MSU Extension Publication Archive

Archive copy of publication, do not use for current recommendations. Up-to-date information about many topics can be obtained from your local Extension office.

Control of Annual Broadleaf Weeds in Corn Michigan State University Extension Service IPM Fred Salzman, Jim Kells, Department of Crop and Soil Sciences Issued December 1992 4 pages

The PDF file was provided courtesy of the Michigan State University Library

Scroll down to view the publication.



Extension Bulletin E-2259

Revised December 1992

Control of Annual Broadleaf Weeds in Corn

Fred Salzman and Jim Kells, Department of Crop and Soil Sciences, Michigan State University

Biology

Annual broadleaf weeds complete their life cycle in one year by germinating, flowering, producing seed, and dying. Reproduction is by seed only; there are no overwintering vegetative parts. Summer annuals complete their life cycle from spring to fall, while winter annuals complete their life cycle from fall to late spring. Most annual broadleaf weeds in Michigan are summer annuals.

Cultural Control

Cultural control utilizes crop management practices that allow a desirable crop to outcompete weeds. Two common cultural control methods are the use of a smother crop and crop rotation. Smother crops compete with weeds for light, nutrients, and moisture. Common smother crops include forage sorghum, cereals (barley, oats, wheat, or rye), and legumes (alfalfa or clover), although any highly competitive crop that is well adapted to an area may be suitable for use as a smother crop.

Crop rotation prevents the buildup of weeds common to a specific crop. An ideal crop rotation includes crops that have vastly different growth habits and planting conditions compared to other crops in the rotation and to predominant problem weeds. Smother crops can be included in the crop rotation.

Mechanical Control

Tillage can be used for both ground preparation and weed control. Tillage equipment can be subdivided into two categories, primary and secondary. Primary tillage tools include moldboard plows, chisel plows, and heavy disks. Secondary tillage tools include various types of harrows, field cultivators, row crop cultivators, finishing disks, and rotary hoes. Rotary hoes are used to remove shallow-rooted weeds prior to or shortly after crop emergence. Row crop cultivators are used to remove weeds between crop rows.

Tillage can influence weed species communities. For example, grasses and perennial weeds are more predominant in reduced tillage systems.

Shallow cultivation may be used to enhance herbicide applications. Cultivate as shallow as possible to prevent bringing weed seeds to the soil surface. Do not cultivate fields receiving preemergence herbicide applications for at least 2 weeks following application; however, rotary hoe the field if dry weather persists for 7 to 10 days following a preemergence application. Delay cultivation after postemergence herbicide applications for at least 7 to 10 days to allow time for the herbicide to translocate throughout the sprayed weeds.

Chemical Control

Chemical control of annual weeds can be achieved with herbicides applied preplant incorporated, preemergence, or postemergence. Consider the energy and environmental implications when choosing a control method.

Preplant incorporated herbicides are mechanically incorporated into the soil prior to planting. Incorporation of some herbicides is necessary to prevent losses from volatilization or photodecomposition.

Preemergence herbicides are applied to the soil surface after the crop has been planted but before the crop seedlings emerge through the soil.

Postemergence herbicides are applied after crop emergence. These herbicides either burn off the aboveground portion of the weeds or they may be translocated throughout the weed and kill the growing points. Most postemergence herbicides are applied broadcast. However, certain herbicides can be applied with directed equipment such as drop nozzles when the crop or weeds are too large for broadcast applications.

