

# Asparagus Pathology Research



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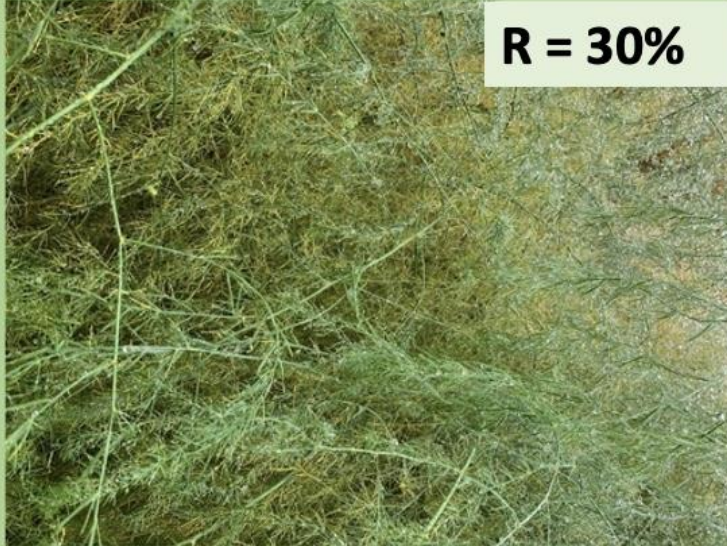
# Fungicide Tested for Purple Spot

Product	Active ingredient	FRAC	Labeled
Aprovia Top SL	difenoconazole/benzovindiflupyr	3/7	no
→ Bravo WeatherStik SC	chlorothalonil	M05	yes
Cabrio EG	pyraclostrobin	11	no
Luna Experience SC	tebuconazole/fluopyram	3/7	no
Luna Sensation SC	fluopyram/trifloxystrobin	7/11	no
Luna Tranquility SC	fluopyram/pyrimethanil	7/9	no
→ Manzate Pro-Stick WP	mancozeb	M3	yes
Merivon SC	fluxapyroxad/pyraclostrobin	7/11	no
Miravis Prime SC	pydiflumetofen/fludioxonil	7/12	no
Omega 500F	fluazinam	29	no
→ Quadris SC	azoxystrobin	11	yes
Scala SC	pyrimethanil	9	no
Tanos DF	famoxadone/cymoxanil	11/27	no

