Control of Annual Grass Weeds in Corn

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

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Issued March 1991
4 pages

MECP
Michigan Energy Conservation Program for Agriculture and Forestry
Extension Bulletin E-2261 March 1991

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Biology

Annual grass 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 the fall to late spring. Most annual grass weeds in Michigan are summer annuals.

Cultural control

Cultural control utilizes crop management practices that allow a desirable crop to out-compete 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 compared 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 application. 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 broadcast applied; 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

Grass Weed Response to Herbicides in Corn

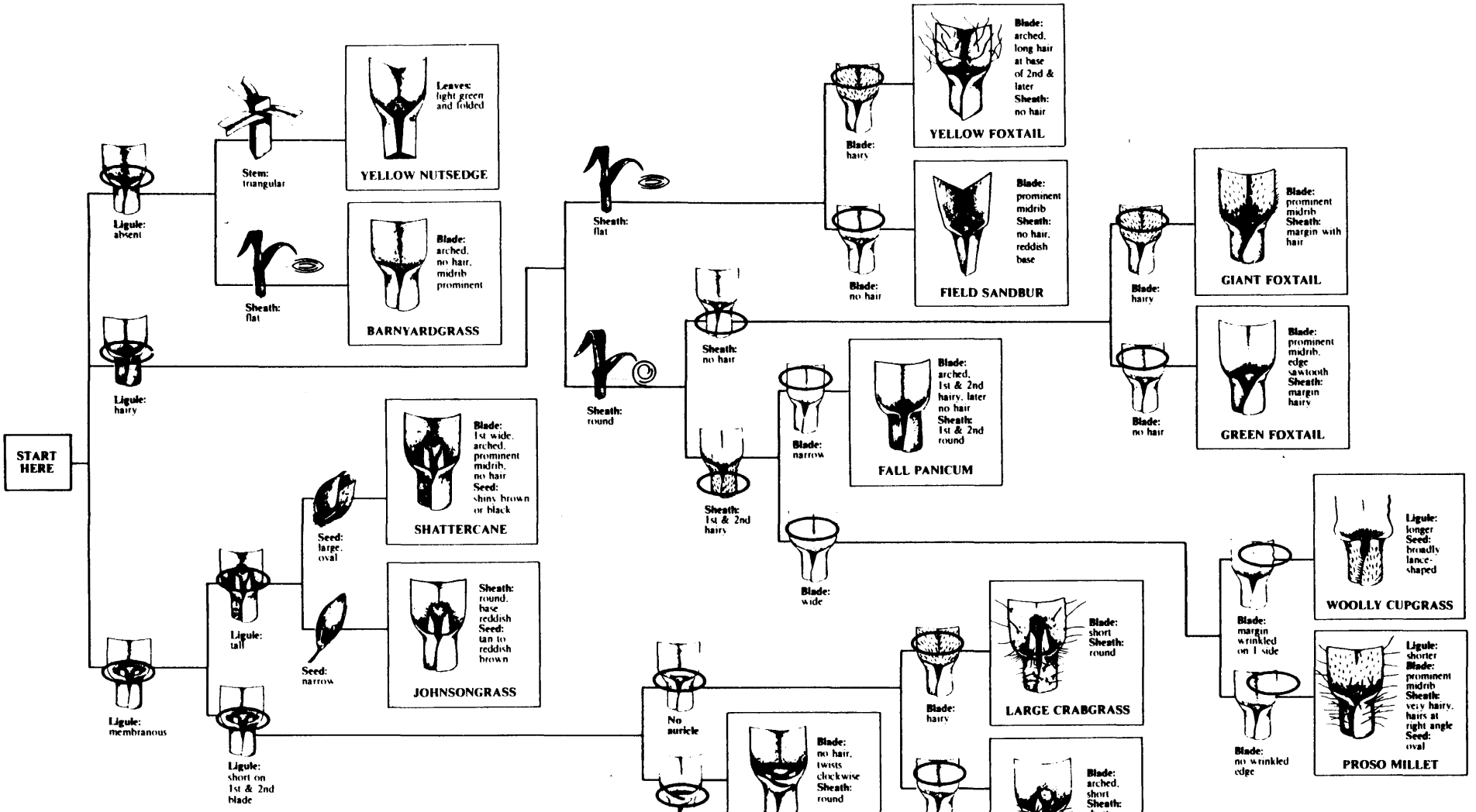
Herbicide	Rate /A[b]	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Wild proso millet
		Control[a]							
Preplant Incorporated									
Atrazine 4L	1 qt	G	P	F	F	G	P	P	P
Bladex 4L	1¾ qt	G	G	G	G	G	G	G	F
Dual	1 qt	E	E	E	E	E	E	E	F
Eradicane	4 ¾ pt	E	E	E	E	E	E	E	G
Eradicane Extra	5 pt	E	E	E	E	E	E	E	G
Sutan Plus	4 ¾ pt	E	E	E	E	E	E	E	F
Lasso	2½ qt	E	E	E	E	E	E	E	F
Princep 4L	1 qt	G	F	F	F	G	P	P	P
Preemergence									
Atrazine 4L	1 qt	G	P	F	F	G	P	P	P
Bladex 4L	1¾ qt	G	G	G	G	G	G	G	F
Dual	1 qt	E	E	E	E	E	E	E	F
Lasso	2 qt	E	E	E	E	E	E	E	F
Princep 4L	1 qt	G	F	F	F	G	P	P	P
Prowl	1½ qt	E	E	E	E	E	E	E	F
Ramrod	5 qt	G	E	E	E	E	G	G	F
Postemergence									
Accent + COC[c] or NIS[c]	2/3 oz + 1% or ¼%	E	F	E	E	E	E	E	G
Atrazine 4L + COC[c]	1 qt + 1 qt	F	P	F	G	G	P	P	P
Beacon + COC[c] or NIS[c]	.76 oz + 1% or ¼%	P	P	F	F	F	G	G	P
Bladex 90DF	2.2 lb	G	F	F	G	G	P	P	F
Postemergence Directed									
Evik	2 lb	G	G	G	G	G	G	G	G
Gramoxone Extra	0.8 pt	E	E	E	E	E	E	E	E
Linex/Lorox 50DF	3 lb	F	F	F	F	F	F	F	F

