

Advances in Sugarcane Aphid Management

Louisiana Agricultural & Management Conference

Marksville, LA

February 18, 2016

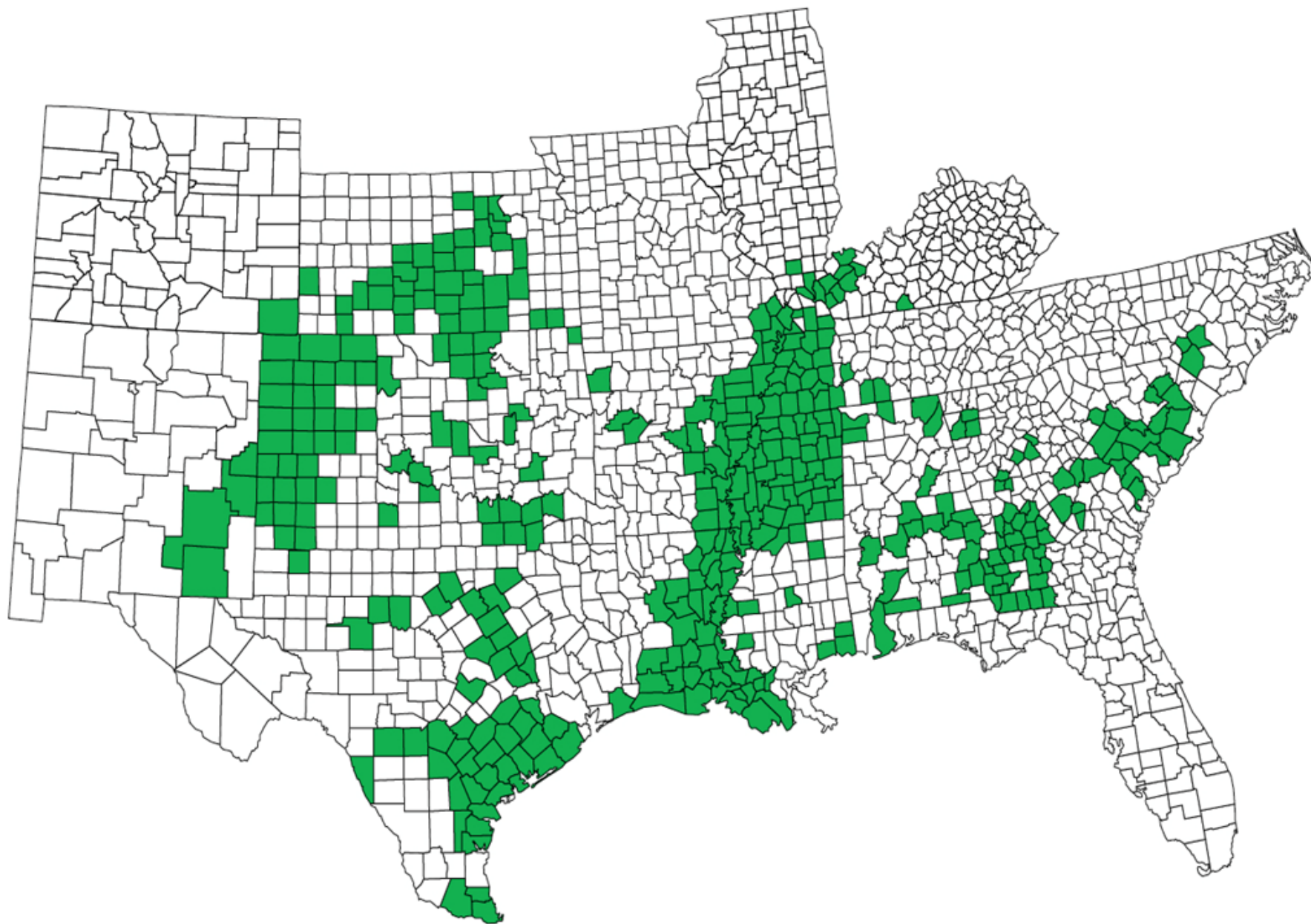
**David L. Kerns, Julien Beuzelin,
Sebe Brown and Fangneng Huang**

