Current status of cucurbit diseases in Indiana

César Escalante, Department of Botany and Plant Pathology

2025 Convention - Indiana Vegetable Growers Association & Illiana Watermelon Association

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Overview of cucurbit diseases in Indiana

Purdue Univ. Cooperative Extension Service

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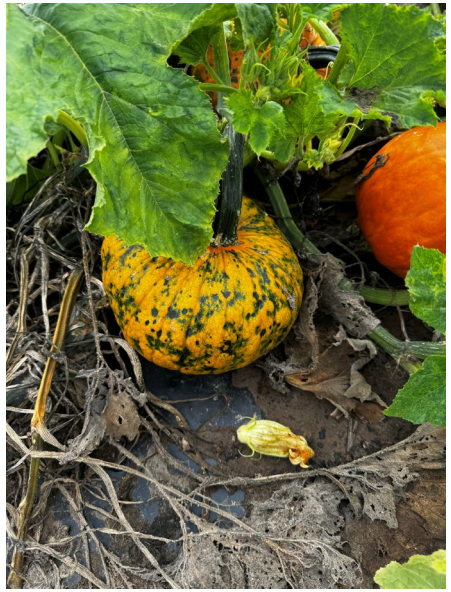
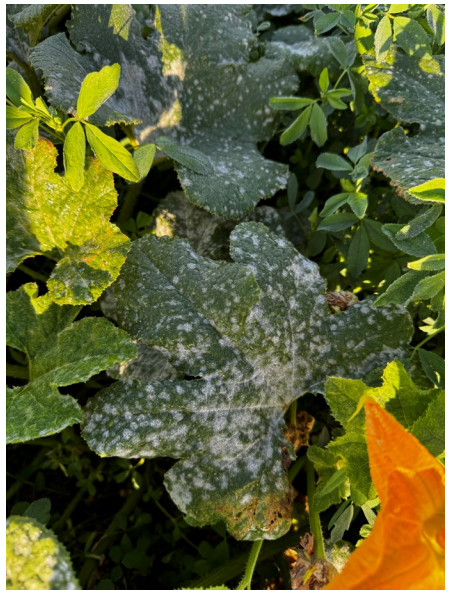
Current research and extension

Research

- Vegetable Pathology Lab at SWPAC
- Plant disease diagnostics
- Pathogen discovery
- Disease management and control
- Plant-pathogen interactions and physiology





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Current research and extension

Extension

- Sub-lab of the PPDL
- Vegetable grower visits
- Phone calls and emails
- Extension and outreach events

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Cucurbit diseases in Indiana

- Gummy Stem Blight
- Powdery Mildew
- Downy Mildew
- Fusarium Wilt
- Phytophthora Blight
- Anthracnose
- Bacterial Fruit Blotch
- Viruses
- Root-Knot Nematode
- Cucurbit Yellow Vine Disease

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Gummy stem blight

- Causal agent: *Phoma cucurbitacearum*
- Symptoms: Circular, tan to dark brown spots appear on the leaves, enlarge rapidly until the entire leaf is blighted

APSnet.org

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Gummy stem blight

- Use of treated seed
- 2-year rotation cycle
- No resistance cultivars in several cucurbits
- Protectant fungicides

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Fusarium wilt

- Causal agent: *Fusarium oxysporum* f. sp. *Melonis*
- Symptoms: Yellowing leaves, wilting, stunted growth

Dan Egel, Purdue Extension

APSnet.org

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Fusarium wilt

Management strategies: Cultural controls, resistant varieties, biocontrol agents

- Crop rotations
- Fumigation
- Fungicide prothioconazole (Proline®)
- Sanitation – greenhouse
- Resistance - some watermelon cvs. offer partial resistance
- Biofumigation
- Grafting
- **Please contact me if would like to have your farm sampled**

Cesar Escalante

escalac@purdue.edu

812-886-0198

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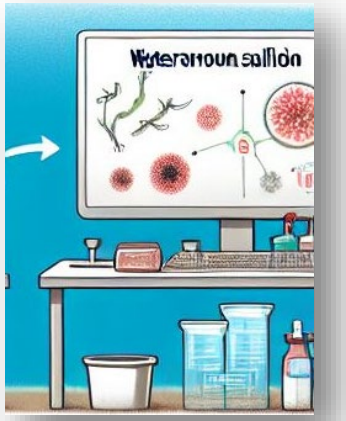
Fusarium wilt

