Circular A-194 April, 1953

[redacted]

Chemical Control of PERENNIAL WEEDS

Prepared by:
Dr. E.A. Helgeson, Botanist,
Experiment Station
and
R.B. Widdifield, Agronomist,
Extension Service

EXTENSION SERVICE
NORTH DAKOTA AGRICULTURAL COLLEGE AND U.S. DEPARTMENT OF AGRICULTURE COOPERATING
E.J. Haslerud, Director, Fargo, North Dakota
Distributed in Furtherance of Acts of Congress of May [illegible] June 30, 1914.

Control of Perennial Weeds

Many perennial weeds can be controlled satisfactorily with 2,4-D. Although eradication may occasionally be obtained with one or two applications, repeated treatments are usually necessary, often over a period of several years.

For most persistent perennial weeds, control should be the goal rather than eradication. With repeated applications over a period of years, eradication will often be obtained.

When noxious weeds are still confined to small, well defined areas, it is recommended that soil sterilants such as sodium chlorate, borax or sodium chlorate-borax compounds be applied to kill out such patches before they spread.

A careful follow-up with retreatment of remaining plants, as often as is necessary, is very important to obtain complete eradication. Noxious weeds in North Dakota include leafy spurge, creeping jenny (field bindweed), perennial sow thistle, Canada thistle, perennial peppergrass and Russian knapweed.

CMU is a newer soil sterilant that can be applied on non-cropland only to kill weeds or prevent growth of vegetation where it might be a fire hazard. A rate of 1/2 pound per square rod is suggested. Due to its slow downward movement in the soil it's effectiveness on deep rooted perennial weeds is not yet known. Tests have not been run long enough to determine how long the toxic effect will last in the soil but it appears to be for several years.

Ammate is another chemical that is showing promise for the control of leafy spurge, poison ivy and brush.

RECOMMENDATIONS FOR SOIL STERILANTS

Kind	Lb. Per Square Rod	Time	Method
Sodium Chlorate	5 lbs.	Fall	Preferably dry due to fire hazard.
Chlorate-Borax mixtures	8 lbs.	Preferably fall	Wet or dry
Borascu	15 lbs.	Preferably fall	Dry (Polybor either wet or dry)
CMU	1/2 lb.	Early spring or late fall	Wet spray

In Growing Crops

Where long-time control of perennials is your aim, the rate to apply 2,4-D must be not more than the upper limit recommended for each crop.

Apply only in crops recommended for treatment with 2,4-D.

If the weed infestation is severe, use a somewhat higher rate on harder-to-kill weeds. Under these circumstances, the possible injury to your crop from 2,4-D may be less than that caused by weeds.

Delay the time of application as long as can be safely done, prior to the time that the heads are in the boot stage. The delay is to allow the maximum emergence and growth of weeds.

Maximum rates per acre of 2,4-D should be 1/2 to 3/4 pound of amine for spring small grains, or 3/8 to 1/2 pound of ester after the fully tillered or stooled stage. For treating perennial weeds in flax or other crops, see recommendations under such crops for maximum dosage.

In small grains, perennials such as Canada thistle, perennial sow thistle, leafy spurge and creeping jenny can usually be controlled satisfactorily by a treatment as recommended above. That is, the top growth is usually killed back to the ground so that they will not offer any material competition to the crop until harvest. A second treatment after harvest may be required to prevent regrowth and production of seed. Several years of such applications are usually required for complete control and and in some cases eradication.

In Non Crop Land

CANADA THISTLE AND PERENNIAL SOW THISTLE

Two applications of 2,4-D each year over a period of 2 or more years are necessary. The first application should be at the bud stage with the second in early fall when regrowth is in the rosette stage. Apply 1 to 2 pounds of 2,4-D per acre each

time to weaken plants and prevent seed production. Intensive cultivation, later after treating with 2,4-D, has given good control.

Applications of 1/8 to 1/4 pound per acre, repeated every 2 to 6 days until a total of 1 pound of 2,4-D has been applied, has been promising in recent experiments. Apply a soil sterilant for eradication of small patches.

LEAFY SPRUGE, PERENNIAL PEPPER GRASS AND RUSSIAN KNAPWEED

Two applications of 2,4-D each year at 3/4 to 1 pound per acre in the early bud stage and again in late summer at the same stage will prevent seed formation and reduce the stand somewhat. In solid stands, rates of 2 to 3 pounds per acre are suggested the first year with lower rates in following years. About 20 gallons of water per acre as a carrier are recommended to give thorough coverage.

For best results on non cropland, seed infested areas to adapted grasses to provide competition and to help take over as the spurge is weakened. In dense grass 1 pound of 2,4-D per acre applied as often as needed to keep down top growth for 2 or more years will give important stand reductions. Further infestation, from seed, can be expected. Seedlings may be destroyed by lighter applications.

