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Michigan State University Extension Service
Michigan Energy Conservation Program for Agriculture and Forestry

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MECP

Michigan Energy Conservation Program for Agriculture and Forestry

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CONTROL OF ANNUAL BROADLEAF WEEDS IN CORN

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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.

MECP is a cooperative effort of the:
Michigan Department of Agriculture - Michigan Soil Conservation Districts - USDA Soil Conservation Service
Michigan State University's Agricultural Experiment Station and Cooperative Extension Service

Broadleaf Weed Response to Herbicides in Corn

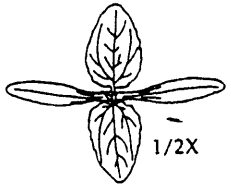
Herbicide	Rate/A[a]	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black)	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard
		Control[b]								
Preplant Incorporated										
Atrazine 4L	1 qt	F	F	E	E	G	E	G	F	E
Bladex 4L	1¾ qt	F	P	E	G	F	E	G	P	G
Dual	1 qt	N	N	P	F	G	P	P	N	P
Eradicane	4¾ pt	P	P	F	P	F	F	F	F	F
Eradicane Extra	5 pt	P	P	F	P	F	F	F	F	F
Sutan Plus	4¾ pt	P	P	P	N	P	P	P	F	P
Lasso	2½ qt	N	N	P	G	G	P	P	N	P
Princep 4L	1½ pt	G	F	E	E	E	E	G	F	E
Preemergence										
Atrazine 4L	1 qt	F	F	E	E	G	E	G	F	E
Bladex 4L	1¾ qt	F	P	E	G	F	E	G	P	G
Dual	1 qt	N	N	P	F	G	P	P	N	P
Lasso	2 qt	N	N	P	G	G	P	P	N	P
Princep 4L	1 qt	G	F	E	E	E	E	G	F	E
Prowl	1½ qt	N	N	G	P	F	P	P	F	P
Ramrod	5 qt	N	P	P	N	F	P	P	P	P
Postemergence										
Accent + COC[c] or NIS[c]	2/3 oz + 1% or ¼%	F	G	F	P	E	P	G	F	-
Atrazine 4L + COC[c]	1 qt + 1 qt	G	G	E	G	E	E	G	E	E
Banvel	1 pt	G	G	G	G	G	G	E	G	F
Basagran + COC[c]	1 qt + 1 qt	E	G	F	P	P	F	G	G	E
Beacon + COC[c] or NIS[c]	.76 oz + 1% or ¼%	E	G	F	G	E	G	G	G	-
Bladex 90DF	2.2 lb	F	P	E	G	F	E	G	F	G
Buctril	1½ pt	G	G	E	G	F	G	G	G	F
Stinger	½ pt	E	G	P	P	P	G	F	P	P
2,4-D amine	1 pt	F	F	G	G	G	G	P	F	G
2,4-D ester	1 pt	F	F	G	G	G	G	P	G	G
Postemergence Directed										
Evik	2 lb	G	G	G	G	G	G	G	G	G
Gramoxone Extra	0.8 pt	E	E	E	E	E	E	F	E	E
Linex/Lorox 50DF	3 lb	F	F	G	G	G	G	G	G	G

[a] Refer to Extension Bulletin E-434, **"Weed Control Guide for Field Crops,"** for more specific weed control recommendations

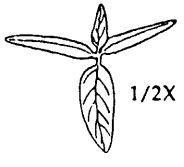
[b] N = none; P = poor; F = fair; G = good; E = excellent; - = not enough information

[c] COC = crop oil concentrate; NIS = nonionic surfactant

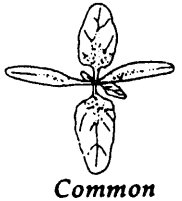
BROADLEAF WEED IDENTIFICATION GUIDE



Common Cocklebur

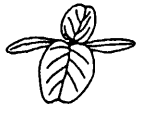


Jimsonweed

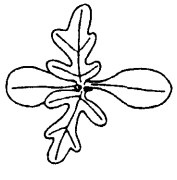


Common Lambsquarters

Eastern Black Nightshade

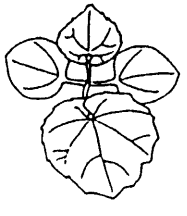


Smooth Pigweed or Redroot Pigweed

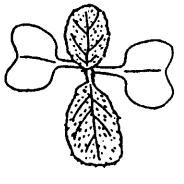


Common Ragweed

Pennsylvania Smartweed



Velvetleaf



Wild Mustard

Illustrations produced by Diane Anderson and William S. Curran, Vocational Agriculture Service, University of Illinois at Urbana-Champaign.

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

Herbicide	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black)	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard	Corn
	Height[a]									
Broadcast										
Accent + COC[b] or NIS[b]	NR	3"	NR	NR	4"	NR	4"	NR	NR	6 lf
Atrazine + COC[b]	4"	4"	6"	4"	6"	4"	4"	4"	4"	12"[c]
Banvel	4"	4"	4"	4"	4"	4"	6"	4"	2"	8" or 5 lf[c]
Basagran + COC[b]	10"	10"	NR	NR	NR	2"	10"	5"	8"	-
Beacon + COC[b] or NIS[b]	4"	4"	NR	4"	4"	9"	4"	4"	NR	20"[c]
Bladex 90DF	NR	NR	1½"	1½"	NR	1½"	1½"	NR	1½"	4 lf[c]
Buctril	8"	4"	6"	6"	NR	4"	4"	3"	NR	8 lf[c]
Stinger	5 lf	5 lf	NR	NR	NR	5 lf	NR	NR	NR	24"[c]
2,4-D amine	NR	NR	2"	2"	2"	2"	NR	2"	2"	8"[c]
Directed										
Evik	3"	3"	3"	3"	3"	3"	3"	3"	3"	12"[d]
Gramoxone Extra	3"	3"	3"	3"	3"	3"	NR	3"	3"	10"[d]
Linex/Lorox	3"	3"	3"	3"	3"	3"	3"	3"	3"	15"[d]

[a] NR = not recommended; - = no restrictions on crop growth stage
[b] COC=crop oil concentrate; NIS = nonionic surfactant
[c] Maximum corn height or growth stage
[d] Minimum corn height.
* 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.

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

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