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CHEMICAL WEED CONTROL

In
FIELD CROPS



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CHEMICAL WEED CONTROL IN FIELD CROPS

Recommendations for chemical weed control contained in this circular are based on recommendations of the Research Committee of the North Central Weed Control Conference and the North Dakota Experiment Station.

The use of chemicals suggested here is contingent upon registration of such chemicals by the Food and Drug Administration in regard to tolerances when applied to crops raised for food or feed purposes. Chemicals should be used only as recommended on the label of the container.

The use of chemical herbicides can add materially to a good weed control program. In small grain production, chemicals can be used effectively in addition to cultural practices for control of annual weeds. Chemicals are also recommended for control of hard to kill weeds such as creeping jenny, leafy spurge, Canada thistle and perennial sowthistle.

When applying herbicides to growing crops, follow closely the instructions on the container. In determining rates to use, consider both the crop tolerance and kind of weeds present. The proper use of herbicides should result in a large measure of weed control. But, if the chemicals are not used along with recognized cultural control practices they are not likely to solve your weed problems.

Do not spray when there is danger of drift, or when winds are blowing toward a neighboring crop or planting more susceptible than the crop being sprayed.

Weeds more susceptible to MCP than to 2,4-D include Canada thistle and perennial peppergrass. Those more susceptible to 2,4-D include Russian thistle, false flax, wild buckwheat, smartweed, redroot pigweed, ball mustard, tansy mustard and sowthistle.

Wheat, durum, barley and oats

Wheat, durum and barley are more tolerant to 2,4-D than oats, with wheat and durum somewhat more tolerant than barley.

All four crops are likely to be injured by 2,4-D if applied from emergence to the two leaf stage or during the boot and shot blade stage. The best time to spray wheat, durum and barley is from the time that five full leaves appear until the early boot stage. During this period $\frac{1}{4}$ to $\frac{1}{2}$ pound per acre of 2,4-D amine or $\frac{1}{4}$ to $\frac{1}{3}$ pound of 2,4-D ester can generally be used to control broadleaved weeds without injury to the crops.

Oats are easily injured by a 2,4-D application at any stage of growth, with early jointing the most sensitive stage. Weed control obtained will usually more than offset the 2,4-D injury. Oats are more tolerant of MCP than of 2,4-D. Application should be made after the 5 to 6 leaf stage up to the early boot stage. The recommended rates per acre for oats are $\frac{1}{4}$ to $\frac{1}{2}$ pound of MCP, $\frac{1}{4}$ to $\frac{3}{8}$ pound of 2,4-D amine and not over $\frac{1}{4}$ pound of 2,4-D ester.

In general, use the upper recommended rates on small grains for harder to kill weeds or when crop and weed growth is retarded due to drouth or cool weather. The lower rates are suggested only when growth is rapid or when treating more susceptible weeds.

Winter rye

Winter rye may be treated with 2,4-D at $\frac{1}{4}$ to $\frac{1}{2}$ pound per acre of the ester or amine to control

susceptible broadleaved weeds with little injury to the crop. Applications should be made in the spring from the full tillered stage through early jointing but before the boot stage. Similar applications made in the fall generally result in crop damage and are not recommended.

Flax

Spray flax with MCP or 2,4-D as soon as emergence of susceptible weeds is sufficient to make spraying practical. This will usually be when flax is 2 to 6 inches tall. Spraying may reduce yields somewhat, but weed competition usually reduces yields more than does the injury from spraying. Do not spray flax during the bud and blossom stage.

MCP is less likely to injure flax than 2,4-D and is the preferred material. Use 2 to 3 ounces per acre of MCP or 2,4-D in amine formulations for susceptible weeds like wild mustard. Use 4 ounces for weeds such as lambsquarters, redroot pigweed, cocklebur, marsh elder and ragweed. Use 4 to 5 ounces in amine formulations for wild buckwheat or smartweed. Use 5 to 6 ounces of MCP amine for Canada thistle and perennial sowthistle. Use 2,4-D ester at 4 to 5 ounces, or MCP ester at 5 to 6 ounces for Russian pigweed and Russian thistle. The higher rates, especially of ester formulations, may damage flax seriously.

TCA at 5 pounds per acre will kill green foxtail, yellow foxtail and barnyardgrass in young flax. The flax should be at least 2 inches tall and the weeds less than 2 inches for best results. TCA can be applied in mixture with MCP or 2,4-D to kill susceptible grass weeds and susceptible non-grass weeds with one application.

Preharvest Weed Control

In small grain crops, treatment before harvest at the early dough stage should be considered an emergency measure to be used only when weeds threaten to interfere with harvest operations. One pound per acre of 2,4-D is generally required even though it may result in some crop injury.

