



Cercospora leaf blight

Update

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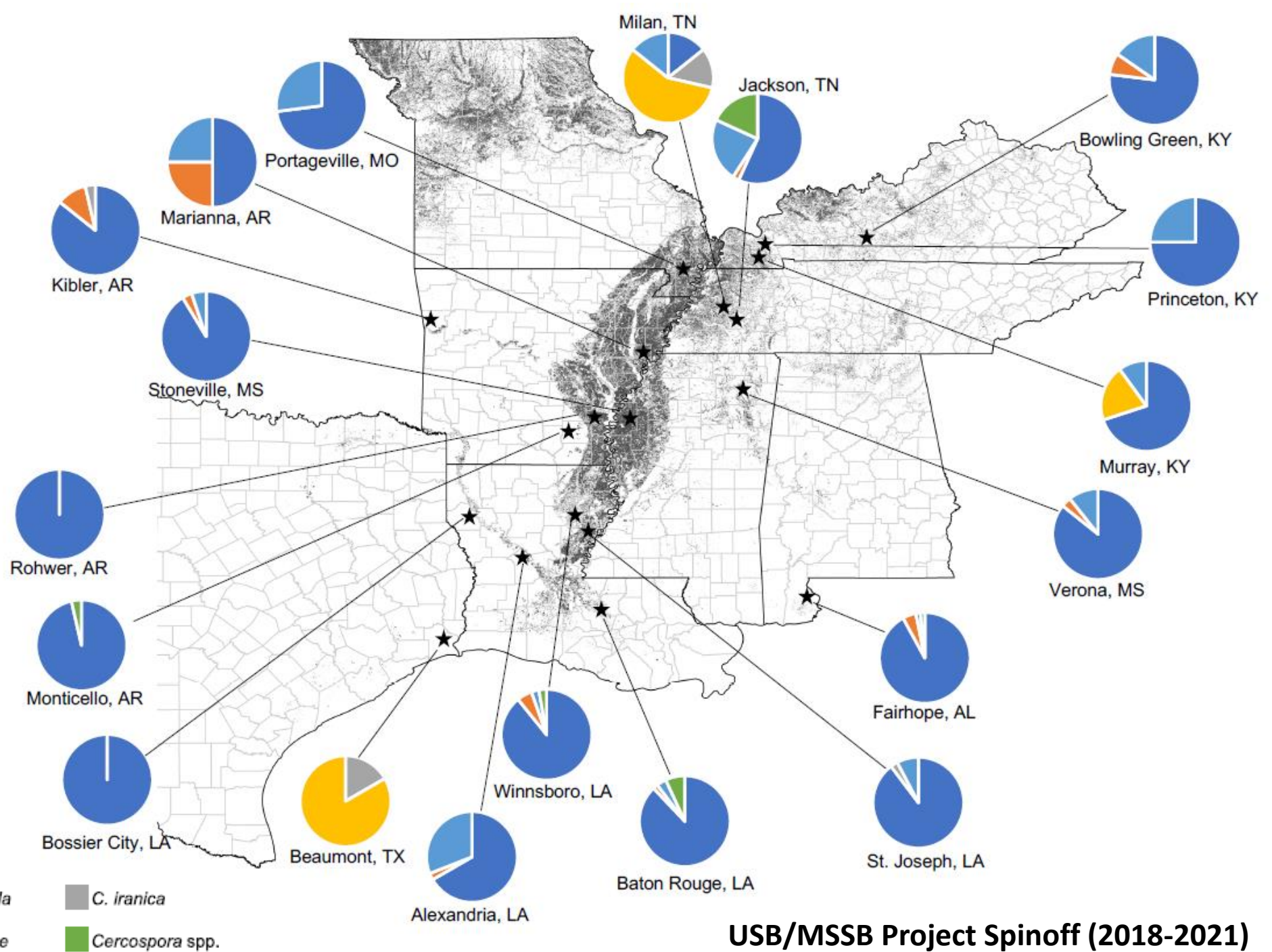
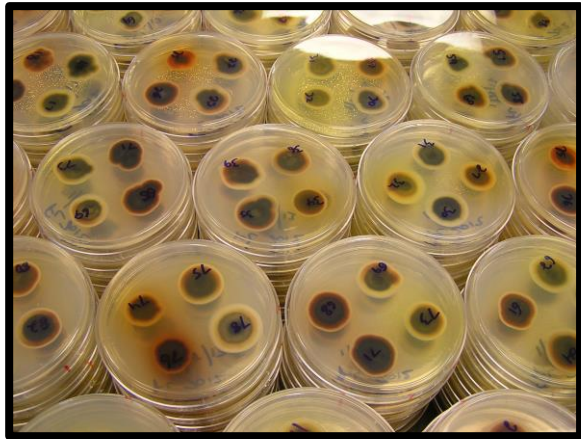


Cercospora leaf blight

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DISEASE ID IS IMPORTANT!

Cercospora Species Associated with Cercospora leaf blight in the southern US.



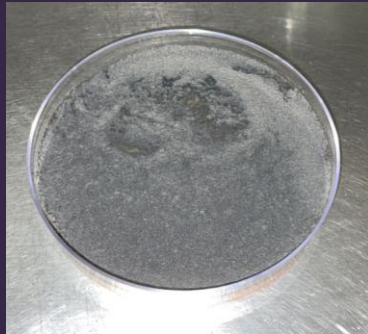
Doyle's Lab - Developing a protocol to study the biology of the species associated with CLB

