UMC

Science and Technology

GUIDE

Published by the University of Missouri - Columbia Extension Division

Chemical Weed Control In Field Corn For 1982

Part 2: Pre-emergence and Postemergence

Harold D. Kerr, Joseph H. Scott, E. J. Peters, L. E. Anderson,
O. Hale Fletchall, David Guethle, Zane R. Helsel and Howard Guscar
Department of Agronomy, College of Agriculture

Application Rates. Because the concentration of herbicides in commercial products may vary, herbicide rates are given on the basis of *active* ingredient (called *acid equivalent* for some herbicides) or per surface acre that will actually be treated. (See Table 21 for herbicide conversion values.) Note that treated areas will be less than acres of crop in the field, if the herbicide is applied in a band.

Label rates take legal precedence over rates included in this guide.

Pre-emergence (Surface) Treatments

Alachlor (Lasso). This herbicide is highly effective in controlling ***annual grasses*** and does an acceptable job on several ***broad-leaved weeds.*** Alachlor is more persistent in most Missouri soils than propachlor (Ramrod or Bexton), so it controls weeds for a longer period of time and is more effective under conditions of excessive rainfall. Alachlor is quite effective in controlling ***fall panicum.*** It is generally better than propachlor for controlling ***broad-leaved weeds.*** However, propachlor usually gives better weed control on clayey soils.

Lasso contains 4 pounds/gallon active ingredient. For rates, see Table 1.

The 15 percent granular formulation of alachlor (Lasso II) can be used at the same rates of active ingredient as the liquid except that it should not be used on the light (sand through sandy loam) soils.

Table 1. Alachlor (Lasso).

Soil	lbs./A active ingredient	
	less than 3% organic matter	*more than 3% organic matter*
Light: sand through sandy loam	2	2
Medium: loams	2.5	2.5-3.0
Heavy: silty clay loam through clay	3	3.5-4.0

For fields with significant infestations of broad-leaved weeds, we recommend alachlor be used in combination with a herbicide that is effective on broad-leaved weeds.

Alachlor (Lasso) + Atrazine. This tank mixture gives ***a wide spectrum of weed control.*** The combination reduces the amount of atrazine carry-over in the soil in comparison to atrazine used alone because less atrazine is used. It controls ***fall panicum*** and ***crabgrass*** better than atrazine alone and provides better control of several ***broad-leaved weeds*** than alachlor alone. This treatment, with water as a carrier, can be applied any time after the crop is planted until the corn is 5 inches tall or before the weeds are beyond the two-leaf stage, but preferably before the weeds emerge.

Either the wettable powder or the liquid formulation of atrazine can be used in this treatment.

This combination is best applied pre-emergence, but can be applied after the crop is planted or before the two-leaf stage. Any atrazine formulation can be used in this tank mix. For rates, see Table 2.

Plant only corn, sorghum, or soybeans the year after this treatment. ***Restrictions:*** Do not plant soybeans where furrow irrigation is used. Do not graze treated area or feed treated forage to livestock for 21 days after application.

Table 2. Alachlor (Lasso) + Atrazine.

Soils	lbs./A active ingredient	
	less than 3% organic matter	*more than 3% organic matter*
light sandy	1.50 + 1.0	1.50 + 1.0
silt loam	1.75 + 1.00-1.20	2.0 + 1.20-1.40
heavy clay	2.25 + 1.20-1.60	2.50 + 1.20-1.60

Table 3. Dual 8E + Bladex - Broadcast.

Soil Texture	Percent organic matter in soil *Less than 1%* *lbs. Dual 8E* + *lbs. Bladex 80W**	 *1-2.5%* *lbs. Dual 8E* + *lbs. Bladex 80W**	 *2.5-4%* *lbs. Dual 8E* + *lbs. Bladex 80W**
Coarse			
Sand, loamy sand	Do Not Use	1.25-1.50 + 1.25-1.90	1.50-1.75 + 1.90-2.50
sandy loam	1.25 + 1.25	1.25-1.50 + 1.90-2.25	1.50-1.75 + 2.25-2.75
Medium			
Loam, silt loam, silt	1.50 + 1.90	1.50-1.75 + 2.25-2.75	1.75-2.0 + 2.75-3.12
Fine			
Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay	1.50 + 2.25	1.75-2.0 + 2.50-3.12	2.20-2.25 + 3.12-3.50
muck or peat soils	DO NOT USE		

* When using Bladex 4L, use equivalent rates. One lb. of 80W equal 1.6 pts. of 4L.

