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1988

### G88-875 Weed Control in Soybeans

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Moomaw, Russell S.; Stougaard, Robert N.; Martin, Alex; Roeth, Fred; and Mortensen, David, "G88-875 Weed Control in Soybeans" (1988). *Historical Materials from University of Nebraska-Lincoln Extension*. 741.

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## Weed Control in Soybeans

**This NebGuide provides information on mechanical and chemical weed control methods, including herbicides to use for preplant incorporated, preemergence and postemergence.**

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Soybeans are a relatively easy crop to grow. Limited insect and disease problems presently are associated with their production in Nebraska. Weeds, however, are a major production problem. Each 100 pounds of weed growth results in a one bushel loss in soybean yield. Weeds that emerge with the crop and remain in the row are the strongest competitors. Those that emerge later than six weeks after planting have little effect on yield, so it is important to focus on early season weed control.

The 10 worst weeds presently plaguing soybean production in central and eastern Nebraska are estimated to be:

- Pigweeds
- Foxtails
- Velvetleaf
- Sunflower
- Volunteer corn
- Shattercane
- Cocklebur
- Pennsylvania smartweed
- Common lambsquarter
- Kochia

Other weeds that are frequently troublesome include hemp dogbane, field bindweed, buffalobur, morningglory and black nightshade.

Recording weed infestations on field maps can be a valuable tool for soybean producers. This scouting can be done while combining, and will give a good indication of what weeds will be troublesome in each field

the next year. Weed control programs then can be planned to minimize early season weed establishment and competition with soybeans.

## **Cultural Weed Control**

### **Seedbed Tillage**

Reduced tillage systems that leave more plant residue on the soil surface are desirable because they reduce soil erosion and require less energy and labor. The chisel plow and tandem disk commonly are used for primary tillage. Under this system weed seed is not buried, but is concentrated in the one to three inch soil depth where conditions for germination are more favorable. This can result in high weed pressure and require intensive effort to control weeds. Such effort might include better selection of herbicides, use of full suggested herbicide rates, early cultivation, and being prepared to use back-up mechanical and chemical weed control measures.

### **Clean Seed**

Nebraska soybean growers are planting about 85 percent of their acreage with either certified seed or private label seed that has been cleaned and bagged. Use of certified soybean seed assures varietal purity and quality with minimal weed seed contamination. Nebraska seed certification standards require that certified soybean seed have no corn kernels, cocklebur or prohibited noxious weed seed. If bin-run soybean seed is used, it should be cleaned, handled carefully, and have the germination checked.

### **Variety Selection**

Soybean varieties vary in their competitiveness with weeds. Although it is impossible to compare weed competitiveness of all soybean varieties, a useful criteria may be to compare seedling emergence scores as well as yield potential. Emergence scores indicate the variety's ability to germinate and emerge under adverse conditions. Varieties that emerge rapidly from the soil are superior competitors to weeds.

### **Plant Population**

Lower seeding rates are being used now than was true several years ago. If field conditions are ideal and seedling emergence is good, lower soybean plant populations can produce maximum yield. Under adverse field conditions, however, a lower seeding rate may result in a less than ideal plant population. Populations lower than five plants per foot in 30 to 40 inch rows may result in greater weed problems. Large gaps in the row make the problem worse.

### **Row Spacing**

Close-spaced rows result in more uniformly distributed soybean plants that make better use of soil moisture, nutrients and light. Soybeans in close-spaced rows form a shade canopy more quickly, which reduces weed growth. Total ground shade in 10 inch spaced soybean rows may occur in five to six weeks, compared with seven to eight weeks for 40 inch spaced soybean rows.

### **Crop Rotation**

Crop rotations allow more flexibility in weed control programs. Alfalfa production will prevent most annual weeds from going to seed and reduce populations of some perennial weeds. Small grains in the rotation permit intensive weed control measures on perennial weeds during the fallow period, and can help break the growth cycle of annual weed species. A corn/soybean rotation allows more concentrated and

economical effort to be given to cocklebur and velvetleaf control during the corn year. Soybeans are useful in the rotation with corn or grain sorghum if shattercane becomes troublesome.

## **Planting Date**

Optimum planting date for soybeans in Nebraska is from May 20 to June 5. Planting earlier than May 20 may mean cool soil which favors weed rather than soybean growth. Planting soybeans in this time period permits preplant tillage to destroy weed seedlings. It also results in the application of herbicide closer to the time weeds such as shattercane and black nightshade begin growth. Planting soybeans at a depth of 1-1 1/2 inches in moist, warm soil results in fast soybean emergence and improved crop competitiveness.