Sample collection in the field

Pathogen isolation in the lab



DNA isolation in the lab

DNA sequencing in the lab

Tests in GH & field

Phytophthora blight

- Causal agent: *Phytophthora capsici*
- Symptoms: Brown, rotting fruit, yellowing leaves

Dan Egel, Purdue Extension

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Phytophthora blight

Management strategies: Cultural controls, fungicides, resistant varieties

- Water management
- Raised beds
- Drip irrigation
- No host resistance
- Brassica cover crops
- Fungicides

Product	Common name	REI/ PHI[1]	FRAC code[2]	Comments
Agri-Fos®, Phostrol®, Prophyte®, Rampart®	Phosphorus acid/ phosphite	4/0	33 or P07	Apply to watermelon when fruit is about the size of a softball. Acibenzolar-S-methyl applied to manage diseases such as angular leaf spot or bacterial fruit blotch may help to lessen severity of Phytophthora blight. Phosphite products drenched onto squash or pumpkin crowns at about bush stage may help to lessen disease severity.
Forum 4.18SC®	Dimethomorph	12/0	40	
Actigard®	Acibenzolar-S-methyl	12/0	P01	
Elumin®	Ethaboxam	12/2	22	
Orondis Ridomil Gold SL®	Oxathiapiproprilin/ mefenoxam	48/5	U15/4	These products may be available at pre-mixes or co-packs. See label for description of application methods. Do not follow a soil application of Orondis Ridomil Gold® with foliar applications of Orondis Ultra®. Orondis Ultra® and Orondis Ridomil Gold® are combinations of two different systemic active ingredients.
Orondis Ultra ®	Oxathiapiproprilin/ mandipropamid	4/0	U15, 40	
Presidio 4SC®	Fluopicolide	12/2	43	
Ranman®	Cyazofamid	12/0	21	
Revus®	Mandipropamid	4/0	40	
Ridomil Gold®	Mefenoxam	48/5	4	Strains of the Phytophthora blight fungus that are resistant to Ridomil® might be present, so be sure to alternate this product with others that have different modes of action.
Zampro®	Ametoctradin/ dimethomorph	12/0	40	
Gavel®	Mancozeb/zoxamide	48/5	M/22	The products Gavel® and Zing!® are premixes of the systemic active ingredient zoxamide and the respective contacts mancozeb and chlorothalonil,. These products may be useful because the combination of systemic and contact active ingredients can help manage fungicide resistance.
Zing!®	Chorothalonil/ zoxamide	12/0	M/22	

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Viruses

- Potyviruses: Papaya ringspot virus, watermelon mosaic virus, and zucchini yellow mosaic virus
- Other viruses: Tobacco ringspot virus, squash mosaic virus

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Viruses

New viruses in Indiana

- Two viruses found in mixed infection (Knox Co): Watermelon mosaic virus and watermelon crinkle leaf-associated virus 1

- Next steps include statewide survey of vegetable viruses in Indiana (mainly watermelon, pumpkin, pepper, and tomatoes)

- **Please contact me if would like to have your farm sampled**

Cesar Escalante

escalac@purdue.edu

812-886-0198

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Root-knot nematode

Meloidogyne spp.

- Yellow and stunted plants
- Roots produce galls
- Wide host range
- Melon and other vegetables
- Nematicides
- Soil test

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Cucurbit yellow vine disease (CYVD)

An emerging disease in the cucurbit industry

- Bacterial disease
- *Serratia marcescens*
- Spread by squash bugs (*Anasa tristis*)

Illinois Extension

Cucurbit yellow vine disease (CYVD)

Symptoms in watermelon

Leaf yellowing and wilting (bright yellow in some cases). Honey-brown discoloration of phloem

Photo: E. Sikora, Auburn Univ.