Table 4. Dual 8E + Banvel.

Soil Texture*	*Dual 8E*	**Broadcast rate per acre for soils with more than 2.5% organic matter** +	*Banvel*
Medium: loam, silt loam, silt	2 lbs.	+	.5 lb.
Fine: sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, clay	2-2½ lbs.	+	.5 lb.
muck or peat soils	DO NOT USE		

* Do not use on coarse soils or on soils with less than 2.5% organic matter.

Metolachor (Dual 8E) + Cyanazine (Bladex). Apply this tank mix during planting (behind the planter) or after planting, but before corn or weeds emerge. (See Table 3.)

Metolachor (Dual 8E + Dicamba (Banvel). Use this tank mixture **only on flat-planted field corn.**

Apply Dual 8-E + Banvel pre-emergence using the appropriate rates. Apply to the soil surface at planting or after planting, but before corn emerges.

Restrictions: Avoid drift to soybeans or other desirable plants. Do not apply with aircraft.

Plant corn at least 1½ inches deep and apply behind planting equipment. See Table 4.

Rotational Crops: Refer to the crop rotation instructions for Dual 8-E alone on this label and for Banvel alone on the Banvel label.

Linuron (Lorox) + Alachlor (Lasso). This treatment is effective in controlling ***most annual weeds*** in corn. Although it is generally safe on the crop, some injury may occur.

Restriction: Do not use on sand. The activity of this mixture is affected by both soil texture and organic matter content, so be careful to select the proper rate for your soil.

With Table 5, use the lower of each rate range given for the lowest organic matter in each column. The ratio of these herbicides as cleared for the label is not considered ideal for

Table 5. Linuron (Lorox) + Alachlor (Lasso).

Soil	lbs./A active ingredient *1-3% organic matter*	 *3-6% organic matter*
sandy loam	⅓-⅝ + ¾-1	⅝-1 + 1-1½
silt loam	½-⅝ + 1-1½	⅝-1¼ + 1½-2
clay loam	⅝-1 + 1½-2	1-1½ + 2-2½

many Missouri conditions. This is a limitation of this combination in many states.

Atrazine (Numerous Brands and Formulations). Atrazine as a wettable powder must be kept in suspension in the water carrier by vigorous agitation. The liquid form requires less agitation.

Atrazine is effective in controlling ***most annual weeds*** in corn, but lacks effectiveness in controlling ***fall panicum*** and, to a lesser degree, ***crabgrass.*** For Rates, see Table 6.

Table 6. Atrazine.

Soil Texture	lbs./A active ingredient
Coarse: sands, loamy sands and sandy loams	2
silty clay loam - low organic matter	2⅜
Medium: silt and clay loams with medium to high organic matter and clays	3

Surface-applied atrazine must be moved into the soil to be effective. If it does not rain within five to 10 days after application, use a rotary hoe or shallow cultivation to incorporate the chemical.

Atrazine residues in the soil may injure some crops following atrazine-treated corn. Following atrazine-treated corn with corn, sorghum or cotton is generally safe. Following atrazine-treated corn with soybeans is usually safe if the rate of atrazine did not exceed 2 pounds/acre active ingredient.

The hazard of injury from atrazine residues in the soil is reduced by:

- Early application of the atrazine.
- Reasonably adequate rainfall well distributed throughout the season.
- A warm to hot summer.
- Any tillage of the soil.
- Not planting the following crop too early. Do not plant tobacco, some horticultural crops, small grains, small-seeded grasses or legumes in the fall of the year of application or the spring of next year after atrazine-treated corn.

Surface-applied atrazine, when followed by heavy rains and run-off, may severely injury perennial grasses in waterways. Incorporation reduces this possibility.

Restrictions: Do not apply more than 4 pounds/acre of atrazine to corn in any one year. Following harvest of a treated crop, plow and thoroughly till the soil in the fall or spring to minimize possible injury to rotational spring-planted crops, regardless of the rate used. Do not graze treated area or feed treated forage to livestock for 21 days after application.

Atrazine + Simazine (Princep or Caliber 90). This tank mixture will control ***fall panicum*** better than atrazine alone. For rates, see Table 7.

Table 7. Atrazine + Simazine (Princep or Caliber 90).

