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Herbicides for soybeans

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Soybean herbicides can be soil incorporated before planting (PPI). They can be applied to the soil surface at planting time or before crop emergence (pre-emergence). Or they can be applied in a *split application* (sequential) where the first product is incorporated and followed by a pre-emergent applied over the row or broadcast. A final application method is post-emergence treatment.

Preplanting incorporated treatments

Some herbicides should be incorporated into the soil promptly to prevent loss from the surface. Others may be incorporated at a more convenient time. Incorporation may improve performance when there is insufficient rainfall to activate the herbicide.

Proper incorporation is essential. Mix the herbicide thoroughly into the upper 2 inches of soil according to the label. Most tools do not thoroughly mix the chemical as deeply as they penetrate the soil, so they usually will need to be operated at about 3 to 4 inches deep.

An effective method of incorporation is to disk twice with a tandem disk. The first disking will satisfy the urgency of incorporation and turn most of the herbicide under the soil to prevent breakdown by light. A second disking will further mix the herbicide with the soil.

After the whole field has been disked once, disk the second time at a right angle to the first. If this is not practical, disking at any angle to the first is better than disking both times in the same direction. Speed in excess of 4 mph improves mixing.

The *Do-All* bed conditioner and power-driven rotary cultivator incorporate herbicides satisfactorily. The power-driven rotary cultivator may destroy the physical structure of the soil. This method may increase crusting and hamper seedling emergence. The field cultivator with sweeps properly spaced is satisfactory as an incorporation tool. The spike-toothed harrow or the rotary hoe alone is not satisfactory.

Tables 1, 2, and 3 include information relative to individual herbicides, tank mix combinations, sequential and postemergence applications. Application rates include both *product* (liquid or dry from container) and *active ingredient*, which is the amount of actual chemical to be applied per acre.

However, label rates take precedence over rates included in this guide sheet.

General information

Amiben (Chloramben)

Amiben herbicide is effective applied preplant incorporated, pre-emergence and early post-emergence. When used pre-emergence, it is most effective applied at planting time when spraying and planting are done in the same operation. Rain, irrigation water or mechanical incorporation moves Amiben into the soil where weed seeds sprout.

Amiben remains active and effective for several weeks, long enough for crops to fill row middles and shade out the late-season weed growth.

Amiben controls several important annual grass and broadleaf weeds. Deep germinating annual weeds and sprouts from established perennial weeds are not controlled.

Basalin (Fluchloralin)

Basalin is a preplant herbicide which is incorporated into the soil to provide control of a wide range of annual grasses and certain broad-leaved weeds. Basalin controls weeds as they germinate in the soil but will not control established weeds.

Incorporate Basalin thoroughly, within eight hours of application, into the top 1 to 2 inches of the final seedbed. Avoid removal of treated soil from the seedbed before or during the planting operation, as this may expose untreated soil and allow weeds to germinate in the drill row.

Dual (Metolachlor)

Dual 8E is a selective herbicide recommended as a preplant incorporated or pre-emergence, surface-applied treatment in water or fluid fertilizer for control of most annual grasses and certain broadleaf weeds in soybeans. If Dual 8E is incorporated, any supplemen-

Table 1. P.P.I. or Pre-emergent application

Herbicide	Formulation	Soil type	Product Active Ingredient	Incorporate	Weeds controlled: Annual Grass	Weeds controlled: Broadleaf	Limitations
Amiben (Chloramben)	2 lbs./gal.	loam clay	1.25 gal. (3 lbs.) 1.5 gal. (3.6 lbs.)	yes	yes	yes	No feeding restriction if Amiben is used alone.
Amiben 10G	10% active	loam clay	30 lbs. (3 lbs.) 36 lbs. (3.6 lbs.)	yes	yes	yes	
Basalin (Fluchloralin)	4 lbs./gal.	coarse medium fine	1-1.5 pts. (.5-.75 lb.) 1.5-2 pts. (.75-1.0 lb.) 2-3 pts. (1.0-1.5 lb.)	yes	yes	some	Do not graze field or feed treated forage to livestock.
Dual 8E (Metolachlor)	8 lbs./gal.	coarse medium fine	1.5-2 pts. (1.5-2 lb.) 2.5 pts. (2.5 lb.) 2.5-3 pts. (2.5-3 lb.)	yes	yes	some	Do not apply where runoff will occur. Do not apply when drift may occur.
Lasso (Alachlor)	4 lbs./gal.	coarse medium fine	2.5-3 qts. (2.5-3 lbs.) 3 qts. (3.0 lbs.) 3.5-4 qts. (3.5-4 lbs.)	surface blend	yes	some	Do not apply by air. Use 4-qt. rate on any soil type to reduce competition from persistent weeds.
Lasso II	15% active	medium heavy	16-20 lbs. (2.4-3.0 lbs.) 20-26 lbs. (3.0 lb.-3.9 lbs.)	surface blend	yes	some	Soil surface should be freshly worked and free of weed growth. Seed bed should be firm and smooth.
Lorox-50W (Linuron)	50% W.P.	sandy loam silt loam clay loam	1-3 lbs. (.5-1.5 lbs.) 1.25-4 lbs. (.62-2 lbs.) 1.3-5 lbs. (.65-2.5 lbs.)	no	several	yes	Do not apply over top of emerged beans. Avoid drift to desirable plants.
Lorox-L	4 lbs./gal.	sandy loam silt loam clay loam	1-3 pts. (.5-1.5 lb.) 1.25-4 pts. (.62-2 lbs.) 1.3-5 pts. (.65-2.5 lbs.)	no	several	yes	If weeds have emerged add 1 pt. surfactant to each 25-gal. spray mix.
Prowl (Pendimethalin)	4 lbs./gal.	coarse medium fine	1.2 pts. (.5-1.0 lb.) 1.5-3 pts. (.75-1.5 lb.) 2-3 pts. (1.0-1.5 lb.)	yes	yes	some	Livestock can be fed soybean forage from prowl-treated fields. Use 3-pt. rate on heavy clay soils.
Sencor (Metribuzin)	75% D.F.	coarse medium fine	.5-.67 lb. (.37-.5 lb.) .5-1.0 lb. (.37-.75 lb.) .67-1.2 lb. (.37-.9 lb.)	no	several	yes	Treated forage may be graded or fed to livestock 40 days after application. Injury may occur if Atrazine was used during one previous year.
Sencor	4L						
Sencor	50% W.P.	coarse medium fine	.75-1.0 (.37-1.0 lb.) .75-1.5 lb. (.37-.75 lb.) 1.0-1.75 lb. (.5-.87 lb.)	no	several	yes	Same as above.
Lexone (Metribuzin)	75% D.F.	coarse medium fine	.5 lb. (.37 lb.) .5-.67 lb. (.37-.5 lb.) .67-.67 (.5 lb)	no	several	yes	Do not use treated vines for feed or forage. Injury may occur if Atrazine was used previous year.

