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Cooperative Extension South Dakota State University

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CHEMICAL WEED CONTROL IN SOYBEANS: 1983

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Losses 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.

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. Every effort has been made to avoid mechanical error in preparation of this publication. The label should be considered the final guide. 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 herbicide 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.

RATE. Rates for each treatment are stated as the amount of product per acre. The common name and amount of active ingredient or acid equivalent per acre are used in the text when referring to combinations. All rates are on a broadcast basis; adjust accordingly for band application.

TIME TO APPLY. Herbicides may be applied:
Preplant incorporated - before the crop is planted, incorporated as directed.
Shallow Preplant Incorporated - preplant incorporated, but herbicide usually restricted to the top 2 inches of soil with single-pass incorporation.
Preemergence - after planting, but before crop or weeds emerge.

Postemergence - after the crop or weeds have emerged.

BAND VS. BROADCAST

One cultivation is usually needed with broadcast applications. Banding reduces the cost per acre and usually replaces one or two row cultivations.

Adjust broadcast rates for banding. A 12- to 14-inch band is suggested for top planting; a 7-inch band is suggested for most deep furrow or linter planted crops.

DRILLED OR SOLID SEEDING

Drill-planted or solid-seeded soybeans are more competitive with weeds after the first 3-4 weeks.

Early season control is critical. Preplant or preemergence combinations are strongly suggested where both annual grasses and broadleaves are present.

Do not use these planting systems if perennials are a problem. Use the maximum herbicide rate for the soil type.

REDUCED TILLAGE SYSTEMS

FURROW AND TOP-PLANT

Crop residue on the surface may distort the spray pattern or intercept some of the herbicide.

Using the maximum rate for the soil type will partially compensate; however, the amount used should not exceed labeled rates. Heavy residue should be worked into the soil before broadcasting soil-applied treatments. Devices to move residue from the row area will improve results for band application.

Do not use preplant incorporated treatments with deep furrow or linter planting, as treated soil is moved from the row area. For these systems, limit band width of preemergence herbicides to the width of the furrow bottom. Check herbicide label for restrictions on furrow planted crops.

Abbreviations Used

pt = pint
qt = quart
gal = gallon
lb = pound
lb/A acid equiv = pound per acre acid equivalent
lb/gal = pound per gallon active ingredient or acid equivalent
wp = wettable powder
df = dry flowable (spray)
s = sprayule (spray)
gran = granule
and/+ = may be used as split application (and) or as a tank-mix (+)
SOYBEAN HERBICIDES

TREPLAN (TRIFLURALIN)

1-2 pt Treplan-4 lb/gal or 10-20 lb Treplan-59 gran

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. Liquid formulation 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.

Liquid or granule formulation may be applied in late fall and incorporated with one fall tillage operation and one pass in the spring before planting. Spring application seems best suited for most soybean situations. Liquids usually preferred for spring application. Granules appear to fit best for fall applications. Limited data or experience with fall applications in soybeans; however, weed control with fall applied granules has been equal to that for spring applied liquid.

PREPLANT INCORPORATED. Spring application. Immediate incorporation preferred, but may be delayed up to 24 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.

PRAIL (PENDIMETHALIN)

1-3 pt Prait-4 lb/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 2½ pt/A has been satisfactory in most SDSU tests. Minimum carrier is 10 gpa for ground or 5 gpa for air. 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. One pass, shallow incorporation may be adequate if the soil has been prepared adequately prior to application. Follow with a harrow or leveling device. Improper incorporation reduces control.

BASALIN (FLUCHLORALIN)

1-3 pt Basalin-4 lb/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. 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 8 hours if soil surface is dry. Incorporate into the top 1-2 inches of soil 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 provides good incorporation under a variety of conditions. Follow with a harrow or leveling device. Improper incorporation reduces control.
SOYBEAN HERBICIDES

VERNAM (VERNOLATE)

2 1/3-3 1/2 pt Vernam-7 lb/gal

Good control of several annual grasses and some small-seeded annual broadleaves such as pigweed or lambs-quarters. 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 insures uniformity. Improper incorporation reduces control.

TREFLAN OR PROWL OR BASALIN AND/PLUS SENCOR OR LEXONE (TRIFLURALIN OR PENDIMETHALIN OR FLUCHLORALIN AND PLUS METRIBUZIN)

1-2 pt Trefflan-4 lb/gal and/or 1/2-1 pt Sencor or Lexone-4 lb/gal or 1/2-1 lb Sencor or Lexone-50% wp or 1/3-2/3 lb Sencor-75% a or Lexone-75% d.
1/4-2 lb Provil-4 lb/gal and/or 1/4-1 pt Sencor or Lexone-4 lb/gal or 1/4-1 lb Sencor or Lexone-50% wp or 1/3-2/3 lb Sencor-75% a or Lexone-75% d.
1-2 pt Basalax-4 lb/gal and/or 1/2-1 pt Sencor or Lexone-4 lb/gal or 1/2-1 lb Sencor or Lexone-50% wp or 1/3-2/3 lb Sencor-75% a or Lexone-75% d.

