



Cornell University
Cornell Cooperative Extension
Eastern New York Commercial Horticulture

Eastern New York Commercial Horticulture Program



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Allium Leafminer

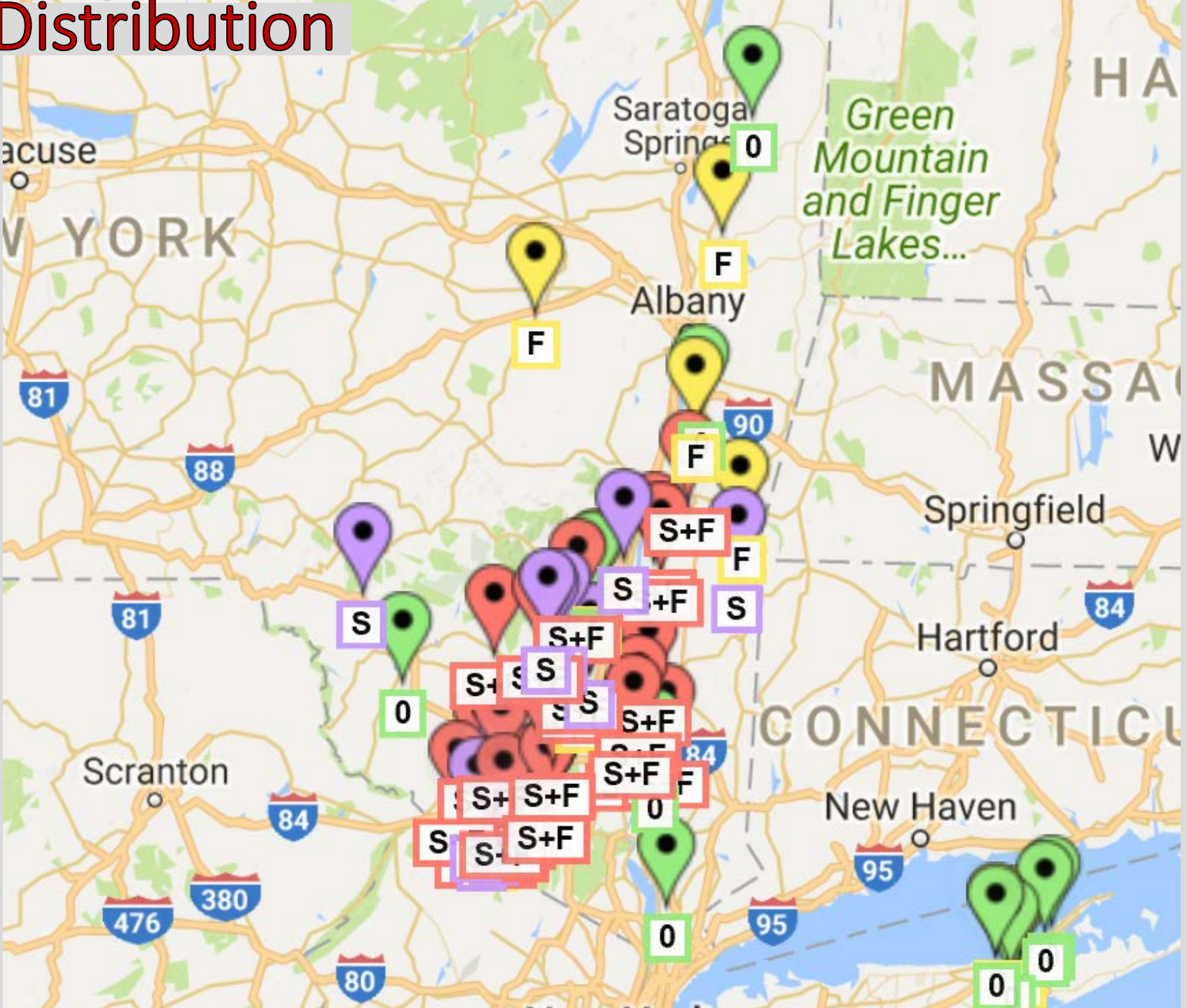
(*Phytomyza gymnostoma*)