## **Cultivation**

Although the goal of no cultivation may sometimes be achieved, timely tillage usually is essential for weed control in soybeans. The rotary hoe and row cultivator are basic tools. Effectiveness of the rotary hoe depends on timeliness, optimum speed and warm, dry weather. Rotary hoe when most of the weeds have germinated and are in the "white," unemerged stage up to 0.25 inch tall. A weighted rotary hoe traveling 8-12 mph on a dry soil surface is most effective. Row cultivation should be shallow to prevent excessive root pruning and to avoid bringing additional weed seeds to the surface.

## **Chemical Weed Control**

Herbicides are used on about 90 percent of Nebraska's soybean acreage. When selecting a herbicide, some factors to consider are weed species to be controlled, soil texture, organic matter, pH and crop rotation. Consult the most recent issue of *EC-130, A Guide for Herbicide Use in Nebraska*, for specific herbicide application rates on various soil types. Remember that herbicide effectiveness is altered by seasonal conditions and may not be uniform from year to year.

## **Preplant Incorporated Herbicides**

Preplant incorporation can be done with a single pass of a rototiller or by two passes (cross or diagonal to each other) with a tandem disk, field cultivator, or a combination of the two implements. Treflan labeling specifies such incorporation procedures. For Sonalan, one pass incorporation may be used if the soil surface smoothness, residue cover and tilth allow thorough herbicide mixing into the soil. Surface blending is the shallow mixing of a herbicide into the top one to two inches of soil with a single pass of a rototiller, field cultivator, mulch treader or similar implement.

Dual, Lasso, Prowl, Preview and Scepter may be surface blended, but these herbicides also can be left on the soil surface as a preemergence application. Command must be mixed into the top one to two inches of soil using the above described implements or a rotary hoe.

In tank mix combinations, the mixture should be incorporated according to the most restrictive instructions for the individual components in the mix. For example, Treflan plus Command should be soil incorporated according to the more restrictive label instructions for Treflan. However, a Lasso plus Command tank mix could be minimally incorporated following the Command label with a mulch treader or rotary hoe.

1. **Prowl, Sonalan and Treflan Alone.** These preplant incorporated herbicides are used primarily for grass weed control, but small seeded broadleaf weeds such as pigweed and common lambsquarters also are controlled. These herbicides may be applied at planting time or before planting at the maximum number of days stated in *Table I*. Application closer to planting generally improves weed control. Label directions state Sonalan should be soil incorporated within 48 hours of application,

Treflan 24 hours, and Prowl within seven days.

<b>Table I. Maximum time interval between herbicide application and soybean planting.</b>						
<b>Grass herbicide</b>	<b>Broadleaf herbicide</b>					
	<b>Along</b>	<b>Command</b>	<b>Preview</b>	<b>Scepter</b>	<b>Sencor or Lexone</b>	
					<b>All incorporated</b>	<b>Split application</b>
----- (Days) -----						
<i>Preplant incorporated</i>						
Prowl	60	30	14	30	7	21
Sonalan	21	30	14	30	21	21
Treflan	60	30	14	30	10	21
<i>Surface blended</i>						
Dual	14	14	14	14	14	14
Lasso	7	7	7	7	7	14
Prowl	60	30	14	30	7	21

- Prowl, Sonalan and Treflan Tank Mixes.** Command, Preview, Scepter and Sencor or Lexone may be used in tank mixes with Prowl, Sonalan and Treflan for broader spectrum broadleaf weed control. Refer to *Table I* for the maximum number of days these treatments may be applied before planting.

Command is the premier soil applied herbicide for velvetleaf control, followed by Scepter, Sencor or Lexone, and Preview. For cocklebur or sunflower, Scepter and Preview should give the most reliable control. Among these tank mixes, Scepter and Preview offer partial control of eastern black nightshade and several morningglory species. Pennsylvania smartweed control should be similar with all these tank mixes.

For Sencor or Lexone, a split application in which part of the product is incorporated with Prowl, Sonalan or Treflan and followed by overlaying additional Sencor or Lexone after planting has given better broadleaf weed control than soil incorporating all of the Sencor or Lexone. Use Sencor or Lexone with care and at reduced rates on calcareous soil. Preview should not be used on fields which have a soil pH of 6.9 or higher. Since Preview may carry-over to the succeeding crop, consult the product label for minimum recropping interval and rotational guidelines.

### **Surface Blended or Preemergence Herbicides**

- Dual and Lasso Alone.** These herbicides control many annual grasses as well as pigweed species and common lambsquarters. Dual and Lasso may be left on the soil surface or surface blended.
- Dual or Lasso Tank Mixes.** Command, Lorox, Preview, Scepter, and Sencor or Lexone may be used in tank mixes with Dual or Lasso for broader spectrum broadleaf weed control. The comparative activity of Command, Preview, Scepter, and Sencor or Lexone on several broadleaf weed species has been indicated in the previous section. Lorox may be particularly useful for control of eastern black nightshade. Do not soil incorporate Lorox.