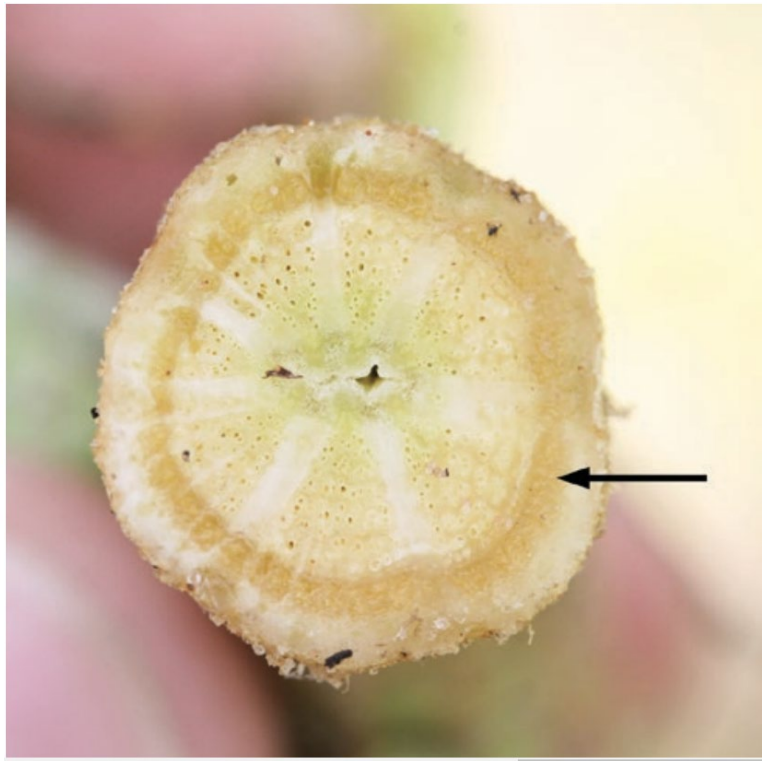

Photo: T. Isakeit, Texas Agrilife Extension

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Cucurbit yellow vine disease (CYVD)

An emerging disease in the cucurbit industry

- If you suspect that your cucurbit plants may be infected with CYVD, we'd like to hear from you!
- **Please contact Cesar Escalante, escalac@purdue.edu, 812-886-0198)**
- Samples can be sent to Vegetable Lab in the SWPAC, Vincennes
- Cesar processes the samples in collaboration with Kensy Rodriguez (Cornell University, NY)

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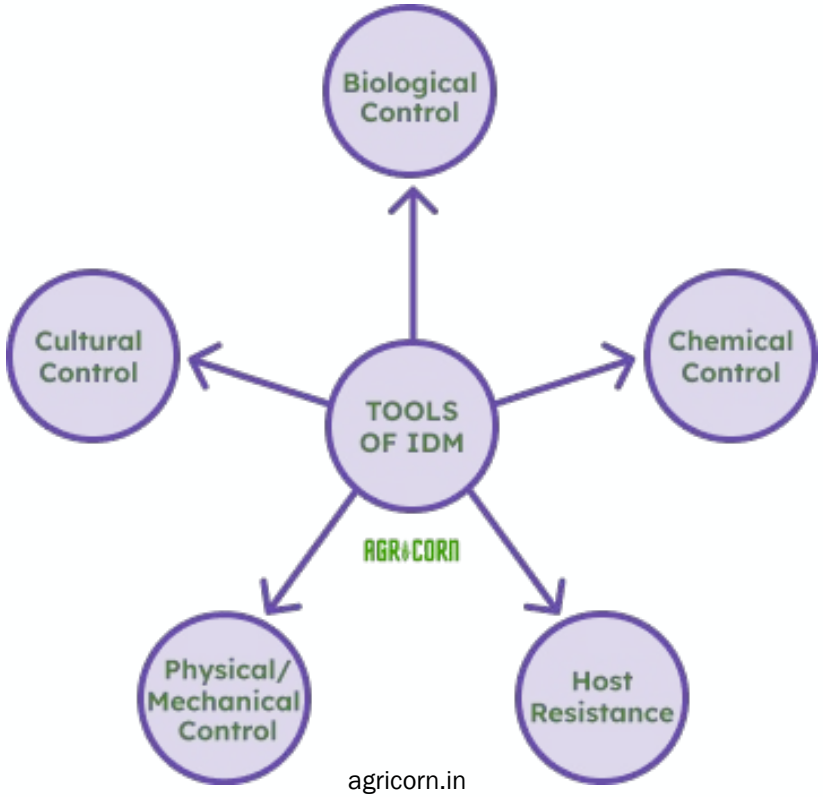
Integrated Disease Management (IDM)

