Chemical Weed Control in Soybeans 1981

Cooperative Extension South Dakota State University

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Chemical Weed Control in Soybeans 1981
Lesseens from weeds in soybeans can be serious. Annual broadleaves such as sunflower, velvetleaf, or cocklebur are difficult to control. Most perennial weeds cannot be controlled. Herbicides are an aid to a good rotation, proper seedbed preparation, and cultivation.

Herbicide Suggestions

Information in this publication is based on South Dakota Agricultural Experiment Station research and other research or observations. Herbicides are included only after the chemical is registered by the Environmental Protection Agency (EPA) as to residue tolerances in crops used for food or feed. Only herbicides are registered by the EPA. Other research or observations. Herbicides are included only after the chemical is registered by the Environmental Protection Agency (EPA) as to residue tolerances in crops used for food or feed.

The information does not imply a guarantee or responsibility for results. The use of tradenames is for reader convenience and does not imply product endorsement. Users are responsible for following all label directions and precautions.

WEED PROBLEMS. Weeds are grouped as small-seeded annual broadleaves (kochia, lambsquarters, pigweed, etc), annual grasses (green or yellow foxtail), or perennial weeds. Control is rated poor, fair, good, very good, or excellent for each category of weeds.

SPECIAL WEED PROBLEMS. A section for “Special Weed Problems” gives the best treatments for each weed.

HERBICIDES. Most herbicides are listed by tradename. The common name is also included in the heading in parentheses. Only the common name is used when the same active ingredient is available in several products.

Treatments listed under “Soybean Herbicides” are those considered to be promising for most situations in South Dakota. Those listed under “Other Soybean Herbicides” may be useful for special problems, are inadequately tested, or have given less consistent performance.

SOYBEAN HERBICIDES

TREFLAN (TRIFLURALIN)

1-2 pt Treflan-4l/gal

Excellent control of most annual grasses and fair control of small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, smartweed, or large-seeded annual broadleaves. Consistent performance. Very good crop tolerance. Low rate is for light, low organic matter soil; the high rate is for heavy, clay soil. Rate of 1½ pt/A has been satisfactory in most SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 5 gpa for ground or air. Carryover may damage oats or sorghum planted the following year.

PREPLANT INCORPORATED. Immediate incorporation preferred, but may be delayed up to 48 hours if soil surface is dry and wind is under 10 mph. Incorporate into the top 2-3 inches of soil using a tandem disk with small blades set to cut 4-6 inches deep operated at 4-6 mph, a field cultivator equipped with three or four rows of sweeps spaced no more than 7 inches apart, or other suitable equipment. A second incorporation improves uniformity, especially under wet, lumpy, or trashy conditions. Follow with a harrow or leveling device. A tandem disk followed by a field cultivator provides good incorporation under a variety of conditions. Improper incorporation reduces control.

TOLBAN (PROFLURALIN)

1-3 pt Tolban-4l/gal

Excellent control of most annual grasses and fair control of small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, smartweed, or large-seeded annual broadleaves. Consistent performance. Very good crop tolerance. Low rate is for light, low organic matter soil; the high rate is for heavy clay soil. Rate of 2 pt/A has been satisfactory in most SDSU tests on medium and heavier soils. May be applied in liquid fertilizer. Minimum carrier is 10 gpa for ground equipment. No label restrictions for crops planted the following year. Problems have not been noted under normal conditions.

PREPLANT INCORPORATED. Immediate incorporation preferred but may be delayed up to 4 hours if soil surface is dry and wind velocity is less than 10 mph. Incorporate into the top 2-3 inches of soil using a tandem disk with small blades set to cut 4-6 inches deep operated at 4-6 mph, a field cultivator equipped with three or four rows of sweeps spaced no more than 7 inches apart, or other suitable equipment. A second incorporation improves uniformity, especially under wet, lumpy, or trashy conditions. Follow with a harrow or leveling device. A tandem disk followed by a field cultivator provides good incorporation under a variety of conditions. Improper incorporation reduces control.
PROWL (PENDIMETHALIN)

1-3 pt Prowl-4lb/gal

Excellent control of most annual grasses and fair control of small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, smartweed, or large-seeded annual broadleaves. Consistent performance as a preplant incorporated treatment. Very good crop tolerance if properly incorporated; less tolerance if left on the surface. Lower rates are for light, low organic matter soil; the higher rates are for heavy, clay soil. Rate of 2/5 pt/A has been satisfactory in most SDSU tests. Minimum carrier is 10 gpa for ground application. No label restrictions for crops planted the following year. Problems have not been observed under normal conditions.

PREPLANT INCORPORATED. Immediate incorporation preferred, but may be delayed up to 7 days. Incorporate with a small-bladed tandem disk set to cut 2-4 inches deep, field cultivator, or other suitable equipment. A second incorporation improves uniformity, especially if no rain was received or under lumpy, trashy conditions. Follow with a harrow or leveling device. Improper incorporation reduces control.

BASELIN (FLUCHLORALIN)

1-3 pt Basalin-4lb/gal

Excellent control of most annual grasses and fair control of small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, or large-seeded annual broadleaves. Some suppression of velvetleaf. Good crop tolerance; crop outgrows initial emergence delay and leaf malformation. Low rate is for light, low organic matter soil. Rate of 3 pt/A has been used in most SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 10 gpa. No carryover.

