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Chemical
Weed Control
in
North Dakota 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. This committee represents agricultural colleges and universities of the North Central States and Canada.

The use of chemicals suggested in this report is contingent upon registration of such chemicals by the Food and Drug Administration. In applying chemicals to crops raised for food or feed purposes, which may move in interstate commerce, growers should check the label on the chemical container to be sure that it meets the requirements of the Food and Drug Administration in regard to residue tolerances. Chemicals should be used only as recommended on the label.

While the use of chemicals has added materially to the control of weeds, it is highly important that good cultural practices should be used at all times in small grain production. Proper summerfallow practices performed at the correct time will generally control most persistent perennial weeds. The use of chemical herbicides, to supplement cultivation, is recommended for combating patches of hard to kill weeds. such as creeping jenny, leafy spurge, Canada thistle and perennial sow thistle.

In spring sown grain, where good cultural practices have been carried out before seeding, the use of herbicides where needed is strongly recommended to combat both annual and perennial weeds in the growing crops. In the application of herbicides to growing crops, follow closely the instructions on the container. The proper use of herbicides should result in a large measure of weed control but if not used along with recognized cultural control practices, is not likely to solve your weed problem.

At all times when using chemical herbicides remember that your neighbor's crop just over the fence, may possibly be more susceptible than the crop being sprayed. Do not spray when there is danger of drift, or when winds are blowing toward a neighboring crop or planting which is more susceptible than the crop being sprayed.

Wheat, durum, barley and oats

Wheat, durum and barley are less sensitive than oats to 2,4-D applications, with wheat and durum being somewhat less sensitive than barley. However, all four crops are likely to be injured by 2,4-D from emergence to the two-leaf stage. Wheat, durum and barley are relatively tolerant from the time that five full leaves appear until the early boot stage. During this period 1/4 to 1/3 pound per acre of 2,4-D ester or 1/4 to 1/2 pound of 2,4-D amine can usually be used to control broadleaved weeds without injury to the crops.

Avoid spraying small grains in the boot or shot-blade stage. Heavy applications of 2,4-D ester (1/2 pound per acre) may result in deformed heads and sterile spikes when applied before the grain has reached the 5 or 6 leaf stage or when sprayed less than 10 days prior to heading. Experimental work has shown that small grains are more tolerant to MCP formulations and to 2,4-D amine than to 2,4-D ester.

Some injury to oats should be expected from a 2,4-D application any time from the seedling to the early boot stages of growth. The time of early jointing is apparently the most sensitive stage of oats. However, the weed control obtained generally will more than offset the 2,4-D injury.

Oats are more tolerant of MCP than of 2,4-D Up to 1/2 pound per acre of MCP can be applied to oats after the 5 to 6-leaf stage up to the early boot stage. Apply 2,4-D to oats only during the latter part of this period and, as a further precaution, apply lighter dosages than for wheat or barley. The recommended rates per acre for oats are 1/4 to 1/2 pound of MCP, 1/4 to 3/8 pound of 2,4-D amine and not over 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 when growth is rapid or when treating more susceptible weeds.

Weeds more susceptible to MCP than to 2,4-D include hemp nettle, horse tail, buttercup, Tartary buckwheat, corn spurry, corn cockle and perennial peppergrass. Those more susceptible to 2,4-D include Russian thistle, false flax, wild buckwheat, velvet weed, Jimson weed, smartweed, redroot pigweed, ball mustard, tansy mustard and wild hemp.

Winter rye

Winter rye may be treated with 2,4-D at 1/4 to 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.

In spring wheat, durum, barley and oats, as well as in winter rye, treatment before harvest, applied at the milk to hard dough stage, should be considered an emergency measure to be used only when weeds threaten to interfere with harvest operations. At this stage 1 pound per acre of 2,4-D is generally required, even though it may result in some damage to the crop and weed control is often not satisfactory.

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 of seed and straw somewhat but weed competition is usually reduced sufficiently to offset injury from spraying.

MCP is less likely than 2,4-D to injure flax and is, therefore, 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 lambsquarters, redroot pigweed, stinkweed, cocklebur, marsh elder, and ragweed.

