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Michigan State University

Cooperative Extension Service

Michigan Energy Conservation Program for Agriculture and Forestry

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## Michigan Energy Conservation Program for Agriculture and Forestry

Extension Bulletin E-2306

March 1991

# CONTROL OF ANNUAL BROADLEAF WEEDS IN SOYBEANS

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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 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.

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 SOYBEANS

Herbicide	Rate/A <sup>a</sup>	Control <sup>b</sup>										
		Cocklebur	Jimsonweed	Lambsquarters	Nightshade (black)	Pigweed (redroot)	Ragweed	Smartweed	Velvetleaf	Wild mustard	Horseweed (Marestail)	
<b>Preplant incorporated</b>												
Command	2 pt	F	F	G	P	P	G	G	E	P	-	
Dual	2 pt	N	N	P	F	G	P	P	N	P	-	
Lasso	2 qt	N	N	P	G	G	P	P	N	P	-	
Lexone/Sencor 75DF	½ lb	G	F	E	N	E	G	E	G	E	-	
Preview 75DG	½ lb	E	G	E	P	E	G	E	G	E	-	
Prowl	2 pt	N	N	G	P	F	P	P	F	P	-	
Pursuit	¼ pt	G	F	F	E	E	F	G	G	E	-	
Scepter	2/3 pt	E	G	G	G	E	F	G	G	G	-	
Sonalan	2½ pt	N	N	G	F	G	P	P	N	P	-	
Treflan	1½ pt	N	N	G	N	G	N	P	N	P	-	
<b>Preemergence</b>												
Dual	2 pt	N	N	P	F	G	P	P	N	P	P	
Lasso	2 qt	N	N	P	G	G	P	P	N	P	P	
Lexone/Sencor 75DG	½ lb	F	F	E	N	E	G	E	G	E	G	
Linex/Lorox 50DF	1½ lb	P	P	G	F	G	G	G	F	G	P	
Lorox Plus	1 lb	G	G	E	F	E	G	G	G	E	G	
Preview	½ lb	G	G	E	P	E	G	E	G	E	E	
Prowl	2 pt	N	N	G	P	F	P	P	P	P	P	
Pursuit	¼ pt	F	F	P	G	E	F	G	F	G	P	
Scepter	2/3 pt	G	G	G	F	E	G	G	F	G	P	
<b>Postemergence<sup>c</sup></b>												
Basagran + COC <sup>d</sup>	2pt+1 qt	E	G	G	P	P	F	G	G	E	G	
Blazer 2L + NIS <sup>d</sup>	2pt+1/8%	F	G	F	G	E	G	G	F	E	P	
Classic + NIS <sup>d</sup>	¾ oz + ¼%	E	G	N	N	E	G	G	G	E	F	
Cobra + COC <sup>d</sup>	0.78pt+1 pt	G	G	P	G	E	G	P	F	E	P	
Pinnacle + NIS <sup>d</sup>	¼oz + 1/8%	F	F	G	N	E	P	G	G	P	N	
Pursuit+28%N <sup>d</sup> + NIS <sup>d</sup>	¼pt+1 qt+1/4%	E	F	P	G	E	F	G	G	G	P	
Reflex + NIS <sup>d</sup> or COC <sup>d</sup>	1 pt+¼% or 1%	P	F	P	F	E	G	P	P	E	P	
Scepter + NIS <sup>d</sup> or COC <sup>d</sup>	1/3 pt + ¼% or 1 qt	E	P	N	P	E	P	P	P	P	P	

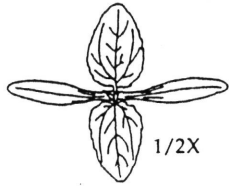
<sup>a</sup> Refer to Extension Bulletin E-434, "Weed Control Guide for Field Crops", for more specific weed control recommendations.

<sup>b</sup> N=none; P=poor; F=fair; G=good; E=excellent; - =not enough information to rank

<sup>c</sup> 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.

<sup>d</sup> NIS=nonionic surfactant; COC=crop oil concentrate; 28% N = 28% liquid ammonium nitrate

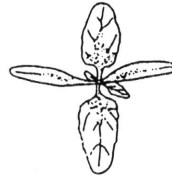
# BROADLEAF WEED IDENTIFICATION GUIDE



*Common Cocklebur*



*Jimsonweed*



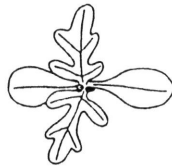
*Common Lambsquarters*



*Eastern Black Nightshade*



*Smooth Pigweed or Redroot Pigweed*



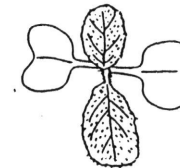
*Common Ragweed*



*Pennsylvania Smartweed*



*Velvetleaf*



*Wild Mustard*

# MAXIMUM BROADLEAF WEED SIZE FOR POSTEMERGENCE CONTROL

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

<sup>a</sup> NO = no control; SUP = suppression only

<sup>b</sup> Replace crop oil concentrate with 1 gal/A of 28% liquid ammonium nitrate for velvetleaf control with Basagran.

<sup>c</sup> Replace nonionic surfactant with 1 gal/A of 28% liquid ammonium nitrate for velvetleaf control with Blazer.

<sup>d</sup> Add 28% liquid ammonium nitrate to Classic + nonionic surfactant for velvetleaf control.

<sup>e</sup> Add 28% liquid ammonium nitrate to Pinnacle + nonionic surfactant for velvetleaf control.

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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