PREPLANT INCORPORATED. Must be incorporated immediately. Incorporate into top 2-3 inches of soil with a small-bladed tandem disk set to cut 4-6 inches deep followed by a harrow or leveling device. A second incorporation improves uniformity. Improper incorporation reduces control.

VERNAM (VERNOLATE)

2½-3½ pt Vernam-7lb/gal

Good control of several annual grasses and some small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, or large-seeded annual broadleaves. Some suppression of velvetleaf. Good crop tolerance; crop outgrows initial emergence delay and leaf malformation. Low rate is for light, low organic matter soil. Rate of 3 pt/A has been used in most SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 10 gpa. No carryover.

PREPLANT INCORPORATED. Immediate incorporation preferred, but may be delayed up to 7 days. Incorporate with a small-bladed tandem disk set to cut 2-4 inches deep, a field cultivator, or other suitable equipment. A second incorporation improves uniformity, especially under wet, lumpy, or trashy conditions. A tandem disk followed by a field cultivator gives good incorporation under a range of conditions. Follow with a harrow or leveling device. Improper incorporation reduces control.

TREFLAN or TOLBAN or PROWL or BASALIN and/+ SENCOR or LEXONE

1-2 pt Trevlan-4lb/gal and/+ 1½-1 pt Sencor or Lexone-4lb/gal or 1½-1 lb Sencor or Lexone-50% wp or 1½-1 lb Sencor or Lexone-75% s or Lexone-75% df

Excellent controlof several annual grasses and fair control of small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, or large-seeded annual broadleaves. Some suppression of velvetleaf. Good crop tolerance; crop outgrows initial emergence delay and leaf malformation. Low rate is for light, low organic matter soil. Rate of 3 pt/A has been used in most SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 10 gpa. No carryover.

PREPLANT INCORPORATED. Immediate incorporation preferred, but may be delayed up to 7 days. Incorporate with a small-bladed tandem disk set to cut 2-4 inches deep, field cultivator, or other suitable equipment. A second incorporation improves uniformity, especially if no rain was received or under lumpy, trashy conditions. Follow with a harrow or leveling device. Improper incorporation reduces control.

TREFLAN or TOLBAN or PROWL and LOROX

1-2 pt Trevlan-4lb/gal and ½-2 lb Lorox-50% wp

Excellent controlof annual grasses and fair control of small-seeded annual broadleaves such as pigweed and lambsquarters. Does not control mustard, nightshade, or large-seeded annual broadleaves. Some suppression of velvetleaf. Good crop tolerance; crop outgrows initial emergence delay and leaf malformation. Low rate is for light, low organic matter soil. Rate of 3 pt/A has been used in most SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 10 gpa. No carryover.

PREPLANT INCORPORATED. Immediate incorporation preferred, but may be delayed up to 7 days. Incorporate with a small-bladed tandem disk set to cut 2-4 inches deep, field cultivator, or other suitable equipment. A second incorporation improves uniformity, especially if no rain was received or under lumpy, trashy conditions. Follow with a harrow or leveling device. Improper incorporation reduces control.

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. Incorporate Trevlan or Tolban or Prowl or Basalin as for each product alone. Apply Sencor or Lexone preemergence. Maximum metribuzin rate is ½ lb/A active for most heavier soils. Must have ½ to ¾ inch of rain within one week after application to activate Sencor or Lexone. Slightly better crop tolerance and gives slightly better control of large-seeded broadleaves than preplant incorporated tank-mix.

SPLIT TANK-MIX PREPLANT INCORPORATED AND PREEMERGENCE. "Splitshot" application for Trevlan + Sencor and Lexone only. Incorporate usual rate of Trevlan + Sencor tank-mix before planting and apply 1½-3/8 lb/A active metribuzin preemergence. Allows for better crop tolerance when higher Sencor cause serious crop injury. Follow soil precautions carefully.

PREEMERGENCE. Tank-mix. Prowl + Sencor or Lexone only. Rates as for preplant tank-mix. Much less consistent grass control than other application methods except with ideal rainfall. Less crop tolerance.

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. Incorporate Trevlan or Tolban or Prowl or Basalin alone. Apply Sencor or Lexone preemergence. Maximum metribuzin rate is ½ lb/A active for most heavier soils. Must have ½ to ¾ inch of rain within one week after application to activate Sencor or Lexone. Slightly better crop tolerance and gives slightly better control of large-seeded broadleaves than preplant incorporated tank-mix.

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. "Splitshot" application for Trevlan + Sencor and Lexone only. Incorporate usual rate of Trevlan + Sencor tank-mix before planting and apply 1½-3/8 lb/A active metribuzin preemergence. Allows for better crop tolerance when higher Sencor cause serious crop injury. Follow soil precautions carefully.

PREEMERGENCE. Tank-mix. Prowl + Sencor or Lexone only. Rates as for preplant tank-mix. Much less consistent grass control than other application methods except with ideal rainfall. Less crop tolerance.
TREFLAN and/or TREFLAN or PROWL or LASSO (METOLACHLOR) • BEN (CHLORAMBEN)

**SPLIT PREPLANT INCORPORATED AND PREEMERGENCE.** Incorporate normal rate of Treflan before planting and apply Modown preemergence. Preferred application method.

**PREPLANT INCORPORATED.** Tank-mix, incorporate more shallowly than for Treflan alone. Do not use a tandem disk. Herbicide must be incorporated into the top 2 inches of soil. This may be too shallow for the best results with Treflan except under ideal seedbed conditions. Deeper incorporation reduces Modown effectiveness.