# Purple Spot Fungicide Trial

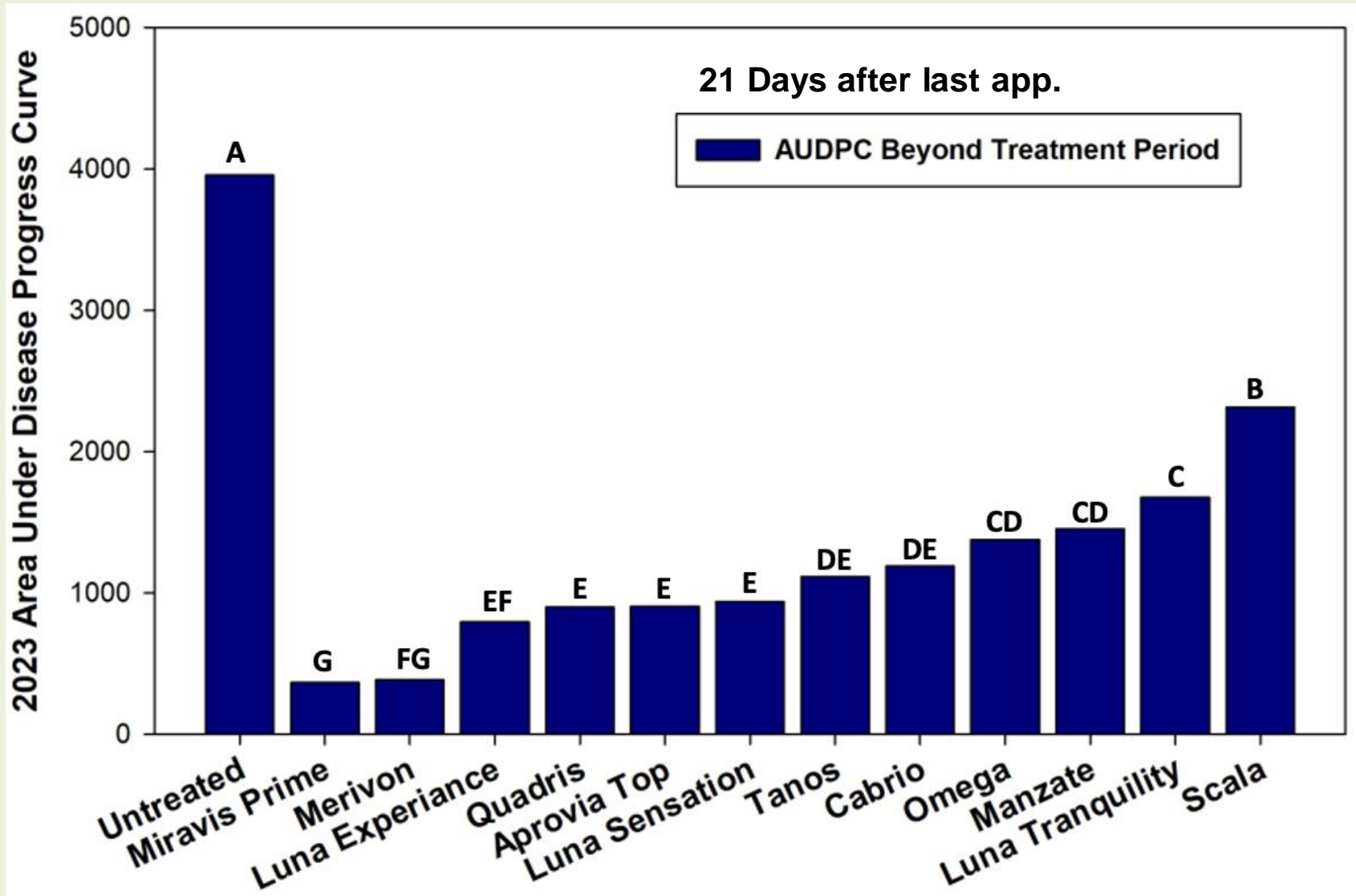
- ‘Sequoia’ in established grower’s field
- 4 replications: 20-ft treatment rows
- Applications made with a CO<sub>2</sub> backpack sprayer every 10 days
  - 29 Jun; 7, 17, 28 Jul; 7, 18, 28 Aug; 7 Sep
- Foliar disease evaluated using a scale of 0= no foliar disease, 100= 100% fern defoliated

# Purple Spot Ratings



# New Product: Beyond the Spray Period

*Each treatment alternated with Bravo WeatherStik*



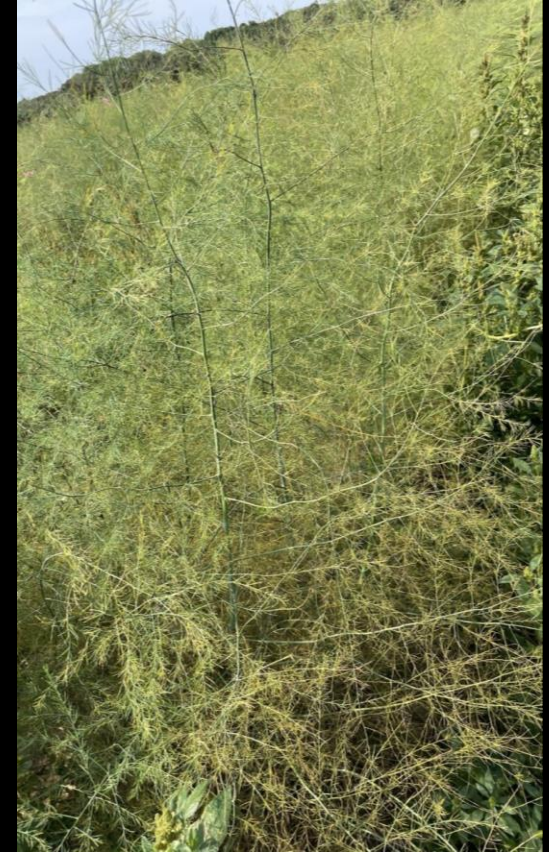
# Registered Fungicides



Quadris 15.5 fl oz  
-alt- Bravo WS 32 fl oz



Untreated



Manzate 14.4 g  
-alt- Bravo WS 32 fl oz

21 September  
(14 Days after last app)

# Unregistered Fungicides



Miravis Prime 13.4 fl oz  
-alt- Bravo WS 32 fl oz



Untreated



Merivon 11.0 fl oz  
-alt- Bravo WS 32 fl oz

28 September  
(14 Days after last app)

# Purple Spot TOMCAST Trial

- ‘Sequoia’ in grower’s field
- 4 replications: 20-ft treatment rows
- Applications made with a CO<sub>2</sub> backpack sprayer:
  - 10-days
  - 15 DSVs
  - 20 DSVs
- Foliar disease evaluated using a scale of 0%-100%