Excellent control of several annual grasses and small-seeded annual broadleaves. Fair to good control of some large-seeded annual broadleaves. Metribuzin gives best annual broadleaved control of soil-applied treatments. Fair crop tolerance. Risk of injury from metribuzin on variable, sandy, high pH, low organic matter soils or on clay knolls. Do not use on soil that is sandy, has a pH over 7.4, or less than 1% organic matter. 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 1/4 lb/A active usually gives satisfactory control of light infestations of most small-seeded broadleaves and reduces risk of crop injury, especially for inexperienced growers. Use maximum rate for soil type for best control of weeds like sunflowers or velvetleaf. Minimum carrier is 10 gpa for tank-mix with ground equipment. Refer to section for Treflan, Prowl, or Basalin for limitations and precautions.

PREPLANT INCORPORATED. Tank-mix. Incorporate as for Treflan or Prowl or Basalin alone. Best performance if rainfall very limited, but may give slightly less control of large-seeded annual broadleaves and have slightly less crop tolerance than split overlay application. Maximum metribuzin rate is 3/8 lb/A active for most soils. Rates of 3/4 (trifluralin) or 1/2 (pendimethalin) or 1 (fluchloralin) + 3/8 (metribuzin) lb/A active have been satisfactory in most SDSU tests. More convenient than split overlay application and good choice for small-seeded broadleaves.

SPLIT TANK-MIX PREPLANT INCORPORATED AND PREEMERGENCE. Treflan + Sencor or Lexone and Sencor or Lexone only. Incorporate usual rate of Treflan + Sencor or Lexone before planting and apply 1/4-3/8 (metribuzin) lb/A active preemergence after planting. Rates vary according to soil type. Allows for better crop tolerance when higher Sencor or Lexone rates are needed for better control of weeds such as velvetleaf. Promising for special situations. 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 OR PROWL AND LOROX (TRIFLURALIN OR PENDIMETHALIN AND LINURON)

1-2 pt Trefflan-4 lb/gal and/or 1/2-2 lb Lorox-50% wp or 1/2-2 pt Lorox-4 lb/gal
1/2-1 pt Procal-4 lb/gal and/or 1/2-1 pt Lorox-50% wp or 1/2-1 pt Lorox-4 lb/gal

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. Incorporate usual rate of Treflan or Prowl before planting and apply Lorox preemergence. Excellent control of annual grasses and very good control of several small-seeded annual broadleaves. Fair control of certain large-seeded broadleaves. Rate of 1 (linuron) lb/A has been used in most SDSU tests. Low rates for lighter, low organic matter soil. Slightly less risk of injury than with metribuzin combinations. Plant seed 1 3/4 inches deep. Do not use on sands. Do not incorporate Lorox. Combined effects of Lorox with atrazine carryover can cause serious crop injury. Follow application directions and precautions as for Treflan, Prowl, or Lorox used alone.

PREEMERGENCE. Tank-mix. Prowl + Lorox only. Much less consistent grass control than with split application. Less crop tolerance. Ground equipment only. See section for Prowl alone.
SOYBEAN HERBICIDES (CONTINUED)

TREFLAN AND/± MODOWN (TRIFLURALIN AND/± BIFENOX)

1-2 pt Treftlan-4 lb/gal and/± 3-4 pt Modown-4 lb/gal or 2-2½ lb Modown-80% wp

Excellent control of annual grasses and very good control of certain small-seeded annual broadleaves such as pigweed and lambsquarters. Fair control of certain large-seeded annual broadleaves. Fair crop tolerance. Weed control and crop tolerance affected less by variations in soil type than linuron or metribuzin; however, leaf burn and stunting can be serious if raindrops splash bifenox onto the emerging crop. Yields are usually not affected. Use higher rate for dense weed infestations on heavy soil. Rates of 3/4 (trifluralin) and/± 1.6 (bifenox) lb/A active have been used in most SDSU tests. Note precautions in Treftlan section.

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

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

TREFLAN OR PROWL OR BASALIN AND/± AMIBEN (TRIFLURALIN OR PENDIMETHALIN OR FLUCHLORALIN AND/± CHLORAMBN) (TRIFLURALIN OR PENDIMETHALIN OR FLUCHLORALIN AND/± CHLORAMBN)

1½-2 pt Treftlan-4 lb/gal and/± 3-4 qt Amiben-2 lb/gal or 2-2½ lb Amiben-75% df
1½-2½ pt Prowl-4 lb/gal and/± 4 qt Amiben-2 lb/gal or 2.5 lb Amiben-75% df

Excellent control of several annual grasses. Good to very good control of several small-seeded annual broadleaves such as Russian thistle, kochia, and lambsquarters. Fair control of several large-seeded annual broadleaves. Very good crop tolerance. Weed control and crop tolerance affected less by soil variation than for linuron or metribuzin. Minimum carrier is 10 gpa. Refer to sections for Treftlan or Prowl or Amiben.