**TREFLAN or PROWL and/or AMIBEN (TRIFLURALIN or PENDIMETHALIN and/or CHLORAMBEN)**

**SPLIT PREPLANT INCORPORATED AND PREEMERGENCE.** Incorporate normal rate of Treflan or Prowl before planting and apply Amiben preemergence. Rainfall required for Amiben. Slightly better broadleaf control than preplant tank-mix of Treflan + Amiben. Preferred application method. Amiben may be banded to reduce cost.

**PREEMERGENCE.** Tank-mix, Prowl + Amiben only. Much less consistent grass control than with split application except under ideal rainfall situations. Less crop tolerance. Minimum carrier is 10 gpa for ground equipment.

**LASSO (ALACHLOR)**

**PREEMERGENCE.** Requires ½ to ¾ inch rainfall within one week after application. Use a harrow or rotary hoe if weeds emerge before rainfall is received. Travel the same direction as the rows if banded.

**DUAL (METOLACHLOR)**

**PREEMERGENCE.** Requires ½ to ¾ inch rainfall within one week after application. Use a harrow or rotary hoe if weeds emerge before rainfall is received. Travel the same direction as the rows if banded.

**AMIBEN (CHLORAMBEN)**

**SPLIT PREPLANT INCORPORATED.** Incorporate normal rate of Treflan before planting and apply Modown preemergence. Preferred application method. Amiben may be banded to reduce cost.

**PREEMERGENCE.** Preferred application method. Must have ½ to 1 inch of rainfall within one week after application. Use rotary or harrow if rainfall is not received within 3 to 5 days.

**POST-EMERGENCE.** May be applied when soybeans are in cracking to second trifoliate stage. Apply 5-6 qt/A. Dependent upon rainfall. Results improved if emerged weeds are controlled with harrow or rotary hoe. Limited tests. Water carrier only.
**LASSO or DUAL and/or SENCOR or LEXONE (ALACHLOR or METOLACHLOR and/or METRIBUZIN)**

2-3 qt Lasso-4lb/gal + ½-1 lb Sencor or Lexone-4lb/gal or ½-1 lb Sencor or Lexone-50% wp or ½-¾ lb Sencor-75% s or Lexone-75% df

1½-2½ pt Dual-Bib/gal + ½-1 pt Sencor or Lexone-4lb/gal or ½-1 lb Sencor or Lexone-50% wp or ½-¾ lb Sencor-75% s or Lexone-75% df

Very good to excellent control of several annual grasses and small-seeded annual broadleafes. Fair to very good control of some large-seeded annual broadleafes. Metribuzin gives best annual broadleaf control of soil applied treatments. Fair crop tolerance. Risk of injury from metribuzin on variable, sandy, low pH, low organic matter soils or on clay knolls. Do not use on soil that is sandy, has a pH over 7.4, or has less than 1% organic matter. Cold, wet soil conditions that slow emergence increase risk of injury. Combined effects of metribuzin with atrazine carryover can produce serious crop injury.

Use lower rates for light, lower organic matter soils. Higher rates are for heavy, clay, low pH soils. Metribuzin at ¾ lb/A active usually gives satisfactory control of light infestations of many small-seeded broadleafes and reduces risk of injury, especially for inexperienced growers. Use maximum rate for soil type for best control of weeds like sunflower or velvetleaf. May be applied in liquid fertilizer carrier. Maximum carrier is 15 gpa for Lasso or 10 gpa for Dual with ground equipment and 5 gpa for Lasso or 2 gpa for Dual with aerial equipment.

**SHALLOW PREPLANT INCORPORATED.** Tank-mix. Dual combinations only. Incorporate as for Dual alone. Will improve results when rainfall is very limited, but gives slightly less control than preemergence application with adequate rainfall. There is slightly less tolerance to metribuzin applied in this manner. Maximum metribuzin rate for most soils is 3/8 lb/A active. Rates of 2 (metolachlor) + 3/8 (metribuzin) lb/A active have been satisfactory in most SDSU tests.

**PREEMERGENCE.** Tank-mix. Must have ½-¾ inch rainfall within one week. Metribuzin applied preemergence gives slightly better control of broadleafes and has slightly better crop tolerance than preplant incorporated. Maximum metribuzin rate is ½ lb/A active for most heavy soils. Rates of 2 (alachlor or metolachlor) + 3/8-1/2 (metribuzin) lb/A active have been satisfactory in most SDSU tests. More convenient than split application.

**SPLIT PREPLANT INCORPORATED AND PREEMERGENCE.** Dual + Sencor or Lexone only. Incorporate Dual before planting and apply Sencor or Lexone preemergence. Refer to preplant or preemergence sections above.

**LASSO or DUAL + LOROX (ALACHLOR or METOLACHLOR + LINURON)**

1½-3 qt Lasso-4lb/gal + 1-3 lb Lorox-50% wp

1½-2½ pt Dual-Bib/gal + 1-3 lb Lorox-50% wp

Tank-mix. Very good to excellent control of several annual grasses. Very good control of several small-seeded annual broadleafes. Good crop tolerance. More risk on light soil. Low rates are for light, low organic matter soils. Higher Lorox rates improve control of some large-seeded broadleafes, but increase risk of injury. Slightly less risk of injury than with metribuzin combinations. Rates of 2 (alachlor or metolachlor) + 1 (linuron) lb/A active have been satisfactory in most SDSU tests. Do not use on sands. Combined effects of Lorox with atrazine carryover can produce serious crop injury. May be applied in liquid fertilizer. Plant seed at least 1/4 inch deep. Apply by ground or air as for Lasso or Dual alone.