Lexone	50% W.P.						
Lexone	4L	coarse medium fine	.75 pt. (.37 lb.) .75-1.0 pt. (.37-.5 lb.) 1.0-1.0 pt. (.5 lb.)	no	several	yes	Same as above.
Surflan (Oryzalin)	4 lbs./gal.	coarse medium fine	75. qt. (.75 lb.) 1.0 qt. (1.0 lb.) 1.5 qt. (1.5 lb.)	if no rain	yes	some	Do not feed treated forage to livestock. Do not plant root crops for 12 months after application.
Surflan	75W	coarse medium fine	1.0 lb. (.75 lb.) 1.3 lb. (.98 lb.) 2.0 lbs. (1.5 lb.)	if no rain	yes	some	Same as above.
Treflan (Trifluralin)	4 lbs./gal.	coarse medium fine	1.0 pt. (0.5 lb.) 1.5 pt. (.75 lb.) 2.0 pts. (1.0 lb.)	yes	yes	some	Do not contaminate any body of water in any manner with Treflan.
Treflan pro-5	5 lbs./gal.	coarse medium fine	0.8 pt. (0.5 lb.) 1.2 pt. (.75 lb.) 1.6 pt. (1.0 lb.)	yes	yes	some	Cool, wet weather during early growth may result in stress to beans.
Treflan 5G	5% granule	coarse medium fine	10 lbs. (0.5 lb.) 15 lbs. (.75 lb.) 20 lbs. (1.0 lb.)	yes	yes	some	Same as above.
Vernam 7E (vernolate)	7 lbs./gal.	coarse medium fine	2.3 pts. (2.0 lbs.) 3.0 pts. (2.6 lbs.) 3.5 pts. (3.0 lbs.)	yes	yes	some	Incorporate immediately after application.
Vernam 10G	10% granule	light medium heavy	20 lbs. (2.0 lbs.) 25 lbs. (2.5 lbs.) 30 lbs. (3.0 lbs.)	yes	yes	some	Do not mix 10G with insecticides or fungicides. Do not contaminate irrigation or domestic-use water.
Coop Propachlor 20G	20% granule	medium high organic	20 lbs. (4.0 lbs.) 25 lbs. (5.0 lbs.)	no	yes	some	For soybeans grown for seed only. Do not graze or feed forage from treated fields.
Dyanap, Kleen-Krop, Naptro, Ancrack and others (Naptalam + Dinoseb)	3 lbs./gal.	light medium heavy	4.5 qts. (3.8 lbs.) 4.5 qts. (3.8 lbs.) 6 qts. (4.5 lbs.)	no	no	yes	Do not graze or feed forage from any treated crop.

Table 2. Tank mix pre-emergents or sequential rate/acre.

Check label for proper sequence.

