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1980 Recommendations for Chemical Weed Control in Corn

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Federal regulations on the use of herbicides change frequently, so it is important to stay informed on the status of label registration. Based on available information, recommendations in this guide conform to laws and regulations at the time of writing.

Read and understand the label on herbicides you plan to use. Rates lower than indicated on the label are now legal to use.

About Recommendations

Recommendations in this guide are based on research and comparative performance over a period of years. However, herbicide performance depends on many factors which cannot be controlled or foretold. (See UMC Guide 4903, "Factors Affecting Herbicide Performance.") For this reason, results may vary widely from those normally expected. *These recommendations do not and cannot imply satisfactory performance in all cases.* An element of risk is involved in the use of any herbicide.

Because economic situations vary widely from time to time, cost was not a factor in making recommendations. You should check on the cost of alternative weed control treatments and compare the costs with expected performance for your specific situation.

Comparative performances, with emphasis on weed control and crop tolerance, are major factors in herbicide evaluation. Because no herbicide treatment is superior to others in all circumstances, no effort has been made to list treatments in this guide in any order of preference.

About Application

Because the concentration of herbicides in commercial products may vary, herbicide rates are given on the basis of active ingredient (unless otherwise indicated) per surface acre that will actually be treated. Treated acres will be less than acres of crop in the field if the herbicide is applied in a band.

The label on the container gives the amount of active ingredient in the commercial product. The amount of commercial product to use is easy to calculate when you know the active ingredient content of the commercial product. Simply divide the pounds of active ingredient needed by pounds per gallon (for liquids) or percent active ingredient expressed as a decimal (for dry materials). **RATES INCLUDED ON THE LABEL TAKE PRECEDENCE OVER RATES GIVEN IN THIS GUIDE!**

If a label says a herbicide can be applied in liquid fertilizer, determine the compatibility of the herbicide and the fertilizer by preparing a mixture in a small transparent container. The herbicide, fertilizer and water, if any, should be used in the same proportion as they will be used in the spray tank.

Since batches of fertilizer vary, use a sample of the same batch of fertilizer to be used for the field application. Stir the mixture and allow it to stand for about an hour. Any large particles that tend to settle to the bottom or float to the top indicate that the ingredients are not compatible and you may have difficulty applying the mixture. Sometimes, spraying a mixture with some particles in it is possible if vigorous agitation is applied.

Incorporating in Soil Before Planting

Some herbicides should be incorporated into the soil to prevent their loss from the surface. Others may be incorporated in the soil to provide for a more convenient time of application or to improve their performance, especially when application is followed by a lack of sufficient rainfall for optimum activity of the herbicide. Incorporating some herbicides may reduce their performance.

Atrazine (Numerous Brands and Formulations): If favorable rainfall occurs, atrazine is more effective as a surface application than as an incorporated one. If rainfall is light or delayed after application, incorporation is beneficial. Rates to use are the same as those given under "Pre-emergence Treatments." Incorporate shallowly. Do not apply more than two weeks before planting. See "Pre-emergence Treatments" for further discussion on the use of atrazine.

Metolachlor (Dual 6-E or 8-E): Primarily a grass herbicide, this product is for corn, grown for grain only. It can be applied preplant, incorporated, or as a pre-emergent. See "Pre-emergence Treatments" for rates to use. Do not graze or feed livestock or use for silage.

[Metolachlor (Dual) + Atrazine (Aatrex)] (Bicep): It is designed to control both grass and broadleaved weeds. Bicep is a mixture containing 2½ lbs. Metolachlor (Dual) + 2 lbs. atrazine per gallon. Bicep can be applied preplant or pre-emergence. Do not graze or feed forage from treated fields to livestock or use for silage.

Butylate (Sutan +): Sutan + is a formulation of butylate which contains a chemical to help protect the corn from injury from the herbicide. The protectant has been quite effective in research observation. Butylate gives good control of most annual grasses. It is slightly less consistent for shattercane

and johnsongrass seedling control than EPTC. It is partially effective for nut sedge control.

Rates of active ingredient per acre are 3 lbs./A on sandy (light) soils or 4 lbs./A on sandy loam (medium) to clay loam (heavy) soils.

Incorporate butylate with a power-driven rotary cultivator set 2-3 ins. deep or a disk operated at 4-6 mph and set to cut 4-6 ins. deep. There is some benefit from cross disking. The second disking should be done in a different direction and no deeper than the first. Follow disking with a spiked-tooth harrow or other leveling device.