Soil Texture	lbs./A active ingredient
Coarse: sands, loamy sands and sandy loams.	1 + 1
Medium: silt and clay loams low in organic matter	1.2 + 1.2
Fine: silt and clay loams with medium to high organic matter and clay	1.5 + 1.5

Observe all the precautions for atrazine and simazine mentioned in this guide.

Cyanazine (Bladex). Similar to atrazine, cyanazine does not present as serious a problem of residue carrying over in the soil. It is more effective than atrazine on ***fall panicum*** and ***crabgrass,*** and somewhat less effective on ***pigweed*** and ***western water hemp.*** The seasonal duration of weed control tends to be shorter. It is available as an 80 percent wettable powder, a 4 pounds/gallon water suspension and a 15 percent granule. For rates, see Table 8.

Table 8. Cynazine (Bladex).

	lbs./A active ingredient cyanazine for organic matter content of:					
soils	*less than 1%*	*1%*	*2%*	*3%*	*4%*	*more than 4%*
sand, loamy sand	do not use	1.2	1.6	2	2.4	2.8
sandy loam	1.2	1.6	2	2.4	2.8	3.2
loam, silt loam silt	1.6	2	2.4	2.8	3.2	3.6
sandy clay loam, clay loam, silty clay loam	2	2.4	2.8	3.2	3.6	4
sandy clay, silty clay, clay	2.4	2.8	3.2	3.6	4	4

Use rotary hoe or shallow cultivation if rainfall or sprinkle irrigation has not occurred within about 10 days after application. Enough moisture is needed to wet the soil to 1½-2 inches deep or to make it too wet to cultivate. At least a half an inch of rainfall is essential.

Cyanazine application can be followed by fall-sown small grains or other crops without injury from residues.

Apply cyanazine only once per season.

Alachlor (Lasso) + Cyanazine (Bladex). This tank mix generally controls ***most annual grasses*** and ***several annual broad-leaved weeds*** effectively. Among the weeds for which control is sometimes marginal are ***annual morning-glory, cocklebur,*** and ***velvetleaf.*** Carry-over soil residue has not been a significant problem with this combination. Bladex applications normally can be followed by fall-sown grains or other crops without residue injury. (See Table 9.)

Table 9. Alachlor (Lasso) + Cyanazine (Bladex).

	lbs./A active ingredient	
	1-1.9% organic matter	*2-2.9% organic matter*
sand or loamy sand	Do Not Use	2 + 1
sandy loam	2 + 1	2 + 1.2
loam	2 + 1.2	2 + 1.4
silty loam through clay loam	2 + 1.4	2 + 1.6
clay	2 + 1.6	2 + 1.8
	3-4% organic matter	*more than 4% organic matter*
sand or loamy sand	2 + 1.2	2 + 1.4
sandy loam	2 + 1.4	2 + 1.6
loam	2 + 1.6	2 + 1.8
silty loam through clay	2 + 1.8	2 + 2
clay	2 + 2.2	2 + 2.2

Cyanazine (Bladex) + Atrazine. Only corn or sorghum can be grown the year following application of this tank mix. This combination gives better control of ***pigweed*** than Bladex alone, improves ***crabgrass*** and ***panicum*** control, and reduces atrazine carry over. (See Table 10.)

Linuron (Lorox) + Atrazine. Combining these herbicides reduces the amount of atrazine residue carry over in the soil and controls ***fall panicum*** and ***crabgrass.*** Although it is generally safe on the crop, some injury may occur. For rates, see Table 11.

Table 11. Linuron (Lorox) + Atrazine.

	lbs./A active ingredient	
Soils	*1-2% organic matter*	*2-5% organic matter*
sandy loam	.33-.5 + .4-.54	.5-1 + .54-1
silt loam	.5-.75 + .54.8	.75-1.25 + .8-1.2
clay loam	.67-.84 + .6-.8	.84-1.5 + .8-1.6

Restrictions. Do not use on sand or loamy sand soils because of the hazard of crop injury. Do not use on clay soils or soils very high in organic matter because of the lack of dependability in controlling weeds.

Metolachlor (Dual 8E). Dual is a selective herbicide that controls ***most annual grasses*** and ***certain broad-leaved weeds.*** For rates, see Table 12.

For Dual applied alone, the amended label allows rotation to small grains four and a half months after treatment or to corn, soybeans, root crops or small grains the following spring.