**Louisiana State University
Agricultural Center**



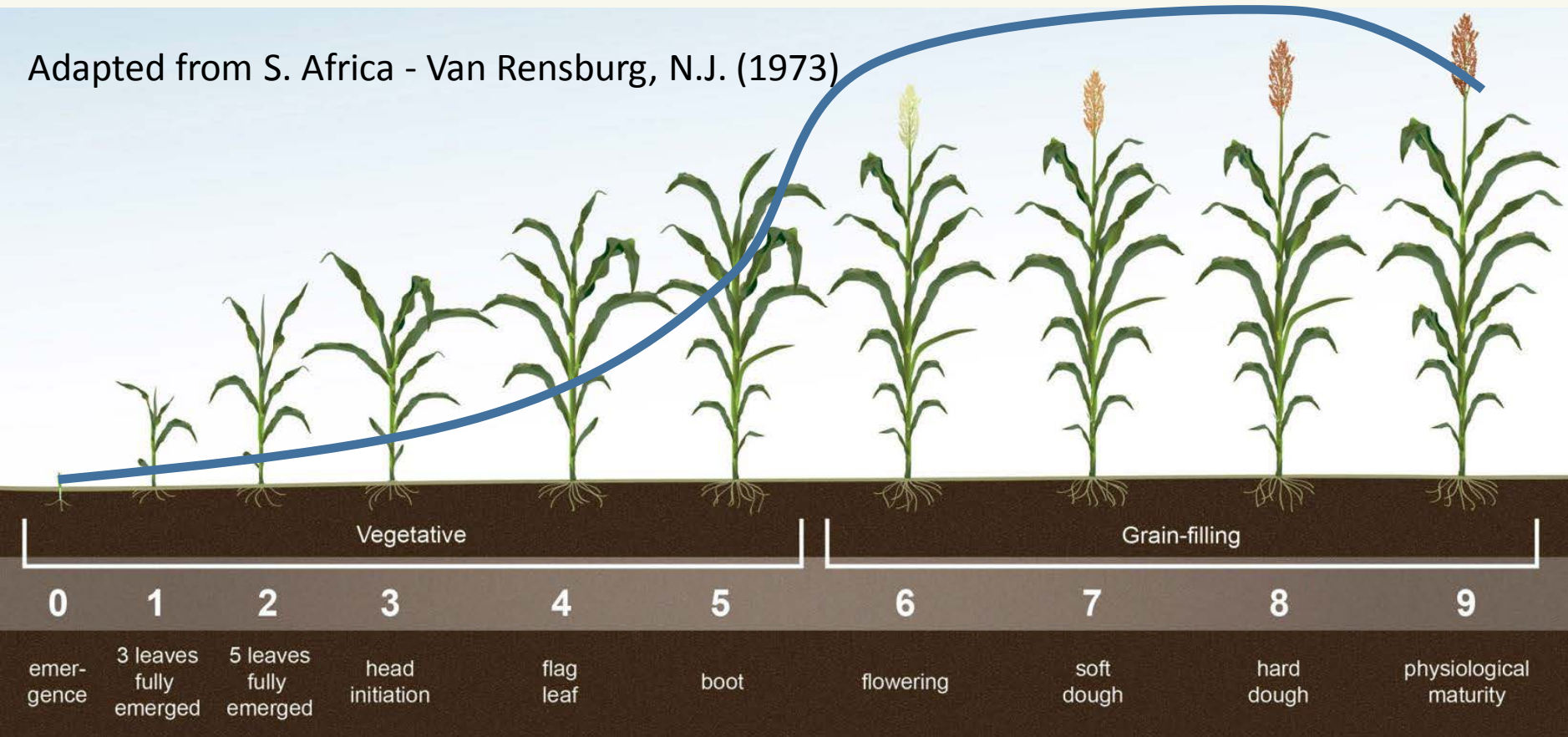
2015 Sugarcane Aphid, *Melanaphis sacchari*, Occurrence on Sorghum

September 11, 2015



Typical Population Development

Adapted from S. Africa - Van Rensburg, N.J. (1973)