Herbicide	Formulation	Seq.	Soil type	Product Active ingredient	Incorporate	Weeds controlled: Annual grass	Weeds controlled: Broadleaf	Limitations
Amiben (Chloramben)	2 lbs./gal.	yes	coarse	4 qts. + 1.5 pt. (2.0 + 1.5 lb.)	yes	yes	yes	No feeding restriction.
+			medium	4 qts. + 1.5 pt. (2.0 + 1.5 lb.)				
Dual[8E] (Metolachlor)	8 lbs./gal.		fine	6 qts. + 1 qt. (3.0 + 2.0 lbs.)				
Amiben	2 lbs./gal.	no	coarse	3 qts. + 1.5 qt. (1.5 + 1.5 lb.)	yes	yes	yes	No feeding restriction.
+			medium	4 qts. + 2.0 qts. (2.0 + 2.0 lbs.)				
Lasso (Alachlor)	4 lbs./gal.		fine	4 qts. + 2.0 qts. (0.0 + 2.0 lbs.)				
Amiben	2 lbs./gal.	no	sandy loam	3 qts. + 2.0 lbs. (1.5 + 1.0 lb.)	no	yes	yes	Plant beans at least 1.75 inches deep. No feeding restriction.
+			silt loam	3 qts. + 2.5 lbs. (1.5 + 1.3 lb.)				
Lorox (Linuron)	50% 10 W.P.		clay loam	4 qts. + 3.0 lbs. (2.0 + 1.5 lb.)				
Amiben	2 lbs./gal.	no	loamy sand	3 qts. + .75 lb. (1.5 + .38 lb.)	no	yes	yes	Do not use treated forage to feed livestock. Injury may occur if Metribuzin is applied to soils with a pH of 7.5 or higher.
+								
Sencor (Metribuzin)	50% W.P.		clay loam	3 qts. + 1.0 lb. (1.5 + .5 lb.)				
or								
Lexone	4 lbs./gal.		silty loam	4 qts. + 1.0 lb. (2.0 + .5 lb.)				
Amiben	2 lbs./gal.	no	coarse	4 qts. + 7.5 qts. (2.0 + .75 lb.)	no	yes	yes	Do not use treated vines for feed or forage.
+			medium	4 qts. + 1.0 qt. (2.0 + 1.0 lb.)				
Surflan (Oryzalin)	4 lbs./gal.		fine	4 qts. + 1.25 qt. (2.0 + 1.25 lb.)				
Dual (Metolachlor)	8 lbs./gal.	yes	coarse	1.25 pt. + 4.5 qts. (1.25 + 3.8 lbs.)	no	yes	yes	Do not apply tank mix in liquid fertilizer.
+	3 lbs./gal.		medium	1.5 pt. + 6.0 qts. (1.5 + 4.5 lbs.)				
Dyanap (Naptalam + Dinoseb)			fine	2.0 pts. + 6.0 qts. (2.0 + 4.5 lbs.)				
Dual (Metolachlor)		yes	coarse	1.25 pt. + .5 lb. (1.25 + .25 lb.)	yes	yes	yes	Do not use on soils with less .5% organic matter or with a pH of over 7.4.
+	8 lbs./gal.		medium	1.5 pt. + .75 lb. (1.5 + .37 lb.)				
Sencor	*50% W.P.		fine	2.0 pts. + 1.0 lb. (2.0 + .5 lb.)				
or (Metribuzin)	4 lbs./gal.							
Lexone								
Dual	8 lbs./gal.	no	coarse	1.25 pt. + 1.0 lb. (1.25 + .5 lb.)	no	yes	yes	Do not use on soils with less than .5% organic matter.
+	50% W.P.		medium	1.5 pt. + 1.5 lb. (1.5 + .75 lb.)				
Lorox (Linuron)			fine	2.0 pt. + 1.0 lb. (2.0 + 1.0 lb.)				
Dual	8 lbs./gal.	yes	coarse	1.5 pt. + 1.0 pt. (1.5 + .5 lb.)	yes	yes	some	May be applied and incorporated up to 14 days before planting.
+	4 lbs./gal.		medium	2.5 pts. + 1.5 pt. (2.5 + .75 lb.)				
Treflan (Trifluralin)			fine	2.5 pts. + 2.0 pts. (2.5 + 1.0 lb.)				
Lasso (Alachlor)	4 lbs./gal.	no	coarse	2 qts. + 4.5 qts. (2 + 3.3 lbs.)	no	yes	yes	Apply within 5 days after last tillage operation.
+			medium to					
Dyanap (Naptalam + Dinoseb)	3 lbs./gal.	no	fine	2 qts. + 6.0 qts. (2 + 4.5 lbs.)				