- Native to Poland
- PA - Dec. 2015
- NY - Confirmed in Ulster County
Nov. 2016 (leeks)
- Spring 2017- Widespread in Orange,
Dutchess, and Ulster counties,
limited presence in Columbia and
Sullivan
- Also widespread in NJ, Maryland
Spring 2017
- Fall 2017- Confirmed in Orange,
Dutchess, Ulster, Columbia,
Sullivan, Schoharie, Suffolk counties
- Latest addition Thompsons County

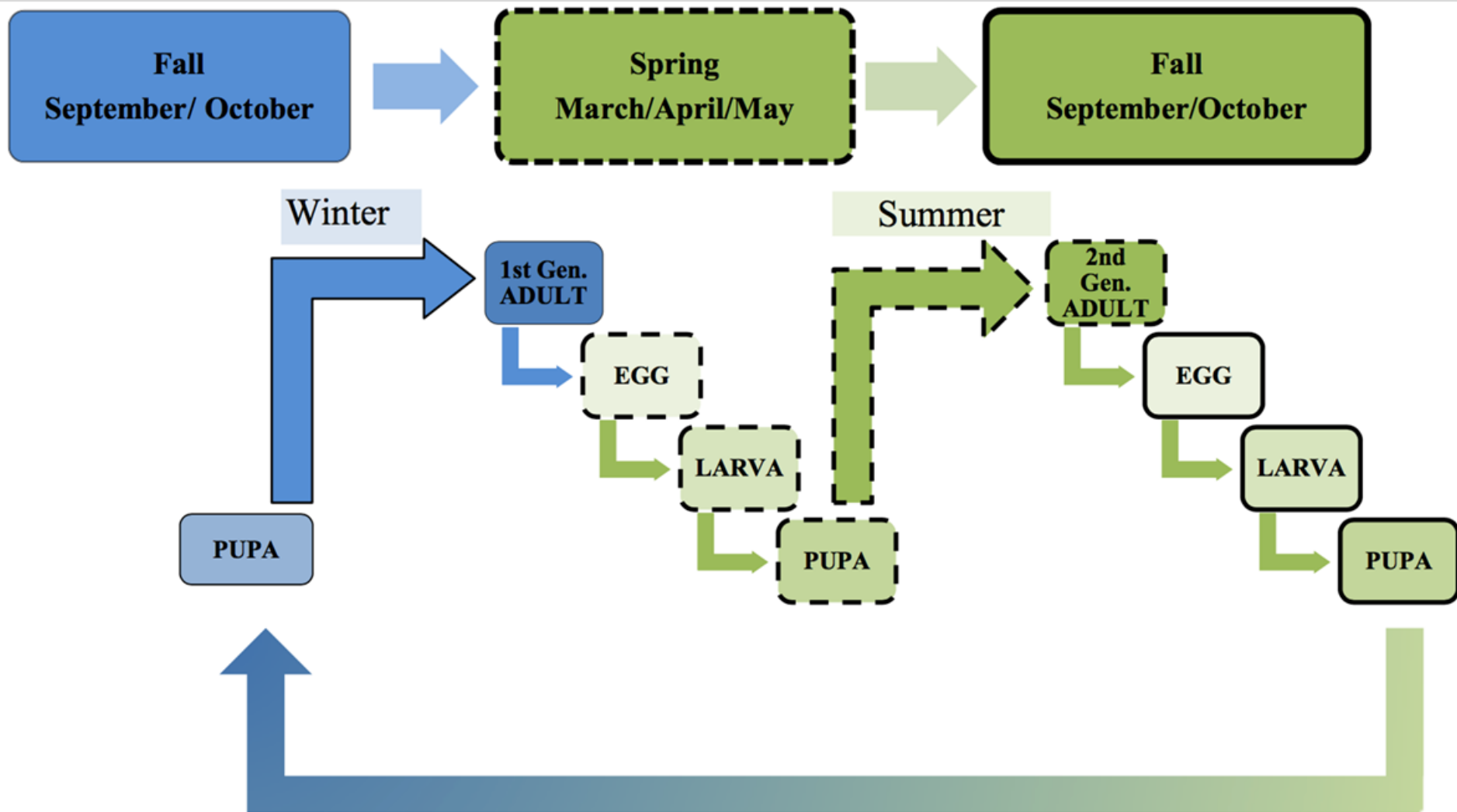


Photo Peter Jentsch, HVL

NY Distribution



Lifecycle



Observations