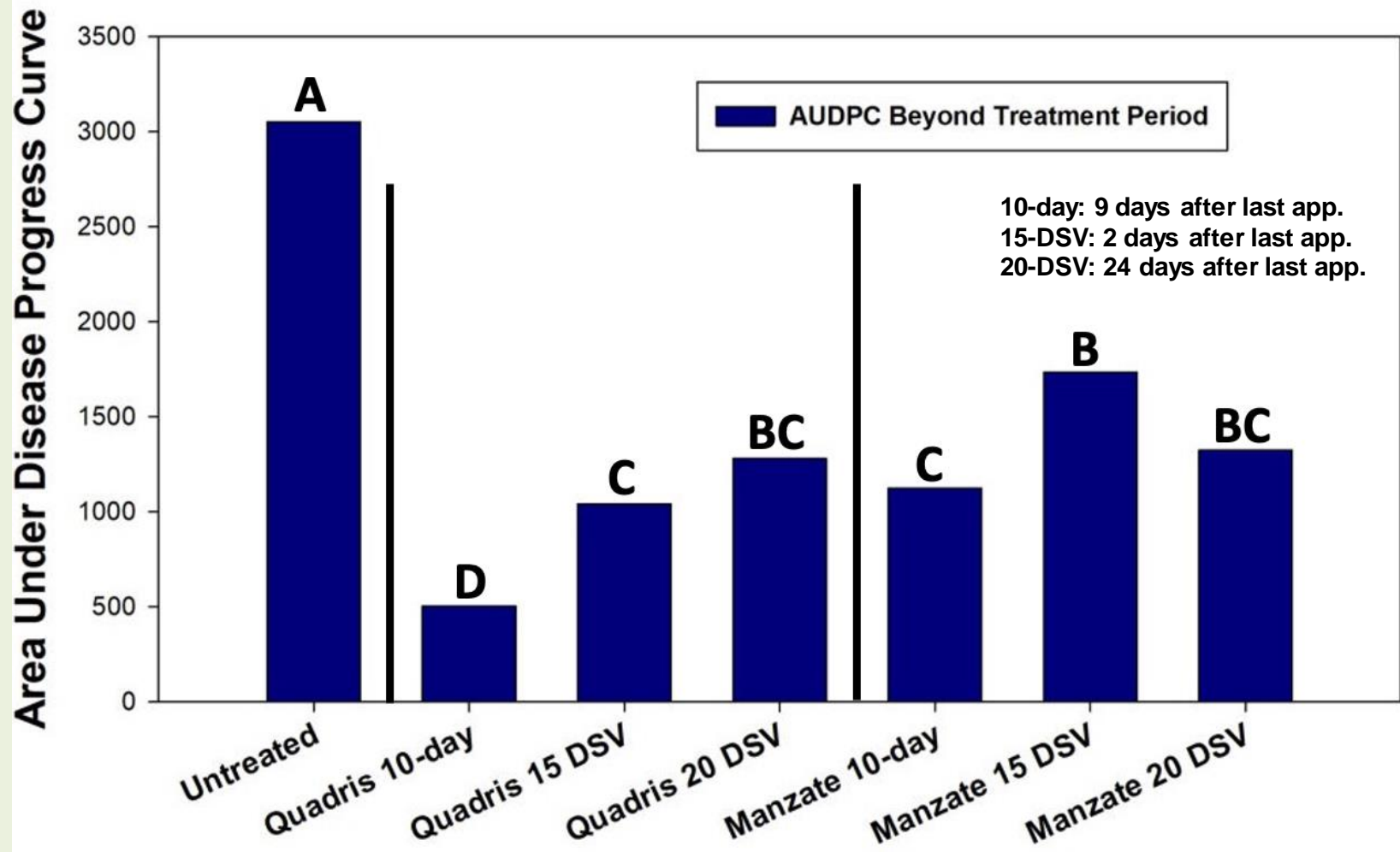
# Fungicide Programs Tested for Purple Spot