Colonization

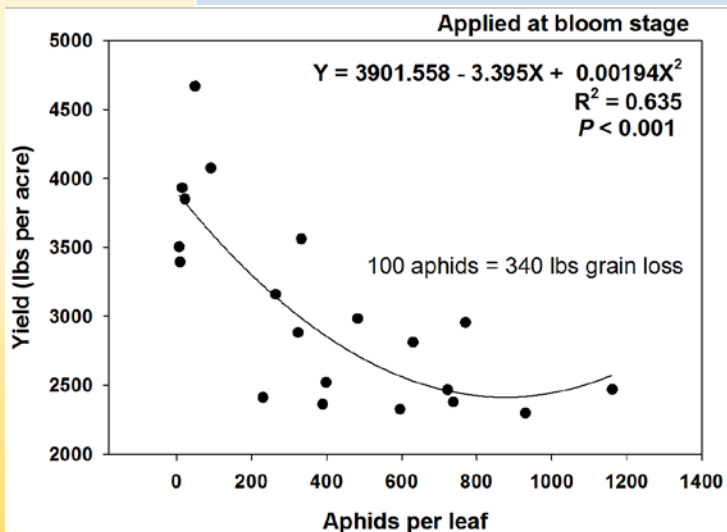
**Slow
population
development**

Rapid population growth

**Peak and
decline**

Potential yield loss

Crop Stage at 20% Infestation	Percent Yield Loss with No Treatment
Pre-boot	81-100%
Boot	52-69%
Panicle emergence - bloom	60-67%
Soft dough	21%
Harvest	50%



Adapted from A. Catchot Mississippi State University



Where and how does it overwinter?

Historical OW hosts:

- *Miscanthus sacchariflorous*
- *Andropogon* spp.
- *Pennisetum* spp.
- *Panicum* spp.



In U.S., theorized to OW as viviparous morph on Johnson grass, possibly on:

- whole plants in tropical zone
- rhizomatous tissue or host surviving winter in temperate zone

Initial Testing

Rhizomatous tissue no-choice test for sorghum isolates

- 10 day survey
- 3-4 in Johnson grass rhizome
- 1 leaf blade with ~50 aphids
- After 3 days no aphids survived



