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Control of Annual Broadleaf Weeds in Soybeans

Michigan State University

Cooperative Extension Service

IPM Facts

Fred Salzman, and Karen Renner, Department of Crop and Soil Sciences

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FACTS

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Control of Annual Broadleaf Weeds in Soybeans

**Fred Salzman and Karen Renner,
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 out-compete weeds. Two common cultural control methods are the use of a smother crop and crop rotation. Smother crops compete favorably 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 the 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, if dry weather persists for 7 to 10 days following a preemergence application, rotary hoe the field. 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

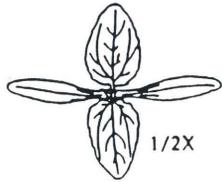
Chemical control of annual weeds can be achieved with herbicides applied either preplant incorporated, preemergence, or postemergence. Consider the energy and environmental implications when choosing a control method.

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 crop seedlings emerge.

Postemergence herbicides are applied after crop emergence. They either burn off the above-ground portion of the weeds or are translocated throughout the weed which kills 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.

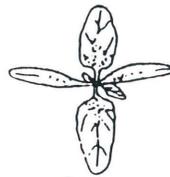
BROADLEAF WEED IDENTIFICATION GUIDE



Common Cocklebur



Jimsonweed



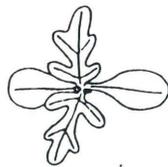
Common Lambsquarters



Eastern Black Nightshade



Smooth Pigweed or Redroot Pigweed



Common Ragweed



Pennsylvania Smartweed



Velvetleaf



Wild Mustard

Broadleaf Weed Response to Herbicides in Soybeans

Herbicide	Rate/A ^a	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black)	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard	Horseweed (Marestail)
		Control ^b									
Preplant incorporated											
Command	1 1/2 pt	F	F	G	P	P	G	G	E	P	-
Dual	2 pt	N	N	P	F	G	P	P	N	P	-
Lasso/Partner/Microtech	2 qt	N	N	P	G	G	P	P	N	P	-
Lexone/Sencor 75DF	1/2 lb	G	F	E	N	E	G	E	G	E	-
Preview 75DG	6 oz	E	G	E	P	E	G	E	G	E	-
Prowl 3.3 EC	2.4 pt	N	N	G	P	G	P	P	F	P	-
Pursuit	1/4 pt	G	F	G	E	E	F	G	G	E	-
Scepter	2/3 pt	E	G	G	G	E	F	G	G	G	-
Sonalan	2 1/2 pt	N	N	G	F	G	P	P	N	P	-
Treflan	1 1/2 pt	N	N	G	N	G	N	P	N	P	-
Broadstrike + Treflan	2 pt	F	F	E	F	E	F	-	G	E	-
Broadstrike + Dual	2 1/4 pt	F	F	E	G	E	F	-	G	E	-
Preemergence											
Dual	2 pt	N	N	P	F	G	P	P	N	P	P
Lasso/Partner/Microtech	2 qt	N	N	P	G	G	P	P	N	P	P
Lexone/Sencor 75DG	1/2 lb	F	F	E	N	E	G	E	G	E	G
Linex/Lorox 50DF	1 1/2 lb	P	P	G	F	G	G	G	F	G	P
Lorox Plus	14 oz	G	G	E	F	E	G	G	G	E	G
Preview	6 oz	G	G	E	P	E	G	E	G	E	E
Prowl 3.3 EC	2.4 pt	N	N	G	P	F	P	P	P	P	P
Pursuit	1/4 pt	F	F	F	G	E	F	G	F	G	P
Scepter	2/3 pt	G	G	G	F	E	G	G	F	G	P
Broadstrike + Dual	2 1/4 pt	F	F	E	G	E	F	-	G	E	-
Postemergence^c											
Basagran + COC ^d	2pt+1 qt	E	G	G	P	P	F	E	G	E	G
Blazer 2L + NIS ^d	1.5pt+1/8%	F	G	P	G	E	E	G	P	E	P
Classic + NIS ^d	3/4oz + 1/4%	E	G	N	N	E	G	E	G	E	F
Cobra + COC ^d	0.78pt+1 pt	G	G	P	G	E	E	P	F	E	P
Galaxy + COC ^d	2 pt + 1 qt	E	G	G	F	G	G	E	G	E	G
Pinnacle + NIS ^d	1/4 oz + 1/8%	F	F	G	N	E	P	E	G	E	N
Pursuit+28%N ^d + NIS ^d	1/4 pt+1 qt+ 1/4%	E	F	P	G	E	F	G	G	G	P
Reflex + NIS ^d or COC ^d	1 pt + 1/4 % or 1%	P	F	P	F	E	G	P	P	E	P
Scepter + NIS ^d or COC ^d	1/3 pt + 1/4% or 1qt	E	P	N	P	E	P	P	P	P	P
Storm + COC ^d	1 1/2 pt + 1 qt	G	G	F	G	E	E	G	F	E	P

^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 to rank.

^c Refer to labels for more specific recommendations on size of smaller broadleaf weeds controlled at lower herbicide application rates, and for spray pressure, gallonage, and tank mix recommendations.

^d NIS=nonionic surfactant; COC=crop oil concentrate; 28% N = 28% liquid ammonium nitrate.

Maximum Broadleaf Weed Size for Postemergence Control

Herbicide	Rate/A	Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black)	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard (diameter)	Horseweed (Marestail)
		Weed Height ^a									
Basagran	2 pt	10" ^e	10"	2"	NO	NO	3"	10"	6" ^{b,e}	8"	6"
Blazer	1.5 pt	2"	6"	<1"	2"	4"	3"	6"	NO	4"	4"
Classic	3/4 oz	12"	6"	NO	NO	4"	4"	4"	6" ^c	6"	6"
Cobra	0.78 pt	6"	4"	NO	2"	4"	4"	SUP	2"	4"	4"
Galaxy	2 pt	6"	6"	2"	<2"	2"	3"	6"	5"	4"	5"
Pinnacle	1/4 oz	SUP	SUP	4"	NO	12"	NO	6"	6" ^d	4"	NO
Pursuit	1/4 pt	8"	3"	<1"	2"	6"	2"	3"	2"	3"	2"
Reflex	1 pt	NO	4"	SUP	2"	2"	3"	4"	NO	4"	NO
Scepter	1/3 pt	8"	NO	NO	NO	4"	NO	NO	NO	NO	NO
Storm	1 1/2 pt	6"	6"	/NC	2"	2"	3"	6"	/NC	4"	NO

^a NO = no control; SUP = suppression only; /NC = inconsistent.

^b Add 1 gal/A of 28% liquid ammonium nitrate for velvetleaf control with Basagran.

^c Add 28% liquid ammonium nitrate to Classic + nonionic surfactant for velvetleaf control.

^d Add 28% liquid ammonium nitrate to Pinnacle + nonionic surfactant for velvetleaf control.

^e Cocklebur up to 24" and velvetleaf up to 12" can be suppressed by 3 pt/A of Basagran or 1.5 pt/A applied twice.

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.

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 Extension office.



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