

WEED CONTROL IN BURLEY TOBACCO

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Good weed control uses crop rotation, early root destruction, cultivation, and the appropriate use of herbicides. Using an herbicide will reduce dependence on the first cultivation for early-season weed control. Some herbicides may also be applied to the row middle after the last cultivation to obtain full-season weed control. Herbicide use should be based upon the specific weeds present in each field, the weed-control program that integrates best with overall farm management practices, and herbicide cost in relation to performance, crop safety, and anticipated rotational crops. Herbicide performance and safety depend upon the use of correct application methods. Make a special effort to apply all herbicides exactly as stated on the product label.

IMPORTANT CONSIDERATIONS IN HERBICIDE USE

Selecting the Proper Herbicide

Weed Identification - Identifying the problem weeds in each field should be the first step in any weed control program. Check herbicides to ensure that the products are active against the desired weeds. The use of herbicides with rotation crops may reduce populations of hard-to-control weeds in tobacco fields and avoid some of the problems associated with use of tobacco herbicides. The table on page 52 is a summary of herbicide performance for weeds found in burley tobacco fields in Virginia.

Soil Texture and Organic Matter Content - Herbicide rates should increase as the percent organic matter increases and as the soil texture changes from coarse to fine. However, the lowest recommended rate should always be used when the percent organic matter is less than 1 percent, regardless of soil texture. The soil textures listed in herbicide labels and recommendations are as follows: *Coarse Soils* - sands, loamy sands, and sandy loams; *Medium Soils* - sandy clay loams, loams, silt loams, and silts; *Fine Soils* - clay loams, silty clay loams, and clays. You can determine the percent organic matter of your soils by taking a soil sample and submitting it to a soils laboratory for analysis.

Proper Herbicide Application

Soil Preparation - Most herbicides used in tobacco fields control weeds by preventing seed germination. Thoroughly work all weed growth and crop stubble into the soil prior to application of most tobacco herbicides. The soil should be moist and loose, with all clods broken up, before an herbicide is applied.

Spray Equipment - Use a standard low-pressure (25 to 50 psi) boom sprayer to apply herbicides in 20 to 40 gallons of water per acre. Check for clogged nozzles and screens frequently while spraying. Use 50-mesh screens in strainers, nozzles, and suction units. Clean or replace dirty or worn-out sprayer, boom, and nozzle parts to ensure uniform application. Be sure to calibrate the sprayer before use to avoid crop injury and/or poor herbicide performance. Ensure that the spray solution is continuously agitated. Do not apply an herbicide in strong wind, since wind can cause uneven coverage. Poast must be applied at higher pressures (40 to 60 psi) using smaller spray volumes (5 to 20 gallons of water per acre). Use only hollow-cone or flat-fan nozzles to apply Poast. Never leave a spray mixture in a sprayer overnight!

Herbicide Incorporation - Herbicides should generally be incorporated as soon after application as possible. Use a field cultivator or a combination, tandem, double disc, or disc harrow set to cut 4 to 6 inches deep. Avoid using a large field disc to incorporate PPI herbicides. Discs should be no more than 24 inches in diameter and 8 inches apart. Shallow incorporation with implements set to cut less than 2 inches deep can result in erratic weed control. **A single cultivation does not adequately incorporate herbicides, and may increase crop injury and decrease weed control.** Incorporating equipment should be operated in two different directions, at right angles to each other, at 4 to 6 mph. PTO-driven equipment (tillers, cultivators, hoes) perform best on coarse soil types. Set PTO-driven equipment to cut 3 to 4 inches deep and do not operate at a speed greater than 4 mph. Tillage is often required with over-the-top (OT) herbicide use. Irrigation is also often required to incorporate tobacco herbicides applied at layby. Using incorporation equipment and/or tractor speeds not listed on the product label may result in poor or erratic weed control and/or crop injury.