For control of johnsongrass seedlings and nut sedge and for suppression of rhizomatous johnsongrass, use 4 lbs./A on soils coarser than silt loam and 6 lbs./A on silt loam, clay loam, and clay soils. To suppress johnsongrass from rhizomes, plow and till the soil before application to break the rhizomes into small pieces, incorporate the herbicide thoroughly, and supplement the treatment with cultivation.

If it is practical, apply and incorporate butylate in the same operation. If not, incorporate the herbicide immediately after application to avoid loss from the soil surface. A moist soil surface, high temperature, and wind increase the rate of loss of the herbicide. Do not apply more than two weeks before planting.

Do not use butylate on corn seed stocks.

Very shallow cultivation may aid in weed control.

Butylate (without the protectant) is also available as a granule containing 10% active ingredient.

Butylate (Sutan +) plus Atrazine: This combination gives good control of most annual grasses and broadleaved weeds. It should be incorporated in the same manner as described for butylate alone (above). Use 1 lb./A atrazine on soils up to 5% organic matter or 2 lbs./A on soils with more than 5% organic matter. The atrazine may be tank-mixed with the butylate and incorporated, or it can be applied on the surface of the soil following incorporation of the butylate.

Do not use on corn grown for seed stocks.

Very shallow cultivation may aid in weed control.

A butylate + atrazine combination (without a protectant) is available as a granule with 18% butylate plus 6% atrazine.

Cyanazine (Bladex) + Butylate (Sutan +): The cyanazine may be tank-mixed with the butylate and incorporated, or it can be applied on the surface of the soil following incorporation of the butylate. Apply 0.8-2 lbs./A cyanazine plus 3.4-4.4 lbs./A butylate, depending on soil type. Follow all instructions and precautions on the labels of both herbicides.

EPTC (Eradicane): Eradicane is a formulation of EPTC, which contains a chemical to help protect the corn from injury from the herbicide. The protectant has been quite effective. This treatment normally gives good control of grass weeds and fair control of broadleaved weeds. It is especially effective for control of shattercane and johnsongrass seedlings. It provides partial control of johnsongrass originating from rhizomes. Thorough disking to cut rhizomes into small segments is essential.

Do not use on corn grown for seed stock.

Eradicane is not recommended for shatter cane control in Northwest Missouri (north of I-70 and west of I-29).

EPTC (Eradicane) + Atrazine: Tank-mix 4.75-7.3 pts. of Eradicane with 1.25-2 lbs. atrazine 80W or 2-3 pts. atrazine 4-L per acre. Use the higher rates on soils with more than 5% organic matter.

EPTC (Eradicane) + Bladex: Tank-mix Eradicane (same rates as with atrazine, above) with 2-2.5 lbs. Bladex 80W or 3-4 pts. Bladex 4-L per acre. Refer to Bladex label for rates based on soil type.

Metolachlor (Dual) + Aatrex: Dual in combination with Aatrex provides a broad spectrum of annual weed control.

Dual is effective in controlling most annual grasses. Incorporate at a shallow depth.

soil	Dual + Aatrex	
	less than 3% organic matter	more than 3% organic matter
sandy loam	1½ pts. + 1.25 lbs.	2 pts. + 1.5 lbs.
silt loam	2 pts. + 1.5 lbs.	2½ pts. + 2 lbs.
clay loam	2½ pts. + 2 lbs.	3 pts. + 2.25 lbs.

Do not use on sweetcorn or popcorn. Do not graze or feed forage or fodder to livestock or use for silage.

Simazine (Princep 80W): Rates for incorporation are the same as for surface application. Incorporate shallowly. Best results generally are obtained when herbicide is applied within 2 weeks before planting, but applications can be made up to 4 weeks before planting.

Pre-emergence (Surface) Treatments

Alachlor (Lasso): This herbicide is highly effective in controlling annual grasses and does an acceptable job on several broadleaved weeds. Alachlor is more persistent in most Missouri soils than propachlor, 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 broadleaved weeds. However, propachlor usually gives better weed control on heavy soils.

Lasso contains 4 lbs./gal. active ingredient. Rates:

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	3
heavy: silty clay loam through clay	3	3.5