Managing SCA in Sorghum Requires a Fully Integrated Approach

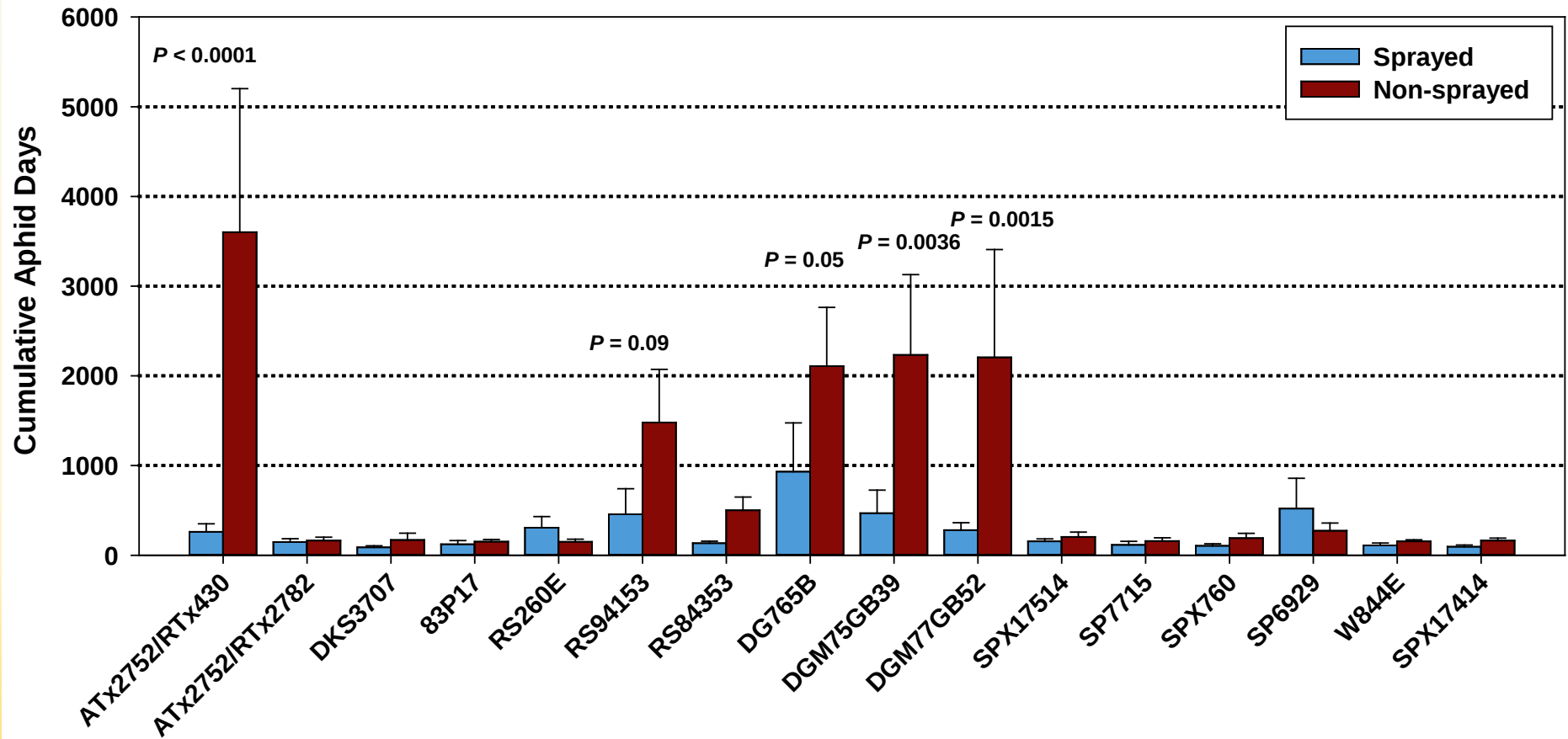
- Landscape management
- Hybrid selection
- Insecticide seed treatments
- Planting timing
- Effective and timely scouting
