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CEREALS

The 3-C's of

Perennial Weed Control

Chemicals-Cultivation-Crop Rotation

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Dense stands of perennial noxious weeds have taken many years to develop in fields, pastures, rangelands or roadsides. Essentially, all are foreign plants introduced into favorable ecological situations in Idaho. As such, they are the most serious pollutant of our land resource.

They can be eradicated only through a persistant program conscientiously applied over several years. The suggestions in this publication have been successfully applied by land owners. They will help you to solve your perennial weed problem if you fit them to your land and crop management.

Team Work

The most effective and practical method of controlling perennial weeds in badly infested fields is to apply a suitable combination of cropping, chemicals and cultivation. By developing and persistently applying a combination fitted to the individual farm, it is possible to increase crop yields and also bring perennial weeds under control.

Suitable Crops

Crops best adapted for controlling these weeds are corn for silage, or grain, small grains or grass. Short season cultivated crops, such as beans and potatoes, can be used to advantage. Thick vigorous alfalfa is effective in controlling Canada thistle and in checking field bindweed.

Most other crops cannot compete and should not be grown on land infested with perennial weeds.

Fertilizer and Management Essential

Dense stands of healthy, vigorous crops compete best with weeds and are essential for high yields. Use soil tests to determine fertilizer needs. Use adequate amounts of nitrogen, phosphorous and other needed nutrients. Prepare a good seed bed, use heavy seeding rates, irrigate properly and manage for top yields.

Weed Seedlings

Thousands of weed seeds may infest the plow layer of soil in old, established stands of perennial weeds. Chemicals do not kill weed seeds. CONTROL OF SEEDLING PLANTS IS, THEREFORE, ESSENTIAL IN ANY WEED PROGRAM. Killing young seedlings is easy. Seedlings of any noxious weeds die when the roots are cut by cultivation or sprayed with 2,4-D within a month after they come through the ground. Kill them before they can become established.

Ditches and Fence Rows

Encourage the growth of desirable perennial grasses along ditch banks and fence rows. A thick stand of grass competes with weeds and helps to keep them from becoming established. Level and seed all new ditch banks immediately. Plant crested or stream bank wheat grass on the dry banks; Kentucky bluegrass on the better moisture sites and redtop at the water's edge. Spray weeds at least twice a year on ditch banks and in fence rows with 2,4-D or other suitable herbicides. Apply in 30 to 60 gallons of water per acre at no more than 20 to 30 pounds of pressure.

Use of Herbicides for Perennial Weed Control in Cereals

2,4-D is registered for use in cereals at a rate no higher than 1½ lbs. per acre. It must be applied either between tillering and boot stages or between the dough stage and harvest. When used between tillering to boot, do not feed or graze treated foliage for 2 weeks. When used at dough or later stage, do not use straw for feed. Use only the amine formulation.

Dicamba (Banvel) is registered for SPOT use in Idaho under wheat fallow programs and where wheat will follow wheat in crop sequence. It is effective on field bindweed, Russian knapweed and Canada thistle, and does a fair job on leafy spurge.