- Combining cultural, biological, and chemical controls to manage diseases
- Benefits: Reduced chemical use, delayed resistance, improved yields



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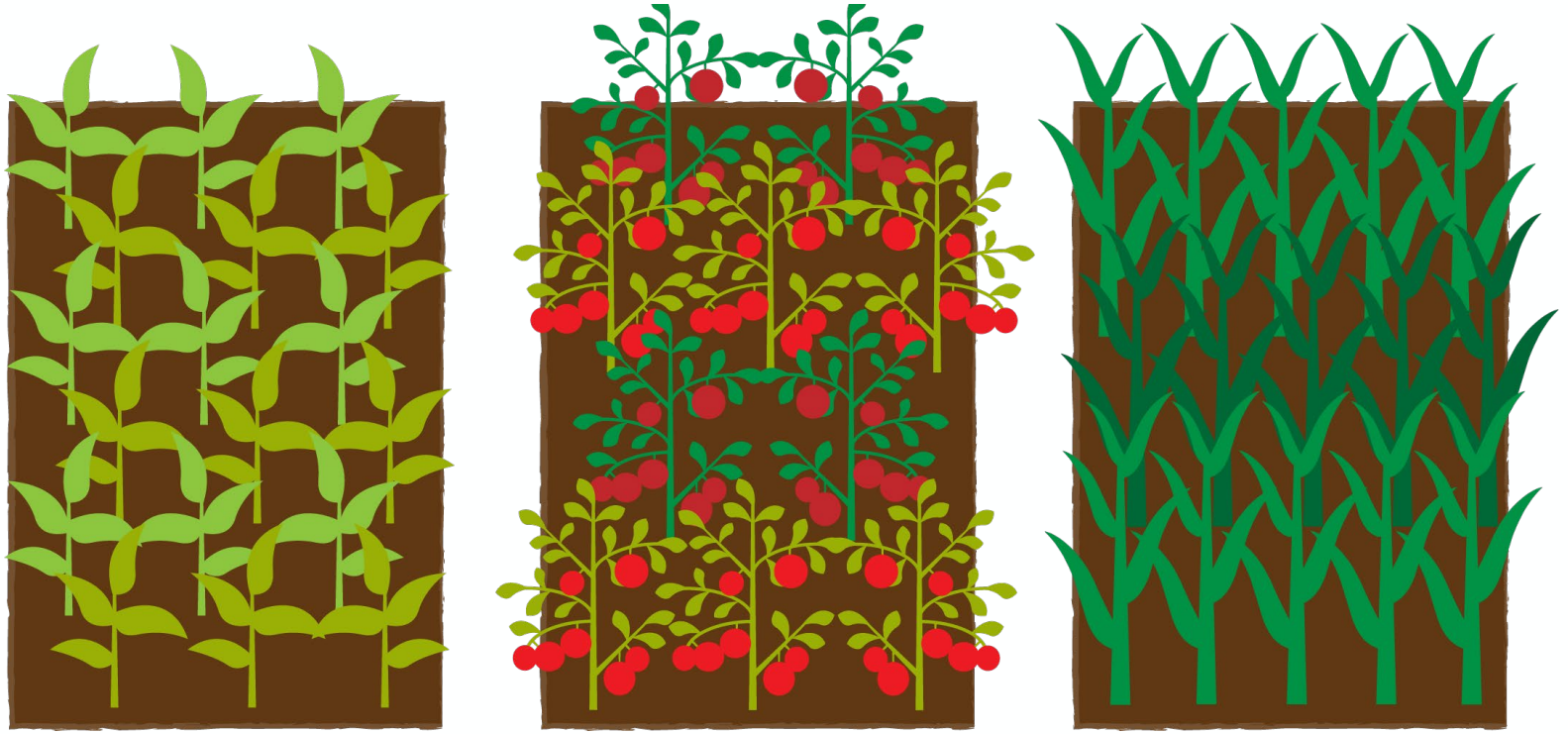
Cultural controls

- Sanitation: Removing infected plants and debris
- Irrigation: Avoiding overhead watering
- Crop rotation: Rotating to non-cucurbit crops



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Biological controls

Biocontrol agents: *Trichoderma harzianum, Bacillus subtilis*

Chemical controls

Fungicide Efficacy Table for Cucurbits (2025)