**PREEMERGENCE.** As for Lasso or Dual alone. Do not incorporate.

**LASSO or DUAL + AMIBEN (ALACHLOR or METOLACHLOR + CHLORAMBEN)**

2 qt Lasso-4lb/gal + 4 qt Amiben-2lb/gal

1½-2½ pt Dual-Bib/gal + 4-6 qt Amiben-2lb/gal

Very good to excellent control of several annual grasses and good control of some small-seeded annual broadleafes. Fair control of some large-seeded annual broadleafes. Very good crop tolerance. Weed control and crop tolerance affected less by soil variation than with linuron or metribuzin combinations. Low rates are for light, low organic matter soil. Rates of 2 (alachlor or metolachlor) + 2 (chloramben) lb/A active have been satisfactory in most SDSU tests. High Amiben rate improves control of some large-seeded broadleafes. Apply by ground or air as for Lasso or Dual alone.

**SHALLOW PREPLANT INCORPORATED.** Tank-mix. Dual + Amiben only. Incorporate as for Dual or Amiben alone.

**PREEMERGENCE.** Tank-mix. Preferred application method for most situations.

**SPLIT PREPLANT INCORPORATED AND PREEMERGENCE.** Dual and Amiben only. Incorporate Dual shallowly as for Dual alone and apply Amiben preemergence. Amiben may be banded to reduce cost.

**LASSO + MODOWN (ALACHLOR + BIFENOX)**

2-3 qt Lasso-4lb/gal + 1½-2½ lb Modown-80% wp or 2½-4 pt Modown-4lb/gal

Tank-mix. Very good to excellent control of several annual grasses and good control of some small-seeded annual broadleafes. Very good on pigweed. Fair control of some large-seeded annual broadleafes. Weed control and crop tolerance affected less by soil variation than with linuron or metribuzin combinations; however, leaf burn and stunting can be serious if raindrops splash bifenox onto the emerging crop. Yields are usually not affected. Shallow incorporation reduces problem. Low rates are for light, low organic matter soil. Rates of 2 (alachlor) + 1½ (bifenox) lb/A active have been satisfactory in most SDSU tests. Minimum carrier is 15 gpa for ground application.

**SHALLOW PREPLANT INCORPORATED.** Incorporate into top 1 inch of soil with rotary hoe, shallow field cultivator, or other suitable equipment. Do not use a disk. Must be shallow or weed control is reduced. Less crop injury. Furrow planting moves treated soil from row area.

**PREEMERGENCE.** Must have ½-¾ inch of rain within one week after planting. Use a rotary hoe or harrow if rain is not received within 7 days after planting. Method will improve control and reduce risk of crop injury.

**BASAGRAN (BENTAZON)**

¾-1 qt Basagran-4lb/gal

**POST-EMERGENCE.** Excellent control of cockleburs and very good control of small sunflower and velvetleaf. Pigweed, nightshade, and kochia usually are not controlled. Weeds should be small for best results. Soybeans are usually in the unifoliate to 2-trifoliate leaf stage but are tolerant at all growth stages. Excellent crop tolerance. Some leaf margin burn may occur if plants are under stress. Best results under good growing conditions; less effective under low humidity or dry conditions.

The low rate is for cockleburs under 6 inches, velvetleaf under 2 inches, or sunflower or mustard under 4 inches. High rate is for larger weeds but before cocklebur is 10 inches, velvetleaf 5 inches, or sunflower or mustard 6-7 inches. Late season treatment of two applications of ¾ qt/A applied 10-14 days apart or a single application of 1½ qt/A will give partial control of cockleburs up to 24 inches.

Primarily contact action. Good coverage important. Minimum carrier is 20 gpa for ground or 5 gpa for air with minimum of 40 psi boom pressure. Do not use flood-jet nozzles. Very small amounts of 2,4-D or Banvel contamination in tank, hoses, boom, or container can cause severe damage. Do not cultivate for 3 to 5 days after application. See special weed problem section for perennial weed control.

Petroleum-base non-phytotoxic oil concentrate is suggested for some situations. Oil is suggested for velvetleaf, ragweed, and lambsquarters. Not required for cocklebur. Maximum oil rate is 1 qt/A for ground and 1 pt/A for air. Crop leaf burn is usually not increased except with very high temperature or high humidity.
OTHER SOYBEAN HERBICIDES

VERNAM + TREFLAN or TOLBAN or BASALIN or AMIBEN

1¼-3 pt Vernam-7lb/gal + 1½-3 pt Treflan-4lb/gal
1¼-3 pt Vernam-7lb/gal + ½-1½ pt Tolban-4lb/gal
1¼-2½ pt Vernam-7lb/gal + ¾-1 pt Basalin-4lb/gal
2½ pt Vernam-7lb/gal + 3 qt Amiben -2lb/gal

PREPLANT INCORPORATED. Tank-mix. Incorporate as for Vernam alone. Both herbicides in the combinations are primarily for annual grass control except for Vernam + Amiben. Deep incorporation of Amiben reduces control of small-seeded annual broadleaves except under very dry conditions. Fair to good velvetleaf control with Vernam + Amiben. Treatments appear to have limited potential compared to other alternatives available. Refer to sections for each herbicide alone.