Programs	Interval	Number of Applications	Application Dates
<b>1) Manzate Pro-Stick WP</b> <b>alt Bravo Weather Stik SC</b>	<b>10 Day</b>	<b>8</b>	<b>30 Jun</b>
<b>2) Quadris SC</b> <b>alt Bravo Weather Stick SC</b>			<b>10, 20, 31 Jul</b> <b>10, 21, 31 Aug</b> <b>12 Sep</b>
<b>3) Merivon SC</b> <b>alt Bravo Weather Stick SC</b>	<b>15 DSV</b>	<b>5</b>	<b>30 Jun</b>
<b>4) Miravis Prime SC</b> <b>alt Bravo Weather Stick SC</b>			<b>13, 27 Jul</b> <b>10, 24 Aug</b>
	<b>20 DSV</b>	<b>4</b>	<b>30 Jun</b> <b>20 Jul</b> <b>7, 28 Aug</b>

# TOMCAST: Beyond the Treatment Period

## Registered Fungicides

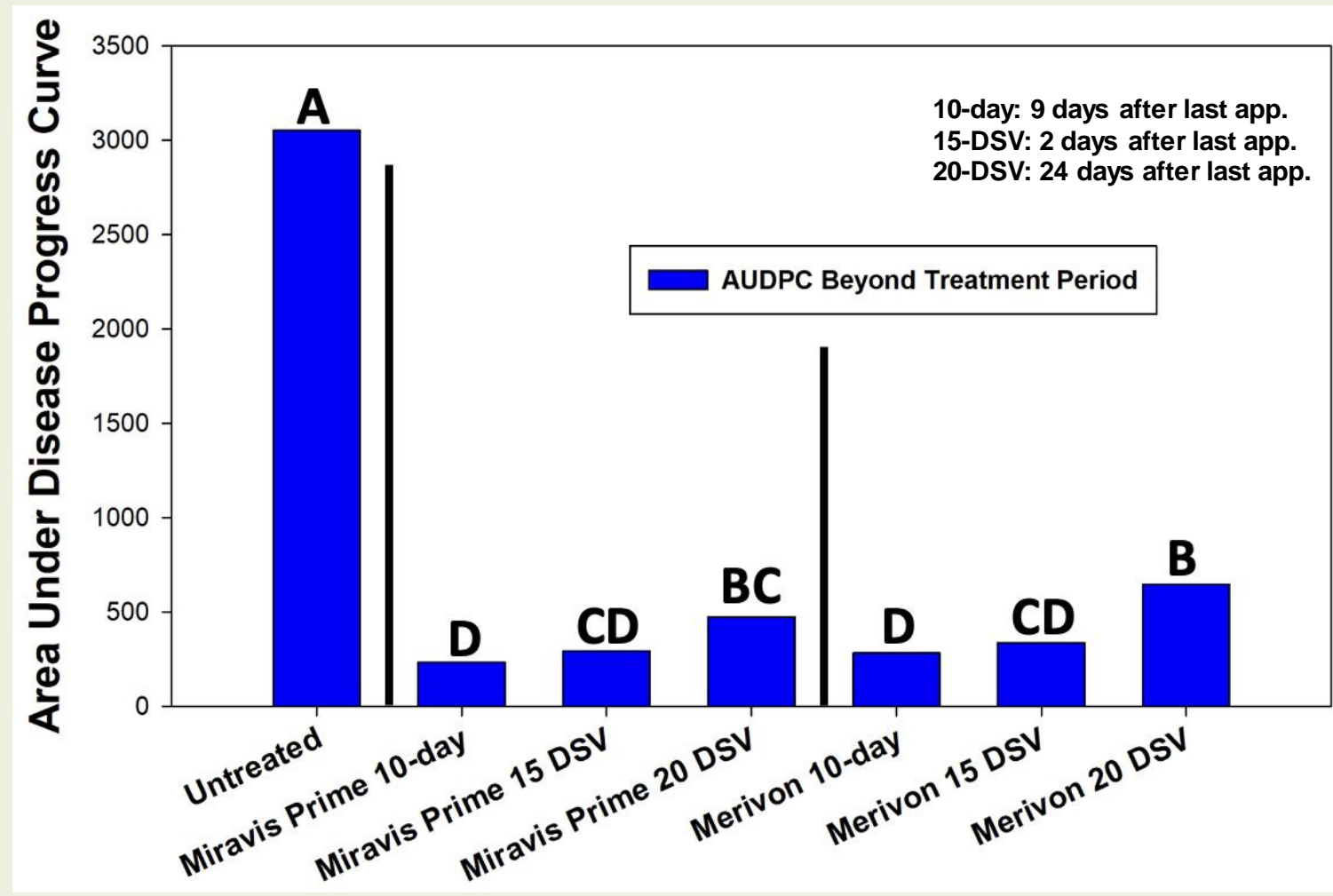
*Each treatment alternated with Bravo WeatherStik*