VG=Very Good, G=good, F=fair, P=poor, S=suppression

Trade Names (REI/PHI)	Active Ingredients MOA or FRAC code: fungicides with a number as the MOA code should be tank-mixed or alternated with a different MOA code according to the label.	Alternaria leaf blight	Anthracnose	Bacterial fruit blotch	Bacterial leaf and fruit spot	Downy mildew	Gummy stem/ black rot	Plectosporium blight	Phytophthora blight	Powdery mildew	Scab
Actigard (12h/0d)	acibenzolar-S-methyl (P1)			F	P	P				P	P
Agri-Fos, Phostrol(4h to 12 h/0d)	acid/phosphite (33)					F	F		F		
Aprovia Top (12h/0d)	difenconazole (3), benzovindiflupyr (7)		F				F	F		G	
Bravo, Echo, Equus, Initiate (12h/0d)	chlorothalonil (M5)	G	G			F	G	F	P	P	G
Cabrio (12h/0d)	pyraclostrobin (11)	G	G			P	P	G		P	
copper (4h to 48h/0d)	copper (M1)	P	P	F	F	P	P				
Curzate (12h/3d)	cymoxanil (27)					F					
Dithane, Manzate, Penncozeb (24h/5d)	mancozeb (M3)	G	G			F	G	F			G
Elumin (12h/2d)	ethaboxam (22)					G			G		
Flint (12h/7d)	trifloxystrobin (11)					P		G		P	
Fontelis (12h/1d)	penthiopyrad (7)	G					P	F		F	
Forum 4.18SC (12h/0d)	dimethomorph (40)					P			F		
Gatten (12h/0d)	flutianil (U13)									G	
Gavel (48h/5d)	mancozeb (M3), zoxamide (22)	G				G			F		
Inspire Super (12h/7d)	difenoconazole (3), cyprodinil (9)	G	F				G	F		G	
Luna Experience (12h/7d)	fluopyram (7), tebuconazole (3)	G	F				G			G	
Luna Sensation (12h/0d)	trifloxystrobin (11), fluopyram (7)	G	G				F			F	
Merivon (12h/0d)	fluxapyroxad (7), pyraclostrobin (11)	G	G				P			F	
Miravis Prime (12h/1d)	pydiflumetofen (7), fludioxonil (12)	G					G			G	
Monsoon, Onset, Toledo (12h/7d)	tebuconazole (3)						G			F	
Omega 500F (12h/7d to 30d)	fluazinam (29)					G					
Orondis Gold 200 (4h/0d)	oxathiapipropilin (49)								F		
Orondis Opti (12h/0d)	oxathiapipropilin (49), chlorothalonil (M5)					VG			F		
Orondis Ultra (12h/0d)	oxathiapipropilin (49), mandipropamid (40)					G			VG		
Presidio 4SC (12h/2d)	fluopicolide (43)					F			G		
Previcur Flex (12h/2d)	propamocarb (28)					G					
Pristine (12h/0d)	boscalid (7), pyraclostrobin (11)	G	G			P	P			P	
Procure (12h/0d)	triflumizole (3)									VG	
Proline (12h/7d)	prothioconazole (3)									VG	
Quadris, Satori (4h/1d)	azoxystrobin (11)	G	G			P	P	G		P	
Quadris Opti (12h/1d)	azoxystrobin (11), chlorothalonil (M5)	G	G			P	P			P	
Quadris Top (12h/1d)	azoxystrobin (11), difenconazolel (3)	G	G				G	G		P	
Quintec (12h/3d)	quinoxyfen (13)									VG	
Rally (24h/0d)	mycolobutanil (3)									F	
Ranman (12h/0d)	cyazofamid (21)					G			G		
Revus (4h/0d)	mandipropamid (40)					G			VG		
Switch 62.5WB (12h/1d)	cyprodinil (9), fludioxanil (12)	G					G			F	
Tanos (12h/3d)	cymoxanil (27), famoxadone (11)	G	G	S		F			S		
Topsin M (24h/0d)	thiophanate-methyl (1)		G				F	F		F	
Torino (4h/0d)	cyflufenamid (U6)									F	
Velum Prime (12h/0d)	fluopyram (7)										
Vivando (12h/0d)	metrafenone (U8)									VG	
Zampro (12h/0d)	ametoctradin (45), dimethomorph (40)					G			F		
Zing (12h/0d)	zoxamide (22), chlorothalonil (M5)	G	G			G			F		

