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Weed Control in Soybeans

Cooperative Extension South Dakota State University

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Weed Control in Soybeans

COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U. S. DEPARTMENT OF AGRICULTURE

Weed Control in Soybeans

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There are now over 350,000 acres planted to soybeans in eastern South Dakota each year. Weeds are a serious problem. Most perennial weeds cannot be controlled, and annual weeds such as sunflower and cocklebur are more difficult to control in soybeans than in other row crops. Herbicides control fewer kinds of weeds in soybeans than in other row crops. Therefore, cultivation is an important part of an efficient soybean weed control program. Soybeans become more competitive later in the season when the plants become larger and shade small weeds.

Narrow rows usually increase yields and improve the competitiveness of the crop. However, solid-planted or close-drilled soybeans cannot be cultivated with conventional implements or with herbicides. Serious weed problems result with this planting system if herbicides do not perform satisfactorily or if weed species are present that are tolerant to the herbicide. Crop rotations are useful in controlling perennial weeds and in preventing the build-up of annual weeds.

Crop Rotations for Weed Control

Where small grain, forage crops or corn are used in the rotation with soybeans, extra efforts should be made to control problem annual weeds such as cocklebur, sunflower and mustard. Timely cultivation and the use herbicides in these rotation crops will prevent annual weeds from producing seed. Cultivation or spraying after harvest is also helpful. Use implements that leave plant residues to reduce soil erosion.

Most perennial weeds can be reduced by using intensive cultivation, herbicides, and crop rotation. Obtain a copy of the fact sheet that discusses the specific perennial weed in question.

Cultivation for Weed Control

Proper tillage immediately before planting will kill emerged weeds and prevent the weeds from getting a head start on the crop.

Several cultivation systems can be used to control weeds after the crop is planted. Soybeans planted in conventional row spacings can be cultivated with a row-crop cultivator. At least one cultivation is required even though a rotary hoe or flextine harrow is used for early cultivations. Do not "hill" the row during the last cultivation; this prevents harvesting of lower pods and results in an unnecessary loss of 2 to 5 bushels of beans per acre.

Rotary Hoe. The rotary hoe should be used at a speed of 8 to 10 miles per hour early in the season when the weeds are just emerging. It is generally not effective if weed seedlings are large enough to develop green color. It is most effective if the soil is crusted, but it is also effective on moist soil. Use a shield over the hoe or behind the tractor driver's head as protection from flying clods and stones. Small crop plants growing in furrows, wheel tracks, or loose soil may be covered. If crop plants are large, hoe during the heat of the day to prevent breaking plants. Two hoeings can be done for approximately the same cost as the first row cultivation.

Flextine Harrow. The flextine harrow is used in much the same way as the rotary hoe, but it is operated more slowly. It is most effective at 2 miles per hour or less. The rotating action of the flexible tines makes it effective for killing weed seedlings. The harrow is most effective on weed seedlings ¼ inch high or less. Three harrowings can be made for about the same cost as the first row cultivation.

Herbicides for Weed Control

Herbicides can aid in controlling weeds in soybeans, but are not intended as a replacement for sound management practices such as good rotations, proper seedbed preparations, and timely cultivation. Mixtures of herbicides can capitalize on the good points of several herbicides while minimizing weak points. Herbicides used in mixtures may be purchased separately and tank-mixed in the sprayer or some may be purchased in one container as a commercial premix. Do not mix herbicides that are not labeled for use together.

Herbicides may be applied preplant, preemergence or post-emergence. Some are available in granule and spray formulations. Herbicides applied postemergence or preemergence may be broadcast or applied in a band.

Granules vs Spray Formulations. Several herbicides are available in spray and granular formulations. Granules are preferred by some growers because they are easier to handle when band treating. However, granules usually cost slightly more per pound of active ingredient than spray formulations.

Broadcast vs Band Application. Band applications reduce the cost per acre for chemical. Band applications provide early season weed control and reduce yield losses that occur during the first 3 to 4 weeks after planting. Use a band that is 12 to 14 inches wide for surface-planted soybeans.