C. cf. flagellaris – DMCC1435 and DMCC4400

C. cf. iranica – BW251

C. kikuchii - DMCC2070

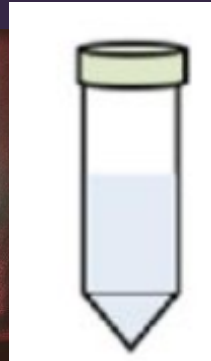
C. cf. sigesbeckiae – BW232



4 days after plating



5×10^4 conidia/mL
0.5% Tween 20
0.5% gelatin



Plants inoculated with mock solution



Plants inoculated with conidia solution

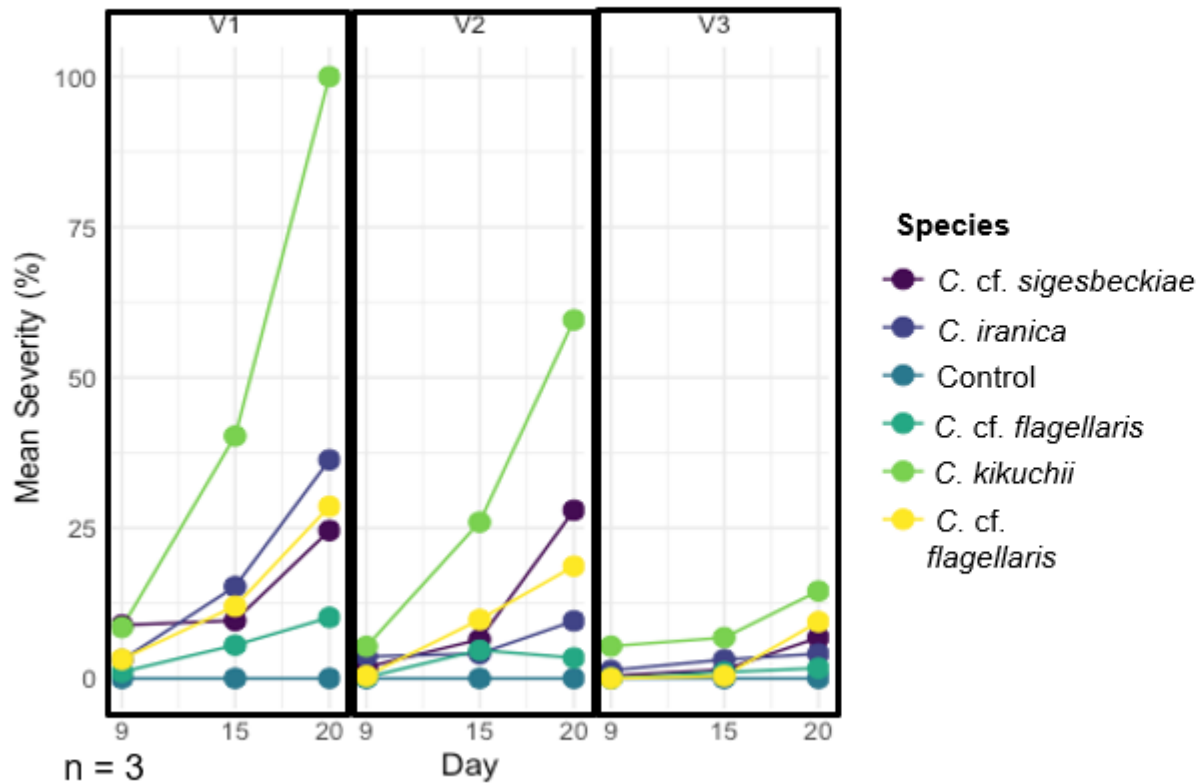


Ernesto da Silva

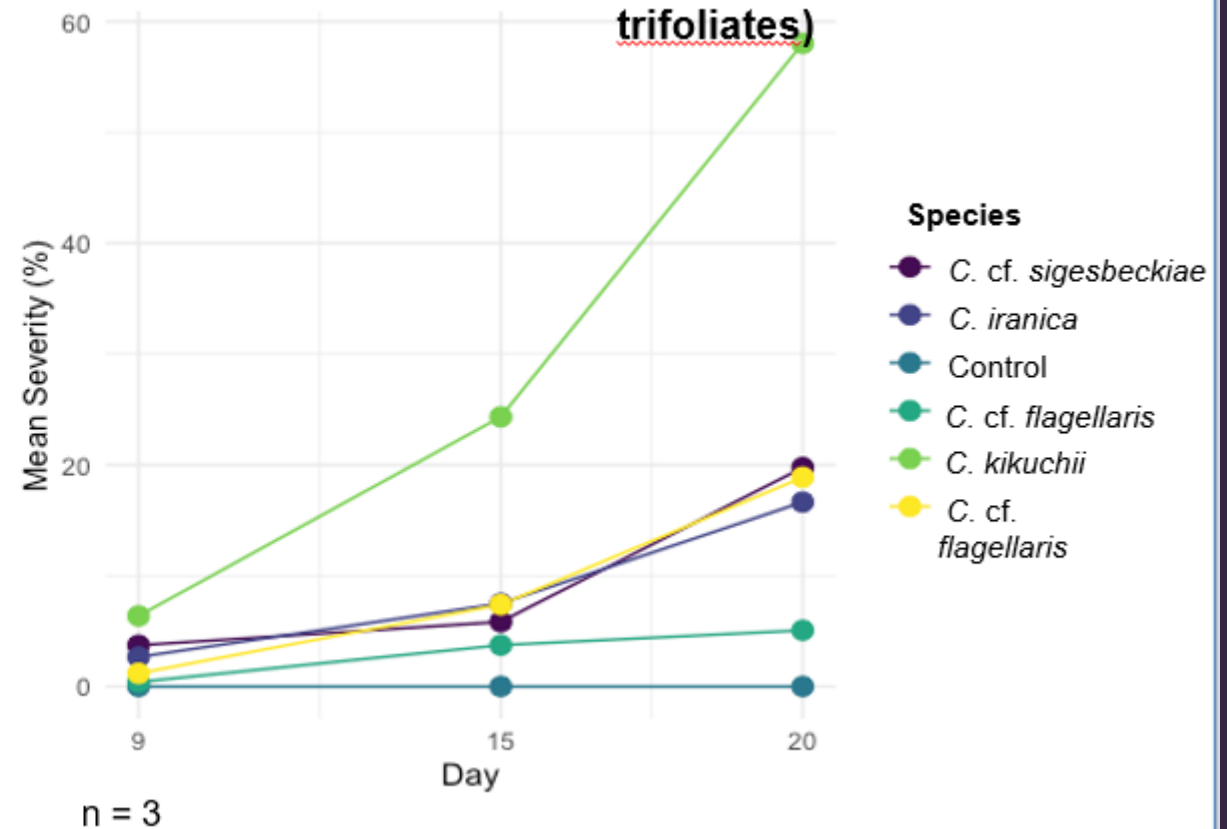
Virulence varies among isolates

- *C. kikuchii* most virulent in this study

Disease Progress by Isolate

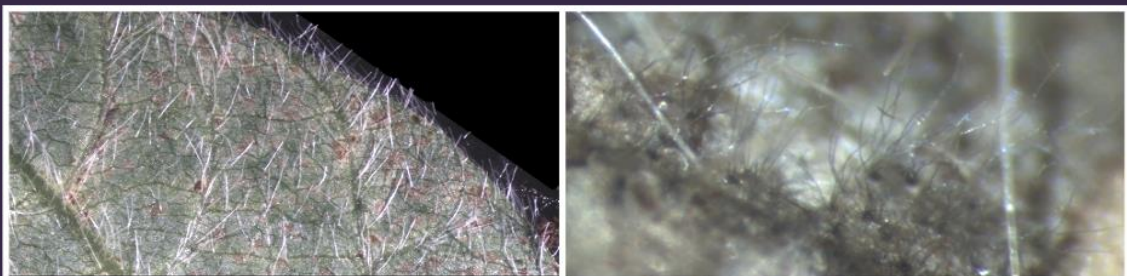


Disease Progress by Isolate (All trifoliates)



CLB symptoms caused by multiple species of *Cercospora*

“NEWLY” IDENTIFIED SYMPTOM
LIL’ PURPLE SPOTS
*possible management trigger?