PREPLANT INCORPORATED. Tank-mix. Incorporate as for Treftlan or Prowl or Basalin alone. Shallow incorporation with Prowl or Basalin preferred to deeper incorporation. Broadleaf control less than for split application except with extremely limited rainfall. Split application preferred for most situations.

SPLIT PREPLANT INCORPORATED AND PREEMERGENCE. Incorporate normal rate of Treftlan or Prowl or Basalin before planting and apply Amiben preemergence. Rainfall required for Amiben. Slightly better broadleaf control than preplant tank-mix. 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.

LASCO (ALACHLOR)

2-3½ qt Lasco-4 lb/gal or 16-26 lb Lasco-15% gran (broadcast)

Very good to excellent control of several annual grasses and fair control of pigweed with high rates and favorable conditions. Useful for special weed problems such as nightshade or nutseed. Consistent on annual grasses when rainfall or soil moisture requirements are met. Excellent crop tolerance. Low rates are for light, low organic matter soil; the high rate is for heavy, clay soil. Rates of 2½-3 qt/A have been satisfactory in most preemergence SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 15 gpa for ground and 5 gpa for air. Granule or spray formulations appear equally effective. Adjust granule rate for banding. No carryover.

SHALLOW PREPLANT INCORPORATED. Incorporate into top 2 inches of soil with a field cultivator, shallow disk, multi weeder, or other suitable equipment during final seedbed preparation. Flextine harrow is not satisfactory. Will improve control when rainfall is very limited but gives slightly less control than preemergence application with adequate rainfall. Some rainfall improves results. Proper incorporation may be difficult with trashy, lumpy seedbed. Deeper incorporation reduces annual grass control. Use 1 pt/A more Lasco than for preemergence. Rate of 3½ qt/A Lasco has been used in most tests. Furrow planters will move treated soil from row area.

PREEMERGENCE. Requires 1/2 to 3/4 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.
SOYBEAN HERBICIDES (CONTINUED)

**DUAL** (METOLACHLOR)

2-3 pt Dual-8 lb/gal

Very good to excellent control of several annual grasses and fair control of pigweed with high rates and favorable conditions. Useful for special weed problems such as nightshade or nutsedge. Consistent on annual grasses when rainfall or soil moisture requirements are met. Excellent crop tolerance. Low rates are for light, low organic matter soil; the high rate is for heavy clay soil. Rates of 2½-3 pt/A have been satisfactory in most SDSU tests. May be applied in liquid fertilizer. Minimum carrier is 10 gpa for ground and 2 gpa for air. No carryover.

**SHALLOW PREPLANT INCORPORATED.** Incorporate into top 2 inches of soil with a field cultivator, shallow disk, or other suitable equipment during final seedbed preparation and within 14 days before planting. Will improve results when rainfall is very limited but gives slightly less control than preemergence application with adequate rainfall. Proper incorporation may be difficult with trashy, lumpy seedbed. Deeper incorporation reduces annual grass control. Use maximum rate for soil type.

**PREEMERGENCE.** Requires 1/2-3/4 inch rainfall within one week after application. Use a harrow or rotary hoe if weeds emerge before rainfall is received. Travel same direction as the rows if banded.

**AMiben** (CHLORAMBN)

1-1½ gal Amiben-2 lb/gal or 2.6-4 lb Amiben-75% d.f. or 20-30 lb Amiben-10% gran (broadcast)

Good control of several annual grasses and good to very good control of some small-seeded annual broadleaves such as pigweed, lambsquarters, or smartweed. Very good Russian thistle control in some tests. Variable control of velvetleaf. Does not control sunflower. Some erratic results. Rainfall critical. Good crop tolerance. Some stunning noted with heavy rainfall at emergence. Spray or granule forms appear equally effective. Granules are applied to soil surface behind the press wheel. Low rates for light, low organic matter soil. Rate of 3 (chloramben) lb/A active has been satisfactory in most SDSU tests. May be applied in liquid fertilizer carrier. Minimum carrier is 10 gpa for ground and 3-5 gpa for air.

**SHALLOW PREPLANT INCORPORATED.** Weed control less than for preemergence application except under extremely dry conditions. Incorporate before planting into the top 2 inches of soil with shallow disk or other suitable equipment.

**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.

**POSTEMERGENCE.** May be applied when soybeans are in cracking 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 **/+ Sencor OR LEXONE (ALACHLOR OR METOLACHLOR AND/+ METRIBUZIN)

2-3 pt Lasso-4 lb/gal-4-1 pt Sencor or Lexone-4 lb/gal or ½-1 lb Sencor or Lexone-50% wp or 1/3-1/2 lb Sencor-75% s or Lexone-75% s: 1½-2½ pt Dual-8 lb/gal-5-1 pt Sencor or Lexone-4 lb/gal or ½-1 lb Sencor or Lexone-50% wp or 1/3-1/2 lb Sencor-75% s or Lexone-75% s.