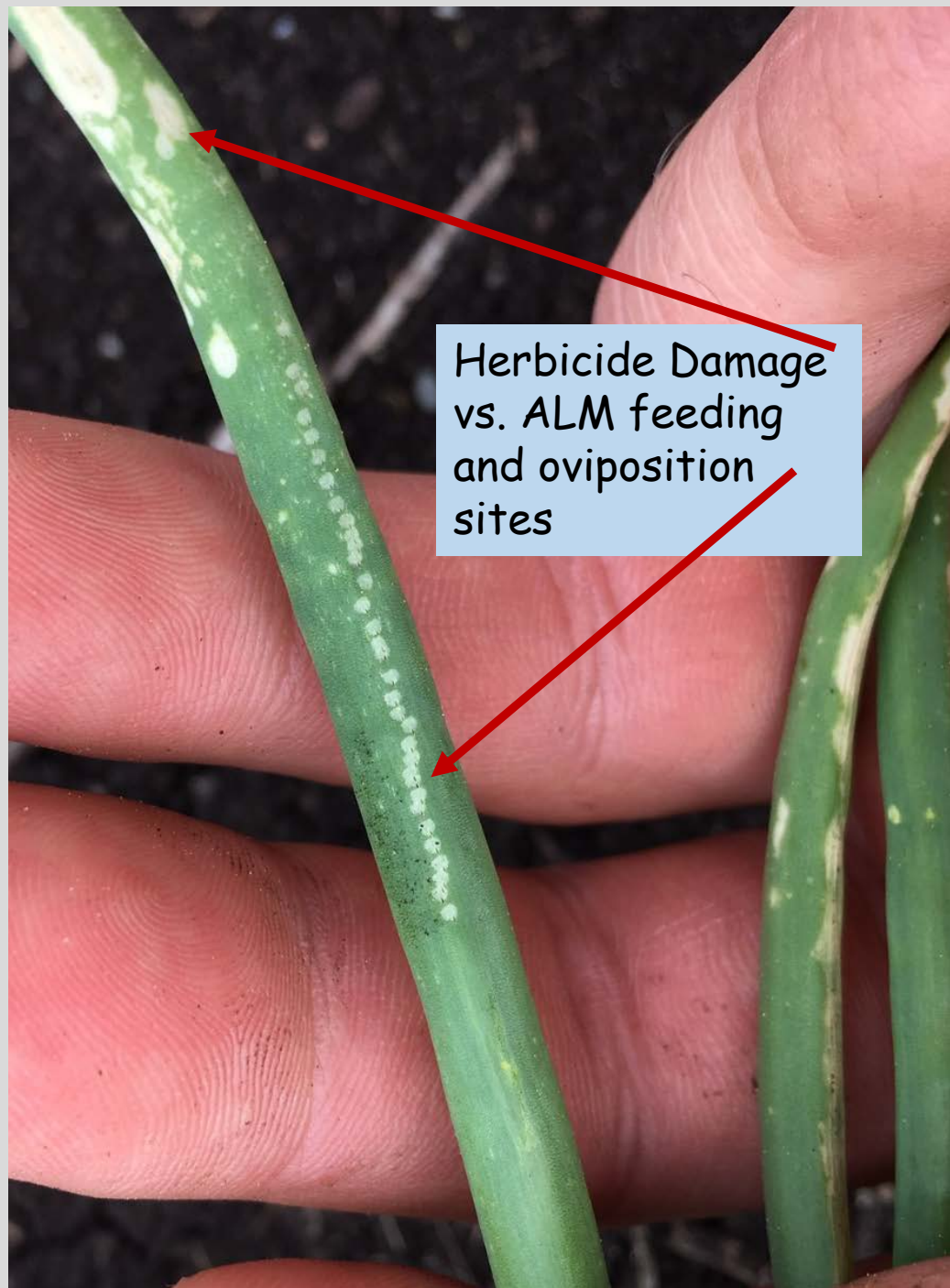
- Fall- Leeks, Green Bunching Onions, Chives
- Spring- Garlic, Shallots & transplant onions, chives, bunching onions, cull piles (seeded onions?), seed onions
- Ornamental & wild alliums
- Organic production more risk
- Overwinter as pupae in plant tissue or soil
- April thru May -Adults emerge, lay eggs (first signs of feeding damage found April 20 in 2017 Northern Ulster)
- Diapause
- 2nd gen adults emerge sept/oct. (9-18-17 OC blackdirt)



