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Control Weeds In Potatoes With Herbicides

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Weeds Take \$42 an Acre From Idaho Potato Growers

Uncontrolled weeds reduce Idaho potato yields an average of 11 sacks, or \$20 per acre. Very weedy fields lose 35 sacks or more. A survey of 839 fields in Idaho showed that 56% had medium or heavy weed infestations. Cultivation for weed control is a general practice which in itself results in an average loss of 12½ or more sacks, or \$22 per acre. Tests show that some growers lose 20% or more in yield, with quality loss too, because of cultivation. In short, uncontrolled weeds and cultivation for weed control are costing Idaho potato growers an average of \$42 per acre or 13 million dollars a year. Better weed control practices can prevent or reduce these losses.



Weed-free rows in control plots are marked contrast to the uncontrolled plots in this experimental field.

How to Use Herbicides For Potato Weed Control

1. Diagnose the weed problem.
 - a. Find out what weeds are in your field. Herbicides are selective and, like medicines, are not cure-alls.
 - b. Find out whether your weeds are susceptible to registered potato herbicides. Learn if they are seed-dependent annuals, or resistant perennials.
2. Plan the treatment well in advance to avoid possible complications.
 - a. Choose a herbicide or combinations that will control all important weed species in your field.
 - b. Determine exactly how the herbicide is to be applied and plan every detail into the cultural program.
 - c. Plan to kill weeds before they grow beyond the seedling stage.
 - d. Determine how this will affect other cultural operations and anticipate necessary changes in the usual procedures.
 - e. Anticipate changes in equipment and learn any necessary special techniques and skills.
 - f. Determine if additional treatments will be necessary.
 - g. Know if following crops will be affected by herbicide use and if special efforts such as deep plowing will be needed to protect the next crop from traces of undecomposed herbicides.
 - h. Find out from the label directions whether you can cultivate or operate equipment in the field after it is treated without jeopardizing weed control.
 - i. Make final hill or other necessary surface conditioning to prepare for the herbicide application.
 - j. Plan for proper soil moisture conditions to insure herbicide effectiveness. For some herbicides, you must be prepared to irrigate immediately after spraying.
 - k. Plan to handle resistant perennial weeds as a separate problem.

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3. Check out all application equipment.
 - a. Check sprayer for proper operation: pump, screens, agitation system, connections and fittings, pressure regulator, gauges, nozzle tips. Inspect each tip to insure that all are the same size.
 - b. Calibrate sprayer: calibrate each tip individually. Any tip should deliver within 10% of the rated average. Plan to use not less than 30 gallons of water per acre at 20-40 P.S.I. for adequate coverage of soil surface. Check your tractor speedometer/tachometer for accuracy. Don't assume it is correct.
 - c. Adjust and lubricate incorporation implements. If preparing to spray after planting and before potatoes emerge, insure that the incorporation implement teeth will mix the upper 2 to 4 inches of a pre-bedded potato hill on the proper row spacing.
 - d. Field test the entire mechanical assembly. Be sure that the entire tractor-drawn setup will be able to maintain a precise constant speed in the field to deliver the right gallonage. This is important for fields with slope. Changing gears or rpms can cause serious variations in rate.
 - e. Check your calculations!

What Cuts Yield and Grade?

1. Weed competition stunts potatoes. One study by the University of Idaho proved that the longer annual weeds were allowed to compete with potato plants the greater the yield loss. When weeds were allowed to compete for 60 days, the yield reduction was 48% compared with 2½% when competition was limited to only 15 days after potato emergence.
2. Poor cultivation practices injure potato plants.

3. Compaction from equipment stunts potato growth, reduces irrigation efficiency, and results in more clods.
4. Misused chemicals injure potatoes and following crops.
5. Weeds slow potato harvest and reseed to self-perpetuate and increase.

Prevent Reinfestation

1. Control weeds in all crops in the rotation to reduce seed supply in the soil.
2. Spray, burn, graze, or mow fence rows, roadways, ditches, and waste areas to prevent weeds from seeding.
3. Wash soil and trash from equipment coming from other farms or fields. These contain weed seeds.
4. Do not allow livestock to enter your land with weed seeds in hair, mud, or feces.
5. Plant only tested and tagged weed-free seed of all crops.
6. Screen irrigation water at headgates.

Perennial Weed Problems

Perennial weeds reduce yields more than annual weeds. Canada thistle can reduce yield as much as 70%, field bindweed 16%, and Russian knapweed 32%. Quackgrass will cause not only serious yield loss but also quality reduction from tuber deformation.

Growing potatoes in fields heavily infested with deep-rooted perennial weeds is not recommended. However, control programs have been developed to help a grower fight perennials in his potato production program.

Serious perennial weed problems must be solved with persistent programs over a period of years. See your county agricultural extension agent for recent publications on perennial weed control in certain crop situations.



The weedy shadow of an uncontrolled check plot in the center of this photograph is the only mar in this field of potatoes. Timely, careful herbicide use made the difference.

When You Use Herbicides

Before you use herbicides, read and understand the directions on the container label. Use the directions given especially for potatoes. In addition to the container directions, check the following keys for success.