Table 12. Metolachlor (Dual 8E).

Soil	less than 3% organic matter lbs./Acre	more than 3% organic matter lbs./Acre
sandy loam	1.5-2.0	2.0
silt loam	2.0-2.5	2.0-2.5
clay loam	2.0-2.5	2.5-3.0

Metolachlor (Dual 8E) + Atrazine (AAtrex) Bicep. For rates of this tank mix, see the table in preplant incorporated section. Application rates are the same for both treatments. Bicep is a package mix of these products that includes 2 pounds atrazine and 2.5 pounds Dual per gallon.

Pendimethalin (Prowl). This herbicide provides control of ***annual grasses*** and ***several broad-leaved weeds.*** Corn should be planted 1½ inches or deeper below the soil surface. ***Restrictions:*** Do not preplant or incorporate Prowl. Do not use on peat or muck soils. (See Table 13.)

Pendimethalin (Prowl) + Atrazine. This combination provides effective control of a ***broad spectrum of annual***

Table 10. Bladex 4L + Atrazine 80W.

Soil	lbs./A Active Ingredients Percent Soil Organic Matter *1%*	*2%*	*3%*	*4%*
Loamy sand	.6 + .9	.8 + 1.25	1.0 + 1.6	1.2 + 1.9
Sandy loam	.8 + 1.25	1.0 + 1.6	1.2 + 1.9	1.4 + 2.2
Silt loam	1.0 + 1.6	1.2 + 1.9	1.4 + 2.2	1.6 + 2.5
Clay loam	1.2 + 1.9	1.4 + 2.2	1.6 + 2.5	1.8 + 2.8
Silty clay	1.4 + 2.2	1.6 + 2.5	1.8 + 2.8	2.0 + 3.1
Muck	DO NOT USE			

Table 17. Propachlor (Ramrod or Bexton) + Atrazine (Tank Mix).

Soil	Less than 3% Organic Matter *Ramrod + Atrazine*	More than 3% Organic Matter *Ramrod + Atrazine*
	(Active Ingredient)	
Coarse	2.5 lbs. + 1.0 lbs.	3.0 lbs. + 1.2 lbs.
Medium	3.3 lbs. + 1.5 lbs.	3.4 lbs. + 1.4 lbs.
Fine	3.6 lbs. + 1.5 lbs.	3.6 lbs. + 1.6 lbs.
	Ramrod + Atrazine (Package Mix):	
Coarse	5.0 lbs.	6.0 lbs.
Medium	6.0 lbs.	7.0 lbs.
Fine	6.0-7.0 lbs.	7.0-8.0 lbs.

Table 18. Simazine (Princep 80W).

Soil Texture	lbs./A active ingredient
Coarse: sand, silt and loam low in organic matter	2
Medium: soil containing moderate amounts of clay and organic matter	2.4
Fine: loam high in organic matter and clay	3
clay high in organic matter	4

2,4-D Ester (Numerous Brands and Formulations). The ester form is safer on the crop than the amine when used pre-emergence. The 2,4-D ester tends to remain near the soil surface, thus causing less seedling injury than the deeper penetrating water soluble amine form.

Use 1-2 pounds/acre (1-2 quarts of a 4 pounds/gallon formulation) pre-emergence (except in cases limited by the label). The 2 pounds rate should be used on heavy soils where serious ***giant foxtail*** infestations are expected. ***Restriction:*** Do not use 2,4-D pre-emergence on sandy soils, because excessive rainfall will leach the chemical downward where it may severely injure corn.

Pre-emergence use of 2,4-D ester controls ***most annual grasses*** and ***broad-leaved weeds*** for three or four weeks following application. Early season weed control will reduce the number of necessary cultivations, and corn will be well established before the first cultivation becomes necessary.

Postemergence Treatments

Atrazine (Numerous Brands and Formulations) Water Carrier. Atrazine is usually effective on ***weeds not more than 1½ inches tall.*** It is poor for control of ***fall panicum.*** Use at the same rates and with the same precautions mentioned in this guide for the atrazine pre-emergence treatment. Corn under extreme stress from cold or wet weather or some other cause may be injured from this treatment.