Very good to excellent control of several annual grasses and small-seeded annual broadleaves. Fair to very good control of some large-seeded annual broadleaves. Metribuzin gives best annual broadleaf control of soil applied treatments. Fair crop tolerance. Risk of injury from metribuzin on variable, sandy, high 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 ¼ lb/A active usually gives satisfactory control of light infestations of many small-seeded broadleaves 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. Incorporate as for Lasso or 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 (alachlor) or 2 (metolachlor) + 3/8 (metribuzin) lb/A active have been satisfactory in most SDSU tests. Use higher rate for heavy, clay soil.

**PREEMERGENCE.** Tank-mix. Must have 1/2-3/4 inch rainfall within one week. Metribuzin applied preemergence gives slightly better control of broadleaves and has slightly better crop tolerance than preplant incorporated. Maximum metribuzin rate is ¼ 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.
SOYBEAN HERBICIDES (CONTINUED)

LASSO OR DUAL AND/or SENCOR OR LEXONE (CONTINUED)

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 + 1-3 lb Lorox + 50% wp or 1½ pt Lorox + 4 lb/gal. 1½-2½ pt Dual + 1-3 lb Lorox + 50% wp or 1½ pt Lorox + 4 lb/gal. Tank-mix. Very good to excellent control of several annual grasses. Very good control of several small-seeded annual broadleaves. Fair control of some large-seeded annual broadleaves. 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 broadleaves, 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 3/4 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 + 2 lb/gal + 2 qt Amiben + 2 lb/gal or 2.6 lb Amiben + 75% df. 1½-2½ pt Dual + 4-6 qt Amiben + 2 lb/gal or 2.6-4 lb Amiben + 75% df. Very good to excellent control of several annual grasses. Very good control of several small-seeded annual broadleaves. Fair control of some large-seeded annual broadleaves. 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 broadleaves. Apply by ground or air as for Lasso or Dual alone.

SHALLOW PREPLANT INCORPORATED. Tank-mix. Incorporate as for Lasso or Dual alone. Rates of 2½ (alachlor) or 2 (metolachlor) lb/A active have been satisfactory in most shallow incorporated tests with this combination.

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 + 2 lb/gal + 1½-2½ lb Modown + 80% wp or 2½-4 pt Modown + 4 lb/gal. Tank-mix. Very good to excellent control of several annual grasses and good control of some small-seeded annual broadleaves. Very good on pigweed. Fair control of some large-seeded annual broadleaves. Fair crop tolerance. Weed control and crop tolerance affected less by variation in soil type 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 1/2-3/4 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.
SOYBEAN HERBICIDES (CONTINUED)

**BASAGRAN (BENTAZON)**

3/4-1 qt Basagran-4 lb/gal

**POSTEMERGENCE.** Excellent control of cocklebur and very good control of small sunflower and velvetleaf. Pigweed, nightshade, and kochia usually are not controlled. 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 cocklebur 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 3/4 qt/A applied 10-14 days apart or a single application of 1 1/2 qt/A will give partial control of cocklebur 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.

**BLAZER (ACIFLUORFEN)**

1 1/2-2 pt Blazer-2 lb/gal

**POSTEMERGENCE.** Good to excellent control of certain annual broadleaves, including black nightshade, pigweed and wild mustard. Results on velvetleaf and cocklebur are more variable. Topgrowth burn on field bindweed and Canada thistle has been satisfactory in most situations. Some annual grass suppression noted. Fair crop tolerance. Leaf burn, or speckling is frequently noted. Crop recovers rapidly under good growing conditions. Most risk is during times of high humidity and high temperature.

Primarily a contact herbicide. Good coverage is important. Apply when weeds are in the 2- to 4-leaf stage, usually within 21 days after emergence. Rate of 2 pt has been used in most SDSU tests. Do not add oil or surfactant except as directed for special weed problems. A non-ionic surfactant at 2 pt/100 gallons of solution is suggested for escaped grasses at the 2- to 3-leaf stage or for buffalo bur or lambsquarters. Areas may be retreated but the total applied should not exceed 4 pt/A. Minimum carrier is 20 gpa for ground or 10 gpa for air.