Use special nozzles that apply the herbicide uniformly in the treated area for band spraying. Band applications should be made behind the press wheel of the planter. Preplant-incorporated herbicides usually are not banded because suitable equipment is generally not available to incorporate the herbicide properly in the area ahead of the row.

With band applications at least 2 cultivations are required to control the weeds between the rows. One cultivation is usually required with broadcast treatments. Do not throw untreated soil into the treated band if no weeds are present during the first row cultivation. Always operate a rotary hoe or harrow in the same direction as the rows if the crop has been band treated.

For band application, determine the amount needed for the area actually treated. For example, if the broadcast rate of 3 lb/A of product is applied in 12-inch bands to 36-inch rows, only a third of the area is actually treated as the field is crossed and only one-third of the 3 lb/A rate is needed. Therefore, 1 pound of product is all that is needed to band spray each acre. (See Extension fact sheet "Weed Sprayer Calibration.")

Preplant Applied Herbicides. These herbicides are applied before planting. Herbicides applied preplant in soybeans must be incorporated with a disk, PTO-driven tiller or other suitable equipment. Some herbicides must be incorporated immediately after spraying to prevent loss of chemical due to volatilization or breakdown from sunlight. The rainfall requirement is usually less critical for herbicides applied preplant-incorporated than for those applied preemergence. Seasonal variation in performance is usually less with preplant than with preemergence applied herbicides.

Preemergence Applied Herbicides. These herbicides are applied after planting, but before the crop and weeds emerge. Weed control is usually better if tillage operations for seedbed preparation are performed immediately before planting and if the herbicide is applied immediately after planting. Emerged weeds are usually not controlled. Some herbicides will injure the crop if it is emerged at the time of application. Moisture is required within 1 to 2 weeks after application to move the chemical into the soil. Some herbicides are less soluble than others and require more moisture, however, ¾ to 1 inch is usually adequate. More moisture is required if the soil is dry than if it is moist. For best results, the soil should be free of large lumps and heavy amounts of plant residue. A shallow cultivation with a rotary hoe or flextine harrow is suggested if weeds emerge before adequate moisture is received. Preemergence applications are not effective if the area is disturbed by deep cultivations.

Post-emergence Applied Herbicides. These herbicides are applied after the crop and weeds have emerged. A limited number of herbicides can be applied post-emergence on soybeans. These are considered a rescue operation to control particular weeds or if other weed control measures have failed. The weeds should be controlled as early as possible to prevent yield losses due to early season weed competition. Only a limited number of acres can be treated properly by one operator because the most desirable time to spray the crop and weed is usually short. Spraying at the wrong time may result in crop injury and poor weed control. Post-emergence treatments which must be directed so only the weeds are sprayed require special equipment and usually a height differential between the crop and the weed.

Recently, some herbicides have been labeled for use in conjunction with other herbicides applied at a different time. This requires two or more spraying operations. This usually involves a preplant treatment followed by one or more preemergence or post-emergence applications of another herbicide. Do not use herbicides that are not labeled for use in this way.

Safety First

Read and follow all label directions and precautions. Federal regulations and label directions are subject to change.

Herbicide Recommendations

The information presented in this publication is based on field tests and observations in South Dakota. Herbicide uses suggested herein conform to those outlined in the **Summary of Registered Agricultural Pesticide Chemical Uses** prepared by the Environmental Protection Agency (EPA). The rates and uses suggested conform to those stated on the product label, however, the label directions often include additional rates and uses that have not been tested or that do not apply to situations in South Dakota. The labeler will assume responsibility only for those uses stated on the label. The user is responsible for applications that do not conform to label directions.

Herbicides that appear to be most promising for most situations are included in the "Recommended Herbicides" section. Those that appear to have use for special weed problems or have limited uses, or have not performed satisfactorily are included in the "Other Herbicides" section.