BROADLEAF WEED IDENTIFICATION GUIDE



Broadleaf Weed Response to Herbicides in Corn

		Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black)	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard
Herbicide	Rate/A ^a	Control ^b								
Preplant Incorporated			_		_	_	_	_		
Atrazine 4L	1 qt	F	F	E	E	G	E	G	F	E
Bladex 4L	1 3/4 qt	F	P	E	G	F	E	G	P	G
Dual	1 qt	N	N	P	F	G	P	Р -	N	P
Eradicane	4 3/4 pt	Р	P _	F	P _	F	F	+	+	F
Eradicane Extra5 pt	Р	Р	F	P	F	F	F	F	+	-
Sutan Plus	4 3/4 pt	Р	P	Р	N	Ρ	Р	Р	+	Р
Lasso/Arena/Micro-Tech	2 1/2 qt	N	N	P	G	G	Р -	P	N	P
Princep 4L	1 1/2 pt	G	F	E	F	F	E	G	F	F
Preemergence										
Atrazine 4L	1 qt	F	F	Ε	Ε	G	Е	G	F	Е
Bladex 4L	1 3/4 qt	F	Ρ	Е	G	F	Е	G	Ρ	G
Dual	1 qt	Ν	Ν	Ρ	F	G	Ρ	Ρ	Ν	Ρ
Lasso/Arena/Micro-Tech	2 qt	Ν	Ν	Ρ	G	G	Ρ	Ρ	N	Ρ
Princep 4L	1 qt	F	F	Ε	Ε	Е	Е	G	F	Е
Prowl 3.3 EC	1.8 qt	Ν	Ν	G	Р	F	Ρ	Ρ	F	Ρ
Ramrod	5 qt	Ν	Ρ	Ρ	Ν	F	Ρ	Ρ	Ρ	Ρ
Postemergence										
Accent +	2/3 oz +									
COC ^c or NIS ^c	1% or 1/4%	F	G	F	Р	Е	Р	G	F	-
Atrazine 4L + COC°	1 qt + 1 qt	G	G	Е	G	Е	Е	G	G	Е
Banvel	1 pt	G	G	G	G	G	G	Ε	G	G
Banvel + Atrazine 4L	1 pt + 1 qt	G	G	G	G	G	G	Е	G	G
Basagran + COC°	1 qt + 1 qt	Е	G	F	Р	Ρ	F	G	G	Е
Basagran + Atrazine 4L	.72 qt + .72 qt	Е	G	G	F	G	G	G	G	Е
Beacon	0.76 oz +									
COC ^c or NIS ^c	1% or 1/4%	Ε	G	F	G	Е	G	G	G	F
Bladex 90DF	2.2 lb	F	Ρ	G	G	F	G	G	F	G
Buctril	1 1/2 pt	G	G	Е	G	F	G	G	G	F
Buctril + Atrazine 4L	.75 qt + .75 qt	G	G	Е	G	G	G	G	G	G
Stinger	1/2 pt	Ε	G	Ρ	Ρ	Ρ	G	F	Ρ	Ρ
2,4-D amine	1 pt	G	F	G	G	G	G	Ρ	F	G
2,4-D ester	1 pt	G	F	G	G	G	G	Ρ	G	G
Postamarganca Directed										
Evik 80W + NIS ^c	2 lb + 1/2%	G	G	G	G	G	G	G	G	G
Gramoxone Extra + NIS ^o	0.8 pt + 1/4%	Ē	Ē	Ē	Ē	Ē	Ē	F	Ē	F
Linex/Lorox 50DF + NIS°	3 lb + 1/2%	F	F	G	G	G	G	G	G	G
		•	-	-	-	-	-	-	-	-

* Rates based on medium texture soil with 3% organic matter. Refer to Extension Bulletin E-434,
*Weed Control Guide for Field Crops," for more specific weed control recommendations.
* N = none; P = poor; F = fair; G = good; E = excellent; - = not enough information
* COC = crop oil concentrate; NIS = nonionic surfactant

Corn Heights or Growth Stages and Maximum Weed Heights for Postemergence Applications