Lasso or Dual tank mixes with Scepter may be soil incorporated or used preemergence. However,

velvetleaf, eastern black nightshade and giant ragweed are controlled by soil incorporated applications of Scepter only.

Dual or Lasso tank mixes with Command must be soil incorporated. Minimal soil mixing with an implement like the rotary hoe will satisfy the Command label requirement for incorporation. Preview and Sencor or Lexone tank mixes with Dual or Lasso may be either surface blended or applied preemergence.

3. **Command + Scepter.** This tank mix should provide broad spectrum grass and broadleaf weed control. Soil incorporation may be with one or two passes of an appropriate implement. Minimal soil mixing could be accomplished with a rotary hoe. Foxtail, crabgrass, field sandbur, wild sunflower, velvetleaf, cocklebur, Pennsylvania smartweed, Venice mallow, lambsquarters and pigweed are among weeds listed on the label as controlled by Command plus Scepter. Apply 1.5 to 2 pts Command plus 0.33 to 0.5 pt/A Scepter, depending upon soil type and expected weed problems.

### **Postemergence Herbicides for Broadleaf Control**

1. **Basagran.** When applied at the weed height listed on the label, Basagran controls cocklebur, ragweed species, Pennsylvania smartweed, velvetleaf, Venice mallow and sunflower.

Apply Basagran when weeds are small (generally less than four inches) and actively growing, and before they reach the maximum size listed on the label. Basagran application rates range from 1 to 2 pts/A, depending upon weed species and size. Basagran should be applied with a minimum of 20 gals/A water and a minimum of 40 psi pressure. Adding 1 qt/A crop oil concentrate improves weed control when weeds are under any stress or are more mature. When velvetleaf is the primary target weed, 28 percent nitrogen solution at 1 gal/A can be substituted for crop oil.

2. **Blazer or Tackle.** These herbicides provide excellent control of annual morningglory, pigweed, Pennsylvania smartweed, eastern black nightshade and jimsonweed. The application rate is 1 to 2 pts/A depending upon weed species and weed height. Add 1 pt of a nonionic surfactant per 100 gals of spray solution.

Apply Blazer or Tackle when susceptible weeds are small (generally less than four inches) and actively growing, and before they reach the maximum size listed on the label. To insure coverage of weeds, apply Blazer with a minimum of 20 gals/A water and 40 psi pressure. Cultivation before or during Blazer application is not recommended because weeds may be put under stress. Although basically broadleaf weed herbicides, Blazer or Tackle will give partial control of small escaped grass weeds.

3. **Basagran plus Blazer or Tackle.** This tank-mix combination broadens the spectrum of weed control that can be expected from either herbicide applied alone. Basagran plus Blazer or Tackle controls pigweed, morningglory and giant ragweed, in addition to the weeds controlled by Basagran. Application rates are 1.5 to 2 pts Basagran and 0.5 to 1 pt/A Blazer. Apply when susceptible weeds are less than four inches in height.
4. **Cobra.** Cobra's spectrum of weed control is similar to that of Blazer and Tackle. The application rate for Cobra is 12.5 oz/A. Cobra is more effective on sunflower, velvetleaf and cocklebur than are Blazer and Tackle. Soybean vegetative injury symptoms are more severe with Cobra than with Blazer and Tackle. Crop oil at 0.5 to 1 pt/A is the preferred carrier for Cobra but 28 percent nitrogen or surfactant can be substituted for crop oil. Use 1 pt/A crop oil when weeds are under stress.

5. **Classic.** Classic and Basagran are equally effective for control of cocklebur and sunflower, but Classic is more active on ragweed species. Classic is less effective on pigweed species than Cobra, Blazer or Tackle. Classic should not be used on soils with a pH of 6.9 or more. In Nebraska, do not apply Classic north of the Platte River or west of Highway 10. There must be a minimum nine month interval between use of Classic and recropping to corn, sorghum and alfalfa. Apply 0.5 to 0.75 oz/A of Classic, depending upon weed species and size. Add a nonionic surfactant at 1 qt/100 gals spray solution. In addition to surfactant, add 1 gal/A of 28 percent nitrogen for improved velvetleaf control. Classic may cause antagonism to post grass herbicides if tank mixed with Poast, Fusilade, or Option.
6. **Scepter.** Scepter may be applied postemergence at 0.66 pt/A for control of cocklebur and pigweed species. Add a nonionic surfactant at 2 pts/100 gals spray solution or 1 qt/A crop oil concentrate. Scepter at 0.33 pt/A may be tank mixed with Basagran to improve control of pigweed species. Unlike Blazer, Tackle and Cobra, Scepter will not cause soybean vegetative injury.