Corn

The use of 2,4-D in growing corn is suggested only when susceptible weeds cannot be controlled satisfactorily by cultivation. Some degree of injury to corn in the form of brittleness and bending or breakage of stalks can be expected for several days after treating with 2,4-D. Severe stand losses may occur when treatment is followed by a storm or careless cultivation.

Apply $\frac{1}{4}$ to $\frac{1}{2}$ pound of 2,4-D per acre after the corn is 5 inches tall up to the tasseling stage. Determine the dosage by the kind of weeds being treated. The esters must be used at lower rates. If the corn is over 30 inches tall, drop nozzles should be used unless the weeds are too tall. Stalk breakage increases with heavier rates and with later applications.

Do not apply 2,4-D during the tasseling stage or when the temperature is over 90 degrees. MCP has not proved to be less injurious to corn than 2,4-D.

Soybeans

Selective chemical weed control in growing soybeans is not recommended.

To control annual grasses, Randox at 4 to 6 pounds per acre just before bean emergence may be worth a try. As with all pre-emergence herbicides, results will vary with weather conditions.

Grass Seedlings

Perennial grass seedlings may be treated with up to $\frac{3}{4}$ pound per acre of 2,4-D after the seedlings have reached the 2 to 4-leaf stage. When seedlings become

well stooled and have 12 or more leaves they are about as tolerant as established stands. Young grass seedlings may be injured by treating at or soon after emergence. Legumes in grass-legume mixtures are likely to be seriously injured by a 2,4-D application.

Established stands of most perennial grasses are very tolerant to any recommended rate of 2,4-D.

Forage legumes

Avoid using herbicides on seedling legumes unless the nurse crop is seriously threatened by weeds. Red, ladino and alsike clover may be sprayed with 2,4-D or MCP amine at $\frac{1}{4}$ pound or less per acre. Sweet-clover and alfalfa usually will be injured. A complete canopy formed by the companion crop and from weeds will reduce injury to the legumes.

In established stands, 2,4-D or MCP may be applied in the dormant stage of the legume in late fall after killing frost, or in early spring. Dinitro products may be used on established stands of legumes at 1 to 3 pounds per acre for broadleaved weed control.

TCA at 5 to 7 pounds per acre can be used to control many annual grassy weeds in both seedling and established stands of alfalfa, sweetclover and birds-foot trefoil without permanent injury. For best results, apply the TCA before the grass seed-

lings are 2 inches tall. Alsike, red and ladino clover are injured or killed by TCA treatments.

Dalapon may be applied at the rate of 2 to 3 pounds per acre in seedling stands of alfalfa and birdsfoot trefoil to control annual grasses. Apply Dalapon in 5 to 10 gallons of water per acre soon after emergence of the grass seedlings--often 1 or 2 weeks after emergence of the legume. Dalapon may be used later in the season if necessary, but cannot be used if small grains are being grown as a nurse crop.

Sugar beets

Crop rotation and cultivation are the principal means of weed control in sugar beets. Where annual grasses (except wild oats) are a problem the application of 5 to 7 pounds of TCA per acre, just before the emergence of the beets, is recommended. If weather makes it impossible to apply TCA before emergence of the beets, delay the application 10 days. This delayed treatment should be considered an emergency treatment only as it will stunt some beets.

Dalapon at 4 to 6 pounds per acre to control annual grasses, including wild oats, appears promising. This chemical must be applied after emergence of the weeds, either before or after beet emergence.

CHECK PER ACRE OUTPUT OF YOUR SPRAYER

To do a good, economical job of spraying it is necessary to know the per-acre output of your sprayer and to make adjustments as necessary. Too much chemical will injure your crop and too little chemical may not do a good weed killing job.

1. Start with the spray tank completely full.
2. Make one round.
3. Measure carefully the water it takes to refill the tank.
4. Determine the number of acres covered from table below.
5. Divide the exact gallons used in one round by the acres covered. This gives rate of application per acre. Mix your chemical and water accordingly.

Boom Width

16 ft. = 1.9 A/mile	30 ft. = 3.63 A/mile
18 ft. = 2.18 A/mile	32 ft. = 3.87 A/mile
20 ft. = 2.42 A/mile	33 ft. = 4.00 A/mile
22 ft. = 2.66 A/mile	34 ft. = 4.12 A/mile
24 ft. = 2.9 A/mile	36 ft. = 4.36 A/mile
25 ft. = 3.03 A/mile	38 ft. = 4.60 A/mile
26 ft. = 3.15 A/mile	40 ft. = 4.84 A/mile
28 ft. = 3.39 A/mile	

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