Recommended Herbicides

alachlor (Lasso)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
alachlor—4 lb/gal	2-2½ lb	2-2½ qt
alachlor—15% gran	3 lb	20 lb

Apply alachlor preemergence to control most annual grasses and some broadleaved annual weeds. Use 2 to 2½ pounds active ingredient per acre treated. Use the higher rate on heavier soils with more than 3% organic matter. The granular form is applied at 3 pounds active ingredient per acre.

Alachlor gives excellent control of several annual grasses. It gives fair to good control of some broad-

leaved annuals, including pigweed, especially when used at the higher rate. Smartweed, lambsquarters, and mustard control is inconsistent and sunflower, cocklebur and velvetleaf are not controlled. Consider mixing other herbicides with alachlor if broadleaved weeds are a major part of the weed problem. Preplant incorporated applications have not provided satisfactory weed control in tests in South Dakota.

Soybeans have good tolerance to alachlor. The granular and emulsifiable concentrate formulation are equally effective. Alachlor may be slightly irritating to handle for some individuals.

alachlor (Lasso) plus linuron (Lorox)

alachlor (Lasso) plus chlorbromuron (Maloran, Bromex)

alachlor (Lasso) plus metribuzin (Sencor, Lexone)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
alachlor—4 lb/gal	2 lb	2 qt
+	+	+
linuron—50% wp	1 lb	2 lb
or	or	or
chlorbromuron—50% wp	1½ lb	3 lb
or	or	or
metribuzin—50% wp	½ lb	1 lb

Apply a mixture of alachlor plus linuron or chlorbromuron or metribuzin preemergence immediately after planting to control most grassy and broadleaved annual weeds. Tank-mix 2 pounds active ingredient of alachlor plus 1 pound of linuron or 1½ pound of chlorbromuron or ½ pound active ingredient of metribuzin per acre treated. Plant seed 1¼ inch (1¾ for linuron) deep. Do not use on sandy soil or incorporate.

Alachlor gives very good control of most annual grasses. Linuron, chlorbromuron or metribuzin control most broadleaved annuals including some control of velvetleaf and cocklebur.

The rates above are maximum for most soils in South Dakota. Consult the product label for lower rates on light soils. Soybeans have fair tolerance to these mixtures. Some injury may occur on clay knolls, sandy areas, or when very heavy rain occurs early in the season.

These are tank-mixes of an emulsifiable concentrate and a wettable powder. Use sufficient agitation to keep the wettable powder from settling out.

chloramben (Amiben)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
chloramben—2 lb/gal	2-3 lb	1-1½ gal
chloramben—10% gran	2-3 lb	20-30 lb

Apply chloramben preemergence as soon as possible after planting to control many grassy and broadleaved annual weeds. On most soils use 2½ pounds active ingredient per acre. Use a lower rate on lighter soils and a higher rate on heavy soils.

Chloramben will control most common annual grasses and several broadleaved annuals including pigweed, lambsquarters, and smartweed. Mustard velvetleaf, and sunflowers usually are not controlled. Chloramben is less affected by soil organic matter content than some other preemergence herbicides. The lower rate gives less consistent weed control on most soils.

There is little risk of crop injury under normal seasonal conditions. Stunting and root malformation has been noted during early growth stages when heavy rain follows application. The granular and emulsifiable concentrate are equally effective.

fluorodifen (Preforan, Soyex)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
fluorodifen—3 lb/gal	3¾-4½ lb	5-6 qt

Apply fluorodifen preemergence immediately after planting to control many annual grasses and several broadleaved annual weeds. Use 3¾ to 4½ pounds active ingredient per acre.

Fluorodifen gives very good control of most annual grasses and several broadleaved annuals, including pigweed, and lambsquarters. Velvetleaf and sunflower are not controlled. Do not incorporate fluorodifen.