COOPERATIVE EXTENSION SERVICE
COLLEGE OF AGRICULTURE

AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF IDAHO

	FIELD BINDWEED	CANADA THISTLE OR PERENNIAL SOW THISTLE	W
SPRING WHEAT	Spray with 1-1/2 lbs. 2,4-D per acre after the wheat is tillered and before booting. This allows about 2 weeks for application. If weather or other conditions prevent application during this period, make application when wheat is in soft dough stage. Follow this program for at least 3 consecutive years, before going into other cropping sequence. After harvest: (1) immediately remove excess straw, irrigate, wait 2 weeks or until maximum weed growth is present, spray with 3 lbs. of 2,4-D per acre; or (2) cultivate with a duckfoot type cultivator every 14 days from harvest until all growth stops; or (3) apply 6 lbs. of dicamba (Banvel) per acre to the infested spots. Where this herbicide is used, wheat may be planted 1 month after application, but other grass type crops should not be planted for 1 year after application, and legumes, sugar beets and potatoes should not be planted for 2 years after application. In non-irrigated areas, spray fall-emerged weeds with 2,4-D and/or dicamba.	Follow the same treatment procedure as given under field bindweed. Spring wheat is the best crop to grow when controlling Canada thistle or perennial sow thistle with 2,4-D.	Follow a persistent progra Spray with 1-1/2 lbs. 2,4- is stooled and before it is in t After harvest: (1) irriga emerges, cultivate to cut of no more emergence occurs t maximum fresh growth is p 8 lbs. of amitrole per acre. corn within 8 months of appl In non-irrigated areas: (plow. Plant to winter wheat next season.
WINTER WHEAT	In the spring, spray with 1-1/2 lbs. of 2,4-D per acre when the grain is between tillering and booting. If weed growth makes it necessary, spray again after the grain is in the soft dough stage or apply dicamba (Banvel) to infested spots at a rate of 6 lbs. per acre at least 1 month before planting. If this herbicide is used, do not plant any other grass type crop for at least 1 year and do not plant potatoes, sugar beets or beans for at least 2 years. After harvest: (1) on irrigated land, remove excess straw, irrigate, wait for good weed growth and spray with 3 lbs. of 2,4-D per acre; or (2) cultivate with a duckfoot type cultivator every 14 days from harvest until growth stops. In non-irrigated areas, if green growth is present after harvest follow the same spraying and cultivating program.	Follow the same treatment procedure as given under field bindweed.	The full tiller to boot sta with the early bud stage o with 1-1/2 lbs. of 2,4-D per a After harvest: Follow th spring wheat.
BARLEY	Spray with 1-1/2 lbs. of 2,4-D per acre when the barley is tillered and before booting. This generally allows about 2 weeks for application. If conditions prevent application during this period, 2,4-D can be applied from soft dough to harvest. After harvest: (1) on irrigated land, remove excess straw, irrigate, wait 2 weeks or until good growth occurs, then apply 2,4-D at the rate of 3 lbs. per acre; or (2) cultivate every 14 days until all seasonal growth stops. Be sure the cultivator will cut off all bindweed growth each time. Do not use dicamba where barley will be grown. In non-irrigated barley, if green growth is present follow the same spraying and cultivating program.	Follow the same treatment procedure as given for the control of field bindweed.	
OATS	When the oat crop is fully tillered and before booting, spray with 1-1/2 lbs. of 2,4-D per acre or apply MCPA at the rate of 1-1/2 lbs. per acre. Oats are more sensitive to 2,4-D than either wheat or barley, therefore more damage may result. After harvest: Follow the same program as designated under barley.	Follow the same treatment procedure as given for the control of field bindweed.	

	RUSSIAN KNAPWEED OR LEAFY SPURGE	PERENNIAL GROUND CHERRY OR SHOWY MILKWEED	QUACKGRASS
is eliminated. on as the grain after whitetop ry 8 days until n late fall when bs. of 2,4-D or ny crop except le. emergence and p and cultivate	These two weeds are more difficult to control with selective 2,4-D applications, but careful, persistent treatment will give results. Spray 1-1/2 lbs. of 2,4-D per acre when the grain is fully tillered and before it is in the boot. After harvest: (1) remove straw, irrigate, and spray 3 lbs. of 2,4-D per acre at least 2 times while growth is present; or (2) cultivate to cut off all top growth every 14 days until freeze up; or (3) treat patches with dicamba at a rate of 6 lbs. per acre. If dicamba is used, don't plant any crop except wheat.	Treatment is the same for wheat, barley and oats; can be controlled best by treatment after harvest: (1) remove straw, irrigate, wait 3 weeks, spray with 4 lbs. of Amitrole per acre. Do not plant any crop except corn for 8 months after Amitrole application; or (2) cultivate every 14 days until no growth reappears and plow deep in late fall.	Treatment is the same for wheat, barley and oats. Do no plant grain crops on land infested with quackgrass. However, if an infested field is cropped with grain, take advantage of the dry soil condition at harvest time. Plow immediately after harvest. After plowing, cultivate once a week or more often for the remainder of the season with a spring tooth cultivator. Complete eradication is possible if thorough dry cultivation is followed for 6 to 8 weeks. The following crop year grow a crop in which chemical control of quackgrass can be used, such as corn, beans or potatoes.
eat will coincide ay at this time as given under	At least 1 month before seeding fall wheat, apply 6 lbs. of dicamba per acre to the weed-infested areas. In the spring after the wheat is fully tillered and before it is in the boot, spray with 1-1/2 lbs. of 2,4-D per acre. After harvest: Follow the procedure given under spring wheat.	Treatment is the same for wheat, barley and oats; can be controlled best by treatment after harvest: (1) remove straw, irrigate, wait 3 weeks, spray with 4 lbs. of Amitrole per acre. Do not plant any crop except corn for 8 months after Amitrole application; or (2) cultivate every 14 days until no growth reappears and plow deep in late fall.	Treatment is the same for wheat, barley and oats. Do no plant grain crops on land infested with quackgrass. However, if an infested field is cropped with grain, take advantage of the dry soil condition at harvest time. Plow immediately after harvest. After plowing, cultivate once a week or more often for the remainder of the season with a spring tooth cultivator. Complete eradication is possible if thorough dry cultivation is followed for 6 to 8 weeks. The following crop year grow a crop in which chemical control of quackgrass can be used, such as corn, beans or potatoes.
	Spray 1-1/2 lbs. of 2,4-D per acre after the barley is tillered and before it is in the boot. After harvest: (1) remove straw, irrigate, and spray new growth with 3 lbs. of 2,4-D per acre at least twice while growth is present; or (2) cultivate to cut off all top growth every 14 days until freeze up.	Treatment is the same for wheat, barley and oats; can be controlled best by treatment after harvest: (1) remove straw, irrigate, wait 3 weeks, spray with 4 lbs. of Amitrole per acre. Do not plant any crop except corn for 8 months after Amitrole application; or (2) cultivate every 14 days until no growth reappears and plow deep in late fall.	Treatment is the same for wheat, barley and oats. Do no plant grain crops on land infested with quackgrass. However, if an infested field is cropped with grain, take advantage of the dry soil condition at harvest time. Plow immediately after harvest. After plowing, cultivate once a week or more often for the remainder of the season with a spring tooth cultivator. Complete eradication is possible if thorough dry cultivation is followed for 6 to 8 weeks. The following crop year grow a crop in which chemical control of quackgrass can be used, such as corn, beans or potatoes.
	Follow the same procedure as given under barley.	Treatment is the same for wheat, barley and oats; can be controlled best by treatment after harvest: (1) remove straw, irrigate, wait 3 weeks, spray with 4 lbs. of Amitrole per acre. Do not plant any crop except corn for 8 months after Amitrole application; or (2) cultivate every 14 days until no growth reappears and plow deep in late fall.	Treatment is the same for wheat, barley and oats. Do no plant grain crops on land infested with quackgrass. However, if an infested field is cropped with grain, take advantage of the dry soil condition at harvest time. Plow immediately after harvest. After plowing, cultivate once a week or more often for the remainder of the season with a spring tooth cultivator. Complete eradication is possible if thorough dry cultivation is followed for 6 to 8 weeks. The following crop year grow a crop in which chemical control of quackgrass can be used, such as corn, beans or potatoes.