VERNAM and AMIBEN or LOROX

1¼-3 pt Vernam-7lb/gal and 4-6 qt Amiben-2lb/gal
1¼-3 pt Vernam-7lb/gal and 1-2½ lb Lorox-50% wp

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. Incorporate the recommended rate of Vernam as for Vernam alone. Apply Amiben or Lorox preemergence. Good to very good control of several small-seeded annual broadleaves. Less consistent grass control. Vernam gives somewhat better velvetleaf control than other preplant treatments. Amiben or Lorox further improves broadleaf control. Appears to be limited to situations where velvetleaf is part of a serious broadleaf problem and soil factors exclude the use of metribuzin. Refer to section for each herbicide.

TREFLAN or TOLBAN or VERNAM and +/- FURLOE (TRIFLURALIN or PROFLOURALIN or VERNOLATE and +/- CIPC)

1-2 pt Treflan-4lb/gal and +/- 2-3 qt Furloe-4lb/gal
1-3 pt Tolban-4lb/gal and +/- 2-3 qt Furloe-4lb/gal
2½-3 pt Vernam-7lb/gal and +/- 2-3 qt Furloe-4lb/gal

Furloe gives very good to excellent control of smartweed and wild buckwheat. Control of large-seeded annual broadleaves is not improved. Good to excellent control of annual grasses. Very good crop tolerance. Low rates are for light, low organic matter soil. Minimum carrier is 10 gpa. Appears to have limited potential, except where smartweed is a major problem. Refer to section for each herbicide used alone.

PREPLANT INCORPORATED. Tank-mix. Incorporate into the top 1½ to 2 inches of soil as for Treflan, Tolban, or Vernam alone. Split application preferred, as deep incorporation reduces Furloe performance.

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. Incorporate Treflan, Tolban, or Vernam as recommended for each herbicide used alone. Apply Furloe preemergence. Preferred application method.

MODOWN (BIFENOX)

2-2½ lb Modown-80% wp or 3-4 pt Modown-4lb/gal

PREEMERGENCE. Most useful in shallow preplant or preemergence combinations to improve control of certain broadleaves. Not suggested for use alone.

LOROX (LINURON)

1-5 lb Lorox-50% wp

PREEMERGENCE. Most useful in preemergence combinations to improve broadleaf control. Not suggested for use alone.

SENCOR or LEXONE (METRIBUZIN)

½-1 lb Sencor or Lexone-50% or ½-1 pt Sencor or Lexone-4lb/gal or ½-¾ lb Sencor-75% s or Lexone-75% df

Most useful in preplant or preemergence combinations to improve broadleaf control. Not suggested for use alone.

SURFLAN (ORYZALIN)

1-2 lb Surflan-75% wp or 1½-3 qt Surflan-4lb/gal

PREEMERGENCE. Chemically related to Treflan but does not require incorporation. Weed control has been less satisfactory than for Treflan. May be tank-mixed with Lorox, Sencor, Lexone, or Dynap.

AMIBEN + LOROX or SENCOR or LEXONE (CHLORAMBEN + LINURON or METRIBUZIN)

3-4½ qt Amiben-2lb/gal + ¾-3 lb Lorox-50% wp
3-4½ qt Amiben-2lb/gal + ½-1 lb Sencor or Lexone-50% wp or ½-1 pt Sencor or Lexone-4lb/gal

PREEMERGENCE. Tank-mix. Limited data. More effective on annual broadleaves than annual grasses. Adjust rates for soil type. Refer to section for Amiben, or sections for Lorox, Sencor, or Lexone combinations.

FURLOE + LASSO (CIPC + ALACHLOR)

2-3 qt Furloe-4lb/gal + 2-3 qt Lasso-4lb/gal

PREEMERGENCE. Tank-mix. Furloe gives very good to excellent control of smartweed and wild buckwheat. Lasso gives very good to excellent control of annual grasses. Less effective on other small-seeded annual broadleaves. Does not control large-seeded annual broadleaves. Preemergence combinations better than preplant incorporated Furloe combinations. Use high rates for most soils. Very good crop tolerance. Minimum carrier is 5 gpa water. Refer to Lasso section.
PREMERGE (DINOSOBE)

2-2½ gal Premerge-3lb/gal

Contact herbicide. Follow handling precautions as it is highly toxic. Minimum carrier is 3 gpa for air and 30 gpa for ground.

PREEMERGENCE. Rates are 2-2½ gal/A Premerge. Erratic annual weed control. Short residual. Not for light soil.

EARLY POST-EMERGENCE. Rates are 2-3 qt/A Premerge. Apply when soybeans are in cotyledon stage but before first true leaves open. Timing is critical. Usually better control than preemergence. Emerged weeds only. Use low rate when temperature is over 75°F. Considerable risk of leaf burn.

LATE POST-EMERGENCE. Rates are 1-2 pt/A Premerge. Low rate for small weeds. Salvage treatment for cocklebur. Apply from first true leaves until bloom stage. Temporary leaf burn. Crop under stress may be permanently damaged. Use at grower’s risk. Minimum carrier is 3 gpa.

PREMERGE + LASSO (DINOSOBE + ALACHLOR)

PREEMERGENCE. Tank-mix. Rates are 4-6 qt/A Premerge-3 lb/gal + 2-3 qt/A Lasso-4lb/gal. Refer to Premerge section.

EARLY POST-EMERGENCE. Rates are 2-3 qt/A Premerge-3 lb/gal + 1½-3 qt/A Lasso-4 lb/gal. Tank-mix. Apply when soybeans are at cotyledon stage but before first leaves are open. Refer to Premerge section.