Photo: T. Rusinek

Cull Pile Management







Serpentine Leafminer



Onion Thrips



Botrytis Leaf Blight



ALM Larval Mining



ALM feeding and mining on Garlic

ALM mining on scallion leaves



Larvae can reach up to 8 mm in length.





The larvae mines within the leaf blade, making it's way down toward the bulb.

20-100 pupae
per plant

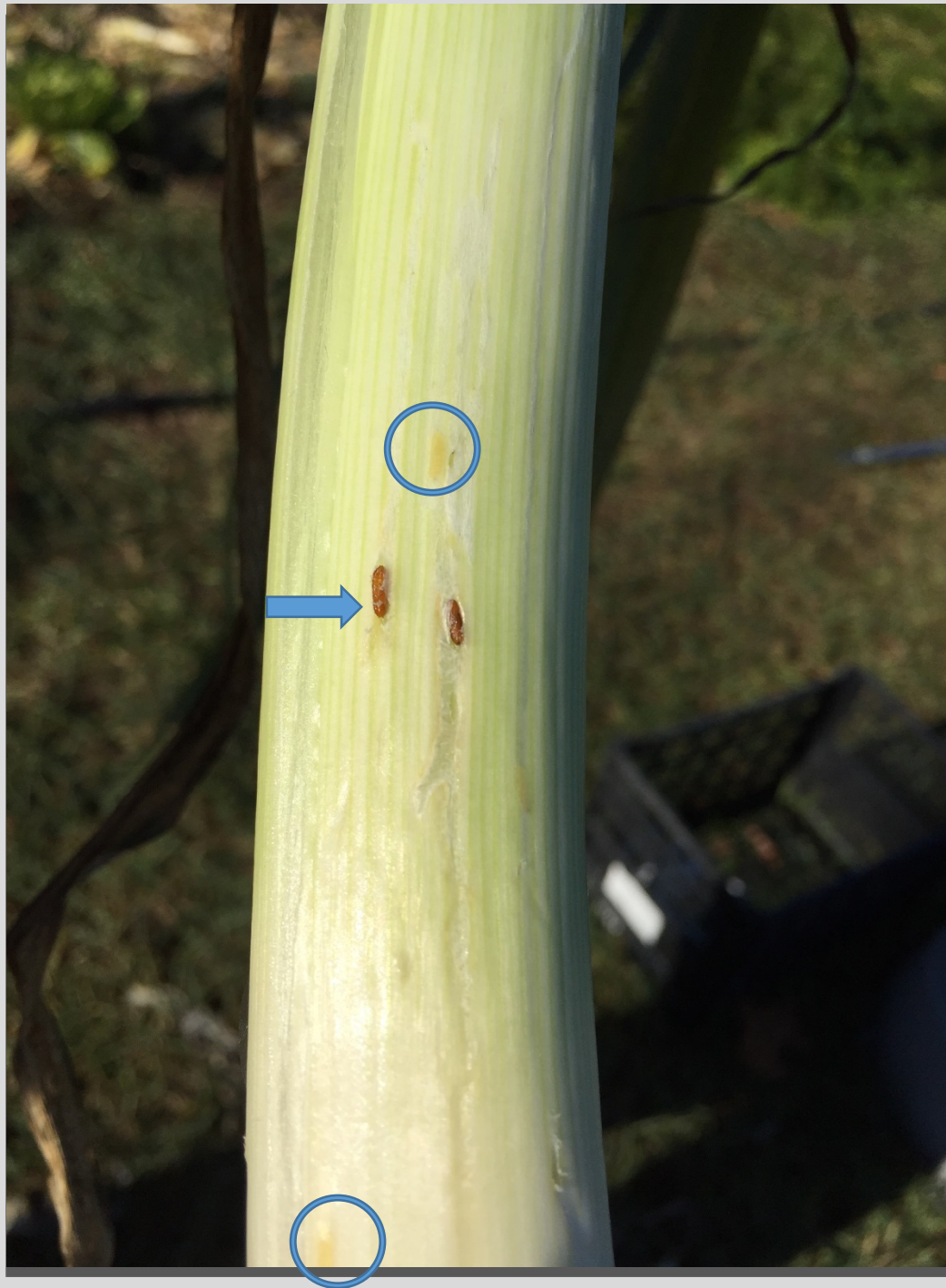


Photo: T. Rusinek





Photos: E. Grundberg

Allium Leaf Miner Scouting Form
 Farm/Grower: _____ Scout: _____
 Field Name: _____ Date: _____
 Crop/Cultivar: _____ Block: _____
 Growing degree days: _____ ALM adult Presence: _____
 Trap Type: _____

Note: _____

Plant	# Oviposition marks	Location on Leaf (Tip, Middle, Bottom)	Mining Visible (Yes=1/No=0)	# Larvae visible inside leaf	# Eggs found
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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22					
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24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
Total					
AVG					

Scouting Map: _____

Scouting and Monitoring



	TREATMENTS			
	Product	Rate per Acre		Surfactant Type
	Untreated control	-		-
	Agri-Mek SC	3.5 fl oz		LI-700
	Assail 30SG	8 oz		LI-700
	Aza-Direct	32 fl oz		Kinetic
	Aza-Direct + Trilogy	32 fl oz + 2.0% v:v (2 gallons/100 gallons H ₂ O)		-
	Entrust SC	7 fl oz		Kinetic
	Exirel	13.5 fl oz		LI-700
	Lannate LV	48 fl oz		LI-700
	Movento	5 fl oz		LI-700
	PyGanic Specialty	17 fl oz		Kinetic
	Radiant SC	8 fl oz		LI-700
	Scorpion 35SL	7 fl oz		LI-700
	Surround WP	25 lbs		LI-700
	Trigard	2.66 oz		LI-700
	Warrior II w/Zeon Technology	1.92 fl oz		LI-700