**OTHER SOYBEAN HERBICIDES**

**VERNAM + TREFLAN OR BASALIN OR PROWL OR AMIBEN OR LASSO**

(VERNOLATE + TRIFLURALIN OR BENTAZON OR PENDIMETHALIN OR CHLORAMBN OR ALACHLOR)

2 1/3-3/4 pt Vernam-7 lb/gal+1/4 pt Treflan-4 lb/gal
1 3/4-2 1/3 pt Vernam-7 lb/gal+3/4-1 pt Basalan-4 lb/gal
1 3/4-3 pt Vernam-7 lb/gal+3/4+1/4 pt Prowl-4 lb/gal
2 1/2 pt Vernam-7 lb/gal+3/4 qt Amiben-2 lb/gal
1 3/4-3 pt Vernam-7 lb/gal+1-1 1/2 qt Lasso-4 lb/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 (VERNOLATE AND CHLORAMBEN OR LINURON)**

2 1/3-3/4 pt Vernam-7 lb/gal and 4-6 qt Amiben-2 lb/gal
1 3/4-3 pt Vernam-7 lb/gal and 1-1/2 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.
OTHER SOYBEAN HERBICIDES (CONTINUED)

VERNAM + TREFLAN + SENCOR OR LEXONE (VERNOLATE + TRIFLURALIN + METRIBUZIN)

PREPLANT INCORPORATED. Three-way tank-mix. Incorporate as for Vernam alone. Expected to provide excellent annual grass control and good to excellent control of annual broadleaves. Vernam + Sencor or Lexone has provided very good velvetleaf control and will usually be superior to other two-way combinations with Sencor or Lexone on this weed. Some early searing can be expected. Follow soil precautions for Sencor or Lexone.

TREFLAN OR VERNAM AND/+ FURLOE (TRIFLURALIN OR VERNOLATE AND/+ CIPC)

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

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

DUAL + TREFLAN (METOLACHLOR + TRIFLURALIN)

PREPLANT INCORPORATED. Tank-mix. Incorporate as for Dual or Treflan alone. It's difficult to incorporate both herbicides properly with the same incorporation method. Both herbicides are most effective on annual grasses. Appears to have limited potential for weed problems in most field situations.

TREFLAN OR PROWL + AMIBEN + SENCOR OR LEXONE (TRIFLURALIN OR PENDIMETHALIN + CHLORAMBEN + METRIBUZIN)

Three-way combinations. These combinations are intended to improve weed control with Treflan or Prowl + Amiben combinations while minimizing the risk of injury associated with Sencor or Lexone. Provides very good to excellent control of many annual weeds; however control of weeds such as velvetleaf or cocklebur is less than for the combinations using full Sencor or Lexone rates. Appears to have limited potential for most weed situations. Follow soil limitations as for Sencor or Lexone.

PREEMERGENCE. Tank-mix. Prowl + Amiben + Sencor or Lexone only. Control is dependent on rainfall before weed emergence. Incorporated applications of Prowl preferred.

LASSO OR DUAL + AMIBEN + SENCOR OR LEXONE (ALACHLOR OR METOLACHLOR + CHLORAMBEN + METRIBUZIN)

Three-way tank-mix. Intended to improve control of certain weeds which are not controlled by Lasso or Dual + Amiben combination while reducing the risk of injury associated with Sencor or Lexone. Provides very good to excellent control of many annual weeds; however control of weeds such as velvetleaf or cocklebur is less than for the combinations using full Sencor or Lexone rate. Appears to have limited potential for most weed situations. Follow soil limitations as for Sencor or Lexone.

PREEMERGENCE. As for Lasso or Dual alone. Do not apply after crop emerges. Rainfall required.
OTHER SOYBEAN HERBICIDES (CONTINUED)

**MODOWN (BIFENOX)**

2-2½ lb Modown-80% wp or 3-4 pt Modown-4 lb/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 or 1-5 pt Lorox-4 lb/gal

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-4 lb/gal or 1½-2½ 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 3-4 qt Surflan-4 lb/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, Dynap, or Amiben.

**AMIBEN + LOROX OR SENCOR OR LEXONE (CHLORAMBIEN + LINURON OR METRIBUZIN)**

3-4½ qt Amiben-2 lb/gal+2½-3 lb Lorox-50% wp
3-4½ qt Amiben-2 lb/gal+½-1 lb Sencor or Lexone-50% wp or ½-1 pt Sencor or Lexone-4 lb/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-4 lb/gal+3-4½ qt Lasso-4 lb/gal

PREEMERGENCE. 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.

**GOAL (OXYFLUORFEN)**

1-1½ pt Goal-2 lb/gal

PREEMERGENCE. Goal is chemically related to Modown. Weed control and crop effects similar. Most effective on annual broadleaved weeds such as pigweed. Fair control of certain large seeded broadleaves. Grass control is usually unsatisfactory. Crop tolerance is fair. Leaf burn and temporary stunting frequently noted. Most emphasis in future will be for use in no-till soybeans. Crop tolerance is not associated with soil texture or pH factors.

**GOAL + LASSO (OXYFLUORFEN + ALACHLOR)**

1-1½ pt Goal-2 lb/gal+1½-2½ qt Lasso-4 lb/gal

PREEMERGENCE. Tank-mix. Refer to Goal alone. Provides good to excellent control of annual grasses and certain annual broadleaves. Velvetleaf or cocklebur control less consistent. Primary emphasis is for use in no-till systems.
OTHER SOYBEAN HERBICIDES  (CONTINUED)

**PREEMERGE (DINOSORB)**

2-2½ gal Premerge-3 lb/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 POSTEMERGENCE.** 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 POSTEMERGENCE.** 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.