Chemical Used	Rate of Active Ingredient Per Acre	Guides on Use and Keys to Success
Eptam	3 lb. EPTC ($\frac{1}{2}$ gal. Eptam 6E) 4 lb. EPTC for perennials ($\frac{2}{3}$ gal.)	Apply preplant or postplant* soil incorporated. All weed growth must be eliminated before or during incorporation. Effective to mid-season. Can be followed with metribuzin after hilling, if Eptam-tolerant weeds are present.
Treflan Postplant	$\frac{1}{2}$ to $\frac{3}{4}$ lb. trifluralin (1 to 1.5 pts. Treflan)	Postplant pre-emergence* mechanical incorporation only, and before potato sprouts are 2" long. Make final hill shape before spraying. If a sensitive crop is to follow, plow 10" deep after potatoes. Effective entire season.
OR		OR
Preplant + Postplant	$\frac{3}{4}$ pt. + $\frac{3}{4}$ pt.	Pre plant - Mechanical incorporation Pre or post emergence - Mechanical incorporation.
Treflan + tank mix Eptam Postplant	$\frac{1}{2}$ lb. (1 pt. Treflan) 3 lb. ($\frac{1}{2}$ gal. Eptam 6E)	Use same guide as for Treflan post plant. Follow directions on both containers.
OR		
Preplant + Postplant	$\frac{3}{4}$ pt. Treflan + $\frac{1}{2}$ gal. Eptam 6E + $\frac{3}{4}$ pt. Treflan	Preplant — Mechanical incorporation. Pre- or postemergence — Mechanical incorporation. Useful because mechanical incorporation controls weeds resistant to both herbicides.
Maloran or Bromex	2 to 3 lb. Chlorobromuron (4 to 6 lbs. Maloran or Bromex) Don't use on soils with less than 1% O.M.	Postplant pre-emergence* only; use only with sprinklers. Prepare final hill first because soil surface must not be cultivated or otherwise disturbed after spraying. Apply to moist, clod free soil with at least 30 gallons of water/A. One inch of water by rain or sprinkler must follow within 10 days to avoid wind blowing and to move the chemical to germination zone before weeds get too big. Effective all season.
Lasso	2 $\frac{1}{2}$ - 3 lb. alachlor (2 $\frac{1}{2}$ - 3 qts. Lasso)	Use same guide as for Maloran above. Not effective on lambsquarter. State registration only. See label directions for use on furrow-irrigated fields.
Dinitro (salt formulation)	3 to 4.5 lb. (1 to 1.5 gal. of Premerge or Sinox PE)	Not for coarse textured soils (sands). Pre-emergence* only. Spray before potato sprouts are 2" long. Don't disturb soil surface afterward. Kills emerged weeds and inhibits further germination for approximately 2 weeks.
Lexone or Sencor	$\frac{1}{2}$ lb. metribuzin (1 lb. Lexone or Sencor)	See Idaho Current Information Series No. 291. Can be applied pre emergence or post emergence or both , but don't exceed 1 lb. metribuzin in one year. Incorporate with sprinkler water. Prepare final hill first because soil surface must not be disturbed after spraying. Use half as much on sand, use up to twice as much on furrow irrigated fields (see label). Can be preceded with Eptam if needed.

Note: Sencor was approved for use on potatoes in late April. EPA registration for Lexone was pending at the time of this publication. CHECK LABELS AND USE ONLY APPROVED MATERIAL.

*Preplant means spray on before planting potatoes. Postplant means spray on after planting potatoes. Pre-emergence means spray before potatoes come up.

EFFECTIVENESS OF HERBICIDES IN IDAHO POTATOES
(This table applies only to conventional labeled usage in potatoes.)

Weed	Eptam	Treflan	Maloran	Lasso	Dinitro (Temporary Activity on Seedlings)	Sencor or Lexone	Fumigants (Telone, DD)
barnyard grass (watergrass)	A	A	A	A	O	O ¹	
buckwheat	A	A	P	O	A	A	
cocklebur	O	O	O	O	P	A ¹	
dodder	O	O	O	O	A	O	
foxtails	A	A	A	A	O	O ¹	
knotweed	A	A	P	A	A	A	
kochia	O	A	P	P	A	A	
lambs-quarter	A	A	A	O	A	A	
mallow	O	O	P	P	A	A	
mustards	O	O	A	P	A	A	
nightshade	A	O	A	A	A	O	
purslane	A	A	A	A	O	A	
redroot (pigweed)	A	A	A	A	A	A	
Russian thistle	O	A	P	P	A	A	
sowthistle	P	O	P	P	A	A	
sunflower	O	O	O	O	P	A	
sweetclover	O	O	A	O	O	A	
volunteer barley	A	O	O	O	O	O	
volunteer oats	A	A	O	P	A	A ¹	
volunteer wheat	A	P	A	O	O	O	
wild oats	A	P	O	P	O	O ¹	A
Canada thistle	O	O	O	O	O	O ¹	A
morning glory (field bindweed)	O	O	O	O	O	O	P
yellow nutsedge (nutgrass)	A	O	O	P	O	O ¹	A
quackgrass	A	O	O	O	O	P	
Russian knapweed	O	O	O	O	O	O	

A—Acceptable control

P—Partial control

O—Poor or no control

A¹, O¹—Variable if applied pre-emergence; good control if applied to small, emerged weeds.

Trade names are used in this publication for better understanding of the information presented. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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