C. cf. flagellaris

C. cf. sigesbeckiae

C. kikuchii

C. iranica



Chris Ward



6 dai



Ernesto da Silva



1ST TO COMPLETE
KOCH'S POSTULATES!?

Vinson Doyle's Program



Official Variety Trials

Cercospora leaf blight ratings at MRRS, NERS, DLRS, RRS, BHRS www.lsuagcenter.com



Official Variety Trials - Observations

Later maturity groups typically will have more CLB

Later planted trials typically will have more CLB

CLB ratings can be confounded with chloride toxicity at MRRS



Years ago, LL varieties seemed to have more resistance to purple seed stain

Plant Introductions Resistant to CLB

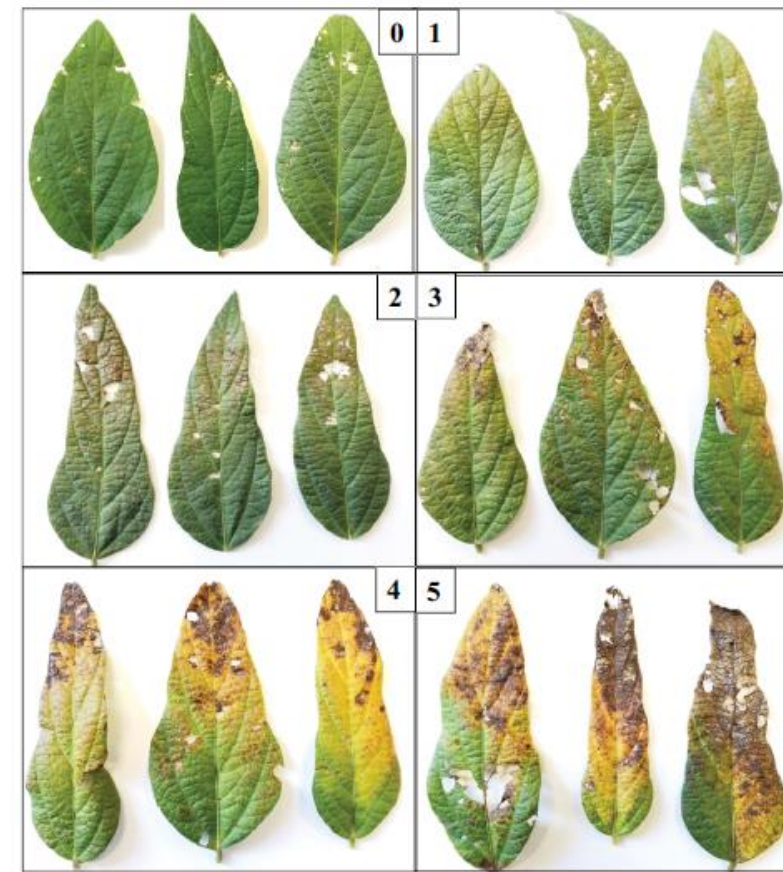
JOURNAL OF CROP IMPROVEMENT
<https://doi.org/10.1080/15427528.2020.1865226>



Evaluating *Cercospora* leaf blight resistance in soybean accessions using an improved categorical disease-evaluation scale

Brian M. Ward^{a,b}, Bishnu K. Shrestha^c, Tom W. Allen ^d, Blair Buckley^e, Pengyin Chen^f, Michael Clubb^f, Leandro A. Mozzoni^g, Moldir Orazaly^g, Liliana Florez^g, David Moseley^{g,h}, John C. Rupeⁱ, Thanos Gentimisⁱ, and Paul P. Price, III ^c

- 568 Accessions *57 PIs identified resistant
- 2016-2018
- 17 location-years
- MG III-VII



Numerical description	Symptom expression and characteristic differences between plant parts
0	No disease symptoms
1	Light purple/bronzing, few petiole lesions, no leaf blight
2	Moderate purple/bronzing and/or petiole lesions, no or minimal leaf blight
3	Heavy purple/bronzing and/or petiole lesions, light blight
4	Heavy purple/bronzing and/or petiole lesions, moderate blight
5	Severe blight, < 50% defoliation
6	Severe blight, > 50% defoliation

USB/MSSB Variety Development Project (2016-2021); David Moseley continues a similar project (USB)