### Postemergence Herbicides for Grass or Grass-Broadleaf Control

1. **Fusilade 2000.** Apply 0.75 pt/A Fusilade 2000 for control of six to 12 inch shattercane or wild proso millet, and volunteer corn to 24 inches height. For control of foxtail species, use 1.5 pts/A on two to six inch tall plants but before tillering. Add either a nonionic surfactant at 1 qt/100 gal spray solution or crop oil at 1 qt/A. Use 40 to 60 psi pressure and up to 40 gals/A spray solution to get thorough coverage of plant foliage. Do not cultivate within seven days before or after application of Fusilade 2000.

<b>Table II. Minimum time periods between sequential applications of grass and broadleaf herbicides.</b>			
<b>Grass herbicide</b>	<b>Broadleaf herbicide</b>	<b>Grass herbicide before broadleaf herbicide</b>	<b>Broadleaf herbicide before grass herbicide</b>
		----- (Days) -----	
Fusilade	Basagran	1	1
Fusilade	Blazer or Tackle	3	When grass resumes growth
Option	Basagran	1	1
Option	Blazer or Tackle	3	7
Poast	Basagran	1	1
Poast	Basagran + Blazer or Tackle	1	7
Poast, Fusilade, or Option	Classic	1	7

2. **Fusilade 2000 plus Basagran or Fusilade plus Blazer or Tackle.** The products may be tank mixed or applied sequentially using the labeled rate for each product. With sequential treatments, either product can be applied first, depending upon weed growth stages. Broadleaf weeds usually need to be sprayed first. With sequential treatments, follow the minimum time periods stated in *Table II* for applying each product. Use an approved nonionic surfactant in tank mixes of Fusilade plus Blazer or Tackle. For Fusilade plus Basagran tank mixes, add 1 qt/A crop oil concentrate. It is not necessary

to increase the rate of Fusilade when tank mixing with Basagran, Blazer or Tackle.

3. **Option.** For control of volunteer corn with Option, apply 0.8 pt/A when corn is 10 to 16 inches tall. Use 1.2 pts/A of Option for control of three to eight inch foxtail species or eight to 12 inch height shattercane. Add 1 qt/A crop oil concentrate with the spray solution. Apply Option with a minimum of 10 gals/A spray solution and 30 to 60 psi pressure. Do not cultivate within four days before or after application of Option.
4. **Option plus Blazer or Tackle.** The products may be tank mixed or applied sequentially. With sequential treatments, apply either product first, depending upon weed growth stage. Use an approved nonionic surfactant with both products. With tank mixes, the rate of Option must be increased to 1.6 pts/A plus 1.5 to 2 pts/A of Blazer or Tackle. Do not use crop oil or any other surfactant in the tank mix. With sequential treatments, follow the minimum time periods stated in *Table II* for applying each product.
5. **Option plus Basagran.** If both the annual grass and broadleaf weeds are in the proper stage of growth at the same time, the herbicides can be tank mixed. Use Option at 1.2 to 1.6 pts/A and Basagran at 1.5 to 2.0 pts/A. Add 1 qt/A crop oil concentrate to the tank mixture. Use the lower rate for each product when weeds are at the smaller size of the labeled height range for control. Option and Basagran can be applied sequentially as the grass and broadleaf weeds reach the labeled heights. Use the rates previously listed for each product.
6. **Poast.** Wild proso millet is controlled with 0.5 pt/A of Poast when it is four to 10 inches in height. The application rate is 1 pt/A for control of volunteer corn and shattercane up to 18 inch height, or for foxtail species which are in the three to eight inch height range. Add 1 qt/A crop oil to all spray solutions. The spray adjuvant Dash can be substituted for crop oil to enhance the performance of Poast. Apply Poast in a minimum of 20 gals/A spray solution at 40 to 60 psi pressure. Do not cultivate five days prior to application of Poast or within seven days following application.
7. **Poast plus Basagran or Poast plus Basagran plus Blazer or Tackle.** For broadleaf and grass weed control, a tank mix or sequential applications may be made. Applications of Poast can be preceded or followed by Basagran or Basagran tank mixes with Blazer or Tackle. Add 1 qt/A crop oil concentrate to the separate tank mixes. Follow the minimum time periods listed in *Table II* for applying each product. When tank mixing Poast Basagran, use the spray adjuvant Dash as a replacement for crop oil. Dash at 1 qt/A plus 1 gal/A 28 percent nitrogen overcomes the antagonism between Poast and Basagran so that the Poast rate does not need to be increased. Do not use Dash in any tank mixes which include Blazer or Tackle.

### Selective Applicators for Weed Escapes

Ropewick and bean bar applicators are used to selectively apply herbicides to individual escaped weeds. Consult *EC-130, A Guide for Herbicide Use in Nebraska*, for a listing of herbicides which may be applied through these machines.

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#### **File G875 under: FIELD CROP**

#### **A-9, Soybeans**

*Issued May 1988; 12,000 printed.*

*Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.*

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