Lasso + Furloe	4 lbs./gal. 4 lbs./gal.	no	coarse medium fine	0.5 qt. + 1.25 lb. (0.5 + .62 lb.) 2.0 qts. + 3.0 qts. (2.0 + 3.0 lbs.) 3.0 qts. + 3.0 (3.0 + 3.0 lbs.)	no	yes	yes	Do not use on soil with less than 1% organic matter.
Lasso + Lorox (Linuron)	4 lbs./gal. 50% W.P. 4 lbs./1 gal.	no	coarse medium fine	2 qts. + .75 lb. (2.0 + .38 lb.) 2.0 qts. + 2.0 lbs. (1.5 + 1.0 lb.) 2.25 qts. + 3.0 lbs. (1.5 + 1.5 lb.)	no	yes	yes	Apply within 5 days after tillage operation. Do not apply over top of emerged beans.
Lasso + Premerge (Dinoseb)	4 lbs./gal. 3 lbs./gal.	no	coarse medium fine	2.0 qts. + 4.0 qts. (2.0 + 3.0 lbs.) 2.0 qts. + 6.0 qts. (2.0 + 4.5 lb) 2.5 qts. + 6.0 qts. (2.5 + 4.5 lbs.)	no	yes	yes	Do not apply on sand or loamy sand soils.
Lasso + Sencor or (Metribuzin) Lexone	4 lbs./gal. 50% W.P. 4 lbs./gal.	no	coarse medium fine	2 qts. + .75 lb. (2.0 + .38 lb.) 2 qts. + 1.0 lb. (2.0 + .5 lb.) 2 qts. + 1.0 lb. (2.0 lbs. + .5 lb.)	yes	yes	yes	Do not apply on soils with a pH of 7.4 or greater.
Prowl (Pendimethalin) + Amiben (Chloramben)	4 lbs./gal. 2 lbs./gal.	yes	coarse medium fine	Do not use 1.5 pt. + 1.0 gal. (.75 + 2 lbs.) 2.0 pts. + 1.0 gal. (1.0 + 2 lbs.)	yes	yes	yes	Forage from treated fields can be fed to livestock.
Prowl + Lorox (Linuron)	4 lbs./gal. 4 lbs./gal.	yes	coarse medium fine	1 pt. + 1 pt. (.5 + .5 lb) 1.5 pt. + 1.5 pt. (.75 + .75 lb) 1.5 pt. 2.0 pts. (.75 + 1.0 lb)	shallow	yes	yes	Forage may be fed to livestock. Do not use on soils of less than .5% organic matter.
Prowl + Sencor or (Metribuzin) Lexone	4 lbs./gal. 75% D.F.	yes	coarse medium fine	1.0 pt. + .5 lb. (.5 + .37 lb.) 1.5 pt. + .5 lb. (.75 + .37 lb.) 1.5 pt. + .67 lb. (.75 + .5 lb.)	yes	yes	yes	Forage can be fed to livestock 40 days after application.
Surflan (Oryzalin) + Lorox (Linuron)	4 lbs./gal. 50% W.P.	no	coarse medium fine	0.5 qt. + 1.25 lb. (0.5 + .62 lb.) .75 qt. + 1.67 lb. (.75 + .83 lb.) 1.0 qt. + 2.0 lbs. (1.0 + 1.0 lb.)	no	yes	yes	Do not use treated vines for feed or forage.
Surflan + Dyanap (Naptalam + Dinoseb) or Klean-Krop	4 lbs./gal. 3 lbs./gal.	yes	coarse medium fine	1.0 pt. + 6 qts. (0.5 + 4.5 lbs.) 1.5 pt. + 6 qts. (.75 + 4.5 lb.) 2.0 pts. + 6 qts. (1.0 + + 4.5 lbs.)	no	yes	yes	Apply within 2 days after planting. Do not apply over top of emerged beans. Do not use treated vines for feed or forage.
Surflan + Sencor or (Metribuzin) Lexone	4 lbs./gal. 50% W.P. 4 lbs./gal.	no	coarse medium fine	1.0 pt. + .5 lb. (0.5 + .25 lb.) 1.5 pt. + .75 lb. (.75 + .37 lb.) 2.0 pts. + 1.0 lb. (1.0 + .5 lb.)	no	yes	yes	Do not use treated vines for feed or forage. Do not plant any crop other than soybeans within 4 months after application.
Treflan (Trifluralin) + Amiben (Chloramben)	 4 lbs./gal. 2 lbs./gal.	yes	coarse medium fine	1.0 pt. + 4 qts. (0.5 + 2 lbs.) 1.5 pt. + 4 qts. (.75 + 2 lbs.) 2.0 pts. + 4 qts. (1.0 + 2 lbs)	yes	yes	yes	Use as a spring preplant incorporated application.
Treflan (Trifluralin) + Sencor or (Metribuzin) Lexone	 4 lbs./gal. 50% W.P. 4 lbs./gal.	yes	coarse medium fine	1.0 pt. + .5 lb. (0.5 + .25 lb) 1.5 pt. + .75 lb. (.75 + .38 lb.) 2.0 pts. + 1.0 lb. (1.0 + .5 lb.)	yes	yes	yes	Do not feed forage. Soybean stress may result if soil pH is above 7.5.

Table 2. Continued.

Herbicide	Formulation	Seq.	Soil type	Product Active ingredient	Incorporate	Weeds controlled Annual grass	Broadleaf	Limitations
Treflan + Vernam (Vernolate)	4 lbs./gal. 7 lbs./gal.	no	coarse medium fine	1.0 pt. + 1.75 pt. (0.5 + 1.5 lb.) 1.5 pt. + 2.3 pts. (.75 + 2.0 lbs). 2.0 pts. + 3.0 pts. (1.0 + 2.6 lbs.)	yes	yes	some	Incorporate immediately after application.
Basalin (Fluchloralin) + Sencor or (Metribuzin) Lexone	4 lbs./gal. 50% W.P. 4 lbs./gal.	yes	sandy loam silt loam clay loam	1.0 + .5 lb. (0.5 + .25 lb.) 1.5 pt. + .75 lb. (.75 + .38 lb.) 2.0 pts. + 1.0 + (1.0 + .5 lb.)	no	yes	yes	Do not apply on soils having a pH 7.5 or above.
Vernam (Vernolate) + Amiben (Chloramben)	7 lbs./gal. 2 lbs./gal.	no	no distinction	2.3 pts. + 3.0 qts. (2.0 + 1.5 lb.)	yes	yes	yes	Incorporate immediately upon application.
Vernam + Basalin (Fluchloralin)	7 lbs./gal. 4 lbs./gal.	yes	coarse medium	1.75 pt. + .75 pt. (1.5 + .37 lb.) 2.3 pts. + 1.0 pt. (2.0 + .5 lb.)	yes	yes	yes	Do not graze livestock in treated areas.
Vernam + Prowl (Pendimethalin)	7 lbs./gal. 4 lbs./gal.	yes	coarse medium fine	1.75 pt. + .75 pt. (1.5 + .37 lb.) 2.3 pts. + 1.0 pt. (2.0 + .5 lb.) 3.0 pts. + 1.5 pt. (2.6 + .75 lb.)	yes	yes	yes	Incorporate immediately after application.