Commercial Lines Identified Resistant to CLB

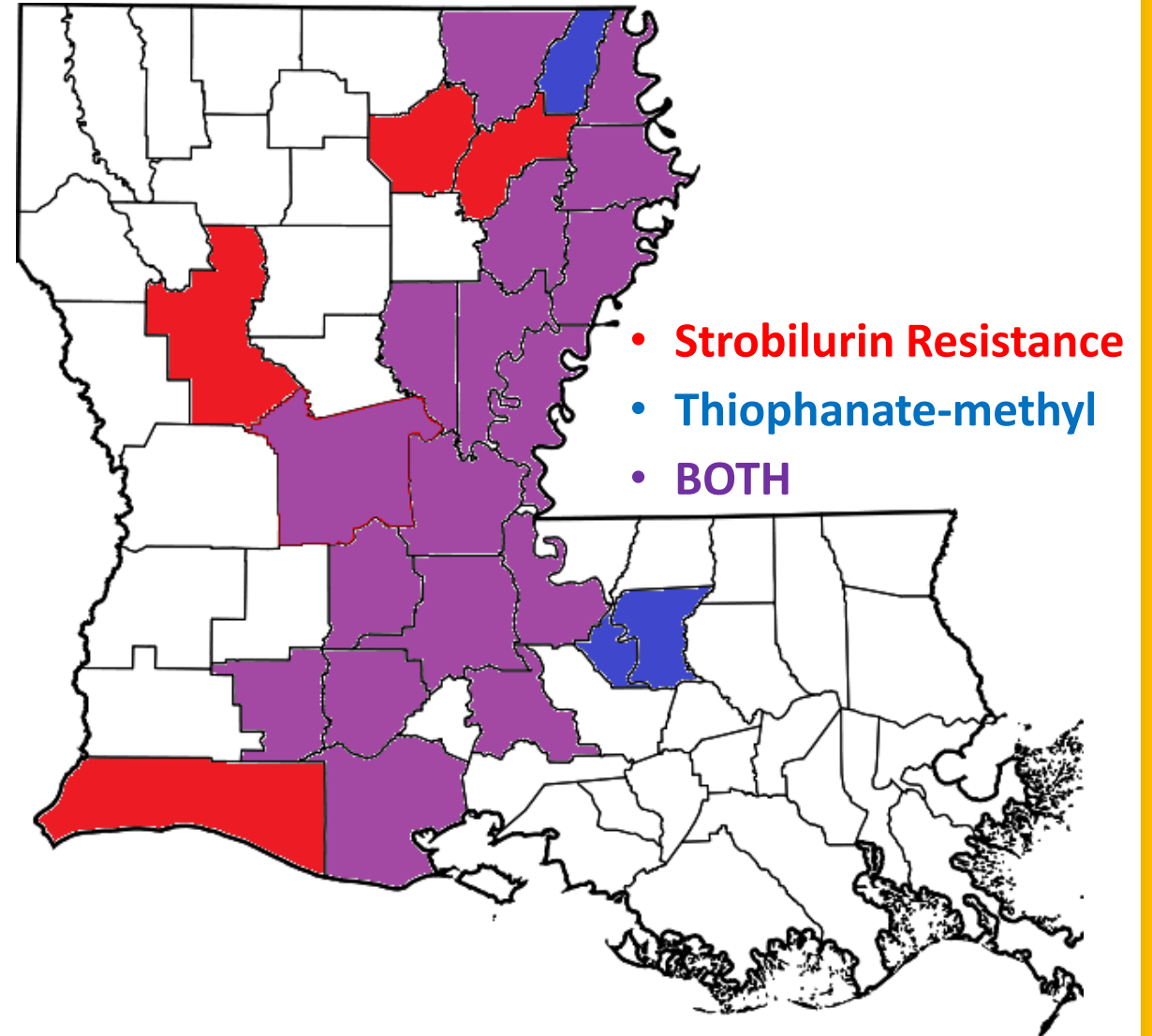
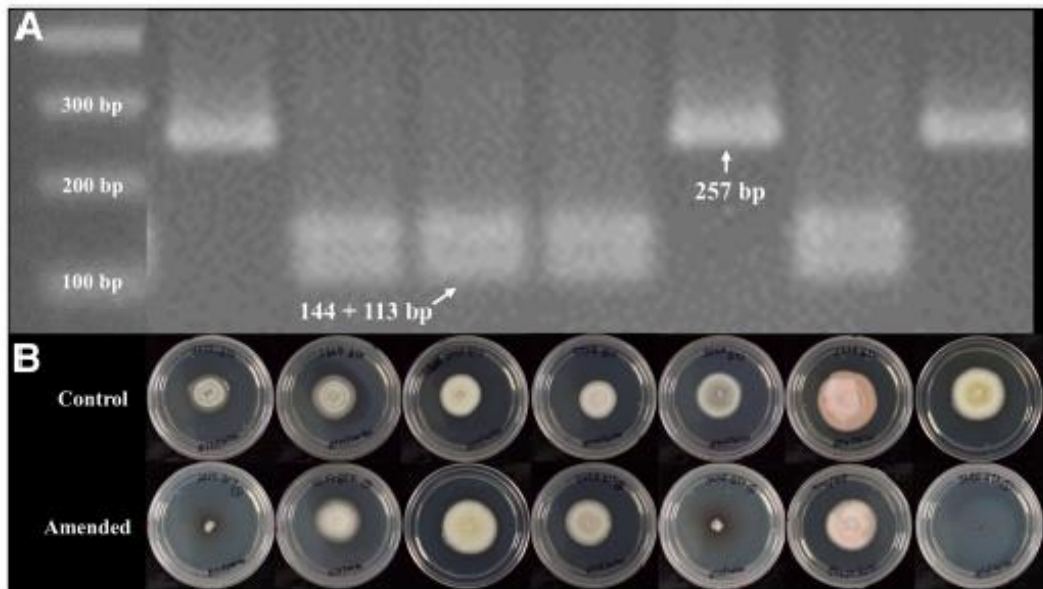
Cultivar	CM.			AL			AR			LA			MO			MS			TN		
	MG ^e	AVG ^f	N ^g	# ^h	AVG	N	#	AVG	N	#	AVG	N	#	AVG	N	#	AVG	N	#	AVG	N
AG46X6	4.6	0.035	50	1	0.005	2	2	0.003	12	4	0.026	24	.	N/A	0	5	0.136	8	1	0.000	4
AG53X6	5.3	0.043	50	4	0.017	3	19	0.019	12	5	0.028	24	.	N/A	0	17	0.173	7	3	0.003	4
R11-2354	6.0	0.057	92	9	0.026	6	8	0.009	24	6	0.033	24	21	0.022	6	1	0.092	16	5	0.015	8
LA560512	5.0	0.062	86	18	0.056	5	18	0.017	20	1	0.020	24	6	0.006	6	2	0.115	16	10	0.027	7
S12-2418	4.0	0.067	90	17	0.055	5	14	0.014	24	11	0.052	24	1	0.000	6	12	0.165	16	14	0.036	7
R10-197RY	5.6	0.070	92	14	0.052	6	11	0.011	24	2	0.024	24	16	0.016	6	9	0.154	16	22	0.053	8
AG47X6	4.7	0.073	51	6	0.020	3	13	0.013	12	19	0.088	24	.	N/A	0	15	0.171	8	2	0.003	4
UA5814HP	5.8	0.074	90	8	0.023	5	15	0.015	24	3	0.026	24	1	0.000	6	10	0.154	16	20	0.048	7
S11-20124	5.0	0.074	92	21	0.069	7	5	0.005	24	8	0.041	24	20	0.021	6	19	0.174	16	11	0.027	7
DG5580	5.5	0.075	49	2	0.010	3	16	0.015	12	23	0.105	22	.	N/A	0	6	0.137	8	4	0.014	4
Osage	5.6	0.075	93	26	0.085	7	12	0.011	24	9	0.047	24	31	0.039	6	4	0.133	16	28	0.071	8
REV56R63	5.6	0.080	50	7	0.020	3	28	0.038	12	21	0.088	24	.	N/A	0	11	0.163	8	9	0.025	3
DG4967LL	4.9	0.080	136	11	0.043	8	22	0.024	36	24	0.105	39	2	0.001	9	13	0.166	24	23	0.054	8
S12-3782	4.0	0.081	88	12	0.047	6	7	0.008	23	14	0.074	24	1	0.000	6	24	0.193	16	19	0.043	5
R11-1192	5.7	0.082	41	13	0.050	3	36	0.063	20	.	N/A	0	8	0.009	3	7	0.146	12	24	0.063	3
4670RR2Y	4.6	0.083	40	20	0.067	4	3	0.005	12	.	N/A	0	3	0.001	6	28	0.205	8	30	0.078	2