PREMERGE + AMIBEN (DINOSOBE + CHLORAMBEN)

PREEMERGENCE. Rates are 4-6 qt/A Premerge-3 lb/gal + 3-4 qt/A Amiben-2 lb/gal. Tank-mix. Refer to Premerge section.

EARLY POST-EMERGENCE. Rates are 2-3 qt/A Premerge-3 lb/gal + 3 qt/A Amiben-2 lb/gal. Tank-mix. Refer to Premerge section.

DYNAP (NAPTALAM + DINOSOBE)

2-6 qt Dynap-2+ 1lb/gal

Commercial premix. Contains 2 lb naptalam and 1 lb dinoseb per gallon. Poor to fair annual weed control. Usually used in combination with other herbicides.

PREEMERGENCE. Apply 6 qta/A Dynap up to cracking stage. Some risk of crop injury with heavy rainfall.

POST-EMERGENCE. Apply 2-4 qta/A Dynap in 8-10 gallon of water after soybeans have second trifoliate leaf but before they are 20 inches tall. Use 20 gpa carrier if temperatures are under 80°F. Primarily for cocklebur. Fair sunflower and mustard control. High rate is for weeds up to 6 inches tall. Considerable risk of crop leaf burn and stunting. Risk is greater at temperature over 90°F. Do not apply when plants are wet. Use minimum of 40 psi pressure.

DYNAP + LASSO or DUAL or SURFLAN

4½-6 qt Dynap + 2 qt Lasso-4lb/gal

Apply when soybeans have second trifoliate leaf. Some risk of crop injury with heavy rainfall.

PREEMERGENCE. Rates are 4-6 qt/A Premerge-3 lb/gal + 1½-2½ pt Dual-8lb/gal.

4½-6 qt Dynap + 1½-2½ lb Surflan-75% wp or 4½-1¼ qt Surflan-4lb/gal

PREMERGENCE. Tank-mix. Dynap contains 2 lb naptalam and 1 lb dinoseb per gallon. Apply before soybeans reach cracking stage. Somewhat erratic. Slight improvement in short term broadleaved control. Will improve control of cocklebur emerging at time of application. Refer to section for each herbicide.

2,4-DB

0.8-1.0 pt Butoxzone-1, 25lb/gal

POST-EMERGENCE. Primarily a rescue operation for cocklebur. Test results have been variable but usually show fair to good control. Apply from 7 to 10 days before soybeans bloom up to mid-bloom. Use 0.8 pt/A for the early treatment and 1 pt/A for the late treatment stage. Some 2,4-D-type leaf distortion frequently is noted. This is usually temporary and causes minimal lasting effects. May be applied by ground (good coverage) or in a minimum of 5 gpa water by air.

BLAZER (ACIFLUORFEN)

1½-2 pt Blazer-2lb/gal

POST-EMERGENCE. Primarily for certain annual broadleaves. Good control of black nightshade, pigweed, and buffalo bur. Primarily a contact herbicide. Good coverage is important. Rates of 1½-2 pt/A are suggested for most situations. Crop tolerance is marginal. Leaf burn has been noted, especially with high temperatures and high humidity. Do not mix with fertilizer or other herbicides or use surfactants. Minimum carrier is 20 gpa for ground equipment. Use appears limited primarily to situations where nightshade or buffalo bur is serious.

ALANAP-L + 2,4-DB

2-3 qt Alanap-L-2lb/gal + 1/5-1/4 pt Butyrac 200 or Butoxone

POST-EMERGENCE. Apply when soybeans are 18-20 inches tall (before mid-bloom). Primarily for cocklebur, sunflower, or wild mustard. Low rate for weeds under 12 inches tall. Minimum carrier is 10 gpa for ground and 5 gpa for air. Not adequately tested.

PARAQUAT (PARAQUAT)

1½-2 pt Paraquat-2lb/gal

HARVEST AID. Apply 1½-1 pt/A Paraquat-2 lb/gal when at least 65% of the seed pods have reached a mature color or when seed moisture is under 30%. The purpose is to dry weeds to facilitate harvest. Paraquat is the only desiccant labeled for use on soybeans that are to be used for other than seed for planting. Less effective on large kochia or Russian thistle than on other actively growing weeds. Contact treatment. Minimum carrier is 20 gpa for ground or 5 gpa for air. Add 1 pt X-77 spreader per 100 gallons of solution. Do not graze treated soybeans fields for 15 days after spraying, and remove livestock at least 30 days before slaughter. Follow handling precautions, as Paraquat is highly toxic. Restricted Use pesticide.

NO-TILL OR REDUCED TILLAGE SYSTEMS. Paraquat is a non-selective, non-residual, contact herbicide which can be used to control emerged weeds at planting. It is used in combination with preemergence herbicides for residual control. Rates of 1-1½ pt/A Paraquat are adequate for small weeds; the high rate is for larger weeds or dense stands. Add 1 pt X-77 spreader per 100 gallons of solution. Minimum carrier is 20-40 gpa. Thorough coverage is very important. Refer to harvest aid section for precautions. Several combinations labeled for use with Paraquat are listed below.

Amount of product per acre, tank-mix:

(Liquid formulations are listed; however, an equivalent amount of other formulations may be used. Add X-77 at the rate of 1 pt/100 gal of solution.)