Three-way tank mixes

Amiben + Lasso + Sencor or Lexone
Amiben + Dual + Sencor or Lexone
Amiben + Treflan + Sencor or Lexone
Prowl + Amiben + Sencor or Lexone
Sencor + Lasso + Dyanap
Treflan + Amiben + Sencor or Lexone

See labels for component rates.

tal tillage before planting must not exceed the specified depth of incorporation. Dry weather after pre-emergence application of Dual 8E or a tank mixture may reduce effectiveness. Cultivate if weeds develop.

Lasso (Alachlor)

This product may be applied either as a surface application after planting or shallowly incorporated before planting to blend the herbicide treatment into the upper 1 to 2 inches of soil. Except for minimum or conservation tillage systems, the seedbed should be fine, firm, and free of clods and trash.

Lexone (Metribuzin)

This product is applied as a spray for selective control of certain broadleaf weeds and grasses in soybeans. It is noncorrosive to equipment, nonflammable, and nonvolatile. Moisture is necessary to activate the herbicide; so best results are obtained if treatment is made to moist soil and moisture is supplied by rainfall or sprinkler irrigation (¼ to ½ inch) within two weeks after application. If moisture is insufficient to activate the herbicide, a shallow cultivation (rotary hoe is preferable) should be made after emergence of crop while weeds are small enough to be controlled by mechanical means. If heavy rains occur soon after application, injury to the crop may result. Lexone can also be applied P.P.I + .

Lorox (Linuron) or Linex

Lorox may be applied to soil before emergence of weeds to control susceptible weed seedlings for an extended period of time. The degree of control and duration of effect varies with the amount of chemical applied, soil texture, rainfall and other conditions. Moisture is required to activate the chemical. Best results occur if rainfall (or irrigation) occurs within two weeks of application.

Lorox may also be used to control emerged weeds. Results vary with rate applied and environmental conditions. Best results are obtained on succulent weeds growing under conditions of high humidity and temperatures of 70 degrees or higher, applied post directed.

Prowl (Pendimenthalin)

Prowl herbicide controls most annual grasses and certain broadleaf weeds as they germinate but will not control established weeds. Unusually cold, excessively wet, or hot and dry conditions that delay germination or extend germination over a long period of time can reduce weed control.

Applied according to label directions and under normal growing conditions, Prowl or Prowl tank-mix combinations will not cause crop injury. Over-application can result in crop stand loss, crop injury, or soil residues. Uneven application or improper soil incorporation can decrease weed control or cause crop injury. Soil incorporation deeper than recommended can reduce weed control. Prowl can be applied P.P.I. or pre-emergence.

Ramrod (Propachlor)

Ramrod is recommended for control of many annual grasses and certain broadleaf weeds. For best results, it should be applied to the soil surface before crop or weeds emerge. The seedbed should be fine, firm and free of clods and trash. Application should be made within five days after the last tillage for weed control. Do not apply when conditions favor drift. Moisture, either as rain or irrigation, is required after application to activate this product. On coarse soils one-third inch of rainfall, and on medium and fine textured and/or high organic soils one-third to three-fourths inch of rainfall is required depending upon original soil moisture.

Use on soybeans grown for seed only.

Sencor (Metribuzin)

Sencor controls problem broadleaf weeds, such as cockebur,, velvetleaf, jimsonweed, sesbania (coffee-bean, coffeeweed), prickly sida, teaweed, sicklepod (Cassia) and Pennsylvania smartweed. It also controls certain grasses.

Sencor can be applied as a *split-shot* where incorporation is followed by a pre-emergence treatment. See label for split rates.

Surflan (Oryzalin)

This is a selective pre-emergent herbicide that will control several annual grasses and some broadleaf weeds. Apply as a pre-emergent but shallowly incorporate if no rainfall occurs within seven to 10 days.

Treflan (Trifluralin)

Treflan is a herbicide which is incorporated into the soil to provide long-lasting control of many annual grasses and broadleaf weeds. Treflan controls weeds as they germinate. Treflan will not control established weeds.

To assure uniform incorporation of Treflan, soil moisture conditions should be such that large clods can be broken up during the incorporation process.