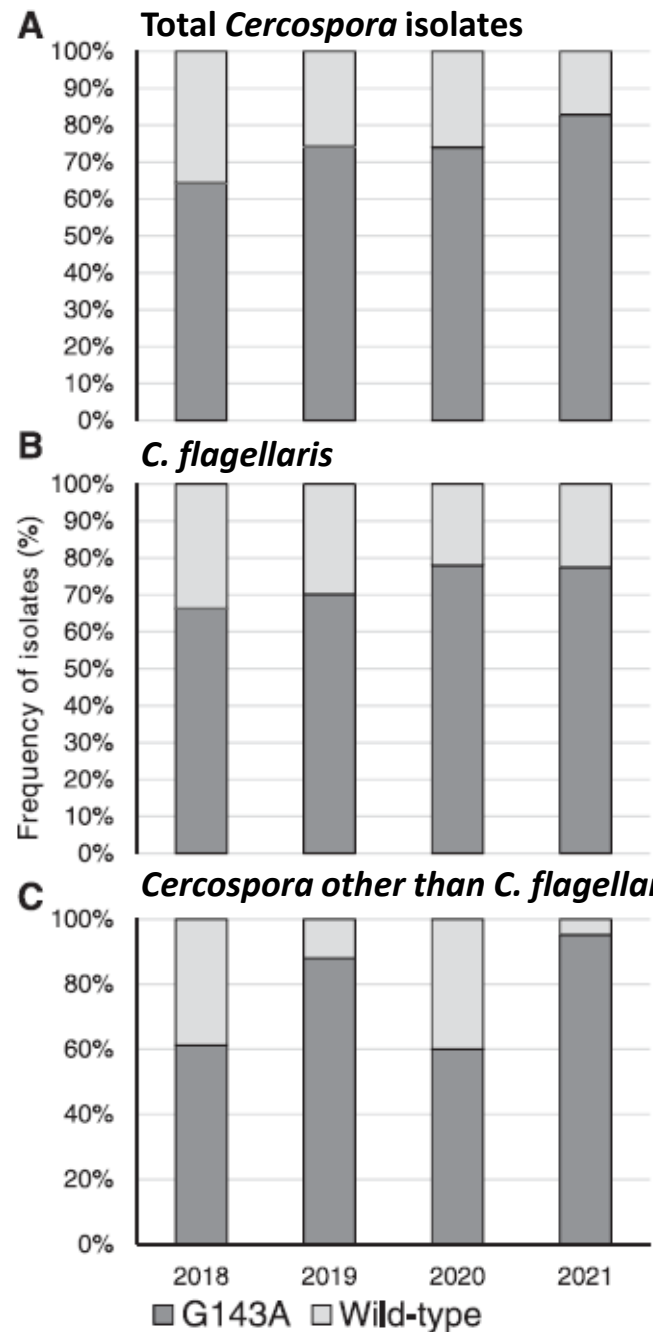
USB/MSSB Variety Development Project (2016-2021); David Moseley continues a similar project (USB)

Cercospora Leaf Blight – Fungicide Resistance

~90% resistant to
strobilurins

~33% resistant to
thiophanate-methyl





- 2018-2021
- 19 locations
- QoI-resistance dominates most populations

USB/MSSB Project Spinoff (2018-2021)