# TOMCAST: Beyond the Treatment Period

## Unregistered Fungicides

*Each treatment alternated with Bravo WeatherStik*



# TOMCAST: Registered Fungicides



Quadris 15.5 fl oz  
-alt- Bravo WS 32 fl oz  
4 Applications  
20 DSV Interval  
Last App: 28 Aug



Untreated  
21 September



Manzate 14.4 g  
-alt- Bravo WS 32 fl oz  
8 Applications  
10-day Interval  
Last App: 12 Sep

# TOMCAST: Unregistered Fungicides



Miravis Prime 13.4 fl oz  
-alt- Bravo WS 32 fl oz  
4 Applications  
20 DSV Interval  
Last App: 28 Aug



Untreated  
21 September



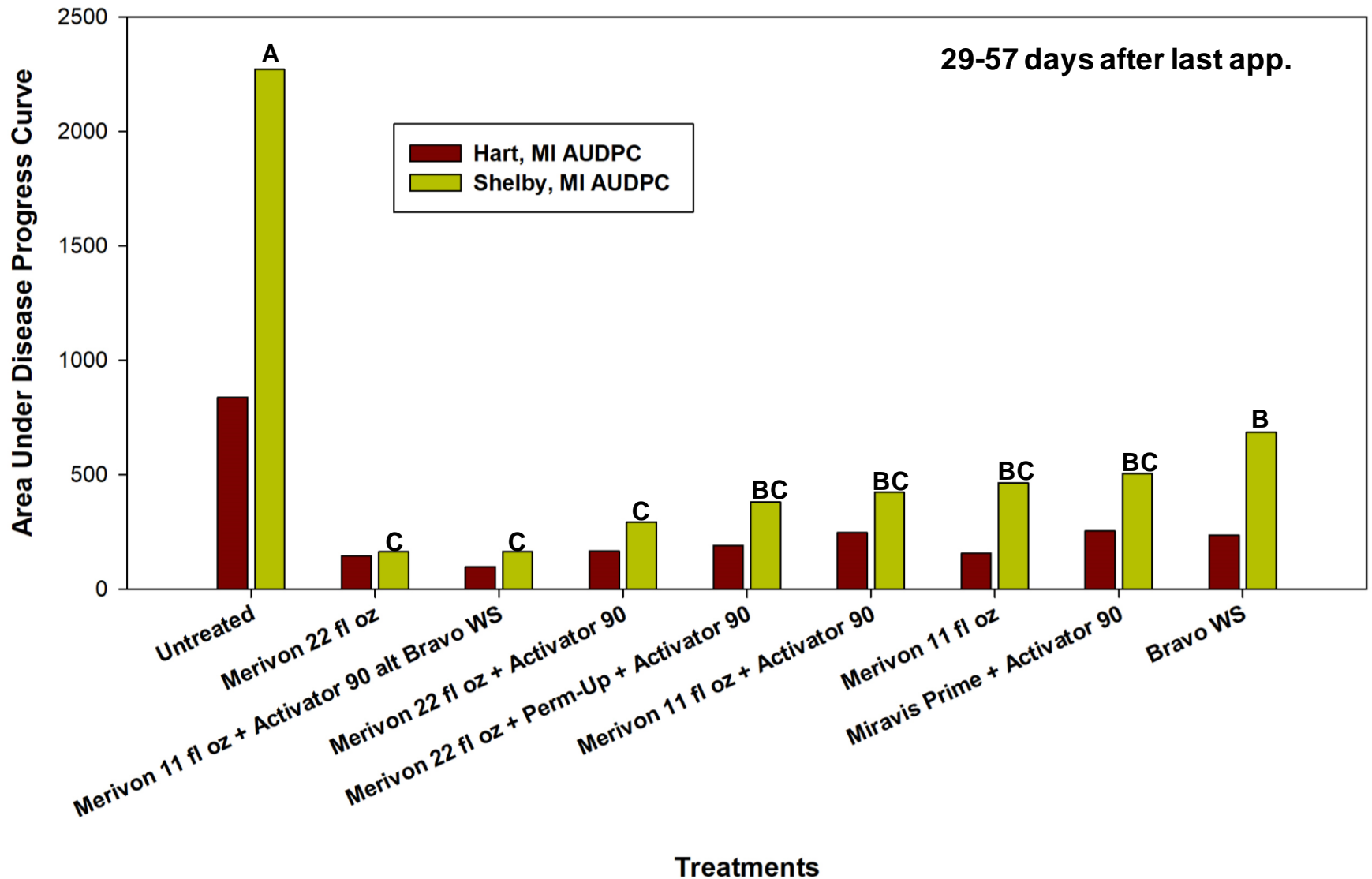
Merivon 11.0 fl oz  
-alt- Bravo WS 32 fl oz  
4 Applications  
20 DSV Interval  
Last App: 28 Aug