1 pt Paraquat + 2-2½ pt Lasso-4lb/gal + ½ pt Sencor or Lexone-4lb/gal
1 pt Paraquat + 1½-2½ pt Dual-8lb/gal + ½ pt Sencor or Lexone-4lb/gal
1 pt Paraquat + 2-3 qt Lasso-4lb/gal + 1-3 lb Lorox-50% wp
1 pt Paraquat + 1½-2½ pt Dual-8lb/gal + 1-3 lb Lorox-50% wp
**ROUNDUP (GLYPHOSATE)**

Roundup-3 lb/gal is a non-selective, translocated, foliage applied herbicide used in no-till or reduced tillage systems, as a spot treatment for perennials, or in specialized application equipment. There is no soil residual. All emerged vegetation coming in contact with the herbicide will be damaged or killed.

**NO TILL OR REDUCED TILLAGE SYSTEMS.** Roundup may replace one tillage to control emerged weeds. It is used in combination with preemergence herbicides to provide residual weed control. Use lower rate for annual weeds under 6 inches tall and high rate for taller annuals. Minimum carrier is 20 gpa water. Several combination treatments are listed below.

Amount of product per acre, tank-mix.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1½ qt Roundup + 2-3 qt Lasso-4lb/gal + 1-3 lb Lorox-50% wp</td>
<td>Preplant incorporated. Equal performance at adjusted rates. Excellent control of several foxtail species. Consistent performance. Good late season control. Fair to good on sandbur at higher rates. Refer to sections for Sencor or Lexone combinations.</td>
</tr>
<tr>
<td>1-½ qt Roundup + 1 ½-2½ pt Dual-8lb/gal + 1-3 lb Lorox-50% wp</td>
<td>Preplant incorporated. Equal performance at adjusted rates. Excellent control of several foxtail species. Consistent performance. Good late season control. Fair to good on sandbur at higher rates. Refer to sections for Sencor or Lexone combinations.</td>
</tr>
</tbody>
</table>

**SPOT TREATMENT.** Roundup may be used at 2-4 qt/A to control small patches of perennial weeds such as quackgrass or Canada thistle. It is usually applied with hand-held equipment. Extreme care is required to prevent drift. Crop contacted by spray or drift will be damaged or killed. Refer to label for mixing directions and precautions.

**SPECIAL APPLICATION EQUIPMENT.** Roundup used in special equipment gives very good control of volunteer corn or wild cane. Results with wild sunflower have been fair. Control of milkweed and hemp dogbane has been more erratic. A height differential is required so the taller weeds are treated over the top of the soybeans. Uniform weed emergence and sufficient height differential improves results. Equipment is usually operated at 3-5 mph. Do not add 2,4-D or other herbicides. Consult label directions for the equipment being used.

**Rope Wick** applicators utilize segments of soft, braided nylon rope which serve as wicks. The rope ends are affixed through a hole into a 3- or 4-inch plastic pipe. The ropes remain wet by diffusion as they wipe the taller weeds. Variations of the wick applicator feature longer, diagonal ropes which are wetted from a supply tank. Wick applicators are inexpensive, efficient, and simple to operate. drift and splash problems are essentially eliminated. Equipment must be operated to avoid "drips" from the ropes. The solution in the pipe or tank is mixed at a ratio of 1 gallon Roundup to 2 gallons of water. One gallon of Roundup will usually treat 15 to 20 acres. Equipment must be operated in a manner that minimizes droplet drift and "splash" effects.

**Recirculating Sprayers (RCS)** direct the spray across the top of the soybeans. Box types operate between the rows and broadcast types operate independently of row spacing.Spray not being intercepted by the weeds is collected in a recovery chamber and goes back through the system. The RCS has been more effective than the rope wick for hemp dogbane or milkweed. The concentration of Roundup varies from 2 to 6 parts per gallon of water. One gallon of Roundup will usually treat 15 to 20 acres. Equipment must be operated in a manner that minimizes droplet drift and "splash" effects.

**EQUIPMENT. SPECIAL APPLICATION**

Roundup used in special equipment gives very good control of volunteer corn or wild cane. Results with wild sunflower have been fair. Control of milkweed and hemp dogbane has been more erratic. A height differential is required so the taller weeds are treated over the top of the soybeans. Uniform weed emergence and sufficient height differential improves results. Equipment is usually operated at 3-5 mph. Do not add 2,4-D or other herbicides. Consult label directions for the equipment being used.

**SPECIAL WEED PROBLEMS IN SOYBEANS**

Herbicides listed below are considered the best choice for the weed problem. Other treatments generally give less control. Suggestions are based on SDSU research data and information from other states. Results will vary according to local conditions.

**ANNUAL GRASSES (foxtail, barnyardgrass, sandbur)**

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treflan or Tolban or Prowl or Basalln</td>
<td>Preplant incorporated. Equal performance at adjusted rates. Excellent control of several foxtail species. Consistent performance. Good late season control. Fair to good on sandbur at higher rates. Refer to sections for each herbicide.</td>
</tr>
<tr>
<td>Lasso or Dual</td>
<td>Preemergence or shallow preplant incorporated. Very good to excellent control of several foxtail species. Preemergence application with adequate rainfall provides best control available. Late season yellow or bristly foxtail may escape. Inconsistent on sandbur. May be tank-mixed with other herbicides without significantly reducing grass control. Refer to sections for Lasso or Dual.</td>
</tr>
</tbody>
</table>