 $\overline{}$

Herbicide Maximum Height* Broadcast NR 3" NR NR 4" NR 4" NR 24" Accent + COC ^b or NIS ^b NR 3" NR NR 4" 8" 8" or 5 lf 10" or 7" 8" - 20" 8" or 5 lf 12" 10" or 8" 6" 6" 6" 6" or 7" NR 1 1/2" <t< th=""><th></th><th>Cocklebur</th><th>Jimsonweed</th><th>Lambsquarters</th><th>Nightshade (black</th><th>Pigweed (redroot)</th><th>Ragweed</th><th>Smartweed</th><th>Velvetleaf</th><th>Wild mustard</th><th>Corn</th></t<>		Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard	Corn
Broadcast Max.Height Accent + COC ^b or NIS ^b NR 3" NR NR 4" NR 4" NR NR 24" Atrazine + COC ^b 4" 4" 6" 4" 6" 4" 4" 4" 4" 2" 8" or 5 lf Banvel 4" 4" 4" 4" 4" 6" 6" 6" 6" 8" or 5 lf Basagran + Atrazine 6" 6" 6" 6" 6" 6" 8" or 5 lf Basagran + Atrazine 8" 8" NR NR 12" 10" 8" or 5 lf Basagran + COC ^b 10" 10" NR NR 11/2" 10" 5" 8" - Basagran + COC ^b 10" 10" NR NR 11/2" 10" 5" 8" - - Basagran + COC ^b 10" 10" NR NR NR 11/2" 11/2" NR 11/2" NR 11/2" 11/2" 4 lf - Buctril Atrazine 12"	Herbicide	Maximum Height ^a									
Accent + COC^{b} or NIS ^b NR3"NRNR4"NR4"NRNR24"Atrazine + COC^{b} 4"4"6"4"6"4"4"4"4"12"Banvel4"4"4"4"4"4"4"4"4"4"8" or 5 lfBanvel + Atrazine6"6"6"6"6"6"6"6"6"8" or 5 lfBasagran + Atrazine8"8"8"NR6"5"12"10"8"12"Basagran + COC ^b 10"10"NRNRNR3"10"5"8"-Beacon + COC ^b or NIS ^b 4"4"NR4"9"4"4"NR20"Bladex 90DFNRNR1 1/2"1 1/2"NR1 1/2"1 1/2"4 lfBuctril10"6"8"6"6"6"6"4"12"Buctril + Atrazine12"6"12"6"6"6"6"6"4"12"Stinger5 lf5 lfNRNRNR5 lfNRNR24"24"2,4-D armine4"NR4"4"4"4"NR24"2"Evik3"3"3"3"3"3"3"3"10"Linex/Lorox3"3"3"3"3"3"3"3"3"3"10"Linex/Lorox3	Broadcast					,					Max.Height
Atrazine + COCb 4" 6" </td <td>Accent + COC^b or NIS^b</td> <td>NR</td> <td>3"</td> <td>NR</td> <td>NR</td> <td>4"</td> <td>NR</td> <td>4"</td> <td>NR</td> <td>NR</td> <td>24"</td>	Accent + COC ^b or NIS ^b	NR	3"	NR	NR	4"	NR	4"	NR	NR	24"
Banvel 4" 4" 4" 4" 4" 6" 4" 2" 8" or 5 lf Banvel + Atrazine 6" 6" 6" 6" 6" 6" 6" 6" 6" 8" 6" 6" 8" 6" 6" 8" or 5 lf Basagran + Atrazine 8" 8" 8" NR 6" 5" 12" 10" 8" 12" Basagran + COCb 10" 10" NR NR 3" 10" 5" 8" - Beacon + COCb or NISb 4" 4" NR 4" 9" 4" 4" NR 20" Bladex 90DF NR NR 1 1/2" 1 1/2" NR 1 1/2" 4 lf Buctril 10" 6" 8" 6" 6" 5" NR * Buctril + Atrazine 12" 6" 12" 6" 6" 8" 6" 4" 12" Stinger 5 lf 5 lf NR NR NR NR 2" 4" 8" <tr< td=""><td>Atrazine + COC^b</td><td>4"</td><td>4"</td><td>6"</td><td>4"</td><td>6"</td><td>4"</td><td>4"</td><td>4"</td><td>4"</td><td>12"</td></tr<>	Atrazine + COC ^b	4"	4"	6"	4"	6"	4"	4"	4"	4"	12"
Banvel + Atrazine 6" 10" 10" 10" 10" 10" 10" 11" 10" 11" </td <td>Banvel</td> <td>4"</td> <td>4"</td> <td>4"</td> <td>4"</td> <td>4"</td> <td>4"</td> <td>6"</td> <td>4"</td> <td>2"</td> <td>8" or 5 lf</td>	Banvel	4"	4"	4"	4"	4"	4"	6"	4"	2"	8" or 5 lf
Basagran + Atrazine 8" 8" NR 6" 5" 12" 10" 8" 12" Basagran + COC ^b 10" 10" NR NR NR 3" 10" 5" 8" - Beacon + COC ^b or NIS ^b 4" 4" NR 4" 4" 9" 4" 4" NR 20" Bladex 90DF NR NR 1 1/2" 1 1/2" NR 1 1/2" NR 1 1/2" 4 If Buctril 10" 6" 8" 6" NR 6" 5" NR 1 1/2" 4 If Buctril + Atrazine 12" 6" 6" 6" 6" 4" 12" 4 If Stinger 5 If 5 If NR NR NR 5 If NR NR 24" 2,4-D amine 4" NR 4" 4" 4" NR 3" 3" 12" Evik 3" 3" 3" 3" 3" 3" 3" 3" 3" 12" Interview	Banvel + Atrazine	6"	6"	6"	6"	6"	6"	8"	6"	6"	8" or 5 If