Vernam (Vernolate)

Incorporated, Vernam controls several annual grasses, nutsedge and certain broad-leaved weeds. During soybean germination and early seedling growth extended periods of cold and wet or hot and dry weather may create abnormal conditions to weaken crop seedlings.

Modown* (Bifenox)

This herbicide can be applied preplant incorporated, pre-emergence or postemergence. Soil organic matter or clay content have little effect on Modown activity.

Sonalan* (Ethalfluralin)

This preplant herbicide affects seed germination and related growth processes. Sonalin should be incorporated within 48 hours after application.

Table 3. Postemergence.

Herbicide	Formulation	Rate/Acre Product	Rate/Acre Active Ingredient	Weeds Controlled Grass	Weeds Controlled Broadleaf	Limitations
Amiben (Chloramben) + crop oil	2.0 lbs./gal.	5.0 to 6.0 qts.	(2.5 to 3.0 lbs.)	no	yes	Do not feed straw or green fodder treated with Amiben. Do not apply later than 33 days after planting.
Amiben + Butyrac-200 or (2,4 DB) Butoxone	2.0 lbs.gal. 2.0 lbs./gal.	5.0 qts. + 2 oz.	(2.25 lbs. + 2 oz.)	no	yes	same as above
Amiben + Alanap-L	2.0 lbs./gal. 2.0 lbs./gal.	5.0 qts. + 2.0 qts. 5.0 qts. + 2.0 qts.	(2.25 + 1.0 lb.) (2.25 + 1.0 lb.)	no	yes	Do not use forage for livestock feed.
Basagran (Bentazon)	4.0 lbs./gal.	0.75 qts. to 1.0 qt. (plus oil concentrate)	(0.70 to 1.0 lb.)	no	yes	Weed size determines rate applied.
Basagran + Butyrac-200 or (2,4 DB) Butoxone	4.0 lbs./gal. 2.0 lbs./gal.	0.75 qt. + 2.0 oz.	(0.75 lb. + 2.0 oz.)	no	yes	Do not apply within 60 days of harvest.
Blazer (Acifluorfen)	2.0 lbs./gal.	2.0 pts.	(0.5 lb.)	no	yes	Do not apply within 50 days of harvest. Do not feed forage to livestock.
Blazer + Basagran	2.0 lbs./gal. 4.0 lbs./gal.	1.5 pt. + 1.0 pt. or 1.0 to 1.5 pt.		no	yes	same as above
Blazer + Butyrac-200 or (2,4 DB) Butoxone	2.0 lbs./gal. 2.0 lbs./gal.	1.5 pt. + 2.0 oz.	(0.38 lb. + 2.0 oz.)	no	yes	Do not apply within 60 days before harvest.

Butyrac-200 or (2,4 DB) Butoxone	2.0 lbs./gal.	0.7 pt. to 0.9 pt. (0.175 to .22 lb.)	no	yes	Same as above. Also use as directed.
Dyanap Naptalan + Dinoseb	3.0 lbs./gal.	2.0 qts. to 4.0 qts. (1.5 lb. to 3.0 oz.)	no	yes	Do not apply after beans are 20 inches tall.
Dyanap + Butyrac-200 or (2,4 DB) Butoxone	3.0 lbs./gal. 2.0 lbs./gal.	2.0 qts. + 1.75 oz. (1.5 lb. + 1.75 oz.)	no	yes	Do not use surfactants.
Fusilade (Fluazfop)	4.0 lbs./gal.	0.25 - 0.5 pt.	yes	no	Do not graze livestock in treated area.
Hoelon (Diclofop)	3.0 lbs./gal.	2.0 to 3.3 pts. (0.75 to 1.25 lb.)	yes	no	Do not graze or feed treated forage.
Poast (Sethoxydin)	1.53 lb./gal.	1.0 to 1.5 pt. (0.1 to 0.19 lb.)	yes	no	Always add a non-phytotoxic oil concentrate. Do not graze or feed forage.
Rescue (Alanap +2, 4-DB)	2.06 lbs./gal.	2.0 to 3.0 qts. (1.05 to 1.59 lb.)	no	yes	Do not apply after mid bloom. Do not graze or feed forage.
Roundup (Glyphosate)	3.0 lbs./gal.	2.0:1.0 ratio, water carrier	yes	yes	Apply with wick wiper or recirculating sprayer.
Sencor (Metribuzin) + Butyrac-200	4.0 lbs./gal.	0.5 pt. + 1.75 oz. (0.25 lb. + 1.75 oz.) (post-directed)	no	yes	Do not harvest beans within 60 days.
Tackle (Acifluorfen)*	2.0 lbs./gal.	2.0 pts. (0.5 lb.)	no	yes	Label pending.
Vistar (Mefluidide)*	2.0 lbs./gal.	1.0 pt. (9.25 lb.)	yes	no	Apply no later than 60 days before harvest.

*Treatments in the experimental stage.

Tackle* (Acifluorfen)

This contact herbicide provides effective postemergence control of annual broadleaf weeds in soybeans. Tackle should be applied to actively growing weeds that are in the 2 to 4-leaf stage. The soybeans should be treated when they reach the 1 to 2 trifoliate leaf stage.

