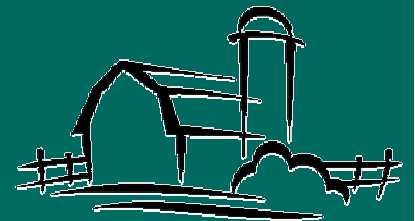


Herbicide Checklist for Vegetable Success

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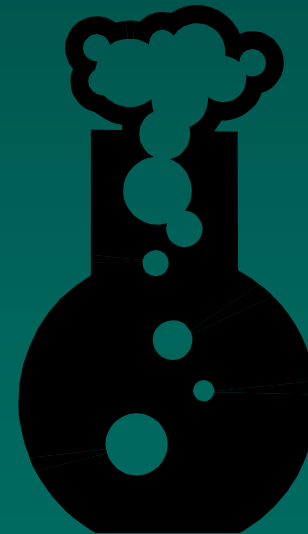


Herbicide carryover



General Rules for Herbicide Breakdown

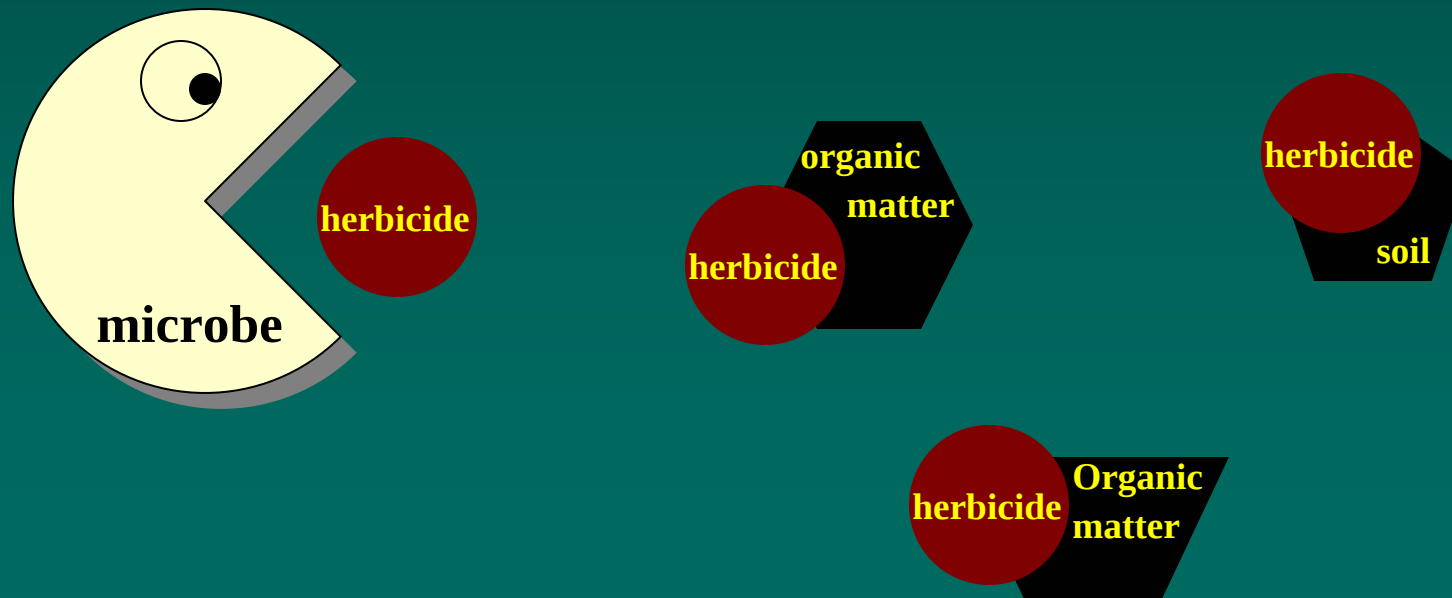
- Most herbicides are broken down by microbial decomposition, some by chemical rxn's



Acid hydrolysis – SU's & triazines

General Rules for Herbicide Breakdown

- Herbicide molecules must be free from binding to soil particles or organic matter for soil microorganisms to degrade.



General Rules for Herbicide Breakdown

- More herbicide molecules are adsorbed to soil particles in dry soils than wet soils



General Rules for Herbicide Breakdown

- Chemical degradation in soil is affected by pH
 - Acid hydrolysis ceases above pH 6.8
 - Acid hydrolysis slows in cold soils

Affects Primarily Sulfonylurea (SU)
and Triazine Herbicides.

Crop rotational restrictions to vegetable crops

Herbicide	Snap Beans	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

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

^b 12 M for processing sweet corn – check for varietal tolerance.

