

Weed Management Update:

Vegetable Crops

Andrew Senesac, Ph.D.

Weed Science

CCE Suffolk County

Agricultural Forum

Jan. 14, 2011

# Eastern Black Nightshade (EBN)

## *Solanum ptychanthum*

- a troublesome summer annual weed of the Solanaceae family.
- EBN is the most common weed of this genus (which includes potatoes and tomatoes) infesting Long Island fields.
- similar species occur less commonly.
  - black nightshade, *S. nigrum*
  - hairy nightshade, *S. physalifolium*

# Eastern Black Nightshade (EBN)

*Solanum ptychanthum*



## Early Response of Eastern Black Nightshade to Herbicides Available for Long Island Vegetable/Fruit Production

Herbicide	Percent Control	
	pre-emergence	post-emergence
Untreated	0	0
AATREX	86	100
AIM	~	100
BASAGRAN	~	100
CALLISTO	~	89
CHATEAU	100	100
DEVIRINOL	0	~
GOAL XL	100	~
IMPACT	~	85
KARMEX	97	~
MATRIX	0	60
OPTION	~	94
REFLEX	0	100
SANDEA	0	79
STRATEGY	94	~

# Longevity of Control

Eastern Black Nightshade							Annual Grasses
Percent Control							
TREATMENT			seed1 (0WAT)	seed2 (4WAT)	seed3 (8WAT)		
Trade Name	Form	Rate lb/a a.i.					
Untreated	~	~	0	0	0	0	
Chateau	51WDG	0.0625	100	100	97	97	
Karmex	80WDG	0.50	60	60	0	63	
Goal	2EC	0.25	97	93	90	97	
Aatrex	4L	0.50	53	20	0	77	
Strategy	2.1EC	0.79	77	73	0	83	
Strategy	2.1EC	1.60	97	87	100	100	
Sencor 2xLUR	75DF	1.00	77	83	93	83	

# Managing Eastern Black Nightshade in Vegetable Crops

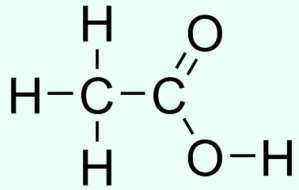
- EBN is not well controlled by Devrinol or use rates of Sencor.
- EBN can be controlled with several selective herbicides labeled for vegetables and fruit crops.
- If this weed is problem, rotating into a crop where it is well controlled will help reduce weed seed bank.

# Some Recent Post Emergence Tools

- Aim
- Acetic Acid

## Aim: Carfentrazone

- WSSA GROUP 14: Inhibition of protoporphyrinogen oxidase (PROTOX-inhibitor) - causes cell membrane disruption and loss of chlorophyll production. Usually rapid action, within 2-4 days.
- Contact herbicide: Controls BL but not grassy or sedge weeds.
- Can be used over sweet corn for BL weed control. Other veg. crops must be hooded to avoid injury.



# 20% Acetic Acid Weed Pharm

[www.pharmsolutions.com](http://www.pharmsolutions.com)

EPA registration & NYS registration

Can be used for non food crop use (since 2007)

- In Fall 2010, WeedWorks received an EPA registration for Food Use (approved for Organic Production).
- NYS Registration for this use is expected in 2011.
- The product will be available as pre-mixed 20% Acetic Acid Solution. (Vinegar is 6.5% acetic acid.)
- The label will have a *Danger* Precaution.
- This will be applied at 60 GPA.
- Research indicates very good burn-down of BL weeds. Smaller grasses should also be controlled.
- For pre-plant and directed application.

# Sweet Corn Herbicide Options Currently Available for LI

- [AAtrex 4](#) *atrazine*
- [Prowl 3.3EC](#) & H2O *pendimethalin*
- [2,4-D](#) multiple products
- [Sandea/Profine](#) *halosulfuron*
- [Aim](#) *carfentrazone*
- [Basagran](#) (*bentazon*)
- [Impact](#) *topramezone*
- [Laudis](#) *tembotrione*
- [Callisto](#) *mesitrione*
- [Accent](#) *nicosulfuron*
- [Option](#) *foramsulfuron*

# Sweet Corn Options

## How to choose between these?

- These potentially offer an alternative to Prowl for grass control, as well as BL weed control.
- Usually used with a reduced rate of Atrazine for better residual control.
  - Impact *topramezone*
  - Laudis *tembotrione*
  - Callisto *mesotrione*
  - Accent *nicosulfuron*
  - Option *foramsulfuron*

Impact *topramezone*

Laudis *tembotrione*

Callisto *mesotrione*

**Pigment Inhibitors: Mode of Action– Prevent the production of pigments necessary for photosynthesis resulting in a bleaching or whitening of plants.**