Vistar* (Mefluidide)

This postemergence soybean herbicide is used for the suppression and control of seedling and rhizome Johnsongrass, shattercane, volunteer corn, and volunteer wheat. Vistar 2-S herbicide may be used in the states of Illinois, Indiana, and Ohio in those areas south of Interstate 70, and in Missouri amd Kansas south of U.S. Highway 24.

Always use a non-ionic surfactant with Vistar.

*Zorial (Norflurazon)

Applied pre-emergence, Zorial controls grasses and sedges. Zorial, which is root absorbed and translocated, does not leach rapidly in soil.

Furloe (CIPC)

Furloe acts as a selective pre-emergence and early-postemergence herbicide. It effectively controls many annual grassy and broadleaf weeds in soybeans.

Postemergence herbicides

Alanap-L (Naptalam)

Use Alanap-L as a pre-emergence spray immediately after seeding or as an overtop application when soybeans are about 18 inches tall and are growing actively. A band treatment may also be used.

The area to be treated must be weed free at the time of application. Alanap-L usually will not control established weeds. To ensure maximum weed control, it is important to have a relatively smooth soil surface. If the area to be treated has been plowed, the soil clods should be broken up. If weather factors make replanting necessary after Alanap-L has been applied, thoroughly disk the area before replanting.

Do not apply Alanap-L to an area where crop seeds are exposed or shallowly planted. The usual depth of planting to ensure a stand is sufficient if the crop seeds are well covered with soil.

***Experimental**

An *experimental* designation indicates that the treatment: 1) is new and not adequately observed under Missouri conditions to allow an accurate description of its characteristics; or 2) although not new, it has been found to be marginal in weed control performance or crop safety, and a longer time is required to determine the degree of dependability.

We recommend that experimental treatments be used on a limited basis until their performance has been determined.

Use rates on the label.

Rescue (Alanap-L 2,4 DB)

Apply to soybeans about 18 inches tall (seven to 10 days before bloom through mid bloom). Position spray boom 18 to 24 inches above the tops of the soybean plants or weeds. It should be equipped with hollow cone nozzles. Maintain a high spray pressure (40 to 50 psi) during application. This ensures a fine spray mist for better overall coverage.

Basagran (Bentazon)

Basagran selective herbicide is intended for the postemergence control of certain broadleaf weeds and sedges. Basagran does not control grasses. Basagran is effective mainly through contact action; therefore, weeds must be thoroughly covered with spray. Large crop-and-weed-leaf canopies shelter smaller weeds and prevent adequate spray coverage.

Basagran applications should be made when weeds are small and actively growing and before weeds reach the maximum size listed in the table. Such applications generally correspond to the soybean growth stages of unifoliate to two expanded trifoliate leaves. Soybeans are tolerant to Basagran at all stages of growth. Slight leaf-yellowing, bronzing, speckling, or burning may occur under certain conditions. Soybean plants generally outgrow this condition within 10 days.

For the addition of oil concentrate to spray tank, refer to recommendations for oil concentrate under the specific crop. Oil concentrate should be added to the spray tank under certain conditions. Use a nonphytotoxic oil concentrate (commonly referred to as oil concentrate) containing a blend of 80 percent (minimum) petroleum or vegetable base oil and 20 percent tolerance exempt surfactant.

For ground application, use oil concentrate at the maximum rate of 1 quart per acre.

For air application use oil concentrate at the maximum rate of 1 pint per acre. Fill the tank of a thoroughly clean sprayer half to two-thirds full with clean water. Start agitation and add Basagran; allow to mix thoroughly. Add oil concentrate and remaining volume of water. Maintain constant agitation during application.

Blazer (Acifluorfen)

Blazer is formulated as a liquid concentrate containing 2 pounds of active ingredient per gallon of product. It is formulated with surfactant and the addition of surfactant to the spray tank is usually not required when the applications are made in 20 gallons of water per acre.

Soybeans are tolerant to postemergence applications of Blazer when applied at the recommended growth stages and suggested dosage rates. Soybean leaves may respond to Blazer and exhibit burning, crinkling, and bronzing, particlarly on the youngest leaves present at the time of application. Soybeans outgrow this condition and continue to develop normally.

Blazer is a selective broad-spectrum herbicide recommended for postemergence applications to soybeans to control susceptible broadleaf weeds. Opti-

mum control with Blazer is achieved when young, actively growing weed seedlings are treated. It is important to cover all weed parts thoroughly with Blazer as it works primarily by contact action. Failure to follow the suggested dosages on maximum leaf stage limits may result in unsatisfactory control. See the weed charts and special use directions for recommended rates and timing of applications.

A tank mix of Blazer + Basagran controls pigweed, morning glory, lambsquarters, and cocklebur better than either herbicide applied alone.

Butyrac or Butoxone (2, 4-DB)

For directed band application, treat when beans are at least 8 inches tall. Adjust the nozzle height to allow spray to contact no more than the bottom one-third of soybean plants. Do not allow spray drift to contact growing terminals of beans, as excessive crop injury will result.

For best results treat when the cocklebur and morning glory are no more than 3 inches tall. All leaves and growing terminals of weeds should be contacted by the spray. Do not use more than two applications per season. Stunting of the soybeans may be observed when two applications of the higher rates are used for weed control.