- Treatment decision making
- Insecticide choice
- Optimizing spray coverage
- Harvest considerations
- Biological control



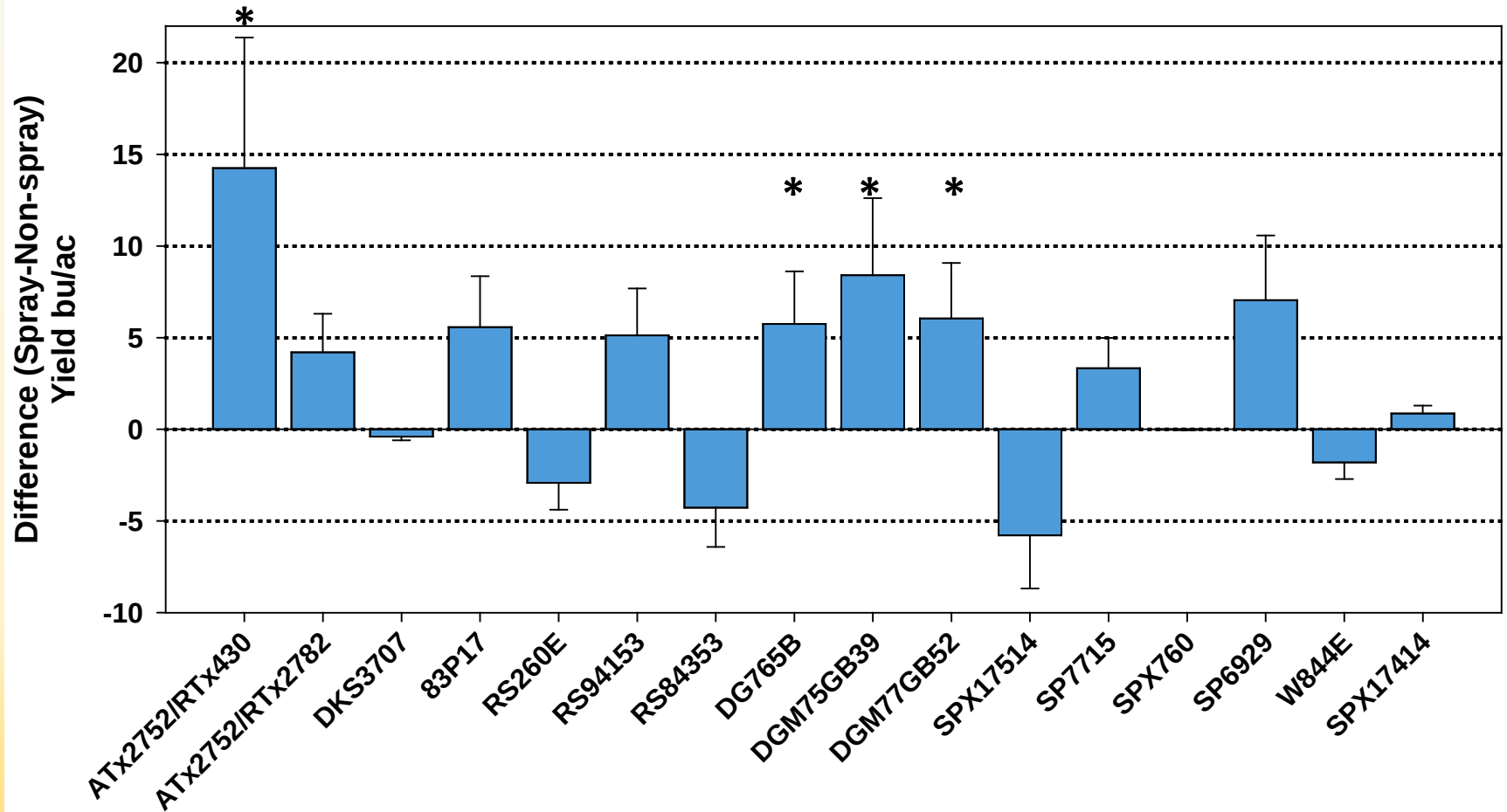
Hybrid Selection – Will resistant hybrids help?