Soybeans have fair tolerance to fluorodifen. Slight leaf malformation at early stages have been noted in some tests. Use the emulsifiable concentrate formulation. The granular form has not been tested in South Dakota.

trifluralin (Treflan)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
trifluralin—4 lb/gal	½-1 lb	½-1 qt
trifluralin—5% gran	½-1 lb	10-20 lb

Apply trifluralin preplant and incorporate immediately to a depth of 2 to 3 inches to control most annual grasses and suppress some broadleaved annual weeds. Use ¾ pound active ingredient for most soils and 1 pound active ingredient per acre for very heavy soils. Slightly lower rates may be adequate on very light soils.

Trifluralin gives excellent control of most common annual grasses, including satisfactory sandbur control. It gives some control of pigweed and lambsquarters, but mustard, smartweed, cocklebur, sunflower and velvetleaf control is unsatisfactory.

Trifluralin must be thoroughly incorporated into the soil to prevent chemical breakdown from sunlight. Spraying and incorporating can be done in one operation. Immediate incorporation is most desirable; however, incorporation may be delayed up to 8 hours after application if the soil surface is dry and wind velocity less than 10 mph. The herbicide should be incorporated into the upper 2 to 3 inches of soil with a disk set to cut 4 to 6 inches deep or a PTO-driven tiller set to cut 2 to 3 inches deep. Two tandem diskings insure thorough incorporation, especially if soil conditions are less than ideal. Harrowing for incorporation is not satisfactory.

Trifluralin should be applied before planting, because proper incorporation is usually impossible without disturbing plant seeds. Harrowing for seedbed preparation after the herbicide is incorporated does not appear to reduce effectiveness. Fall applications of trifluralin have not been tested in South Dakota and do not allow for late changes in the cropping plan.

Soybeans appear to have good tolerance to trifluralin. Carryover has not been reported in South Dakota; however, oats or grain sorghum should not be planted for 18 months after application in areas receiving less than 20 to 25 inches of rainfall.

The emulsifiable concentrate formulation is commonly used; however, a granular form containing 5% active ingredient is available.

trifluralin (Treflan) and **linuron** (Lorox)
trifluralin (Treflan) and **metribuzin** (Sencor, Lexone)

Chemical and product formulation	Amount per acre broadcast: Active ingredient	Product
trifluralin—4 lb/gal	½-1 lb	½-1 qt
and	and	and
linuron—50% wp	1 lb	2 lb
linuron—10% gran	1 lb	10 lb
or	or	or
metribuzin—50% wp	½ lb	1 lb

Split application. Apply trifluralin preplant and incorporate as for trifluralin alone to control annual grasses. Apply linuron or metribuzin preemergence to improve broadleaved weed control. Use 1 pound of linuron or ½ pound active ingredient of metribuzin per acre treated. Plant seed 1½ inch (1¾ for linuron) deep. Do not use on sandy soil.

Trifluralin gives very good control of most annual grasses and some annual broadleaved weeds. Linuron or metribuzin control many broadleaved weeds, including some control of velvetleaf and cocklebur. The preemergence herbicides may be applied in a band at planting time following a broadcast application of trifluralin.

The rates above are maximum for most soils in South Dakota. Consult the product label for lower rates on lighter soils. Soybeans have fair tolerance to these treatments. Some injury has been noted on clay knolls, sandy areas or when very heavy rains occurred early in the season.

Preplant incorporated tank-mix combination of trifluralin and metribuzin may be labeled in the future. Lower rates of metribuzin are suggested to reduce injury risk.

Refer to section on "trifluralin" for more information on application, performance and precautions.

vernolate (Vernam)

Chemical and product formulation	Amount per acre broadcast: Active ingredient	Product
vernolate—6 lb/gal	2-3 lb	2⅔-4 pt.
vernolate—10% gran	2-3 lb	20-30 lb.

Apply vernolate preplant to a dry soil surface and incorporate immediately to a depth of 2 to 3 inches to control most annual grasses and several broadleaved annual weeds. Use 3 pounds on most soils and 2 pounds active ingredient per acre on light soils.

Vernolate gives good control of most common annual grasses and several broadleaved annuals, including pigweed and lambsquarters. Velvetleaf control is inconsistent and cocklebur and ragweed are not controlled satisfactorily.