Basagran + COC ^b 10" 10" NR NR NR 3" 10" 5" 8" - Beacon + COC ^b or NIS ^b 4" 4" NR 4" 4" 9" 4" 4" NR 20" Bladex 90DF NR NR 1 1/2" 1 1/2" NR 1 1/2" NR 1 1/2" 4 lf Buctril 10" 6" 8" 6" NR 6" 5" NR * Buctril + Atrazine 12" 6" 12" 6" 6" 6" 6" 4" 12" Stinger 5 lf 5 lf NR NR NR 5 lf NR NR 24" 2,4-D amine 4" NR 4" 4" 4" NR 2" 4" 8" Directed Evik 3" 3" 3" 3" 3" 3" 3" 3" 3" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 3"	Basagran + Atrazine	8"	8"	8"	NR	6"	5"	12"	10"	8"	12"
Beacon + COC ^b or NIS ^b 4" 4" NR 4" 9" 4" 4" NR 20" Bladex 90DF NR NR 1 1/2" 1 1/2" NR 1 1/2" NR 1 1/2" 1 1/2" NR 1 1/2" 4 If Buctril 10" 6" 8" 6" NR 6" 6" 5" NR * Buctril + Atrazine 12" 6" 12" 6" 6" 6" 6" 4" 12" Stinger 5 If 5 If NR NR NR 5 If NR NR 24" 2,4-D amine 4" NR 4" 4" NR 2" 4" 8" Directed Evik 3" 3" 3" 3" 3" 3" 3" 10" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 3" 3" 10" Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 3" 10"	Basagran + COC ^b	10"	10"	NR	NR	NR	3"	10"	5"	8"	-
Bladex 90DF NR NR 1 1/2" 1 1/2" NR 1 1/2" 1 1/2" NR 1 1/2" 4 If Buctril 10" 6" 8" 6" NR 6" 6" 5" NR * Buctril + Atrazine 12" 6" 12" 6" 6" 6" 6" 4" 12" Stinger 5 If 5 If NR NR NR 5 If NR NR 24" 2,4-D amine 4" NR 4" 4" NR 2" 4" 8" Directed Evik 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 1/2" 4 If Evik 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 3" 3" 3" 10" Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 3"<	Beacon + COC ^b or NIS ^b	4"	4"	NR	4"	4"	9"	4"	4"	NR	20"
Buctril 10" 6" 8" 6" NR 6" 5" NR * Buctril + Atrazine 12" 6" 12" 6" 6" 6" 8" 6" 4" 12" Stinger 5 lf 5 lf NR NR NR 5 lf NR NR 24" 2,4-D amine 4" NR 4" 4" 4" NR 2" 4" 8" Directed	Bladex 90DF	NR	NR	1 1/2"	1 1/2"	NR	1 1/2"	1 1/2"	NR	1 1/2"	4 lf
Buctril + Atrazine 12" 6" 12" 6" 6" 8" 6" 4" 12" Stinger 5 lf 5 lf 5 lf NR NR NR 5 lf NR NR 24" 2,4-D amine 4" NR 4" 4" 4" NR 2" 4" 8" Directed 5" 5" 3" 3" 3" 3" 3" 3" 3" 12" Evik 3" 3" 3" 3" 3" 3" 3" 3" 12" 4" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 10" Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 15"	Buctril	10"	6"	8"	6"	NR	6"	6"	5"	NR	*
Stinger 5 If 5 If NR NR NR 5 If NR NR NR 24" 2,4-D amine 4" NR 4" 4" 4" 4" NR 2" 4" 8" Directed Evik 3" 3" 3" 3" 3" 3" 3" 3" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 3" 3" 3" 10" Linex/Lorox 3" 10"	Buctril + Atrazine	12"	6"	12"	6"	6"	6"	8"	6"	4"	12"
2,4-D amine 4" NR 4" 4" 4" NR 2" 4" 8" Directed Since the second se	Stinger	5 lf	5 lf	NR	NR	NR	5 lf	NR	NR	NR	24"
Directed Min. Height Evik 3" 3" 3" 3" 3" 3" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 10" Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 15"	2,4-D amine	4"	NR	4"	4"	4"	4"	NR	2"	4"	8"
Evik 3" 3" 3" 3" 3" 3" 3" 3" 3" 3" 12" Gramoxone Extra 3" 3" 3" 3" 3" 3" 3" 3" 10" Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 15"	Directed										Min. Height
Gramoxone Extra 3" 3" 3" 3" 3" NR 3" 3" 10" Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 3" 3" 15"	Evik	3"	3"	3"	3"	3"	3"	3"	3"	3"	12"
Linex/Lorox 3" 3" 3" 3" 3" 3" 3" 3" 3" 15"	Gramoxone Extra	3"	3"	3"	3"	3"	3"	NR	3"	3"	10"
	Linex/Lorox	3"	3"	3"	3"	3"	3"	3"	3"	3"	15"