Accent *nicosulfuron*

Option *foramsulfuron*

**Amino Acid Synthesis Inhibitors: Mode of Action– Inhibits a specific enzyme (single site) which prevents production of essential amino acids. Systemic and slow to completely kill the weed.**

# Sweet Corn Options

## How to choose between these?

Sweet Corn Herbicides	Pre	Post
<u><a href="#">Impact topramezone</a></u>	no	yes
<u><a href="#">Laudis tembotrione</a></u>	no	yes
<u><a href="#">Callisto mesotrione</a></u>	yes	yes
<u><a href="#">Accent nicosulfuron</a></u>	no	yes
<u><a href="#">Option foramsulfuron</a></u>	no	yes

# Sweet Corn Options

## How to choose between these?

Sweet Corn Herbicides	Crabgrass Control	Other Annual Grasses
<u><a href="#">Impact <i>topramezone</i></a></u>	good 3"	yes
<u><a href="#">Laudis <i>tembotrione</i></a></u>	fair 3"	yes
<u><a href="#">Callisto <i>mesotrione</i></a></u>	fair	poor
<u><a href="#">Accent <i>nicosulfuron</i></a></u>	poor-fair	poor
<u><a href="#">Option <i>foramsulfuron</i></a></u>	poor-fair @2"	good

# Sweet Corn Options

## How to choose between these?

Sweet Corn Herbicides	LQ Control	RRP Control	Ragweed Control
<a href="#"><u>Impact</u></a>	very good	very good	very good
<a href="#"><u>Laudis</u></a>	very good	very good	very good
<a href="#"><u>Callisto</u></a>	very good	fair-good	fair
<a href="#"><u>Accent</u></a>	poor	good	poor
<a href="#"><u>Option</u></a>	good	good	good

# Sweet Corn Options

## Plant-Back Restrictions

- Restrictions: Warn not to plant certain crops for a certain amount of time after application. This is part of the labeling and has to be obeyed.
- Guidelines: Suggest a certain amount of time before planting certain crops to avoid injury. It is wise to follow this advice but not strictly mandated.

# Sweet Corn Options

## Plant-Back Restrictions

Sweet Corn Herbicides	Restrictions	Guidelines
<a href="#"><u>Impact</u></a>		18 months for several crops
<a href="#"><u>Laudis</u></a>	Bioassay needed before replant	18 months for several crops
<a href="#"><u>Callisto</u></a>		18 months for most crops
<a href="#"><u>Accent</u></a>	Month restrictions, esp. for high pH soil	
<a href="#"><u>Option</u></a>	2 months all crops	

# Sweet Corn Options

## Variety Sensitivity

(multi state trial 2005-7)

Sweet Corn Herbicides	149 Varieties
<u>Impact</u>	~
<u>Laudis</u>	~
<u>Callisto</u>	22% sensitive
<u>Accent</u>	33% sensitive
<u>Option</u>	58% sensitive

# Sweet Corn Options

## How to choose between these?

- **Other factors to consider:**
  - **COST:** Consider the total cost per acre over the entire growing season. If possible factor in the cost of crops loss due to ineffective treatments.
  - **OTHER CROPS:** How does this fit in with your rotation and overall weed management plan? Can you utilize these to help control a weed that escapes in other crops?

# Pumpkin Herbicide Options Currently Available for Long Island

- [Glyphosate](#) *several products*
- [Aim 1.9 EW](#) *carfentrazone*
  
- [Select Max](#) *clethodim*
- [Poast 1.5E](#) *sethoxydim*
  
- [Sandea](#) *halosulfuron*
- [Strategy 2EC](#) *clomazone + ethalfluralin,*
- [Curbit EC](#) *ethalfluralin*



# Common Lambsquarters

## *Chenopodium album*

Large tap rooted, annual broadleaf.