Cumulative Aphid Days

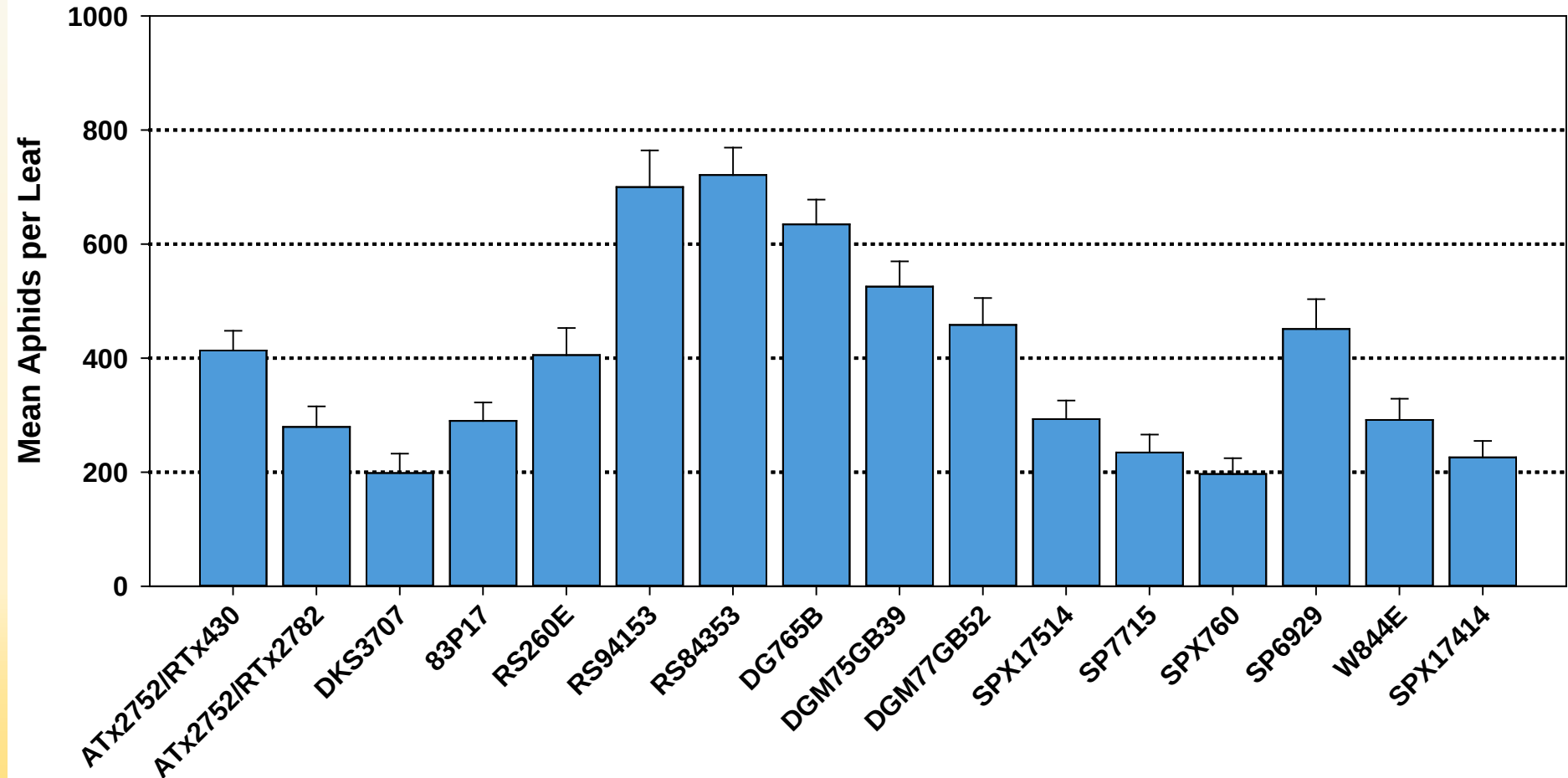


Yields Across Hybrids, Sprayed vs Non-sprayed



Near Harvest Issues Persist Regardless of Resistance Potential

Northeast Research Station 2015





Sorghum Hybrids

That Offer Some Protection From
Sugarcane Aphid With Expected
Availability in 2016



Sorghum hybrids that have demonstrated resistance to sugarcane aphid.^a

Company	Hybrid	Av. Yield across Locations – La. (bu/ac)			Resistance Confirmed by:	
		OVT ^b	SCA resistance screens ^c		LSU AgCenter	Other
			Aphids sprayed	Aphids nonsprayed		
Alta	AG1201	--	--	--		X
	AG1301	--	--	--		X
	AG1203	90.8	--	--	X	X
B&H	BH 4100	--	--	--		X
	BH 3400	--	--	--		X
Dekalb	DKS37-07	--	115.5	115.9	X	X
	Pulsar	--	--	--		X
Dyna Gro	GX15561	89.5	--	--	X	
Golden Acres	3960B	--	--	--		X
	627	--	--	--		X
	IG688	--	--	--		X
Mycogen	IG855	95.3	--	--	X	
	83P17	101.8	110.3	104.8	X	X
	83P56	--	--	--		X
Richardson	RS260E	--	108.2	111.1	X	X
	RS84353	--	93.8	97.7	X	
	Sprint W FG	--	--	--		X
	Jowar I	--	--	--		X
Sorghum Partners	SP7715	94.0	97.9	94.6	X	X
	SP78M30	89.2	96.1	95.2	X	X
	SP73B12	88.6	79.0	84.8	X	X
	SP6929	--	112.9	105.9	X	
Terral/Rev	9782	100.0	--	--	X	
Warner	WV-844-E	--	110.6	112.4	X	
	WV-7051	--	--	--		X

Information compiled by Rick Mascagni, Fangneng Huang, Sebe Brown, Julien Beuzelin and David Kerns, LSU AgCenter; Brent Bean, United Sorghum.

^aAlthough resistance is reported, unacceptable numbers of sugarcane aphids may still develop.

^bYields represent an average of six Louisiana OVTs in 2015 at five locations: Alexandria (non-irrigated), Bossier City (non-irrigated), Crowley (non-irrigated), 2x St. Joseph (non-irrigated) and Winnboro (non-irrigated).

^cYields represent an average among three La. locations: Alexandria, (non-irrigated), St. Joseph, (non-irrigated) and Winnboro (irrigated).

