

HERBICIDE CHECK LIST FOR VEGETABLE SUCCESS

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Although the pace of new herbicide registrations in both field and vegetable crops has slowed in recent years, existing labels continue to evolve in response to events or problems encountered in the field. Most herbicides are broken down by microbial decomposition and/or chemical reactions in the soil. Whether a particular herbicide persists in the soil from one season to the next is affected by many variables including the herbicides chemistry, field moisture, soil type, and soil pH. Labeled crop rotation restrictions (length of time required after application prior to planting certain crops) try to account for the effects of these variables, but local experiences, weather extremes and other unforeseen circumstances provide information needed to adjust these labeled intervals to help protect growers from herbicide carryover problems. Table 1 contains the rotational restrictions to selected vegetable crops for many of the more recent herbicide registrations. Vegetable crops may be particularly sensitive to some herbicide residues, so it is of utmost importance for growers to always read the label for changes to rotation restrictions prior to using any product.

Table 1. Crop rotational restrictions of herbicides to vegetable crops.

Herbicide	Snap Bean	Sweet Corn	Peas	Potato	Cabbage	Cucumber
Aim	12 M	0	12M	30 D	30 D	12 M
Authority	30 M	18 M	30 M	30 M	18 M	30 M
Boundary	12 M	8 M	8 M	8 M	12 M	12 M
Callisto ^a	18 M	FY	18 M	FY	18 M	18 M
Camix ^a	18 M	FY	18 M	FY	18 M	18 M
Canopy EX	12 M	18 M	12 M	30 M	18 M	18 M
Define	12 M	12 M	12 M	1 M	4 M	12 M
Extreme	4 M	18 M ^b	4 M	26 M	40 M	40 M
Gauntlet	30 M	18 M	30 M	30 M	30 M	30 M
G-Max Lite	18 M	0	18 M	18 M	18 M	18 M
Lumax ^a	18 M	FY	18 M	18 M	18 M	18 M
Option	60 D	60 D	60 D	60 D	60 D	60 D
Phoenix	None Listed					
Priority	12 M	3 M	12 M	12 M	15 M	12 M
Spartan	18 M	18 M	18 M	0	0	18 M
Starane	None Listed					
Ultra Blazer	AH	AH	AH	18 M	AH	AH
Valor/Chateau	12 M	4 M	12 M	12 M	12 M	12 M
Yukon	9 M	3 M	9 M	9 M	15 M	9 M

Notes: M-month, D-day, AH-after harvest

^aIf applied after June 1st, only corn or sorghum may be planted the following season.

^b12 M for processing sweet corn – check for varietal tolerance.

Herbicide drift generally consists of spray droplet or vapor movement away from the intended application site. Most herbicide labels contain language indicating that prevention of

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herbicide drift is the responsibility of the applicator and then go on to provide useful information about nozzle selection, boom height, application speed, drift reducing additives, and so on. However, recently many herbicide labels have begun to add wind speed restrictions as well. At first, maximum wind speeds were listed to help prevent direct horizontal herbicide movement. Now, the addition of minimum wind speed restrictions to reduce the potential of vertical movement through temperature inversions has been added as well. Vertically stable air which allows small spray droplets to remain suspended and then potentially move to neighboring fields is most common near sunrise and generally is associated with low wind and clear skies. Table 2 contains some of the minimum and maximum wind speed restrictions of many of the new herbicides. As always, be sure to read the label for any changes prior to use.

Table 2. Wind speed restrictions of selected herbicides when applied by ground

Herbicide	Minimum (mph)	Maximum (mph)
Aim	3	None listed
Callisto	None listed	10
Camix	None listed	10
Canopy Ex	None listed	None listed
Extreme	None listed	None listed
G-Max Lite	3	None listed
Gauntlet	None listed	10
Harmony GT	None listed	None listed
Lumax	None listed	10
Option	2	None listed
Phoenix	None listed	None listed
Priority	None listed	None listed
Roundup WeatherMax	2	10
Spartan	3	10
Starane	2	None listed
Ultra Blazer	None listed	10
Valor	2	10
Yukon	2	5 if towards sensitive plants

Tank contamination is an herbicide issue which seems to be growing in importance each year. Vegetable crops are of particular concern since in addition to crop injury and possible illegal herbicide residue, there is the possibility of damaging the harvested commodity beyond what the marketplace will tolerate. One main reason for an increase in tank contamination problems is the increased popularity of post-emergence herbicide programs coupled with an increase in non-herbicide application trips due to other pests (soybean aphid/virus complex, potentially soybean rust, etc.) have created a situation where switches to and from herbicides have become common. Nearly every herbicide label provides detailed instructions for proper spray tank cleanout after use. Always read the label and follow all listed procedures. University of Wisconsin, Extension Weed Scientist Chris Boerboom suggests the following general guidelines to consider in avoiding tank contamination:

1. Once injury occurs, there is no fix.

2. Post-emergence applied herbicide residues are more likely to injure crops than with pre-emergence applications because the herbicide is applied directly to the leaves rather than being diluted in the soil. Also, several pre-emergence herbicides have little or no post-emergence activity. Therefore, be especially careful to clean post-emergence herbicide residues from spray equipment.

3. Systemic herbicides like glyphosate, dicamba and other growth regulators, ALS inhibitors (Accent, Raptor, etc) and ACCase inhibitors (Assure, Poast, etc.) are a greater concern than contact herbicides because systemic herbicides damage the growing point. Contact (non-mobile) herbicides only damage sprayed leaves. Relatively high concentrations of residues of contact herbicides are required to cause long-term damage. However, low concentrations of systemic herbicides can cause serious damage.

4. Clean spray equipment as soon as possible after use. Dried residues are more difficult to clean and remove.

5. Follow the label's directions for the best cleaning agent to use. On several labels, you will note that the cleaning procedures recommend that the cleaning solution stand in the sprayer for several hours to overnight. Cleaning a spray tank is not a job that should be rushed, especially with certain herbicides that are highly active on sensitive crops.

6. Never add chlorine bleach to ammonia or liquid fertilizers that contain ammonia because toxic chlorine gas can be formed.