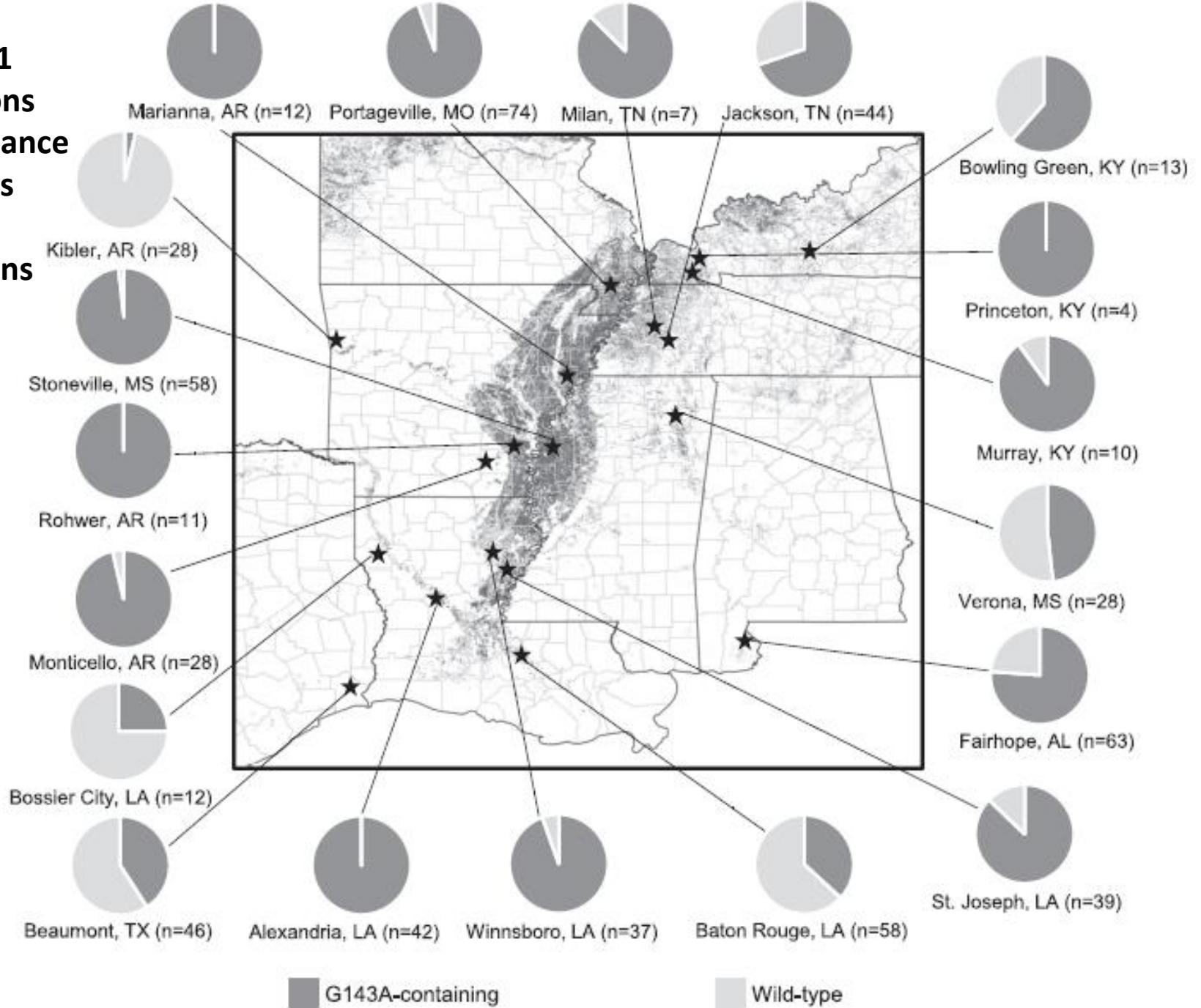
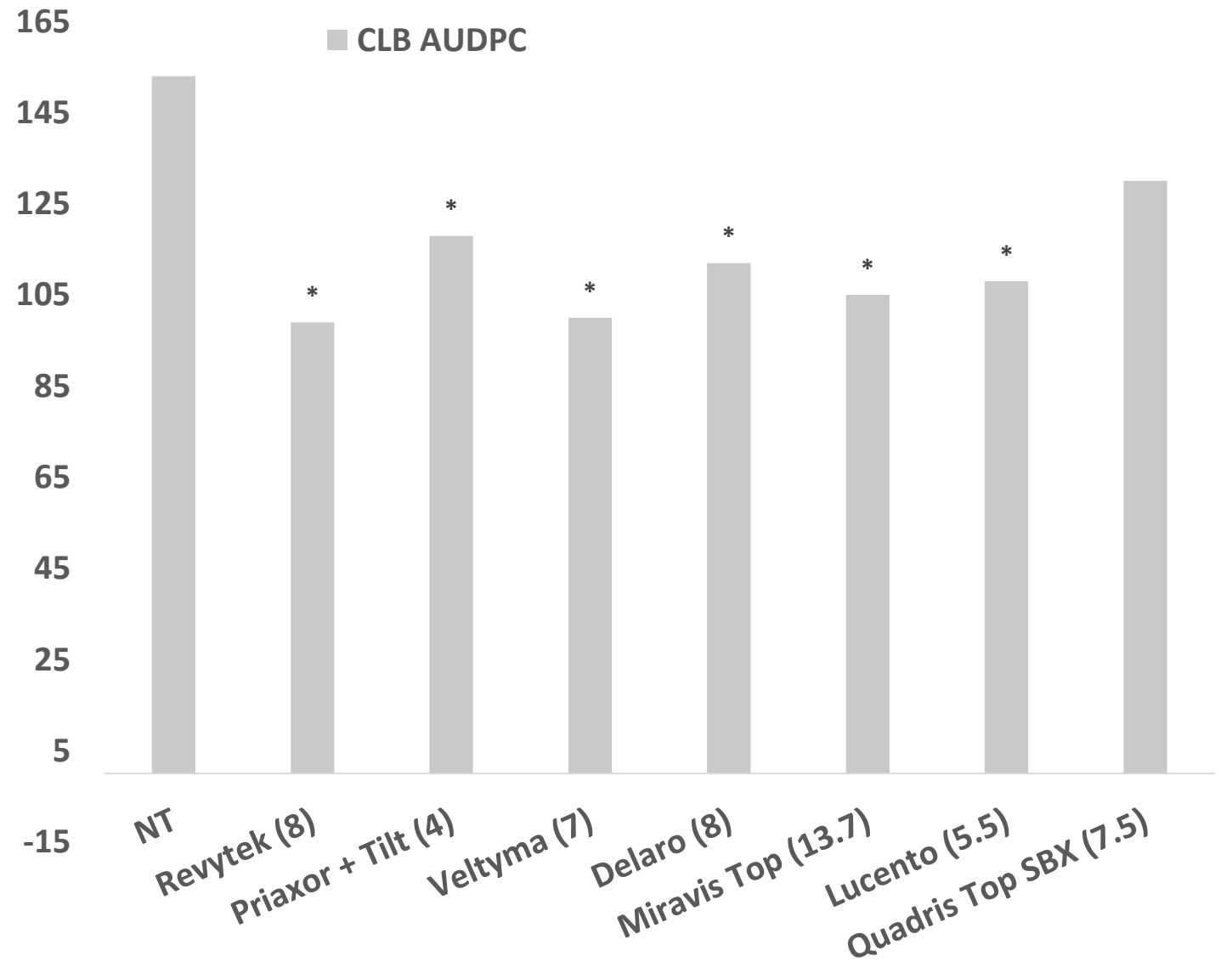
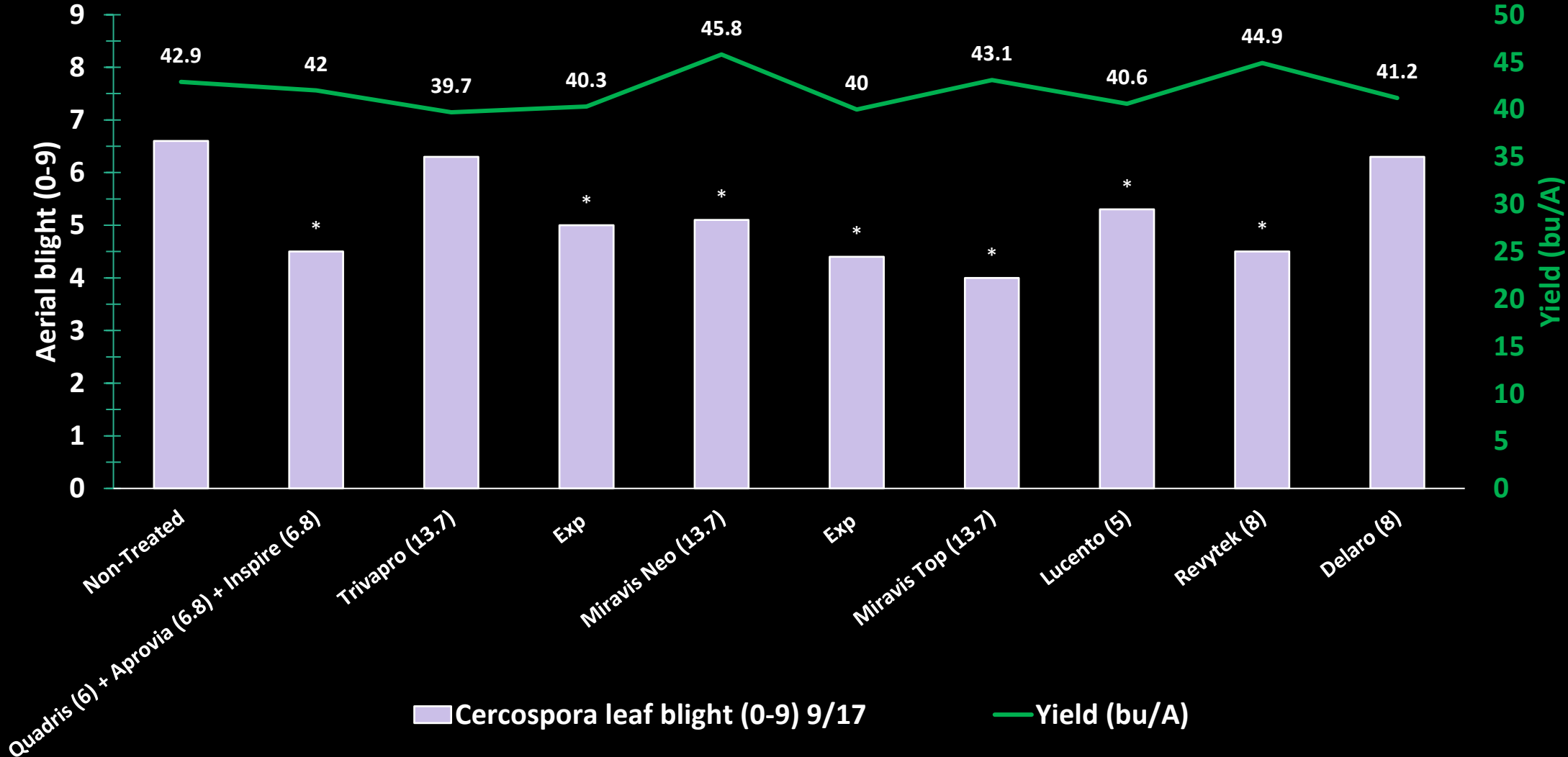


Fig. 5. Frequency of G143A substitution in **A**, total *Cercospora* isolates; **B**, *Cercospora* cf. *flagellaris* isolates only; and **C**, *Cercospora* spp. other than *C. cf. flagellaris* associated with soybean in the southern United States from 2018 to 2021.