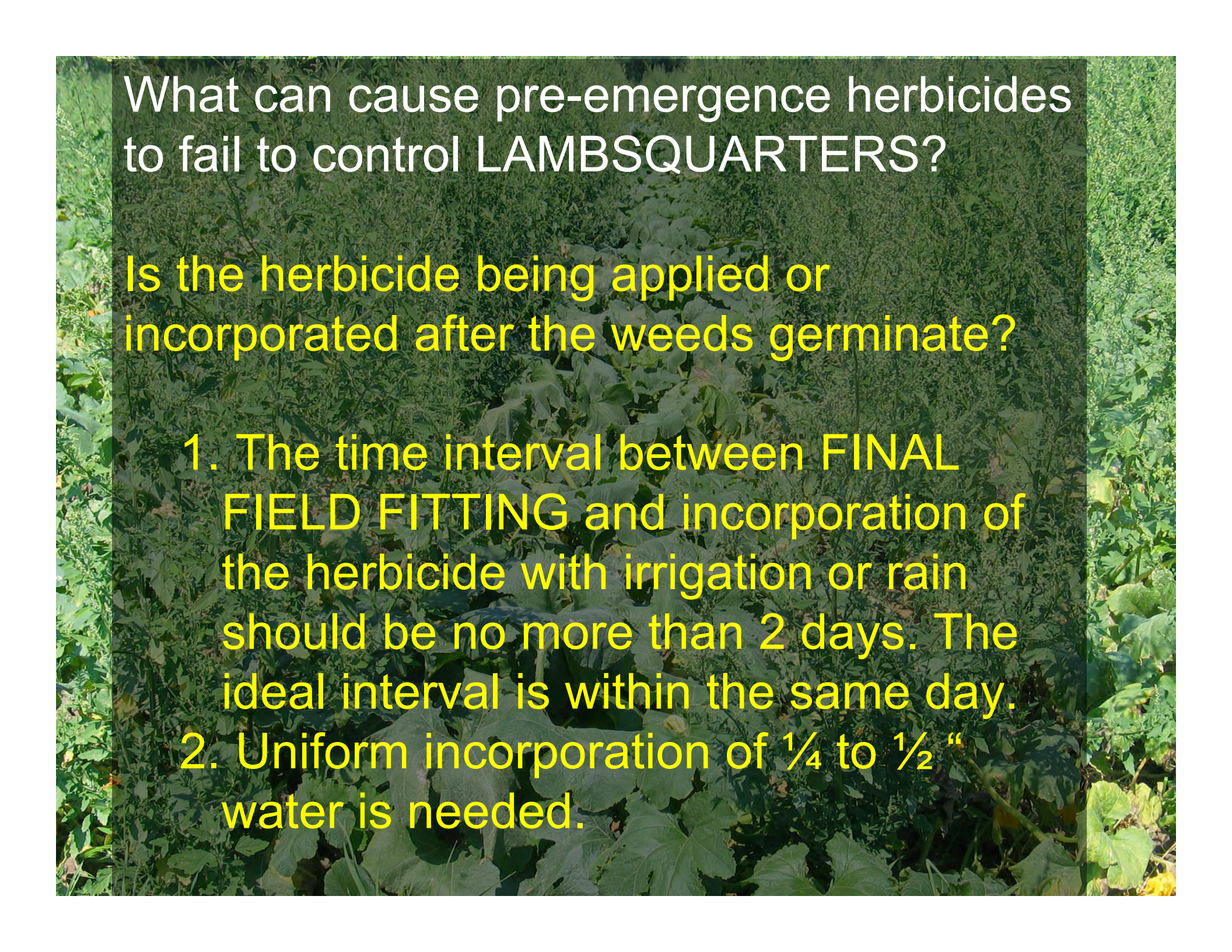
In Goosefoot Family: related to Beets, Swiss Chard and Spinach.

Will begin to germinate early in spring and continue through late summer.

Waxy bloom of leaves makes it difficult to control post emergently.

# Pumpkin Herbicide Options Currently Available for LI

Common Lambsquarters Control	pre	post
<a href="#"><u>Sandea 75DF halosulfuron</u></a>	Labeled full control	No control
<a href="#"><u>Strategy 2EC clomazone + ethalfluralin</u></a>	Labeled full control	
<a href="#"><u>Curbit EC ethalfluralin</u></a>	Labeled full control	



What can cause pre-emergence herbicides to fail to control LAMBSQUARTERS?

Is the herbicide being applied or incorporated after the weeds germinate?

1. The time interval between FINAL FIELD FITTING and incorporation of the herbicide with irrigation or rain should be no more than 2 days. The ideal interval is within the same day.
2. Uniform incorporation of  $\frac{1}{4}$  to  $\frac{1}{2}$  " water is needed.



What can cause pre-emergence herbicides to fail to control LAMBSQUARTERS?

Is the herbicide not lasting long enough before the crop canopy closes?

1. Apply CURBIT and/or STRATEGY not more than 2 days post plant or as a BANDED APPLICATION after emergence or transplant.
2. By delaying the application, the season of control should also be extended.

# Possible strategies for better Lambsquarters control

- Combine Strategy with Curbit
- Combine Strategy with Sandea
- Combine Curbit with Sandea

## **Use a modified stale seedbed technique**

- Prepare seedbed early in the spring. Cultivate a few times before the final seed bed prep.
- This will encourage the seedbed to exhaust itself.

Allow last flush of weeds to emerge 2-3 weeks before planting. Kill that with a post emergence herbicide (glyphosate or Aim or Scythe or Acetic Acid).

Plant and apply pre-emergence and incorporate.

Delay post plant cultivation as long as possible.



## Lambsquarters Strategies cont.

- Rotation with a crop that provides good LQ control the previous year.
- Seed head prevention is very important to decrease this weed.