**PREEMERGE + LASSO (DINOSORB + ALACHLOR)**

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

**EARLY POSTEMERGENCE.** 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.

**PREEMERGE + AMIBEN (DINOSORB + CHLORAMNEN)**

**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 POSTEMERGENCE.** 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 + DINOSEB)**

2-6 qt Dynap-2+1 lb/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 qt/A Dynap up to cracking stage. Some risk of crop injury with heavy rainfall.

**POSTEMERGENCE.** Apply 2-4 qt/A Dynap in 8-10 gallons 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-4 lb/gal
4½-6 qt Dynap + 1½-2½ pt Dual-8 lb/gal
4½-6 qt Dynap + 2/3-1 ½/3 lb Surflan-75% wp or ½-1¼ qt Surflan-4 lb/gal

**PREEMERGENCE.** 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.

**BASAGRAN + BLAZER (BENTAZON + ACIFLUOREN)**

1-2 pt Basagran-4 lb/gal+1-2 pt Blazer-2 lb/gal

**POSTEMERGENCE.** Tank-mix. Combination intended to provide control of more species than either herbicide used alone. Blazer improves the control of pigweed and lambsquarters. Basagran is best for velvetleaf or cocklebur. Suggested rates vary according to the product label. The rates range from 1-2 pt Basagran plus 1-2 pt Blazer per acre. The rate may be adjusted to include about 75% of the normal rate of the herbicide which will give the best control of the predominant species and about 50% of the normal rate of the other product. The rate of ½ pint of each is suggested for heavy stands of mixed weed species. For most situations, surfactant or crop oil is not suggested. Some temporary leaf burn or speckling may occur. Do not apply if crop is under stress. The addition of surfactant will improve control of grasses; crop oil concentrate at 1 pt/A will improve velvetleaf control but will also increase soybean leaf burn. Weeds should be under 2 or 3 inches tall for best results on most weeds. Minimum carrier is 20 gpa for ground and 10 gpa for air.
OTHER SOYBEAN HERBICIDES (CONTINUED)

BASAGRAN + BUTYRAAC (BENTAZON + 2,4-DB)

\[ \frac{1}{2} - 2 \text{ pt Basagran-4 lb/gal} + 1/8 \text{ pt Butyraac-2 lb/gal} \]

POSTEMERGENCE. Tank-mix. Refer to Basagran alone. Primarily for improved control of annual morning glory, which escapes Basagran. Thorough coverage and early application required for Basagran increases risk of injury from 2,4-DB portion. Do not treat plants under stress. Do not add oil or surfactant. Appears to have very limited potential for most field situations.

ALANAP L + 2,4-DB (NPA + 2,4-DB)

RESCUE

POSTEMERGENCE. Tank-mix or use commercial premix containing 2 lb Alanap and .06 lb of 2,4-DB active per gallon. Primarily intended as a “rescue” treatment to control broadleaf annual weeds that cannot be controlled with other postemergence treatments. Good sunflower, mustard and cocklebur control has been noted. Rate of 2-3 qt/A of Rescue is equivalent to the tank-mix of 2-3 qt Alanap L + 3-4 fl oz of Butoxone or Butyrac 200 per acre. Use high rate for weeds over 10-12 inches tall. Add .5% surfactant. Apply 7 days before bloom to midbloom. Leaf abnormalities or stunting may be increased with earlier applications. Minimum carrier is 10 gpa for ground or 5 gpa for air. Do not apply with 60 days of harvest. Spray boom should be 18-24 inches above weeds or crop. Use 40-50 psi pressure to provide a fine spray with hollow cone nozzles.

NO-TILL HERBICIDES

PARAQUAT OR GRAMOXONE (PARAQUAT)

\[ \frac{1}{4} - 2 \text{ pt Paragraz or Gramoxone-2 lb/gal} \]

HARVEST AID. Apply \( \frac{1}{4} - 1 \text{ pt/A paragraz-2 lb/gal} \) 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. Paragraz 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 soybean fields for 15 days after spraying, and remove livestock at least 30 days before slaughter. Follow handling precautions, as paragraz is highly toxic. Restricted Use pesticide.

NO-TILL or REDUCED TILLAGE SYSTEMS. Paragraz 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 paragraz 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 paragraz 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.)