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

For fields with significant infestations of broadleaved weeds, we recommend alachlor be used in combination with a herbicide that is effective on broadleaved 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 compared 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 broadleaved weeds than alachlor alone. This treatment, with water as a carrier, can be applied anytime after the crop is planted until the corn is 5 inches tall or before the weeds are beyond the 2-leaf stage—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 2-leaf stage. Rates:

been a significant problem with this combination. Bladex applications normally can be followed by fall-sown grains or other crops without residue injury. Rates:

	lbs./A active ingredient Alachlor + Cyanazine	
	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. Rates:

soils	Pounds per acre active ingredient		
	1-2% O.M.	3-4% O.M.	over 4% O.M.
loamy sand	.8-1.0 + 0.5-0.7	1.3-1.6 + 0.8-1.0	1.9 + 1.2
sandy loam	1.0-1.3 + 0.7-0.8	1.6-1.9 + 1.0-1.2	2.1 + 1.3
loam-silt	1.3-1.6 + 0.8-1.0	1.9-2.1 + 1.1-1.3	2.4 + 1.5
silty clay loam	1.6-1.9 + 1.0-1.1	2.1-2.4 + 1.3-1.5	2.7 + 1.7
silty clay	1.9-2.1 + 1.1-1.3	2.4-2.7 + 1.5-1.7	2.7 + 1.7

Linuron (Lorox) + Atrazine: The objectives of combining these herbicides are to reduce the amount of atrazine carryover in the soil and to control fall panicum and crabgrass. Although it is generally safe on the crop, some injury may occur. Rates:

soil	lbs./A active ingredient	
	1-2% organic matter Linuron + Atrazine	2-5% organic matter Linuron + Atrazine
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

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 lack of dependability in controlling weeds. Do not graze treated area or feed treated forage to livestock for 21 days after application.

Metolachlor (Dual 6E or 8E): Dual is a selective herbicide that controls most annual grasses and certain broadleaved weeds. Rates Dual 6E or 8E:

soil	lbs./A active ingredient	
	less than 3% organic matter lbs./Acre	more than 3% organic matter lbs./Acre
sandy loam	2.0	2.0
silt loam	2.0-2.5	2.0-2.5
clay loam	2.0-2.5	2.5-3.0

For Dual applied alone, the amended label allows rotation to small grains 4½ months after treatment or to corn, soybeans, root crops, or small grains the following spring.

Metolachlor (Dual) + Aatrex: This tank mix can be applied as a pre-emergence application. For rates, see table in preplant incorporated section. Application rates are the same for both treatments. Bicep is a package mix of the above products that includes 2 lbs. atrazine and 2.5 lbs. Dual per gallon.

Pendimethalin (Prowl): This herbicide provides effective control of annual grasses and several broadleaf weeds. Corn seed should be planted 1½ inches or deeper below the soil surface. Do not preplant or incorporate Prowl.

soil	1.5-3% organic matter	more than 3% organic matter
sandy loam	1.5 lb.	1.5 lb.
silt loam	1.5 lb.	1.5-2.0 lb.
clay loam	1.5-2.0 lb.	2.0 lb.

Do not use on soils with less than 1.5% organic matter. Do not use on peat or muck soils.

Pendimethalin (Prowl) + Atrazine: This combination provides effective broad spectrum annual weed control. It generally gives better control of annual grasses than atrazine alone and better control of several broadleaves than Prowl alone. Prowl will assist atrazine in the suppression of velvet leaf. Limitations are the same as for Prowl used alone. Rates:

soil	1.5-3% organic matter Prowl + Atrazine	more than 3% organic matter Prowl + Atrazine
sandy loam	1 lb. + 1.25 lbs.	1.5 lbs. + 1.25 lbs.
silt loam	1.5 lbs. + 1.5 lbs.	1.5 lbs. + 2.0 lbs.
clay loam	1.5 lbs. + 2.0 lbs.	1.5 lbs. + 2.0 lbs.

Pendimethalin (Prowl) + Bladex: Rates:

soil	1.5-3% organic matter Prowl + Bladex	more than 3% organic matter Prowl + Bladex
sandy loam	1 lb. + 2 lbs.	1.5 lbs. + 2.5 lbs.
silt loam	1.5 lbs. + 2.5 lbs.	1.5 lbs. + 3.0 lbs.
clay loam	1.5 lbs. + 3.0 lbs.	1.5 lbs. + 3.0 lbs.

This tank mixture generally controls most annual grasses and broadleaf weeds effectively. Limitations are the same as for Prowl used alone.

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 broadleaved 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.

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

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

Propachlor (Ramrod) + Atrazine: This combination is best adapted for use on soils with more than 3% organic matter and is effective in controlling most annual grasses and small-seeded broadleaved weeds.