Atrazine Oil-Water Carrier. Adding phytobland oil to water as a carrier for the postemergence treatment with atrazine usually increases the effectiveness of the atrazine. Use an oil designated for use with atrazine containing at least 1 percent of a suitable emulsifier. Use 2 pounds active ingredient of atrazine and 1 gallon phytobland oil in 20-40 gallons of water. ***Restrictions:*** Do not use on inbred lines or breeding stock of corn. Do not add other pesticides or fertilizers to this mixture.

Atrazine + Alachlor (Lasso). Apply as an early postemergence up to two-leaf stage of weed growth and before corn exceeds 5 inches in height. For rates, refer to table under "Pre-emergence Tank Mix for Atrazine and Lasso". ***Restriction:*** It is for use in field and silage corn only. Check label for additional information.

Basagran - Postemergence. Apply when weeds are small and actively growing and before they reach maximum size, from 2 to 6 inches depending upon weed species. Rates are from .75 lb. to 1.0 pound per acre. Corn is tolerant to Basagran at all stages of growth, but very slight leaf speckling may occur. Corn plants generally grow out of the condition within 10 days. ***Restriction:*** Do not apply more than 2 pounds per acre during a given season.

Cyanazine (Bladex). This treatment generally gives good control of ***annual weeds*** with slight risk of injury to the corn. Use 1.2-2 pounds/acre of active ingredient. ***Restrictions:*** Do not use on sand or loamy sand containing less than 1 percent organic matter. The risk of corn injury is greater when weather conditions are such that considerable dew is produced at night, when the corn is succulent due to cool, humid weather. Do not use an oil-water emulsion carrier.

Dicamba (Banvel). This herbicide usually controls most ***annual broad-leaved weeds*** in corn. It is superior to 2,4-D on ***smartweed.*** Use ¼ pound/acre active ingredient. ***Restrictions:*** Do not apply to sweet corn or popcorn. Do not apply to corn more than 3 feet tall or later than 15 days before tassel emergence. Do not graze or harvest for dairy or beef feed before the ensilage (milk) stage. **Drift of Dicamba will injure soybeans and other desirable broad-leaved plants. Exercise extreme care to prevent drift.** Observe the precautions on the label.

Dicamba (Banvel) + 2,4-D Amine. This combination controls more species of ***broad-leaved weeds*** than either herbicide alone. Use dicamba at the same rates indicated for use alone plus ¼-½ pound/acre acid equivalent of 2,4-D amine. On corn 8 inches tall or taller, use drop

Table 13. Pendimethalin (Prowl) (Active Ingredient/A).

Soil	*Less 1.5% Organic Matter*	*1.5-3% Organic Matter*	*more than 3% Organic Matter*
sandy loam	.75-1.0 lb.	1.5 lb.	1.5 lb.
silt loam	1.0 -1.5 lb.	1.5 lb.	1.5-2.0 lb.
clay loam	1.0 -1.5 lb.	1.5-2.0 lb.	2.0 lb.

Table 14. Pendimethalin (Prowl) + Atrazine 80W (Active Ingredient).

Soil	Percent Organic Matter *Less 1.5%*	*1.5-3.0*	*Above 3.0*
Coarse	1.5-2.0 lbs. + 1.6-1.9 lbs.	2.0 lbs. + 1.6 lb.	3.0 lbs. + 1.6 lb.
Medium	2.0 lbs. + 1.6-1.9 lb.	3.0 lbs. + 1.6-1.9 lb.	3.0 lbs. + 1.9-2.5 lbs
Fine	2.0 lbs. + 1.6-1.9 lb.	3.0 lbs. + 1.9-2.5 lbs.	3.0 lbs. + 1.9-2.5 lbs.

Table 15. Pendimethalin (Prowl) + Bladex (Active ingredient).

Soil	Percent Organic Matter *1.5-3%*	*more than 3%*
sandy loam	1.0 lb. + 2.5 lbs.	1.5 lbs. + 2.5-3.12 lbs.
silt loam	1.5 lbs. + 2.5-3.12 lbs.	1.5 lbs. + 3.12-3.75 lbs.
ciay loam	1.5 lbs. + 3.12-3.75 lbs.	1.5 lbs. + 3.12-3.75 lbs.

weeds. It generally gives better control of ***annual grasses*** than atrazine alone and better control of several ***broad-leaved weeds*** than Prowl alone. Prowl will assist atrazine in the suppression of ***velvetleaf.*** Limitations are the same as for Prowl alone. For rates, see Table 14.