1-2 pt paragraz + 1/2-2 pt Lasso + 1/2-1 pt Sencor or Lexone
1-2 pt paragraz + 1/2-2 pt Dual + 1/2-1 pt Sencor or Lexone
1-2 pt paragraz + 1/2-2 pt Prowl + 1/2-2 pt Lorox
1-2 pt paragraz + 1/2-2 pt Prowl + 3/4-1 pt Sencor or Lexone
1-2 pt paragraz + 1/2-2 pt Dual + 1-3 pt Lorox
1-2 pt paragraz + 2-3 pt Lasso + 1-3 pt Lorox
1-2 pt paragraz + 2/3-1 2/3 lb Surflan-75% wp + 1/2 pt Sencor or Lexone

BRONCO (ALACHLOR + GLYPHOSATE)

\[ \frac{3}{4} - 5 \text{ qt Bronco-1.8+1/6 lb/gal} \]

Commercial premix containing 2.6 lb alachlor (Lasso) + 1/6 lb glyphosate (Roundup) active per gallon. Intended to control emerged weeds in no-till situations. Excellent control of emerged annual grasses. Perennials may be suppressed. Lasso provides residual annual grass control but is dependent upon rainfall before weeds emerge. Bronco can be tank-mixed with Lorox, Lexone or Sencor for improved annual broadleaf control. Do not apply after crop emergence.
NO-TILL HERBICIDES (continued)

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 10 gpa water. Several combination treatments are listed below.

Amount of product per acre, tank-mix.

 Liquids formulations are listed; however, an equivalent amount of other formulations may be used.

1-1½ qt Roundup + 2-3 qt Lasso + 1-3 pt Lorox
1-½ qt Roundup + 1½-2½ pt Dual + 1-3 pt Lorox
1-½ qt Roundup + 2-3 qt Lasso + ½-1 pt Sencor or Lexone
1½ qt Roundup + 1½-2½ pt Dual + ½-1 pt Sencor or Lexone
1½ qt Roundup + 2½-3½ lb Surflan-75% wp + ½-1 pt Sencor or Lexone
1½ qt Roundup + 2½-3½ lb Surflan-75% wp + 1-2 pt Lorox

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. Use extreme caution 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.

"Recirculating Sprayers (RCS)" direct the spray across the top of the soybeans. Box types operate between the rows and broadcast types operate independent of row spacing. Spray not 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 quarts per gallon of water. One gallon of Roundup will usually treat 16 to 20 acres. Equipment must be operated in a manner that minimizes droplet drift and "splash" effects.

"Roller" applicators wipe the herbicide onto the taller weeds. The carpet covered roller is continually wetted with solution and rotates as it moves through the field. Some are equipped with electronic sensors that maintain proper roller wetness. Roller applicators avoid drift and splash problems. The Roundup to water ratio is 1 to 13 for corn and wild cane and 1 to 9 for broadleaved weeds. One gallon of Roundup usually treats 25 to 60 acres.

"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. Drain 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 50 to 100 acres.

SPECIAL WEED PROBLEMS IN SOYBEANS

ANNUAL GRASSES (FOXTAIL, BARNYARDGRASS, SANDBUR)

TREFLAN or PROWL or BASALIN
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 section for each herbicide.

LASSO or DUAL
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 section for Lasso or Dual.
### SPECIAL WEED PROBLEMS (CONTINUED)

#### SMALL SEEDED ANNUAL BROADLEAVES (PIMECED, LAMBQUARTERS, KOCIA, SMARTWEED)

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Use</th>
<th>Control Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SENCOR or LEXONE</strong></td>
<td>Preemergence of preplant incorporated. Excellent control. Very good on mustard. Use with other herbicides. Rates as low as 1/2 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>
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<tr>
<td><strong>LOROX</strong></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>
<td></td>
</tr>
<tr>
<td><strong>MODOWN</strong></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>
<td></td>
</tr>
<tr>
<td><strong>AMIBEN</strong></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>
<td></td>
</tr>
<tr>
<td><strong>VELVETLEAF, VENICE MALLOW</strong></td>
<td><strong>BASAGRAN</strong></td>
<td>Postemergence. Very good control. Use 1 1/2 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.</td>
</tr>
<tr>
<td><strong>SENCOR or LEXONE</strong></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 1/2 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>
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</tr>
<tr>
<td><strong>TREFLAN</strong></td>
<td>Split preplant incorporated tank-mix and preemergence. &quot;Split shot&quot; application. Allows for better crop tolerance with high Sencor rates. Best soil-applied treatment for velvetleaf. Refer to Treflan and Sencor section.</td>
<td></td>
</tr>
<tr>
<td><strong>WILD SUNFLOWER</strong></td>
<td><strong>BASAGRAN</strong></td>
<td>Postemergence. Good control. Use 1 1/4 pt/A for weeds up to 4 inches and 1 qt/A for weeds up to 8 inches tall. Crop oil helpful. Weeds emerging later will escape. Best choice for variable or high pH soils. Refer to Basagran section.</td>
</tr>
<tr>
<td><strong>SENCOR or LEXONE</strong></td>
<td>Preemergence. Used as a tank-mix or overlay treatment. Fair control. Use maximum rate for soil type. Most effective soil-applied treatment. Note soil factor precautions in sections for Sencor or Lexone combinations.</td>
<td></td>
</tr>
<tr>
<td><strong>COCKLEBUR</strong></td>
<td><strong>BASAGRAN</strong></td>
<td>Postemergence. Excellent control. Use 1 1/4 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.</td>
</tr>
<tr>
<td><strong>BLACK NIGHTSHADE</strong></td>
<td><strong>LASSO or DUAL</strong></td>
<td>Shallow preplant incorporated or preemergence. 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. Layby cultivation very helpful.</td>
</tr>
<tr>
<td><strong>BLAZER</strong></td>
<td>Postemergence. Good to very good control. Apply when weeds are under 4 inches tall. Risk of leaf burn. Refer to Blazer section.</td>
<td></td>
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</tbody>
</table>
SPECIAL WEED PROBLEMS (CONTINUED)