CROP ROTATIONS FOR IRRIGATED AREAS

It is usually best to plant grain or corn for 3 consecutive years when starting a crop-rotation program for weed control. Spray with 2,4-D twice a year as outlined in the chart. This reduces the stand of weeds so that a vigorous, thick stand of alfalfa hay or grass pasture can be established. After 4 years of alfalfa cut for hay, or after grass pasture that has been sprayed twice a year with 2,4-D, plow the field and plant it to beans, potatoes or cereals. When a suitable crop rotation and spraying program is conscientiously followed, the weeds will be reduced to the point that spot application with an appropriate herbicide will eliminate the few remaining plants. It may be necessary to repeat the rotation and spray program.

The following suggested rotation may have to be modified for different areas and for different types of weeds. Severe weed situations may require fallow prior to the rotation.

Suggested Rotation for Irrigated Areas

First year —— Grain or corn
Second year —— Grain or corn
Third year —— Grain or corn
Fourth year —— Alfalfa hay or grass pasture
Fifth year —— Alfalfa hay or grass pasture
Sixth year —— Alfalfa hay or grass pasture
Seventh year —— Alfalfa hay or grass pasture
Eighth year —— Potatoes, beans, grain or corn

CROP ROTATIONS FOR NON-IRRIGATED AREAS

The choice of crops for rotation under non-irrigated conditions is usually limited by the amount of annual moisture. Therefore, fallow must often be included in the rotation. A well-managed fallow program is the most effective method of controlling perennial weeds in non-irrigated fields. Where perennial weeds exist, cultivate the fallow every 14 days with a cultivator that will cut off all weed shoots. Cultivating 4 inches deep is usually most satisfactory and economical.

Include a grain crop that can be sprayed with 2,4-D. Under most non-irrigated conditions, only one spraying a year is possible. This spray, combined with cultivation immediately after harvest and a deep fall plowing, will thin the stand sufficiently to permit establishment of grasses, alfalfa or sweet clover. Do not seed alfalfa or grasses with a grain crop because the alfalfa or grasses need all the space and mositure to establish strong root systems. Mow the grasses or legumes one or more times the first season to control the weeds.

Suggested Rotations for Non-irrigated Areas

8-Year	8-Year	6-Year
First year —— Grain	Grain	Grain
Second year —— Grain	Grain	Sweet clover
Third year —— Alfalfa	Grass	Sweet clover for green manure
Fourth year —— Alfalfa	Grass	Grain
Fifth year —— Alfalfa	Grass	Grain
Sixth year —— Alfalfa	Grass	Fallow *
Seventh year —— Grain	Grain	
Eighth year —— Fallow *	Fallow *	

* Cultivate every 14 days if perennial weeds are present; otherwise, often enough to control annual weeds and prevent seed production.

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