Pendimethalin (Prowl) + Bladex. This tank mixture generally controls ***most annual grasses*** and ***broad-leaved weeds*** effectively. Limitations are the same as for Prowl used alone.

Prowl + Bladex. For rates, see Table 15.

Propachlor (Ramrod, Bexton). This herbicide is available as a wettable powder, a liquid and as granules. It is ***a good grass killer,*** but only mildly effective on ***broad-leaved weeds.*** It is a mild irritant to the skin and mucous membranes. The wettable powder must be well agitated in the sprayer tank. Propachlor is more effective than alachlor on heavy soils or soils high in organic matter.

Table 16. Propachlor (Ramrod or Bexton).

Soil	lbs./A active ingredient *less than 3% organic matter*	*more than 3% organic matter*
light sandy soils	3.9-4.5	4.5-4.9
silt loam soils	4.5-4.9	5.2-5.5
heavy clay soils	5.2-5.5	5.5-5.8

On areas of heavy weed infestation, use the higher rate of the range for the appropriate soil and organic matter indicated in Table 16.

Propachlor (Ramrod or Bexton) + Atrazine. This combination is best adapted for use on soils with more than 3 percent organic matter and is effective in controlling ***most annual grasses*** and ***small-seeded, broad-leaved weeds.*** For the rates for tank mix, see Table 17.

Simazine (Princep 80W). Less water soluble than atrazine, simazine requires more rainfall to be effective. Longer soil residual presents a slightly greater hazard if soybeans or other sensitive crops follow. Simazine is more effective than atrazine in controlling ***fall panicum*** and ***crabgrass.*** For rates, see Table 18.

Do not apply more than 4 pounds/acre active ingredient to corn in any one year.

The hazard of injury to the crop following simazine-treated corn can be reduced by:

- Application of the simazine early in the season.
- At least moderately adequate rainfall in the year the corn is grown.
- Warm temperatures.
- Tillage of the soil.
- Somewhat delayed planting of the crop following the simazine-treated corn.

nozzles to direct spray toward the base of plants. Observe all limitations of use and precautions in this guide and on the labels of both herbicides.

Metolachlor (Dual 8-E) + Atrazine: See Table 19. See label for additional information.

Table 19. Metolachlor (Dual 8E) + Atrazine.

Soil	lbs. active ingredient/A
Coarse	1.5 lbs. + 1.9 lbs.
Medium	2.0 lbs. + 2.5 lbs.
Fine	2.5 lbs. + 3.12 lbs.

Linuron (Lorox) + Surfactant Directed. This treatment is usually effective for control of many ***annual grasses*** and ***broad-leaved weeds.*** There must be a height differential between the corn and the weeds. Corn should be at least 15 inches high. ***Restrictions:*** Do not apply to upper leaves or whorl of corn. Leaves receiving the spray may be killed. All the foliage of the weeds should be covered with spray.

Use ⅝-1½ pounds/acre active ingredient linuron plus ½ percent by volume of Surfactant WK (½ gallon/100 gallons) in the spray mixture. Use the lower rate when weeds are not more than 2 inches tall and on light soils low in organic matter; use the higher rate for weeds up to 5 inches tall and on heavier soils and soils high in organic matter.

Glyphosate (Roundup). This herbicide is registered for use as a post-emergence spot treatment in corn. Apply prior to silking of corn to ***hard-to-kill weeds*** in a spray solution of 1 to 2 quarts Roundup in 25 gallons water. Thoroughly cover weeds to be treated. Crop plants in treated area will also be killed.

2,4-D Amine. Use ¼-½ pound/acre of acid equivalent to control most ***annual broad-leaved weeds.*** This treatment does not control ***grass.*** The amine form is less likely to injure corn as a postemergent than the ester form. If the ester form is used, no more than ¼ pound/acre should be applied.

This treatment is more effective on ***small weeds.*** ***Restriction:*** Do not apply from the beginning of tasseling to the dough stage.

When ground equipment is used, use drop nozzles on the boom if the corn is over 12 inches high. Adjust the nozzles so the spray fans cross about 2½ inches above the tops of the weeds.

Treatments in Experimental Stage

Treatments discussed in this section have not been evaluated thoroughly enough to determine their dependability under Missouri conditions. **We recommend that experimental treatments be used on a limited basis.** Be sure to follow labels.