Undesired Effects of Herbicide Use

Effect of Preplant Applications on Early-season Tobacco Growth - Herbicides applied before transplanting sometimes inhibit the root development of transplants, delaying plant growth during the first month after transplanting. Full-season weed control can be obtained, and possible early-season growth reductions avoided, by applying herbicides at transplanting and layby.

Effects of Herbicides on Rotation Crops - Residues from some tobacco herbicides may reduce the growth of crops following tobacco. These effects are discussed in the labels for the particular herbicides involved. Potential carry-over can be reduced by: 1) using the minimum labeled rates for the chemical for your weed problems on your soils; 2) applying herbicides in a band at transplant-

ing and/or layby rather than broadcast PPI; 3) fall tillage for early root and stalk destruction; and, 4) by deep plowing before seeding the winter cover crop.

Preplant Incorporated Herbicides (PPI)

Apply the herbicide in an even broadcast application. Avoid spray overlap! Use fan-type (8004, etc.), flood-jet (TK2, TK4, etc.), or rain-drop nozzles. Incorporate the herbicide immediately after application using recommended equipment.

Over-the-top after Transplanting and Layby Herbicides

An OT application can be made as either a band or broadcast application within seven days of transplanting. Tillage is required immediately before or at the time of an OT application if the application is made more than two days after transplanting or if rain has fallen or irrigation was applied since the crop was transplanted.

1. Band Application - Apply the herbicide in a 14- to 24-inch band over the top of transplants during transplanting. Use fan-type, even-spray nozzles (8004E, etc.). The amount of herbicide required per acre of crop is reduced with band application and can be determined by the following formula:

$$\text{Lbs of Product/Acre} = \frac{\text{Band Width (inches)}}{\text{Row Spacing (inches)}} \times \text{Broadcast Rate in Lbs/A}$$

2. Broadcast Application - Apply the herbicide in an even broadcast application using a sprayer equipped with fan-type nozzles (8004, etc.). Be sure to use the recommended amount of product per acre.

Apply layby herbicides as directed sprays to row middles immediately after the last normal cultivation. Use drops equipped with flat, flood-jet (TK2, TK4, etc.) or even, flat-fan (8004, etc.) nozzles to apply the herbicide solution in a 16- to 30-inch band in the row middles. Use nozzles that apply one-half (1/2) the normal number of gallons per acre where spray nozzles on the end of the boom pass over the same row middle twice (to prevent over-application). Use the formula above to determine the amount of product to use for a band application. Irrigation will be required if 1 to 2 inches of rain do not fall within seven to ten days after application (to ensure herbicide activation).

Precautionary and Restriction Statements

Read and follow all directions, cautions, precautions, restrictions, and special precautions on each product label. Take labels seriously. This publication must not be used as the sole source of precautionary and restriction statements.

RELATIVE EFFECTIVENESS OF HERBICIDES FOR TOBACCO***Grasses and Nutsedge**

Herbicide	Barnyard-grass	Bermuda-grass	Broadleaf Signalgrass	Crab-grass	Crowfoot grass	Fall Panicum	Fox-tails	Goose-grass	Johnsongrass (seedling)	Texas Panicum	Nut-sedge
Command	E	P-F	E	E	E	E	E	E	G	G	P
Devrinol	G	P	F	E	E	G	E	E	F	--	N
Poast	F-G	G	E	G	F	E	E	G	E	E	N
Prowl or Pendimax	G	P	G	E	E	G	E	E	G	G	N
Spartan	F	P	P	F	F	F	F	F	F	F	E
Tillam	G	P	P	E	E	G	E	G	G	P	G