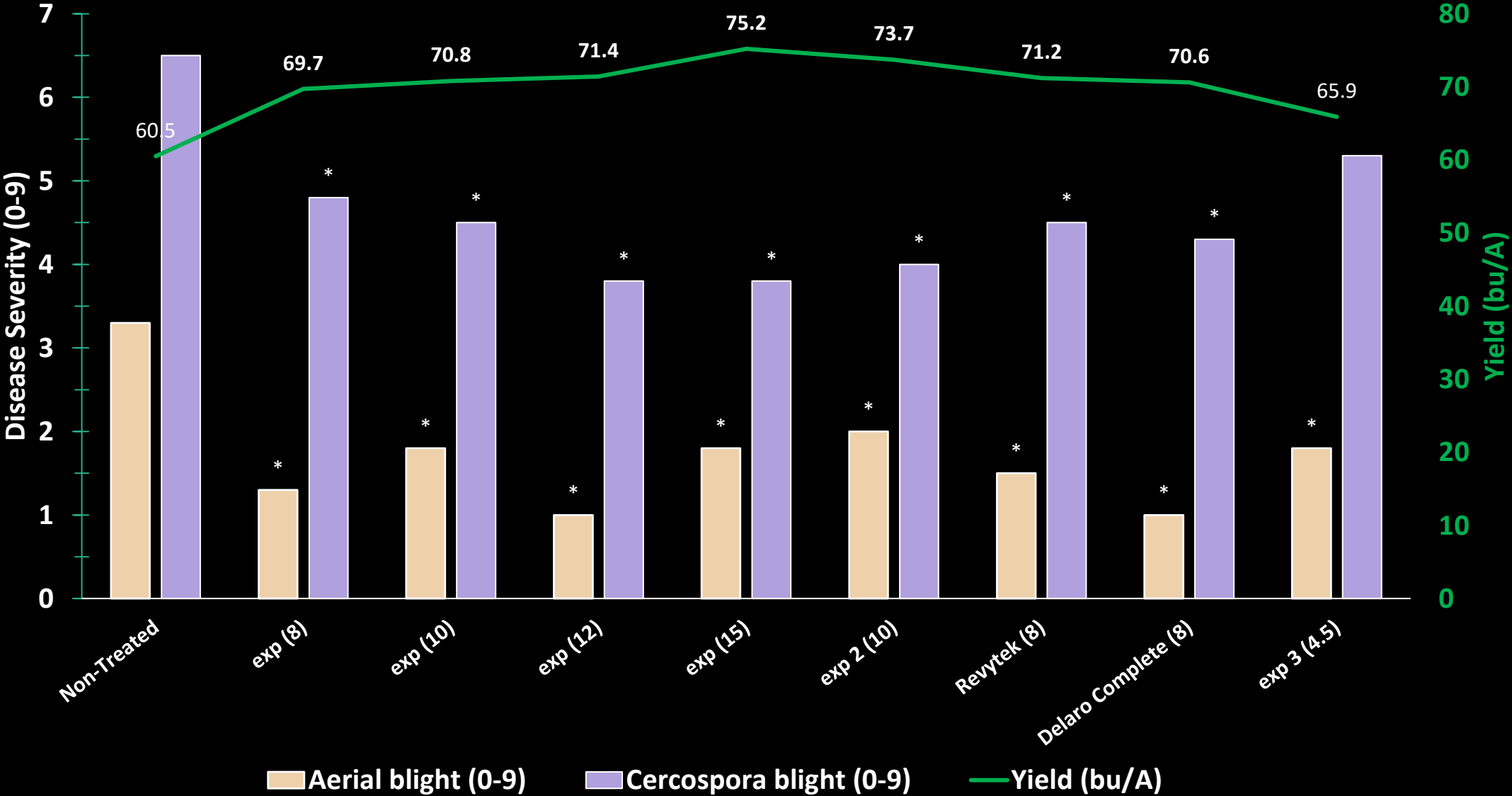
Fungicide efficacy on CLB



Fungicide efficacy on Cercospora leaf blight at MRRS



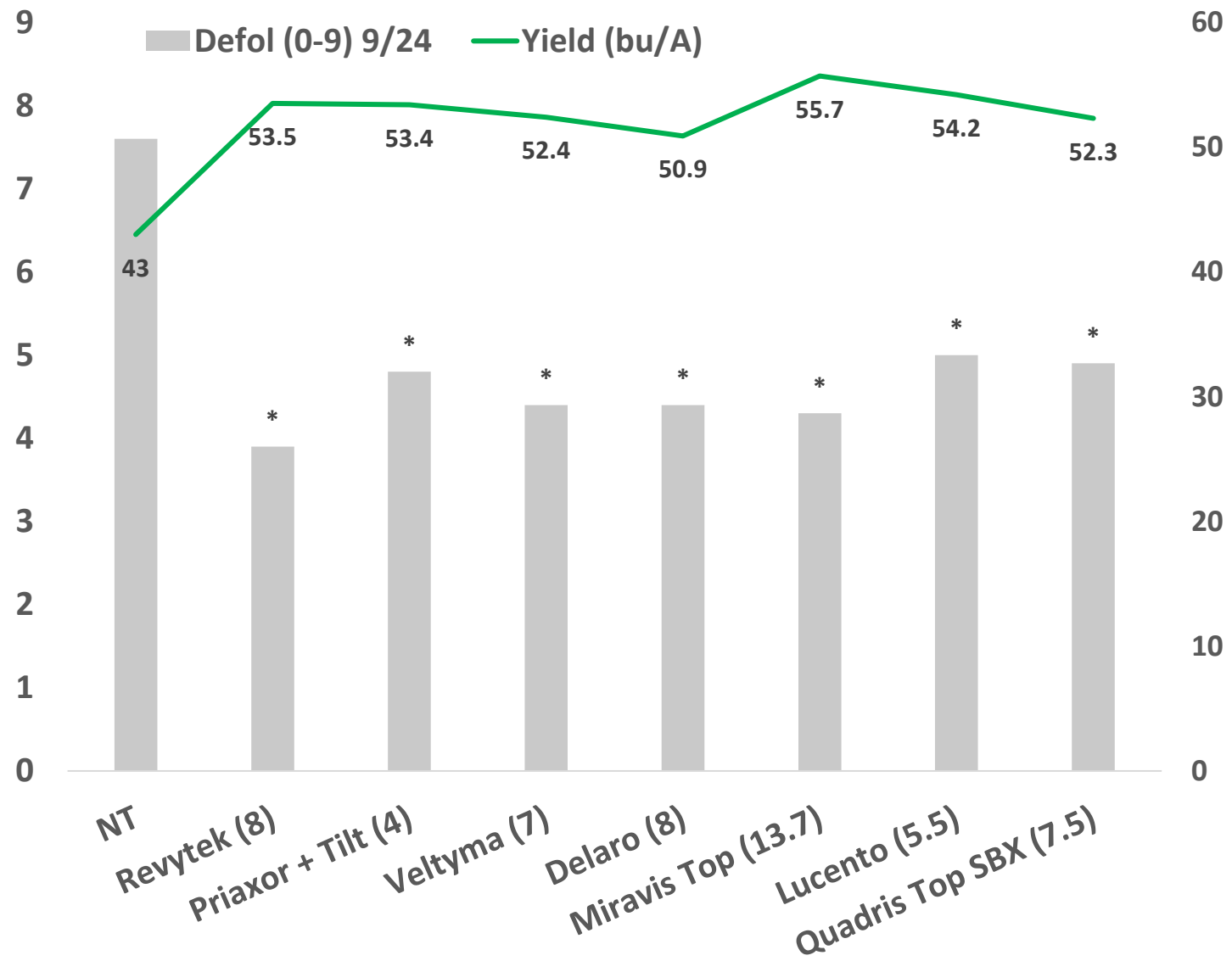
Fungicide efficacy on aerial blight and CLB - DLRS