NR = not recommended; - = no restrictions on crop growth stage

ь COC=crop oil concentrate; NIS = nonionic surfactant

Before tassel emergence

The weed heights and growth stages listed in this table are estimates of the maximum size where consistent control is expected. The maximum height for effective control in any specific situation is dependent on environmental conditions including soil moisture, temperature, and relative humidity.

This bulletin was originally prepared with the support of the U.S. Department of Energy, Grant No. DE-FG0276CS60204. However, any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of DOE.

To protect yourself and others and the environment, always read the label before applying any pesticide.

This publication contains pesticide recommendations based on research and pesticide regulations. However, changes in pesticide regulations occur constantly. Some pesticides mentioned may no longer be available, and some uses may no longer be legal. If you have guestions about the legality and/or registration status for using pesticides, contact your county Cooperative Extension Service office.



MSU is an Affirmative-Action Equal Opportunity Institution. Cooperative Extension Service programs and materials are open to all without regard to race, color, national origin, sex, handicap, age or religion. It is sued in furtherance of Cooperative Extension work in agriculture and home economics, acts of May 8 and June 20, 1914, in cooperation with the U.S. Department of Agriculture. Gail L. Imig, director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824. This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by the Cooperative Extension Service or bias against those not mentioned. This bulletin becomes public property upon publication and may be reprinted verbatim as a separate or within another publication with credit

to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company. Produced by Outreach Communications and printed on recycled paper using vegetable-based inks.