Broadleaf Weeds

Herbicide	Carpet-weed	Cockle-bur	Galinsoga	Jimson-weed	Lambs-quarters	Morning-glory	Pig-weed	Purs-lane	Prickly sida	Rag-weed	Sickle-pod	Smart-weed
Command	P	F	P-F	G	G	P	P	G	E	F-G	P	G
Devrinol	G	F	P-F	P	G	P	G	G	P	F	P	P
Poast	N	N	N	N	N	N	N	N	N	N	N	N
Prowl or Pendimax	G	P	P	P	G	P	G	G	P	P	P	P
Spartan	G	F-G	F	F-G	G	G	G	G	P	P	--	G
Tillam	G	P	P	P	G	P	G	G	P	P	P	P

*E = 90 to 100% control; G = 76 to 90%; F = 50 to 75%; P = 20 to 50%; N = Less than 20%; -- = no data. This table gives general ratings of relative herbicidal activity. Activity varies with weather conditions, soil type, and application method. Under non-optimal conditions, activity may be less than indicated.

WEED CONTROL IN BURLEY TOBACCO FIELDS

Weed Problems	Soil ¹ Texture	Chemical Lbs Active Ingredient/A	Product per Acre	Application ² Method	Remarks
Pigweed, lambsquarters, night-shade, purslane, smartweed, velvetleaf, spurred anoda, carpetweed, cocklebur, cotton, groundcherry, morningglory, common ragweed		carfentrazone 0.012-0.024	Aim 0.5-1.0 oz.	Pretransplant burndown; shielded or hooded spray before layby	Aim is a contact "burndown" herbicide for controlling emerged and actively growing broadleaf weeds. Can be tank mixed with other herbicides, but should be added first, WILL BURN TOBACCO LEAVES ON CONTACT.
		0.013-0.023	Aim EC or Aim EW 0.8-1.5 fl. oz		
Barnyardgrass, broadleaf signalgrass, crabgrass, field sandbur (suppression), foxtails, seedling Johnsongrass, fall panicum, velvetleaf, jimsonweed, lambsquarter, prickly sida, purslane, spurred anoda, venice mallow, common ragweed, smartweed, cocklebur (suppression), shattercane	Coarse	clomazone 0.75	Command ME 2.0 pt	OT	Use the higher rate for heavy weed pressure or heavy soils. Do not use in plant beds.
	Fine	1.0	2.7 pt		
Barnyardgrass, carpetweed, crabgrass, fall panicum, foxtails, goosegrass, johnsongrass from seed, lambsquarter, pigweed, common purslane, ragweed (suppression), ryegrass, check label for uncommon weeds.	Coarse	napropamide 1.0	Devrinol DF 2.0 lb	PPI, OT, Layby	For PPI application, incorporate the same day as applied. Small-grain injury may occur with PPI application method.
	Medium	1.0-1.5	2.0-3.0 lb		
	Fine	2.0	4.0 lb	PPI only	
	Coarse	1.0	Devrinol 2E 2 qt		
	Medium	1.0-1.5	2-3 qt		
	Fine	2.0	4 qt		

WEED CONTROL IN BURLEY TOBACCO FIELDS (continued)