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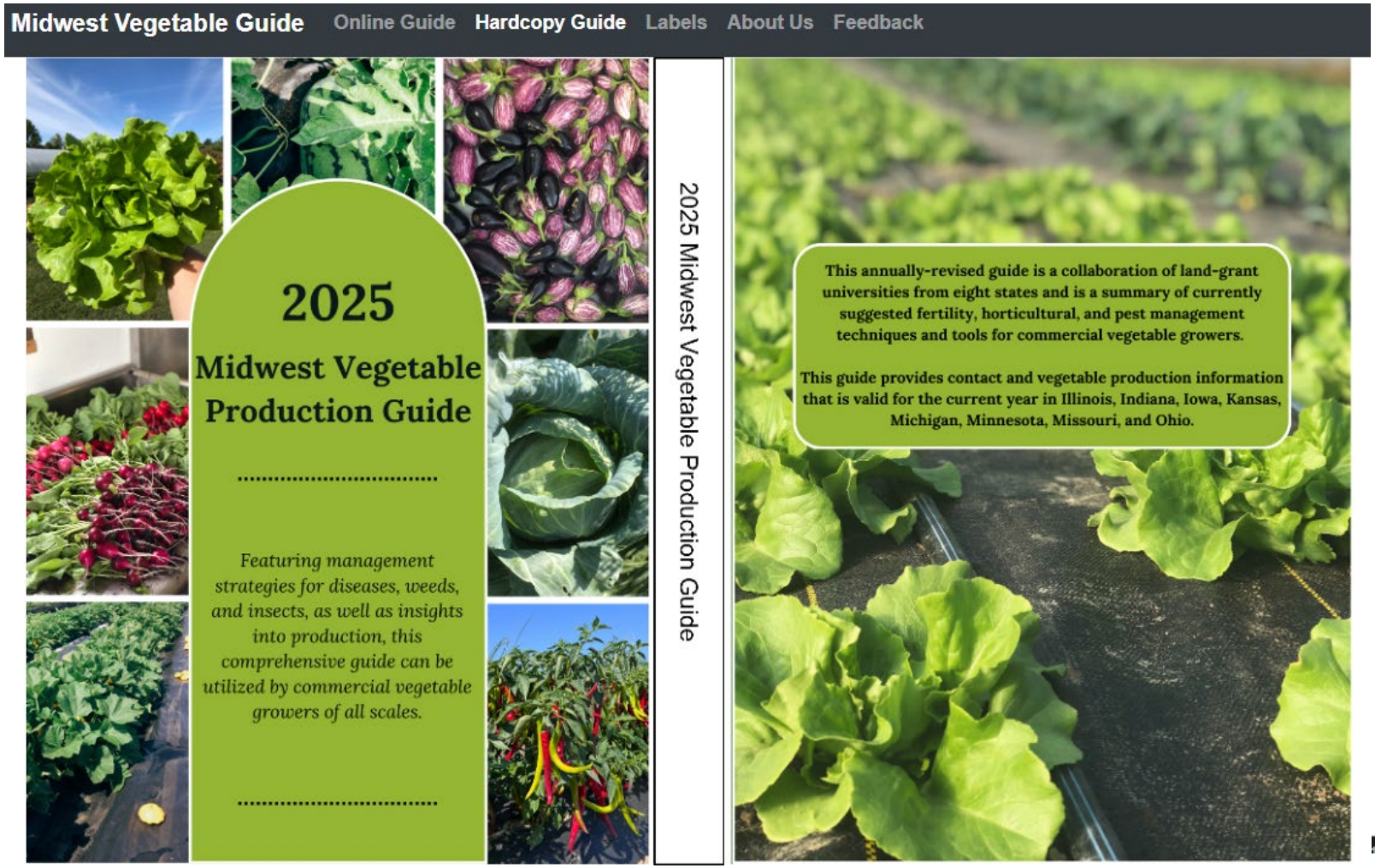
Chemical controls

https://mwveguide.org/guide



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Acknowledgments

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College of Agriculture – Department of Botany and Plant Pathology

Thank You

César Escalante

Email: Escalac@purdue.edu

Office: 812-886-0198

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