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.


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 Postemergence. Partial control. Apply when weeds are under 4 inches tall. Risk of leaf burn. Refer to Blazer section.

YELLOW NUTSEDGE

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 Postemergence. Apply 3/4-1 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 Postemergence. 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.

BLAZER Postemergence. Fair burn of topgrowth. Refer to Blazer section.

Herbicide Cost

The table below gives the cost per acre, based on suggested retail prices for the previous season, for several herbicide treatments. The amounts shown are for the low and high rates. Consult your local dealer for actual cost.

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>AMT/PRODUCT/A</th>
<th>HERBICIDE COST/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treflan</td>
<td>1-2 pt</td>
<td>$4.25 - 8.50</td>
</tr>
<tr>
<td>Prowl</td>
<td>1-3 pt</td>
<td>3.70 - 11.10</td>
</tr>
<tr>
<td>Basalin</td>
<td>1-3 pt</td>
<td>4.05 - 12.15</td>
</tr>
<tr>
<td>Vernam</td>
<td>2-1/3-2½ pt</td>
<td>7.30 - 11.00</td>
</tr>
<tr>
<td>Treflan+Sencor/Lexone</td>
<td>1-2 pt &amp; 1 pt</td>
<td>9.25 - 18.50</td>
</tr>
<tr>
<td>Prowl+Sencor/Lexone</td>
<td>1½-2¼ pt &amp; 1 pt</td>
<td>10.55 - 19.25</td>
</tr>
<tr>
<td>Basalin+Sencor/Lexone</td>
<td>1-2 pt &amp; 1 pt</td>
<td>9.05 - 18.10</td>
</tr>
<tr>
<td>Treflan+Lorox</td>
<td>1-2 pt &amp; 2½ lb</td>
<td>7.40 - 21.00</td>
</tr>
<tr>
<td>Prowl+Lorox</td>
<td>1-2½ pt &amp; 2½ lb</td>
<td>9.95 - 24.85</td>
</tr>
<tr>
<td>Treflan+Modown</td>
<td>1-2 pt &amp; 3-4 pt</td>
<td>13.45 - 20.75</td>
</tr>
<tr>
<td>Treflan+Amiben</td>
<td>1½-2½ pt &amp; 4 qt</td>
<td>18.20 - 24.25</td>
</tr>
<tr>
<td>Prowl+Amiben</td>
<td>1½-2½ pt &amp; 4 qt</td>
<td>21.30 - 25.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>AMT/PRODUCT/A</th>
<th>HERBICIDE COST/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalin+Amiben</td>
<td>1-2 pt &amp; 4 qt</td>
<td>$19.85 - 23.90</td>
</tr>
<tr>
<td>Lasso</td>
<td>2-3½ qt</td>
<td>9.75 - 17.10</td>
</tr>
<tr>
<td>Dual</td>
<td>2-3½ pt</td>
<td>11.70 - 17.55</td>
</tr>
<tr>
<td>Amiben</td>
<td>1-1½ gal</td>
<td>15.75 - 23.60</td>
</tr>
<tr>
<td>Lasso+Sencor/Lexone</td>
<td>2-3½ pt &amp; 1 pt</td>
<td>14.75 - 24.65</td>
</tr>
<tr>
<td>Dual+Sencor/Lexone</td>
<td>1½-2½ pt &amp; 1 pt</td>
<td>13.80 - 24.65</td>
</tr>
<tr>
<td>Lasso+Lorox</td>
<td>1½-3 pt &amp; 3½ lb</td>
<td>13.55 - 33.40</td>
</tr>
<tr>
<td>Dual+Lorox</td>
<td>1½-2½ pt &amp; 1½ lb</td>
<td>13.55 - 33.40</td>
</tr>
<tr>
<td>Lasso+Amiben</td>
<td>2-2½ pt &amp; 4 qt</td>
<td>25.50 - 30.80</td>
</tr>
<tr>
<td>Basagran</td>
<td>3½-4½ pt</td>
<td>14.25 - 19.00</td>
</tr>
<tr>
<td>Blazer</td>
<td>1½-2½ pt</td>
<td>13.50 - 18.00</td>
</tr>
</tbody>
</table>

14