It is available as a packaged mix containing 48.1% propachlor + 20.9% atrazine. This is approximately a 2.3:1 ratio. A ratio of approximately 3:1 is more nearly optimum for most Missouri conditions, but the registered tank mix label does not provide for a ratio this wide.

soil	active ingredient (lbs.) Ramrod + Atrazine	commercial (lbs.)*
Package mix: Propachlor (Ramrod + Atrazine)		
less than 3% organic matter		
light sandy	2.41 + 1.05	5
silt loams	2.89 + 1.25	6
heavy clay	2.89 + 1.25 to 3.37 + 1.46	6-7
more than 3% organic matter		
light sandy	2.88 + 1.25	6
silt loams	3.37 + 1.46	7
heavy clay	3.37 + 1.46 to 3.85 + 1.67	7-8

Tank mix:

less than 3% organic matter		
light sandy	2.47 + 1.04	3.8 + 1.3
silt loams	3.38 + 1.44	5.2 + 1.8
heavy clay	3.38-3.9 + 1.44-1.6	5.2-6 + 1.8-2
more than 3% organic matter		
light sandy	2.93 + 1.2	4.5 + 1.5
silt loams	3.38 + 1.44	5.2 + 1.8
heavy clay	3.38-3.9 + 1.44-1.6	5.2-6 + 1.8-2

*"Commercial" refers to the packaged product. Ramrod is 65% wettable powder; Aatrex is an 80% wettable powder.

Propachlor + Atrazine Granules (aatram 20G). This granular combination contains about 13.34% propachlor plus 6.66% atrazine, a 2:1 ratio. A 3:1 ratio would be better for most Missouri conditions. See discussion of propachlor + atrazine wettable powder combinations. Rates:

soil	lbs./A active ingredient		lbs./A of 20% granules
	propachlor	+ atrazine	
light soils: sands, loamy sands and sandy loams	2	1	15
medium to heavy soils	3-4	1.5-2	22.5-30

Where a range of rates is given, use the higher rate on soils relatively high in organic matter.

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.

soil	lbs./A active ingredient
coarse-textured soil: sand, silt and loam low in organic matter	2
medium-textured soil: soil containing moderate amounts of clay and organic matter	2.4
fine-textured soil: loam high in organic matter and clay	3
clay high in organic matter	4

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

The hazard of injury to the crop following simazine-treated corn is reduced by (1) application of the simazine early in the season, (2) at least moderately adequate rainfall in the year the corn is grown, (3) warm temperatures, (4) tillage of the soil, and (5) somewhat delayed planting of the crop following the simazine-treated corn.

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 lbs./A (1-2 qts. of a 4 lbs./gal. formulation) pre-emergence (except in cases limited by the label). The 2 lb. rate should be used on heavy soils where serious giant foxtail infestations are expected. 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 grass and broadleaved weeds for 3 or 4 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 ins. 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 by 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% of a suitable emulsifier. Use 2 lbs. active ingredient of atrazine and 1 gal. phytobland oil in 20-40 gals. of water. Do not use on inbred lines or breeding stock of corn. Do not add other pesticides or fertilizers to this mixture. Do not make more than one application per season. See the section on the atrazine pre-emergence treatment for additional precautions.

Atrazine + Alachlor (Lasso): Apply as an early post-emergence up to 2-leaf stage of weed growth and before corn exceeds 5 ins. in height. Use 1.2 lbs. atrazine in combination with 1.5-2.5 lbs. alachlor. This is for use in field and silage corn only. Check label for additional limitations.

Cyanazine (Bladex): This treatment generally gives good control of annual weeds with slight risk of injury to the corn. Use 1.2-2 lbs./A of active ingredient. Do not use on sand or loamy sand containing less than 1% organic matter. Use the lower rate when weeds are under drought stress. The risk of corn injury is greater when weather conditions are such that

	lbs./A active ingredient	
	less than 3% organic matter	more than 3% organic matter
	Alachlor + Atrazine	Alachlor + Atrazine
light sandy soils	1.5 + 1	1.5 + 1
silt loam soils	1.75 + 1-1.2	2 + 1.2 -1.4
heavy clay soils	2.25 + 1.2-1.6	2.5 + 1.2-1.6

Plant only corn, sorghum, or soybeans the year after this treatment. 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.

Cyanazine (Bladex) + Propachlor (Bexton 4-L): This combination controls a broad array of annual grass and broadleaved weeds. Use 4.5 qts. Bexton 4-L in combination with 2 to 2.25 lbs. Bladex 80W on light soils; or with 2.5 lbs. Bladex on medium soils; or with 2.8 lbs. Bladex 80W on heavy soils. Bladex 80W rates should be adjusted with soil organic matter content. Check label for adjusted rates.

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.