- **Develop data for Merivon as a new tool for asparagus: Requested by BASF**
- **'Sequoia' & 'Millennium' in growers' fields**
  - **Shelby, MI and Hart, MI**
- **Applications made with a CO<sub>2</sub> backpack sprayer every 10 or 14 days**
  - **10-day: 10, 21, 31 July; 10, 21 Aug**
  - **14-day: 10, 24 July; 7, 21 Aug**
- **Disease evaluated visually**
  - **0= no disease, 100= 100% fern defoliated**

Treatment and rate/A*	Number of Applications
Merivon SC 11 fl oz	3
Merivon SC 22 fl oz	3
Merivon SC 11 fl oz + Activator 90 0.125%V/V	3
Merivon 22 fl oz + Activator 90 0.125%V/V	3
Merivon 22 fl oz + Perm-Up EC 4 fl oz + Activator 90 0.125%V/V	3
Merivon SC 22 fl oz + Activator 90 0.125%V/V ALT Bravo WS SC 3 pt	5
Miravis Prime SC 13.4 fl oz + Activator 90 0.125%V/V*	2
Bravo WS SC 3 pt*	4
*: Treatments applied on 14-day interval, all other treatments applied on 10-day interval	

# Purple Spot IR-4 Trial

Letters represent differences at Shelby MI location





# Fungicide Treatments: September 19



Bravo WS 3 pt  
4 applications  
14-day interval  
Last app: 21 Aug



Untreated



Merivon 22 fl oz  
3 applications  
10-day interval  
Last app: 31 Jul

# Purple Spot Research Summary

- **Quadris: FRAC 11**
  - Effective and registered for asparagus
- **Miravis Prime: FRAC 12/7**
  - Highly effective providing long-lasting protection
  - IR-4 Status: Project accepted as an IR-4 priority; residue studies slated for 2024
- **Merivon: FRAC 11/7**
  - Highly effective providing long-lasting protection
  - IR-4 Status: Registrant considering whether they will support a registration for asparagus. If BASF says 'yes' then the project will need to be prioritized again at the regional and national level (September).
- Pursue additional fungicides for in-season use?

# Acknowledgements

- **Kevin and Al Burmeister: 2022, 2023 field trials**
- **Ken and Nick Oomen: 2023 IR-4 field trials**
- **Funding: MSU Project GREEN, SCBG Grant administered through the Michigan Asparagus Committee, AgBiome, Supplemental Funding for the IR-4 studies provided by the Michigan Asparagus Committee**
- **TOMCAST troubleshooting: Drs. Ben Werling and Younsuk Dong**
- **MSU Lab Members:**
  - David Perla, Matthew Uebbing, Cheryl Engfehr**
  - Ethan Tippet, Jaqueline Methany**