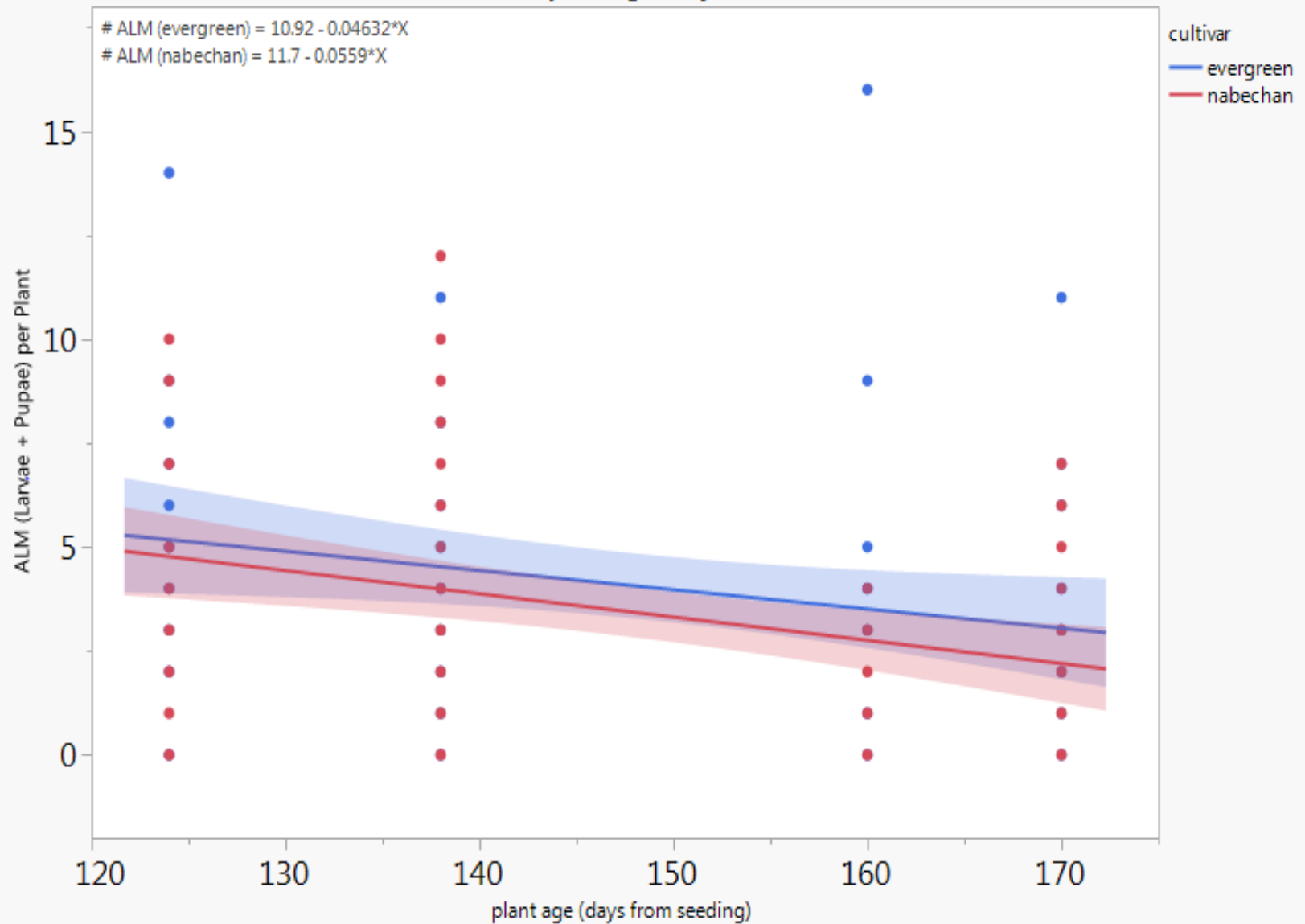
*All treatments were applied on 20 September when the first ALM adults are observed in the field and additional applications will be made weekly for three weeks (4 applications total). Insecticides will be co-applied with the non-ionic penetrating surfactant (LI-700 @ 0.25% v:v for conventional products and Kinetic @ 0.25% v:v for organic products). The experiment will include 14 treatments plus an untreated control with treatments replicated 4 times.



Control	
Organic option	Azadirect
Diamide option – soil	Verimark
Diamide option – foliar	Exirel
Neonic option –soil	Venom or Scorpion
Neonic option-foliar	Venom or Scorpion

Tim Elkner, Penn State Extension and Shelby Fleischer, PSU Dept of Entomology

ALM vs. plant age (days)



Shelby J. Fleischer
Department of Entomology
Pennsylvania State University

Table 1. Number of allium leafminers (larvae + pupae) per plant.