Vernolate spray must be thoroughly incorporated into the soil immediately after application to prevent vapor loss of the chemical. Spraying and incorporation can be done in one operation. Incorporate the chemical 2 to 3 inches deep with a disk set to cut 4 to 6 inches deep or a PTO-driven tiller set to cut 2 to 3 inches deep. Use a tandem disk or disk twice at right angles with a single disk. A harrow or other leveling device behind the disk is helpful.

Vernolate may be applied after planting but proper incorporation is usually impossible without disturbing the seeds. Vernolate may be banded by applying the granules on the soil surface after planting without incorporation. However, in field tests, weed control has been less satisfactory with this application than with preplant incorporated treatments.

Soybeans appear to have fair tolerance to vernolate. A slight delay in emergence and leaf malformations on seedlings have been observed in a limited number of trials. Vernolate is available in granular and emulsifiable concentrate formulations.

2,4-DB (Butoxone SB and Butyrac 175)

Chemical and product formulation	Amount per acre broadcast	
	Acid equivalent	Product
2,4-DB—1.75 lb/gal	0.175—0.22 lb	1 gal/8-10 acres

Use post-emergence applications of 2,4-DB as a rescue operation in very heavy cocklebur infestations. Apply 0.175 lb/A (1/10 gal) 7 to 10 days before soybeans blossom or 0.22 lb/A (1 pt) at the bloom to mid-bloom stage.

Cocklebur plants are usually stunted, but not killed. Crop rotation and cultivation are superior control methods. The sprayer boom should be set high enough so all growing terminals of the weeds are sprayed.

Soybeans usually show twisting and curling injury symptoms from broadcast applications. This injury usually disappears in a few days. Soybeans should have a dark green color before treating. Do not treat soybeans that are under stress from drought or disease. Less soybean injury is noted if the weeds form a protective canopy over the crop.

Post-directed applications of 2,4-DB have not been tested in South Dakota when soybeans are 8 to 12 inches tall and cocklebur are less than 3 inches tall. This type of application is more difficult than broadcast treatments. Shields to protect plants and gauge wheels must be used to maintain proper nozzle height, as the spray should not contact more than the lower ⅓ of the leaves on the soybean plant.

2,4-DB is a water soluble liquid. Do not harvest or feed soybeans for 60 days after treatment.

bentazon (Basagran)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
bentazon—4 lb/gal	½-1 lb	½-1 qt

Apply bentazon post-emergence to control cocklebur, wild mustard and some other broadleaved weeds. Use ½ to 1 pound active ingredient per acre treated. Apply at the 1 to 4 trifoliate leaf stage of the crop and when weeds are in the 2- to 6-leaf stage for best results.

Bentazon presently has an experimental label, so only a limited amount will be available. Full registration is planned for 1975.

Grasses are not controlled. Cocklebur control in field tests has been very good. The higher rate should be used for velvetleaf or sunflower and for larger weeds. The use of surfactant according to label directions has not been tested in South Dakota; however, it is suggested for velvetleaf, sunflower and for larger weeds.

Soybeans have good tolerance to bentazon. Do not apply within 65 days of harvest.

chloroxuron (Tenoran, Norex) plus surfactant

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
chloroxuron—50% wp	1-1½ lb	2-3 lb
+		+
surfactant		surfactant

Post-emergence applications of chloroxuron plus surfactant at the rates shown give good to poor broadleaved annual weed control. Slight to severe leaf burn and stunting of soybeans usually occurs.

Weeds that are not emerged at the time of spraying will not be controlled. Applications should be made after the first trifoliate soybean leaves appear but before broadleaved weeds are 2 inches tall or grasses ½ inch tall. Wild mustard may be controlled with one-half the chloroxuron rate listed above, however, some crop injury should be expected.