To ensure proper placement of spray on the lower one-third of soybean plants, apply with sprayer nozzles mounted on skid shoes, oiling shoes, or cultivators with gauge wheels. Do not mount on booms with drop nozzles or on cultivators without gauge wheels. Use fan nozzles (8001 or larger, or their equivalent). Nozzle pressure should be less than 40 psi to reduce spray drift.

Drought beans should not be sprayed.

Do not use this product on soybeans that show symptoms of disease such as Phytophthora root rot.

Do not add any wetting agents or detergents to the spray solution.

Dinoseb

Dinoseb controls seedling weeds in soybeans. Preplant, pre-emergence, postemergence or directed postemergence applications are possible, depending upon weed problem and dinoseb formulation.

Dyanap (Naptalan + Dinoseb)

Dyanap can be applied anytime after planting through the crook stage and postemergence. Dyanap can also be applied after using preplant incorporated herbicides. The area to be treated should be well prepared and as free as possible from stubble and litter.

As an early postemergence treatment, Dyanap may be applied beginning when the first trifoliate soybean leaf is fully expanded (in all soybean-growing areas).

This treatment will provide effective control of the following broadleaf weeds: cocklebur, annual morning glory, jimsonweed, common ragweed, giant ragweed, ground cherry, pigweed, wild sunflower, and mustard.

Do not apply Dyanap when temperatures are above 75 degrees F during periods of low humidity.

Fusilade (Fluazfop)

Fusilade 4E is a selective postemergence herbicide for control of annual and perennial grasses in cotton and soybeans. Fusilade does not control broadleaf weeds or sedges (nutgrass).

Fusilade is a systemic herbicide that moves from the treated foliage into the rhizomes, stolons, and growing points of grasses. Excellent control of a wide range of annual and perennial grasses will be obtained with Fusilade when applied as recommended on this label.

Growth of treated grasses stops soon after application. Symptoms include loss of vigor, yellowing and/or reddening, and necrosis. Symptoms are generally observed within one to three weeks, depending on grass species and environmental conditions.

Always add one of the following:

- **Crop oil concentrate.** Add crop oil concentrate at 1 percent (1 quart per 25 gallons) of the finished spray volume. Use only nonphytotoxic crop oil concentrates that contain 15-20 percent surfactant.
- **Nonionic surfactant.** Add nonionic surfactant at 0.25 percent (½ pint per 25 gallons) of the finished spray volume. Use only nonionic surfactants that contain at least 80 percent surface-active agent.

Hoelon (Diclofop)

Hoelon 3EC should be applied when the majority of annual grassy weeds are in the one-to-four leaf stage of growth. For best control of crabgrass and yellow foxtail, applications should be made before the second leaf fully emerges. The stage of weed growth is more important than the number of weeds. Thorough uniform spray coverage of weeds is essential.

Heavy infestations of volunteer corn (especially when uneven emergence is occurring from ears buried at varying soil depths) should be treated as a special weed problem.

Apply Hoelon after ***all*** of the volunteer corn has emerged but before the first emerged corn grows to a height where thorough coverage is not possible. Spray boom height and pressures should be adjusted to obtain total coverage of the entire volunteer corn plant. Thorough coverage of the volunteer corn foliage and penetration of clumps is essential.

The delayed broadcast application of Hoelon to control heavy infestations of volunteer corn will give greatly reduced control of any annual grassy weeds that have grown beyond the recommended leaf stages. Do not apply more than one application of Hoelon in a growing season.

Poast (Sethoxydin)

Poast is a selective broad-spectrum postemergence herbicide for control of annual and perennial grass weeds in soybeans. Poast does not control grass weeds in soybeans. Poast does not control sedges or broadleaf weeds. Soybeans at all stages of growth are tolerant to Poast.

Poast rapidly enters the plant through the foliage and translocates throughout the plant. Control symp-

toms exhibited by the grass plant progress from a slowing or stopping of growth, to leaf tip burn, and to reddening of the foliage. Subsequently, burn back of the foliage occurs. These symptoms will generally be observed within three weeks depending on environmental conditions.

Apply Poast herbicide postemergence to actively growing grasses before they exceed the recommended stage of growth given in the rate tables.

Always add a nonphytotoxic oil concentrate to the spray solution at 1 quart per acre for ground applications and 1 pint per acre for aerial applications. Oil concentrates are sold under many brand names and should consist of 80 percent paraffin-base petroleum oil with 20 percent various surfactants and inert ingredients.

Fertilizers as herbicide carriers (Mixes)

Because of the variability of fluid or dry fertilizer grades, make compatibility checks with each batch of fertilizer. Also determine the compatibility of herbicide mixes with the specific fertilizer to be used.

General compatibility

Herbicide	**Fertilizer**
Amiben	Liquid (not dry)
Basalin	Fluid or dry bulk
Dual	Fluid
Lasso	Fluid or dry bulk
Lexone	Fluid
Lorox	Fluid
Sencor	Fluid or dry bulk
Surflan	Not on label
Teflan	Not on label
Vernam	Fluid or dry bulk

(Check label for compatability tests)

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