Level			Mean
Control	A		4.100000
Verimark - Drip	A B		3.800000
Scorpion - Drip	A B		3.650000
Radiant	A B C		2.700000
AzaDirect	A B C		1.875000
Exirel - Foliar	B C		1.500000
Scorpion - Foliar	C		1.025000

Levels not connected by same letter are significantly different.

Table 2. Number of damaged leaves per plant

Level		Mean
Control	A	5.775000
Verimark - Drip	A	5.750000
Scorpion - Drip	A B	4.800000
Exirel - Foliar	A B	4.692307
AzaDirect	A B	4.550000
Radiant	B	3.764706
Scorpion - Foliar	B	3.150000

“Growers who have been spraying leeks all summer for onion thrips need to make sure that they have not already reached the maximum annual application rate of products like Agri-Mek (abamectin, IRAC Group 6), Radiant (spinetoram, IRAC Group 5), and Exirel (cyantraniliprole, IRAC Group 28) that are also labeled for leafminer management in allium crops. There is some anecdotal evidence from the spring flight that Trigard (cyromazine, IRAC Group 17) was effective at managing ALM at the labeled rate of 2.66 oz/acre in at least 10 gallons of water. Please note, however, that there is a 7-day PHI for Trigard and Agri-Mek on bulb vegetables (including leeks, chives, and green onions) whereas Exirel and Radiant have a 1-Day PHI. Organic growers unable to use row cover are encouraged to use Entrust (spinosad, IRAC Group 5) at the 2 oz/acre rate along mixed with a 1%-1.5% v/v solution of M-Pede (potassium salts of fatty acids) for better penetration of the waxy cuticle once adult feeding has begun.”



Photo: E. Grundberg

- Row cover has limitations: heat, crop size, scale
- Other cultural controls?: reflective mulch, trap cropping
- Timing of management strategies critical, but still lacking good information:
402 GDD base 40 from Jan 1 for spring emergence (April 20th)
4357 GDD base 40 from Jan 1 for fall emergence (September 18th)



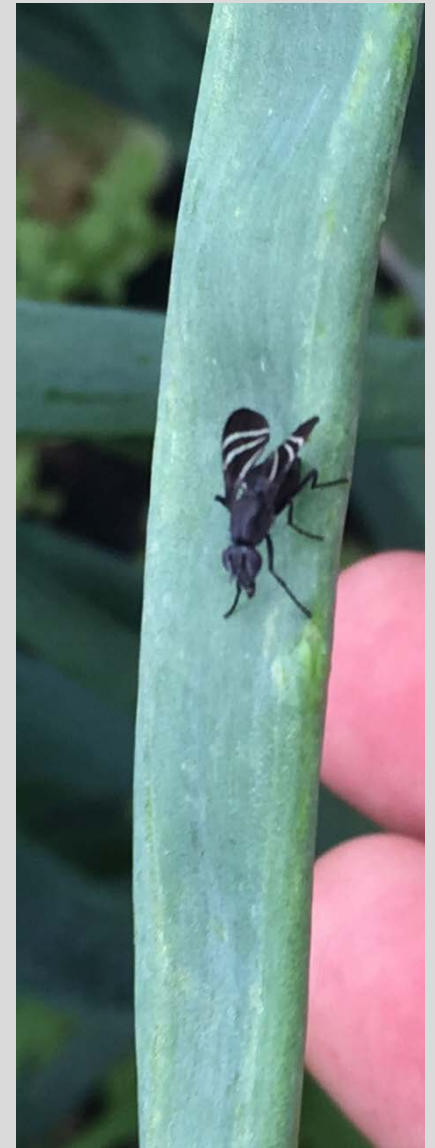
Questions?



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