Do not harvest for 90 days or graze treated fields.

chlorpropham (Chloro-IPC) plus alachlor (Lasso)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
chlorpropham—4 lb/gal	2-3 lb	2-3 qt
+	+	+
alachlor—4 lb/gal	2-3 lb	2-3 qt

Preemergence applications of this tank-mix give better control of smartweed and lambsquarters than alachlor used alone; however, control of most broadleaved annual weeds is more erratic than with some other treatments.

dinoseb (Premerge)

Chemical and product formulation	Amount per acre broadcast	
	Active ingredient	Product
dinoseb—3 lb/gal	1½-3 lb	2-4 qt

Dinoseb applied as an early post-emergence treatment, when soybeans are cracking the soil as they come up, gives satisfactory control of cocklebur and several other broadleaved annual weeds. However, the application must be made when broadleaved weeds have emerged and the soybeans are in the cotyledon stage, but before the first leaves open to expose the terminal bud. This period is very short and most operators will not be able to get it done at the right time. The amount of active ingredient per acre varies ac-

cording to the expected maximum temperature for the next 24-hour period as follows: 3 pounds for below 70°F, 2¼ pounds for 70-80°F, and 1½ pounds for over 80°F. The relative growth stage of the crop and weed is very important if excessive soybean injury is to be avoided and if weeds are to be controlled satisfactorily.

Dinoseb is primarily a contact-type herbicide. Satisfactory cocklebur control has been observed when the weeds were emerged at the time of spraying. Soybeans will be injured if dinoseb is applied too late. One operator can treat only a limited number of acres.

Preemergence applications of dinoseb usually give erratic or unsatisfactory weed control.

Tank-mixes of alachlor or chloramben with dinoseb applied preemergence or early post-emergence are registered. Weed control may be erratic. Dinoseb is usually less effective when applied preemergence and alachlor or chloramben is usually less effective when applied post-emergence.

Dinoseb applied as a post-directed spray when soybeans are 5 to 6 inches tall to before bloom stage has not been tested in South Dakota. Special spray equipment to direct the spray toward the base of the soybean plant is required. Soybean leaves that are sprayed will be injured.

Dinoseb is a water soluble liquid. Do not graze or harvest for forage 3 weeks after treatment. Dinoseb is toxic and is readily absorbed through the skin so use caution when handling.

NPA plus chlorpropham (Solo)

Chemical and product formulation	Amount per acre broadcast: Active ingredient	Amount per acre broadcast: Product
Solo—liq		1-2 gal
Solo—gran		20-40 lb
(NPA + chlorpropham)	2-4+2-4 lb	

General weed control ratings for preemergence applications of this commercially premixed liquid or granules have not been satisfactory in most field tests in South Dakota.

Reports indicate satisfactory smartweed and cocklebur control, but control appears to be erratic. The emulsifiable concentrate formulation contains 2 pounds NPA and 2 pounds chlorpropham *(Chloro-IPC)* per gallon. The granular formulation contains 10% NPA and 10% chlorpropham. The higher rate is suggested on the label for heavy, dark soils that are high in organic matter.

propachlor (Ramrod)
propachlor (Ramrod) plus linuron (Lorox)

Chemical and product formulation	Amount per acre broadcast: Active ingredient	Amount per acre broadcast: Product
propachlor—65% wp	4-5 lb	6.1-7⅔ lb
propachlor—20% gran	4-5 lb	20-25 lb
propachlor—65% wp	3 lb	4⅔ lb
+	+	+
linuron—50% wp	1 lb	2 lb

Propachlor alone or in combination with linuron is registered for use on soybeans grown for seed (planting) purposes only.

Propachlor gives very good control of annual grasses. Linuron improves control of broadleaved annual weeds.

dinitamine (Cobex)

Dinitramine is applied preplant and must be incorporated immediately. In limited tests, weed control with suggested rates has been similar to trifluralin. There may be greater risk of crop injury. Use initially on a trial basis. To be tested further.

linuron (Lorox)
chlorbromuron (Maloran, Bromex)

Preemergence application of linuron or chlorbromuron controls many annual broadleaved weeds, including some control of cocklebur and velvetleaf. Annual grass control is not satisfactory. Rates required for broad-spectrum weed control often give crop injury. These herbicides are most useful in combination with or following other herbicides.