Crop rotational restrictions to vegetable crops

Herbicide	Snap Beans	Sweet Corn	Peas	Potato	Cabbage	Cucumber
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
Sandea	9 M	3 M	9 M	9 M	15 M	9 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

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

Avoiding Herbicide Carryover

- **Read the Label.**
- Obtain field history
- If in doubt, conduct a bioassay
 - Collect soil
 - Plant questionable crop or more sensitive crop in treated & untreated soil

Herbicide Drift



Wind speed restrictions 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 towards sensitive plants

Tank Contamination

- No magic pill once injury occurs
- POST applied residues more likely to injure than PRE applied residues
- Systemic herbicides are a greater concern than contact herbicides
- Clean spray equipment as soon as possible after use
- Follow label's direction for best cleaning agent to use

Sulfentrazone

- FMC – Spartan
- Previously labeled on: soybeans & tobacco

2000 – IR-4 Residue Field Trials

2003 – Petition submitted to EPA

2003 (Sept.) – Tolerance established

2004 – Labeled on Potato, cabbage, horseradish, mint, asparagus, dry beans



Sulfentrazone (Spartan)

Weeds controlled:

- wild buckwheat
- smartweeds
- common lambsquarters
- pigweed
- purslane
- velvetleaf
- **waterhemp** (common & tall)
- nightshade (**hairy** & **eastern black**)
- field bindweed
- crabgrass
- foxtails (gi, gr, ye) –p.c.
- field sandbur – p.c.
- witchgrass
- fall panicum
- **yellow nutsedge**



Sulfentrazone (Spartan)

- PPO Inhibitor mode of action
- PRE
- Rates: Soil Texture & Organic matter dependant
- Some burndown activity
- 2004 – some injury on potato (dark red norland, russet norkotah, silvertop, shepody, yukon gold)

Sulfentrazone (Spartan)

Anytime

Cabbage	Dry beans
Horseradish	Lima beans
Mint	Potatoes
Soybeans	Sunflower

4 Months

Barley	Wheat
Rye	

10 Months

Field Corn	Sorghum
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12 Months

Alfalfa	Oats
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18 Months

Pop Corn	Sweet Corn
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24 Months

Canola

36 Months

Sugar beets

Dimethenamid-P

- BASF – Outlook (6 EC)
- Shoot Inhibitor MOA
- Previously labeled on field corn, sweet corn and soybeans
- Primarily a grass herbicide providing suppression of some small seeded annual broadleaves

Dimethenamid-P (New 2005 Uses)

- Table (garden) beet – apply after 2nd true leaf expands, but before 6th true leaf
- Dry bulb onion – apply after 2nd true leaf, up to 30 days phi
- Potato – apply PRE as a hill spray
- Horseradish – apply after 2 leaf stage and before 8 leaf stage

Starane (fluroxypyr)

- Field & sweet corn labels added in 2004
- 0.66 pt/a
- Apply to weeds < 8" and up to 4th leaf collar corn (drop nozzles if larger)
- Controls: cocklebur, ragweeds, velvetleaf, hemp dogbane, suppresses volunteer potato
- Widematch (Starane + Stinger)
 - 18 month replant to peas or potatoes

Sandea (Halosulfuron-methyl)

- Gowan
- PRE: irrigate with $\frac{1}{4}$ to $\frac{1}{2}$ " if soil moisture is low
- POST: 1-3" broadleaves & 3-5 leaf nutsedge
 - 80% ai NIS at 1-2 qts/100 gal
- Use rate: 0.5 – 1.0 oz/a (max 2 oz/season in 2 app.)
- NO OP insecticides 21 days before or 7 days after a Sandea application
- Can be used under and over plastic
- Asparagus, cucumbers, cantaloupe, muskmelon, watermelon, pumpkins, squash, dry/lima/green beans, eggplant, peppers, tomato, tomatillo

Labels to Watch For:

- **Raptor (Imazamox)** - Snap beans & Succulent Lima's
 - Early postemergence application (1st to 2nd trifoliate) and weeds less than 3 inches
 - Label may require Basagran as tank mix partner
- **Dual (S-metolachlor)** – 33 new tolerances established fall 2004.

2004 Wisconsin IR-4 Projects



- Fluroxypyr (Starane) / Spearmint
- Fluroxypyr (Starane) / Peppermint
- Halosulfuron (Sempra) / Potato
- Sulfentrazone (Spartan) / Pepper (bell)
- Sulfentrazone (Spartan) / Pepper (non-bell)
- Triflumizole (Procure) / Mustard greens
- Oxyfluorfen (Goal) / Cantaloupe
- S-metolachlor (Dual) / carrot
- Mesotrione (Callisto) / Cranberry
- Mesotrione (Callisto) / Cranberry

2005 Wisconsin IR-4 Projects



2,4-DB + CYFLUTHRIN/LAMBDA	H	ALFALFA
AZOXYSTROBIN	F	POTATO
AZOXYSTROBIN+PROPICONAZOLE	F	BEAN (SNAP)
DIMETHENAMID-P	H	BEAN (SNAP)
FLUAZINAM	F	ONION (DRY BULB)
FLUMIOXAZIN	H	CUCUMBER
FLUTOLANIL	F	CABBAGE
HALOSULFURON	H	BEAN (DRY)
HALOSULFURON	H	BEAN (DRY)
OXYFLUORFEN	H	TOMATO
PROPICONAZOLE	F	MINT
PROPICONAZOLE	F	MINT
TRIFLUSULFURON-METHYL	H	BEET (GARDEN)