2022 Season, 15 GPA



Fungicide efficacy on CLB, ASR, and AB - DLRS





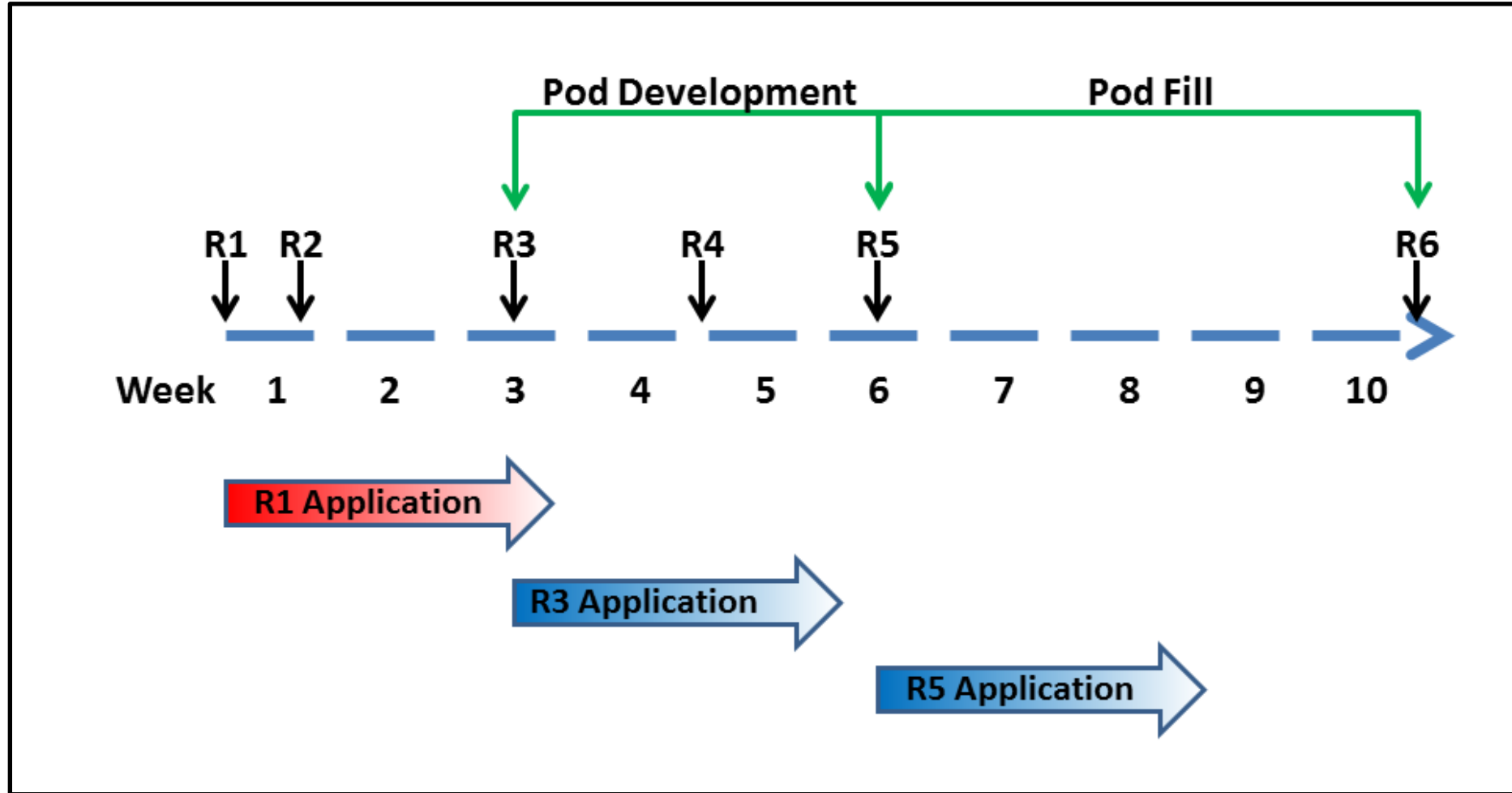
Products that have worked somewhat consistently on CLB in the recent past

- **In no particular order...**
- Miravis Top
- Priaxor
- Quadris Top SBX
- TrivaPro
- Lucento
- Revytek
- Veltyma

- **Possible reasons...**
- Genetic diversity in pathogens
- Ratio of pathogens in a given area
- Varying degrees of fungicide resistance across areas
- Differences in varietal responses to disease and/or fungicide application
- **Combinations of all the above**

NO GUARANTEES!

Fungicide Timing Considerations



CLB Management Recommendations

- Early planted, Early maturing varieties usually avoid CLB
- Plant a resistant variety, if that information is available
- Chose varieties tested in your neck of the woods
- The pathogens are known to overwinter on soybean debris
- Alternative hosts: pokeweed, cotton, giant ragweed, others?
- Infested seed does not appear to be a significant inoculum source
- Use effective fungicides within the R3-R5 window (R5 IMHO)
- Don't bother putting out Strobilurins or Topsin for CLB control
- Apply by ground using as much water as you can afford!
- **Please let me know if/when you see the LIL' PURPLE SPOTS and we'll come put in a test!**

THANK YOU FOR THE SUPPORT

- Farmers
- Crews
- Collaborators
- Grad Students
- Consultants
- Agents
- Industry Partners