Pre-emergence

Chloramben (Amiben) + Atrazine. This tank-mix combination has performed reasonably well in controlling ***annual weeds.*** For suggested rates, see Table 20.

Table 20. Chloramben (Amiben) + Atrazine

Soil	lbs./A active ingredient
Medium	1 + 1
Heavy	1 to 1.5 + 1 to 1.5

Restriction: Do not use on light soils such as sandy loams.

Pendimethalin (Prowl) + Dicamba (Banvel). Use same precautions as Prowl alone. See label for rates.

Postemergence

Basagran + Atrazine + Oil. This tank mix controls a broad spectrum of ***broad-leaved weeds*** included on labels of both products. See label for rates and application instructions.

Pendimethalin (Prowl) + Atrazine. See label for instructions.

Pendimethalin (Prowl) + Cyanazine (Bladex). See label for instructions.

Table 21. Herbicide Conversions.

Herbicide	Formulation	Rate/Acre	Amt. Product
	Active Ing.	Active Ing.	per acre
Amiben	2 lbs/gal.	1.0 lb.	2.0 qts.
Atrazine 80W	80%	1.0 lb.	1.25 lbs.
		2.0 lbs.	2.5 lbs.
Atrazine 4L	4 lbs/gal.	1.0 lb.	1.0 qt.
		2.0 lbs.	2.0 qts.
AAtrex 90	90%	1.0 lb.	1.1 lbs.
		2.0 lbs.	2.2 lbs.
Basagran	4 lbs/gal.	.5 lb.	1.0 pt.
		1.0 lb.	1.0 qt.
Bladex 80W	80%	1.0 lb.	1.25 lb.
		2.0 lbs.	2.5 lb.
Bladex 4L	4 lbs/gal.	1.0 lb.	1.0 qt.
		2.0 lbs.	2.0 qts.
Bladex 15G	15%	1.0 lb.	6.7 lbs.
		2.0 lbs.	13.4 lbs.
Bladex 80W	80%	1.0 lb.	1.25 lb.
		2.0 lbs.	2.5 lbs.
Banvel	4 lbs/gal.	.12 lb.	.25 pt.
		.25 lb.	.5 pt.
Banvel II	2 lbs/gal.	.12 lb.	.5 pt.
		.25 lb.	1.0 pt.
Banvel 5G	5%	.12 lb.	2.5 lbs.
		.25 lb.	5.0 lbs.
Caliber 90	90%	1.0 lb.	1.1 lb.
		2.0 lbs.	2.2 lbs.
Dual 8E	8 lbs/gal.	2.0 lbs.	1.0 qt.
		3.0 lbs.	1.5 qts.
Eradicane 6.7E	6.7 lbs/gal.	2.0 lbs.	2.35 pt.
		4.0 lbs.	4.7 pt.
Lasso	4 lbs/gal.	2.0 lbs.	2.0 qts.
		3.0 lbs.	3.0 qts.
Lasso II	15% granule	2.0 lbs.	13.4 lbs.
		3.0 lbs.	20.1 lbs.
Lorox	50% W.P.	1.0 lb.	2.0 lbs.
		2.0 lbs.	4.0 lbs.
Lorox L	4 lbs/gal.	1.0 lb.	1.0 qt.
		2.0 lbs.	2.0 qts.
Princep 4L	4 lbs/gal.	2.0 lbs.	2.0 qts.
		3.0 lbs.	3.0 qts.
Princep 80W	80% W.P.	2.0 lbs.	2.5 lbs.
		3.0 lbs.	3.75 lbs.
Prowl	4 lbs/gal.	1.5 lbs.	1.5 qts.
		2.0 lbs.	2.0 qts.
Ramrod	4 lbs/gal.	4.0 lbs.	4.0 qts.
		6.0 lbs.	6.0 qts.
Roundup	4 lbs/gal.	1.0 lb.	1.0 qt.
		2.0 lbs.	2.0 qts.
Sutan$^+$ 6.7E	6.7 lbs/gal.	3.0 lbs.	3.5 pt.
		4.0 lbs.	4.7 pt.

■ Issued in furtherance of Cooperative Extension Work Acts of May 8 and June 30, 1914 in cooperation with the United States Department of Agriculture. Leonard C. Douglas, Director, Cooperative Extension Service, University of Missouri and Lincoln University, Columbia, Missouri 65211. ■ An equal opportunity institution.