**SMALL SEEDED ANNUAL BROADLEAVES (pigweed, lambsquarters, kochia, smartweed)**

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sencor or Lexone</td>
<td>Preemergence or preplant incorporated. Excellent control. Very good on mustard. Use with other herbicides. Rates as low as ½ lb/A active metribuzin used with other herbicides frequently give adequate control of light infestations. Use higher rates for best control. Less crop tolerance than other treatments on variable, high pH, or light soils. Refer to sections for Sencor or Lexone combinations.</td>
</tr>
<tr>
<td>Lorox</td>
<td>Preemergence. Use with other herbicides. Very good control. Slightly less risk of crop injury than for metribuzin on variable, high pH, or light soils. Refer to sections for Lorox combinations.</td>
</tr>
<tr>
<td>Modown</td>
<td>Preemergence or very shallow preplant incorporated. Use with other herbicides. Excellent on pigweed. Good control of some other broadleaves. Crop tolerance affected less by soil factors; however, leaf burn and stunting can be serious. Harrowing preemergence treatments reduces leaf burn and stunting. Refer to sections for Modown combinations.</td>
</tr>
<tr>
<td>Amiben</td>
<td>Preemergence preferred. Good to very good control. Fair on mustard. Good crop tolerance on variable soils. Use maximum rate for combination treatments for best control. Refer to Amiben section.</td>
</tr>
</tbody>
</table>

**VELVETLEAF, VENICE MALLOW**

Basagran

Post-emergence. Very good control. Use ½ pt/A for weeds up to 2 inches and 1 qt/A for weeds up to 4 inches tall. Larger weeds only partially controlled. Crop oil helpful. Weeds emerging later will escape. Best choice for light, variable, or high pH soils. Refer to Basagran section.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sencor or Lexone</td>
<td>Preemergence tank-mix or overlay with other herbicides preferred. Very good control. Use as tank-mix with other herbicides or as an overlay for preplant incorporated treatments. Follow precautions for soil factors. Use ½ lb/A active metribuzin if soil type allows. Rate of 3/8 lb/A active metribuzin applied in combination with preplant incorporated herbicides gives slightly less control except under extremely dry conditions. Refer to sections for Sencor or Lexone combinations.</td>
</tr>
</tbody>
</table>

Treflan + Sencor & Sencor

### WILD SUNFLOWER

**Basagran**
Post-emergence. Good control. Use 1½ pt/A for weeds up to 4 inches and 1 qt/A for weeds up to 6 inches tall. Crop oil helpful. Weeds emerging later will escape. Best choice for variable or high pH soils. Refer to Basagran section.

**Sencor or Lexone**
Pre-emergence. Used as a tank-mix or overlay treatment. Fair to good control. Use maximum rate for soil type. Most effective soil-applied treatment. Note soil factor precautions in sections for Sencor or Lexone combinations.

**Lorox**
Pre-emergence. Fair control. Used in combination with other herbicides. Somewhat better crop tolerance than for metribuzin. Refer to sections for Lorox combinations.

### COCKLEBUR

**Basagran**
Post-emergence. Excellent control. Use 1½ pt/A for weeds up to 6 inches and 1 pt/A for weeds up to 8 inches tall. Rescue treatment for larger cocklebur. Refer to Basagran section.

### BLACK NIGHTSHADE

**Lasso or Dual**
Shallow preplant incorporated or pre-emergence. Good control. Use maximum rate for soil type. May be used with other herbicides without reduced control if the Lasso or Dual rate is not reduced. Refer to section for Lasso or Dual.

**Blazer**
Post-emergence. Good to very good control. Apply when weeds are under 4 inches tall. Risk of leaf burn. Refer to Blazer section.

### WILD CANE

**Treflan**
Preplant incorporated. Good control. Use 2-2½ pt/A on most medium and heavy soils. Incorporate thoroughly. Cultivate crop. Refer to Treflan section.

**Tolban**
Preplant incorporated. Good control. Use 3 pt/A on medium and heavy soils with over 2% organic matter. Incorporate thoroughly. Cultivate crop. Refer to Tolban section.

**Basalin**

**Vernam**
Preplant incorporated. Fair to good control. Use 3 pt/A on most soils. Use with cultivation. Refer to Vernam section.

**Roundup**
Apply in recirculating sprayer, roller, or rope wick applicators. Refer to Roundup section.

### VOLUNTEER CORN

**Roundup**
Apply in recirculating sprayer, roller, or rope wick applicators. Refer to Roundup section.

### BUFFALO BUR

**Blazer**
Post-emergence. Good control. Apply when weeds are under 4 inches tall. Risk of leaf burn. Refer to Blazer section.

### YELLOW NUTSEDEGE

**Lasso or Dual**
Preplant incorporated preferred. Thorough tillage prior to planting helpful. Good to very good control. Dual gives slightly better control. Use maximum rate possible. Refer to shallow preplant incorporated section for Dual or Lasso.

**Vernam**
Preplant incorporated. Incorporate immediately. Fair to good control. Must use maximum rate for soil type. Refer to Vernam section.

**Basagran**
Post-emergence. Apply ¾ - 1 qt/A when weeds are 6-8 inches tall. Retreat in 7-10 days if necessary. Good control. Crop oil helpful. Useful for spot treatment or as a followup after other treatments. Refer to Basagran section.

### CANADA THISTLE

**Basagran**
Post-emergence. Fair to good burn of topgrowth. Apply 1 qt/A when weeds are 8 inches tall to bud stage. Retreat 7-10 days later if necessary. Crop oil helpful. Refer to Basagran section.