For moderately resistant weeds, good kills generally are not obtained. But, by using higher rates of application these weeds can be held in check and their seed production largely prevented. For light infestations of moderately resistant weeds, use 4 ounces in amine formulations but for medium to heavy infestations use higher rates. Use 4 to 5 ounces in amine formulations for wild buckwheat or smartweed. Use 5 to 6 ounces of MCP amine for Canada and perennial sow thistle. Use 2,4-D ester at 4 to 5 ounces or MCP ester at 5 to 6 ounces for Russian pigweed and Russian Thistle. Ester formulations at these rates may seriously damage flax.

Do not spray flax with MCP or 2,4-D during the period between bud and the stage when 90 percent of the bolls have formed.

TCA at 5 pounds per acre will kill green foxtail, yellow foxtail, giant foxtail and barnyard grass in young flax. The flax should be at least 2 inches tall and the weeds less than 3 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, but this mixture should not be applied after early bud stage. Do not apply TCA to small grains such as wheat, durum barley and oats as serious injury might result.

When flax is used as a companion crop to establish alfalfa, red clover, alsike clover, Ladino clover, timothy, meadow fescue, bromegrass, or crested wheatgrass, use MCP or 2,4-D as directed for flax except that alfalfa or clover seedlings should be at least 2 inches tall. Sweetclover seedlings will probably be killed if the flax is sprayed with MCP or 2,4-D. TCA can be used on flax sown with alfalfa or sweetclover but TCA will probably kill red clover, alsike clover, timothy, meadow fescue, bromegrass or crested wheatgrass.

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 followed by a storm or careless cultivation.

If 2,4-D is to be applied to corn, apply 1/4 to 1/2 pound 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.

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. Stalk breakage increases with heavier rates and with later applications.

Soybeans

Chemical control of broad-leaved weeds in soybeans is not generally recommended. If weeds such as common mustard or cockleburs cannot be satisfactorily controlled by cultivation, an application of 2 ounces per acre of the amine formulation of 2,4-D or MCP may be applied. For least injury to the soybeans spray when the beans are 3 to 5 inches tall.

Pastures and meadows

Mowing is recommended for controlling many kinds of weeds if done for 2,3 or 4 years. In general, mow herbaceous weeds in the early bud or blossom stage. Spraying with 2,4-D gives better control of more kinds of weeds than a single mowing. Spray when the weeds are growing actively. Repeated treatments for two or more years are usually necessary.

Established stands of most perennial grasses (bent grasses and buffalo are exceptions) are very tolerant to any recommended rate of 2,4-D. Young grass seedlings, however, may be injured by treating at or soon after emergence. Perennial grass seedlings may be treated with up to 3/4 pound per acre of 2,4-D after the seedlings have reached the 2 to 4 leaf stage. After seedlings become well stooled and have 12 or more leaves they are about as tolerant as established stands. Legumes in a grass-legume mixture are likely to be seriously injured by a 2,4-D application.

Forage legumes

Legumes, such as alfalfa, sweetclover, peas and beans, are very susceptible to injury from 2,4-D or MCP and, generally, should not be treated. Alfalfa and sweetclover seedlings growing in a small grain nurse crop will likely be reduced seriously in stand if treated with 2,4-D or MCP. In established stands these herbicides 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 established stands of alfalfa, sweetclover and birdsfoot trefoil without permanent injury. TCA can also be applied in seedling stands of these legume crops at 5 to 7 pounds per acre as a pre-emergence treatment for the weeds or while the weeds are very small. Alsike, red or ladino clover are injured or killed by TCA treatments.

Dalapon may be applied at the rate of 2 pounds per acre in seedling stands of alfalfa and birdsfoot trefoil to control annual grasses, if the forage is not harvested during the treatment year. Apply dalapon, in 5 to 10 gallons of water per acre, soon after emergence of the grass seedlings -- often one or two weeks after emergence of the legume. Dalapon may be used later in the season if necessary but should not be used if small grains are being used 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 per acre of TCA, 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 some beets will be stunted.

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