[a] P = poor; F = fair; G = good; E = excellent

[b] Rates based on a 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. Consult the herbicide label for more specific rate recommendations.

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

GRASS SEEDLING IDENTIFICATION GUIDE



This key is a way to identify grass weed seedlings. To use the key you need to understand how the key is organized and be able to recognize a few simple plant characteristics.

This key uses drawings to show which part of the plant to examine. Identifying characteristics are circled.

Examine grass seedlings with great care. One characteristic alone seldom identifies the weed.

Then begin on the left side of the key and proceed step by step to the right. Do not skip any steps.

Illustrations courtesy of Emory Nelson and Mobay Corporation, Agricultural Chemicals Division, Kansas City, Missouri

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

Herbicide	Barnyardgrass	Crabgrass	Giant foxtail	Green foxtail	Yellow foxtail	Fall panicum	Witchgrass	Wild proso millet	Corn
Broadcast	**Height[a]**								
Accent + COC[b] or NIS[b]	6"	NR	4"	2"	4"	3"	3"	2"	6 lf[c]
Atrazine + COC[b]	NR	NR	NR	1½"	1½"	NR	NR	NR	12"[c]
Beacon + COC[b] or NIS[b]	NR	NR	NR	NR	NR	2"	2"	NR	20"[c]
Bladex	1½"	NR	1"	1½"	1½"	NR	NR	NR	4 lf[c]
Directed									
Evik	3"	3"	3"	3"	3"	3"	3"	3"	12"[d]
Gramoxone Extra	3"	3"	3"	3"	3"	3"	3"	3"	10"[d]

[a] NR = not recommended
[b] COC = crop oil concentrate; NIS = nonionic surfactant
[c] Maximum corn height or growth stage.
[d] Minimum corn height.

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 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"

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 questions about the legality and/or registration status for using pesticides, contact your county Cooperative Extension Service office.

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

Issued in furtherance of Cooperative Extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Michael J. Tate, Interim Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

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