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. In the following rate chart, use the lower of each rate range given for the maximum organic matter given for each column. The ratio of these herbicides as cleared for the label is not considered ideal for many Missouri conditions. This is a limitation of this combination in some areas. Rates:

soil	lbs./A active ingredient Linuron + Alachlor	
	1-3% organic matter	3-6% organic matter
	sandy loam	1/3-5/8 + 3/4-1
silt loam	1/2-5/6 + 1-1 1/2	5/6-1 1/4 + 1 1/2-2
clay loam	5/8-1 + 1 1/2-2	1-1 1/2 + 2-2 1/2

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. Rates:

soils	lbs./A active ingredient
coarse-textured soils: sands, loamy sands and sandy loams	2
medium-textured soils: 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 5-10 days after application, use a rotary hoe or shallowly cultivate 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 lbs./A active ingredient.

The hazard of injury from atrazine residues in the soil is reduced by (1) early application of the atrazine, (2) reasonably adequate rainfall well distributed throughout the season, (3) a warm to hot summer, (4) any tillage of the soil and (5) not too

early planting of the following crop. 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 or the next year after atrazine-treated corn.

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

Do not apply more than 4 lbs./A of atrazine to corn in any one year. Following harvest of a treated crop, plow (moldboard or disk) 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): This tank mixture will control fall panicum better than atrazine alone. Rates:

soils	lbs./A active ingredient Atrazine + Simazine
coarse-textured soils: sands, loamy sands and sandy loams,	1 + 1
medium-textured soils: silt and clay loams low in organic matter	1.2 + 1.2
fine-textured soils: 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. See description of simazine below.

Cyanazine (Bladex): This is similar to atrazine in performance. It presents a much less serious 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% wettable powder, a 4 lbs./gal water suspension and a 15% granule. Rates:

soils	lbs./A active ingredient cyanazine for organic matter content of:					
	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	1.6	2	2.4	2.8	3.2	3.6
silt						
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

Rotary hoe or cultivate shallowly if rainfall or sprinkle irrigation has not occurred within about 10 days after application. Enough moisture is needed to wet the soil 1 1/2-2 ins. deep or to make it too wet to cultivate. At least a half-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 grass and several annual broadleaved weeds effectively. Among the weeds for which control is sometimes marginal are annual morning-glory, cocklebur, and velvetleaf. Carry-over soil residue has not

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 broadleaved weeds in corn. It is superior to 2,4-D on smartweed. Use 1/8-1/4 lb./A active ingredient. Use the higher rate on larger weeds or the less susceptible weeds.

Do not apply to sweet corn or popcorn. Do not apply to corn more than 3 ft. 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 broadleaved plants. Exercise extreme care to prevent drift. Observe precautions on the label.

Dicamba (Banvel) + 2,4-D Amine: This combination controls more species of broadleaved weeds than either herbicide alone. Use dicamba at the same rates indicated for use alone plus 1/4-1/2 lb./A acid equivalent of 2,4-D amine. On corn 8 ins. or more, use drop nozzles to direct spray toward base of plants. Observe all limitations of use and precautions in this guide and on the labels of both herbicides.

2,4-D Amine: Use 1/4-1/2 lb./A of acid equivalent to control most annual broadleaved 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 1/4 lb./A should be applied.

This treatment is more effective on small weeds. 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" high. Adjust the nozzles so the spray fans cross about 2 1/2 ins. above the tops of the weeds.

Linuron (Lorox) + Surfactant Directed: This treatment is usually effective for control of many annual grass and broadleaved weeds. There must be a height differential between the corn and the weeds. Corn should be at least 15 ins. high. 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 5/8-1 1/2 lbs./A active ingredient linuron plus 1/2% by volume of Surfactant WK (1/2 gal./100 gals.) in the spray mixture. Use the lower rate when weeds are not more than 2 ins. tall and on light soils low in organic matter; use the higher rate for weeds up to 5 ins. 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 qts. Roundup in 25 gals. water. Thoroughly cover weeds to be treated. Crop plants in treated area will also be killed.

Treatments in Experimental Stage

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

Chloramben (Amiben) + Atrazine: This tank-mix combination has performed reasonably well in controlling annual weeds. Suggested rates:

soil	lbs./A active ingredient Chloramben + Atrazine
medium	1 + 1
heavy	1 to 1.5 + 1 to 1.5

Do not use on light soils such as sandy loams.

Dicamba (Banvel) + Alachlor (Lasso): Suggested rates:

soil	lbs./A active ingredient Dicamba + Alachlor
silt loam	.24-.5 + 1.5-2
medium clay	.5 + 1.5-2
heavy loam and heavy clay	.5 + 2-2.5

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

Ametryne (Evik 80W) Directed: This treatment is suggested for approximately the same problems as the linuron postemergence directed treatment. We do not have sufficient information about this treatment to evaluate its dependability for weed control or its safety on the corn. Follow label directions.