Linuron and chlorbromuron are sold as a wettable powder containing 50% active ingredient. Linuron is also formulated as a 10% granule.

metribuzin (Sencor, Lexone)

Metribuzin is applied preemergence. Control of annual broadleaved weeds is better than for annual grasses. The margin between adequate weed control and crop injury is narrow. The rate required when used alone for broad-spectrum weed control has given crop injury. One-half pound active ingredient per acre appears to be the maximum rate that can be safely used on most soils.

Metribuzin gives good control of annual broadleaved weeds. Cocklebur control has been satisfactory in some tests. Annual grass control may not be satisfactory.

Metribuzin is sold as a wettable powder containing 50% active ingredient.

trifluralin (Treflan) and chlorpropham (Chloro-IPC)

Control of broadleaved annual weeds is inconsistent or unsatisfactory with chlorpropham applied preemergence after preplant-incorporated application of trifluralin.

This split application requires two separate spraying operations. Smartweed and lambsquarters control may be better than with trifluralin alone. The suggested rate on the *Chloro-IPC* label is 2 pounds active ingredient, (2 quarts liquid or 20 pounds granules) per acre treated.

Cost of Herbicides

The approximate cost (suggested price) per acre for herbicides applied at the rate indicated is given in Table 1. The cost per acre is reduced proportionately for band applications. The cost of application is usually $1.00-$1.50 per acre. See your dealer or custom applicator for current chemical and application costs.

Table 1. Approximate Cost of Recommended Herbicides

Chemical	Rate/A*	Cost per acre broadcast Spray	Granule
alachlor	2½-3	$ 8.35	$ 9.80
alachlor + linuron	2+1	12.60	
alachlor + chlorbromuron	2+1½	12.60	
alachlor + metribuzin	2+½	13.35	
chloramben	2½	12.00	13.25
fluorodifen	4	10.50	
trifluralin	¾	5.25	
trifluralin and linuron	¾ and 1	11.25	12.95
trifluralin and metribuzin	¾ and ½	12.00	
vernolate	3	7.00	

*Active ingredient or acid equivalent. Rates shown are "average" rates recommended in this fact sheet.

Herbicide Performance

Ratings in Table 2 are based on field observations and other data. The comparisons are for recommended application rates under average to favorable conditions in South Dakota. With unfavorable conditions, weed control will be less than indicated and with very favorable conditions, weed control may be better than suggested for some treatments.

Table 2. Herbicide Performance on Major Weeds in Soybeans

	Sunflower	Velvetleaf	Cocklebur	Smartweed	Ragweed	Mustard	Lambsquarters	Pigweed	Barnyardgrass	Foxtails (green & yellow)	Giant Foxtail	Crop tolerance
Preplant Incorporated												
Treflan	5	5	5	4	4	5	2	2	1	1	1	E
Vernam	4	3	5	4	4	3	2	2	1	1	1	F
Preplant and Preemergence												
Treflan and Lorox	3	2	3	1	1	1	1	1	1	1	1	F
Treflan and Sencor/Lexone	2	2	3	1	1	1	1	1	1	1	1	F
Preemergence												
Amiben	5	3	4	3	2	3	2	2	2	2	2	G
Lasso	5	5	5	4	4	4	3	2	1	1	1	E
Preforan/Soyex	5	4	4	1	3	4	3	1	3	2	2	G
Lasso+Lorox	3	2	3	1	1	1	1	1	1	1	1	F
Lasso + Maloran/Bromex	3	2	3	1	1	1	1	1	1	1	1	F
Lasso + Sencor/Lexone	2	2	3	1	1	1	1	1	1	1	1	F

Weed rating:
1=Excellent; 2=Satisfactory; 3=Marginal; 4=Poor; 5=None
Crop tolerance
E=Excellent; G=Good; F=Fair; P=Poor

Use of tradenames does not imply endorsement of one product over another.

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Weed Control in Soybeans