and fine-flavored. The Sabine variety is also a heavy bearer which produces a nut that, although not very attractive, is moderately large. The tree produces a vigorous growth and is fairly resistant to diseases.

Use of Anhydrous Ammonia Reduces Fertilizer Costs

Anhydrous ammonia offers farmers of the Southwest a chance to save several million dollars annually on their fertilizer bills, according to a report of the Louisiana Agricultural Experiment Station. This substance is used in making ammonium nitrate and nitrate of soda, two commonly used solid nitrogen fertilizers, but it can be applied directly in the soil as a liquid. It is a gas at normal temperatures but when put under pressure becomes a liquid which contains 82 percent nitrogen and weighs five pounds per gallon. It can be transported from the ammonia plants to the farmer's railhead in tank cars, and from the tank car it can be transferred to the farmer's storage tank, which is usually mounted on a trailer.

Tractors equipped to apply the liquid anhydrous ammonia carry a tank holding about 100 gallons, from which the ammonia flows through a high-pressure rubber hose down to the back side of an applicator. Each tractor is usually provided with either two or four applicators. The applicator is a knife-like opener which cuts into the soil to a depth of about six inches before releasing the liquid fertilizer. The ammonia when released in the soil, being no longer under pressure, becomes a gas. It is covered immediately by a disc or sweep which follows the applicator.

Anhydrous ammonia is said to be much cheaper than any other nitrogen fertilizer. According to the report of the Experiment Station, it costs the farmer about six cents per pound of nitrogen, compared with 17 cents per pound in nitrate of soda, 10 cents in ammonium nitrate, and 13 cents in cyanamide. Equipment needed in applying the ammonia costs about $1,000.

One two-row tractor outfit can be used to fertilize at least 300 acres a season; in fact, larger acreages can be fertilized if advantage is taken of the fact that this substance can be applied either before planting, while planting, or as a side dressing. It does not leach out of the soil any more rapidly than nitrate of soda or ammonium nitrate, and, according to reports, it gives increases in yields equal to or greater than those produced by other nitrogen fertilizers. A 100-gallon tractor tank contains enough nitrogen to fertilize 10 acres with about 40 pounds per acre, while a 1,000-gallon farm storage tank holds enough to fertilize 100 acres.

ANNOUNCEMENTS

New Farm, Ranch, and Home Record Book Available

The New Mexico Extension Service has recently made available to farmers and ranchers a revised farm record book which contains sections for keeping records of home expenses as well as all business expenses. Copies of the new book may be secured at a minimum charge to cover printing costs by writing to a county agent or to the New Mexico Extension Service, State College, New Mexico.

Meetings

The Annual San Angelo Fat Stock Show and Rodeo will take place March 4-7.

A Brahman Show and Sale, the Annual Louisiana Poultry Show, and the Fifth Annual Baby Chick and Egg Show will be held at the Louisiana State University Agricultural Center beginning March 27.

Recent Publication

Texas Agricultural Experiment Station, College Station:

Summary of the 1947 Corn Performance Tests, Progress Report 1102.