Weed Problems	Soil' Texture	Chemical Lbs Active Ingredient/A	Product per Acre	Application ² Method	Remarks	
Grass weeds and volunteer small grain	All types	sethoxydim	Poast	post-emergence	Apply to actively growing grasses at 40-60 psi in 5-20 gal/A through hollow-cone or flat-fan nozzles. May be banded or applied broadcast. Do not apply more than 4 pt/A per season or within 42 days of harvest.	
	Single use:	0.28	1.5 pt + 2.0 pt oil concentrate			
	Sequential use:	0.19	1.0 pt + 2.0 pt oil concentrate			
Annual spurge, barnyardgrass, carpetweed, crabgrass, crowfoot grass, Florida pusley, foxtails, goosegrass, johnsongrass from seed, lambsquarters, panicums, pigweed, purslane, signalgrass		pendimethalin	Prowl 3.3 EC or Pendimax 3.3		For silt and silt loam soils, use 2.4-3.0 pt/A of Prowl 3.3EC or 2.5 pt/A of Prowl H2O for PPI applications. <i>Rates are for broadcast application and must be adjusted for banded sprays based on the width of the intended spray band and soil texture.</i> Applied according to directions and under normal growing conditions, Prowl should not harm transplanted tobacco, but can temporarily retard growth under stressful conditions (cold/wet or hot/dry weather). Layby applications should be made as a directed spray in a 16- to 24-inch band centered between rows. Spray contacting tobacco leaves may cause deformations. Crop injury may result if winter wheat and winter barley are no-till planted in the fall after spring application of Prowl. Do not feed forage or graze livestock for 75 days after planting wheat or barley in Prowl-treated land.	
	Coarse	0.74-0.99	1.8 - 2.4pt	PPI only		
	Medium	0.74-1.24	1.8 - 3.0 pt			
	Fine	0.99-1.24	2.4 - 3.0 pt			
	Coarse	0.50 - 0.74	1.2 - 1.8 pt			
	Medium	0.74 - 0.99	1.8 - 2.4 pt	Layby only		
	Fine	0.74 - 0.99	1.8 - 2.4 pt			
				Prowl H2O		
	Coarse	0.95	2.0 pt			
	Medium	0.95 - 1.19	2.0 - 2.5 pt	PPI only		
Fine	1.19	2.5 pt				
Coarse	0.71	1.5 pt				
Medium	0.95	2.0 pt	Layby only			
Fine	0.95	2.0 pt				

WEED CONTROL IN BURLEY TOBACCO FIELDS (continued)

Weed Problems	Soil ¹ Texture	Chemical Lbs Active Ingredient/A	Product per Acre	Application ² Method	Remarks	
Cocklebur, Florida pusley, hairy galinsoga, goosegrass, ground-cherry, jimsonweed, seedling Johnsongrass, lambsquarters, morningglory, wild mustard, nightshade, nutsedge, orchardgrass, pigweed, prickly sida, Suppresses barnyardgrass, crabgrass, crowfootgrass, foxtail, panicums, signalgrass. Check label for uncommon weeds.	Coare	0.25	5.3 oz	After bedding, before transplanting	Apply this product only as specified on the label. Do not apply to soils classified as sands with less than 1% organic matter and shallow groundwater. <i>Most tobacco fields in Virginia contain coarse to medium textured soils.</i> Do not impregnate on fertilizer. Apply to soil surface after field has been prepared for planting and within 14 days of transplanting. Do not apply at or after transplanting. Do not disturb treated soil below a 2-inch depth. <i>Crop injury can occur when incorporation is poor, transplants are set too shallow, or heavy rain falls near transplanting.</i> Do not apply Spartan more than once per season. Do not seed small grains within 4 months of application. Do not plant cotton or canola within 18 months of use.	
	Medium	0.31	6.7 oz	After bedding, before transplanting		
	Fine	0.38	8.0 oz			
				Spartan 4F		
		Coarse	0.25	8 fl oz (0.50 pt)		
		Medium	0.31	10 fl oz (0.62 pt)		
	Fine	0.38	12 fl oz (0.75 pt)			
Barnyardgrass, bermudagrass, crabgrass, crowfootgrass, Florida pusley, foxtails, goosegrass, ground cherry, lambsquarters, henbit, pigweed, purslane, purple and yellow nutsedge	All types	pebulate 4.0	Tillam 6E 2.6 qt	PPI	Incorporate immediately after application. Read precautionary statement.	

¹ When the soil has less than 1% organic matter, use the rate for the coarse soil texture recommendations. *Coarse* - sands, loamy sands, sandy loams; *Medium* - sandy clay loams, silts; *Fine* - clay loams, silty clay loams, clays.

² PPI - Preplant incorporated. Delay in growth may result under adverse conditions and/or when poor application practices have been used.

OT - Over-the top after transplanting as a band or broadcast application. Layby - Application of herbicide in row middle after last cultivation.