

CHEMICAL WEED CONTROL IN POTATOES

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Annual weeds and grasses are a problem to the majority of potato producers in a potato producing area. If clean fields are not available for potato production, then chemical weed control by itself or in combination with cultivation can provide clean weed-free fields. Weedy fields increase potato harvesting costs and we can expect a reduction in yield per acre.

Potato growers rely upon high rates of nitrogen, phosphate, potash and zinc to produce high yields. The weeds as well as the potatoes respond to the fertilizers applied. Therefore, the producer must rely upon clean cultivation or a combination of cultivation and herbicides to keep potato fields weed-free.

Potato producers should check past history of herbicides applied to a field to control noxious weeds such as Canada thistle, bindweed or quackgrass. Where soil sterilents, Tordon or Banvel-D have been used in the past to control noxious weeds the residue remaining in the soil can be disastrous to the potatoes. We have seen evidence where a soil sterilent, Tordon or Banvel-D have left bare spots in potato fields. Avoid fields containing noxious weeds, as listed above, since they are impossible to control with clean cultivation or herbicides cleared for use in potato fields.

The basic reasons for cultivation of potatoes are: weed control, soil aeration, and maintenance of soil tilth. Early cultivation is desirable to control germinating weeds and to provide loose soil for later hilling operations. The rolling type of cultivator, such as a lilliston weeder are well suited for early cultivating operations. Harrowing prior to potato emergence will destroy many germinating weeds.

Chemical weed control can be a valuable supplemental measure along with good cultural practices in extending the weed-free period for potato production. Directions on the label of the container should be read carefully and followed to obtain maximum performance and safe use of the chemical.

Effective chemical weed control in potato fields depends upon several factors:

1. Soil type
2. Selection of herbicide
3. Time of application
4. Rate per acre
5. Method of application - surface or incorporated
6. Soil incorporation equipment
7. Depth of incorporation
8. Soil moisture necessary to activate herbicide
If dry supplement with 1/4 inch sprinkler irrigation application
9. Follow directions on the herbicide label

The 1969 Washington State University Chemical Weed Control Handbook lists two chemicals for weed control in potatoes. Eptam [R] (EPTC) applied as a preplant at three pounds per acre and incorporated immediately after application by cross-disking to a depth of six to nine inches. In addition Eptam [R] has been used successfully by incorporating with a lilliston weeder or a rolling cultivator prior to the emergence of potatoes. In this operation the grower sprays the surface with Eptam [R] incorporates and hills his potato rows at the same time. Eptam [R] applied at this stage will last longer than when applied at pre-plant.

The other herbicide recommended is DNBP (general) at one pound per acre or DNBP (amine) at the three pounds per acre. It is applied on the surface as a pre-emergent at least one day prior to the emergence of the potatoes for broadleaf control.

U. S. D. A. has granted label clearance for several other herbicides for weed control in potatoes. These include Treflan [R], Dacthal [R], Patoran [R] and Dowpon.

Treflan [R] used at one to one and one-half pints per acre and incorporated two to three inches during hilling operation prior to potato emergence, controls germinating annual grasses and broad leaf plants with the exception of nightshade. Where nightshade is present a combination of one pint of Treflan [R] with two or three pounds of Eptam [R] will give more effective pre-emergence weed control than either herbicide used alone.

Dacthal [R] at ten pounds per acre applied at time of cultivation or at layby under sprinkler irrigation will give good weed control where weeds have not emerged. Under rill irrigation, Dacthal [R] should be incorporated one to two inches.

Patoran [R] was cleared in 1969 for weed control in potatoes at two pounds per acre. It can be surface applied prior to potato emergence following the hilling operation. One year's observation looks good, however, the soil should contain 1 percent or more of organic matter. Chemical injury showed up on the potato plants after emergence, however the symptoms disappeared as the season progressed in the 1969 plot work.

Dowpon, a grass killer, must be applied at the rate of 3 to 5 pounds per acre prior to potato emergence to control young emerged grasses. Dowpon is sometimes used in combination with DNBP to control annual weeds and grasses prior to emergence of potatoes.

In Franklin County, we have worked with potato producers in setting up Chemical Weed Control Demonstration Plots to determine if potatoes can be grown successfully with chemicals cleared by U.S.D.A. and labeled for weed control in potato fields. In 1969 duplicate one square rod plots were set up, weed control observed, and yield data taken on two locations in Block 1 and Block 16 north of Pasco. Eptam, Treflan and a combination of Eptam-Treflan were incorporated with a lilliston weeder. Dacthal and Patoran were surface applied. All chemicals were applied prior to emergence of the potatoes as the rows were hilled.

In Block 1 the soil moisture conditions were good and a good rain followed the herbicide application. In Block 16 the soil was dry so a two hour sprinkler application was applied following herbicide application.

Below you will find the results of the two demonstration plots in Franklin County.

1969 Weed Control on Norgold Potatoes - Block 1

Date applied, April 15 - Harvested, July 17 - Plot not disturbed

Chemical and Rate/Acre	Tons/A No. 1's	Tons/A No. 2's	Weed Control
Patoran 1#	16.8	1.5	Very good
Plot check	15.9	1.1	*
Patoran 2#	14.6	1.7	Very good
Eptam 2# + Treflan 1 pt.	14.4	1.3	Very good
Dacthal 10#	13.1	1.8	Good
Eptam 3#	11.9	3.1	Good
Treflan 1 pt.	11.6	2.8	Good

*Six watergrass and 2 lambsquarter in the 2 rod square plots

1969 Weed Control on Russet Burbank Potatoes - Block 16

Date applied, May 9 - Cultivated, June 1 - Harvested, September 29

Chemical and Rate/Acre	Tons/A No. 1's	Tons/A No. 2's	Weed Control
Patoran 2#	26.0	7.1	Very good
Treflan 1 pt.	25.0	8.2	Good
Eptam 3# + Treflan 1 pt.	22.9	4.5	Good
Check (2 cult.)	21.5	8.4	*
Eptam 2# + Treflan 1 pt.	21.3	4.5	Poor
Dacthal 10#	18.8	10.8	Fair
Eptam 3#	18.0	9.2	Poor

*13 watergrass - 4 lambsquarter in the 2 rod square plots

In summary, I would recommend that potato producers carry on good farm practices to control both the annual and perennial weeds to insure weed free fields. Where weeds are a problem and regular cultivations fail to control weeds, then herbicides can become a useful tool if used properly. Growers using herbicides to control weeds in potato fields should read and follow the directions on the label. Keep accurate records of all herbicides used to control annual and perennial weeds on each field. This would allow the potato producer an opportunity to determine if a herbicide residue in the soil could cause loss of stand or a chemical injury to the potato plants.