Use soil sterilants to eradicate small patches. Borax compounds are effective on leafy spurge. Retreat as necessary to kill plants that are missed. Limited trials in spraying patches of leafy spurge with 3 pounds of ammate per square rod have shown promise.

On large acreages of leafy spurge a combination of one season of intensive cultivation followed by 3 to 4 years of small grain treated with 2 treatments per year of 2,4-D will probably be most effective. Seeding an infested area to grass for competition to the spurge and treating with 2,4-D for 2 or 3 years is also effective. Large areas can be controlled by pasturing with sheep.

CREEPING JENNY

Creeping jenny (field bindweed) is most susceptible to 2,4-D when growing vigorously. Applications are effective in late fall or in bud to bloom stage in the spring. One half to 1 pound of 2,4-D per acre is required to give practical control. One treatment per year sufficient but retreating each year for 3 to 5

years will usually be necessary to thin out or eradicate it.

Creeping jenny can be controlled by intensive cultivation followed by a late seeded smother crop such as millet, sudan grass or buckwheat. Cultivate to cut off all roots about 4 inches below the surface about 8 to 10 days after emergence each time that they emerge. About July 1 plant to a smother crop. Two to four years are usually required for eradication. Treat small patches with a soil sterilant.

QUACK GRASS

Patches or field areas of quack grass can be controlled by applying 50 to 100 pounds per acre of TCA to undisturbed, or 25 to 70 pounds per acre applied to the soil immediately after plowing or working it up. The lighter rates are suggested for light sandy soils and heavier rates for heavy soils. The best time to apply TCA is in late summer or early fall. The effectiveness of TCA depends on proper moisture conditions. A complete kill of the roots may not result, so follow-up cultivation or chemical treatment may be necessary.

Apply TCA as a spray in 20 to 30 gallons of water per acre to insure good coverage. Enough moisture to move the TCA into the root zone is necessary for effective control. A residual effect of TCA in treated soil, harmful to crops, can be expected for a few months. However, summer or early fall applications will usually not harm crops the following spring, except soybeans or corn. TCA is rather caustic to the skin and to metals. Wash your hands or face if exposed and flush out equipment after applying TCA.

For other than small patches of quack grass cultivation will usually be the most effective and economical means of eradication. Intensive cultivation starting in June and continued throughout the remainder of the season is recommended. If the fallow season is wet poor control may result.

Quack grass patches can be eradicated with a soil sterilant. Sodium chlorate is recommended at 5 pounds per square rod. CMU may be used to eradicate quack grass on non-agricultural land only. Early spring or late fall applications of 20 to 50 pounds per acre have given quite complete kills. CMU will ordinarily be too expensive for any but small patches. More information is needed on length of sterility in the soil.

BRUSH AND WOODY PLANTS

Both 2,4-D and 2,4,5-T have a definite place in woody plant control. Foliage sprays of 2,4-D will kill some plants not killed by 2,4,5-T and 2,4,5-T will kill some plants not killed by 2,4-D. However, 2,4,5-T will probably not be any more effective than 2,4-D on North Dakota species of woody plants except for wild rose. So, generally, 2,4-D ester is recommended.

A foliage spray will usually be most practical. Apply a solution of about 1 to 2 pounds of 2,4-D in 100 gallons of water. Spray so as to thoroughly wet the foliage of the trees, bushes or weeds, when fully leafed out and when growing rapidly. The ester formulation is recommended. When near susceptible crops or plants, use low-volatile esters and be careful to avoid injury from drift.

Ammate (ammonium sulfamate) applied at 3/4 to 1 pound per gallon of water is also effective as a foliage spray for brush control. Apply sufficient spray for thorough coverage of the foliage and add some sticker or spreader to the solution.

Mowing for 2 or 3 seasons is an effective control measure for many weeds and small brush in pastures. Mowing combined with 2,4-D applications may be more effective. The most common cause of weeds and brush coming into a pasture is overgrazing and, unless good pasture management is practiced, weeds can be expected to return.

Where buckbrush or sage brush is a problem in a pasture spraying with 1 to 2 pounds, of 2,4-D ester per acre in 10 to 20 gallons of water per acre is suggested. Apply in the late spring after fully leafed out and when growing rapidly. If such 2,4-D treatments are repeated each year for 2 or 3 years stands may be thinned out materially, although complete elimination may not result. For smaller areas mix 2,4-D ester at the rate of 2 pounds per 100 gallons of water and spray to wet the foliage thoroughly.

OTHER CIRCULARS

(Available From Your County Agent)

Circular A-190 Chemmcal Control of Weeds,

Guide For Mixing Insect and Weed Control Chemicals

er y