^dYields where sugarcane aphids were sprayed and controlled as well as nonsprayed and left uncontrolled are represented.

Authors: Sebe Brown, Assistant Area Agent, Pest Management, Northeast Region, David Kerns, LSU AgCenter

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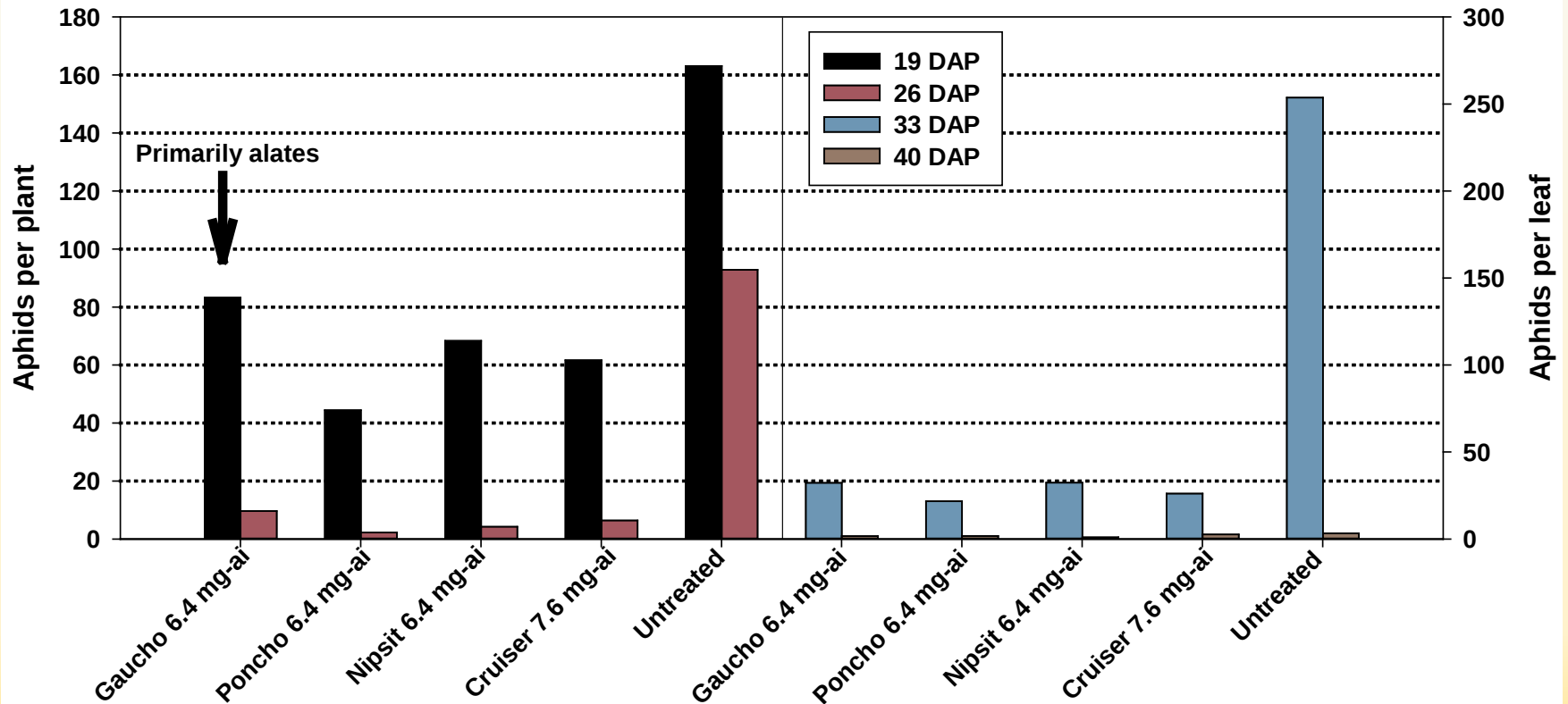
William B. Richardson, LSU Vice President for Agriculture

Louisiana State University Agricultural Center, Louisiana Agricultural Experiment Station, Louisiana Cooperative Extension Service, LSU College of Agriculture
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Insecticide Seed Treatments

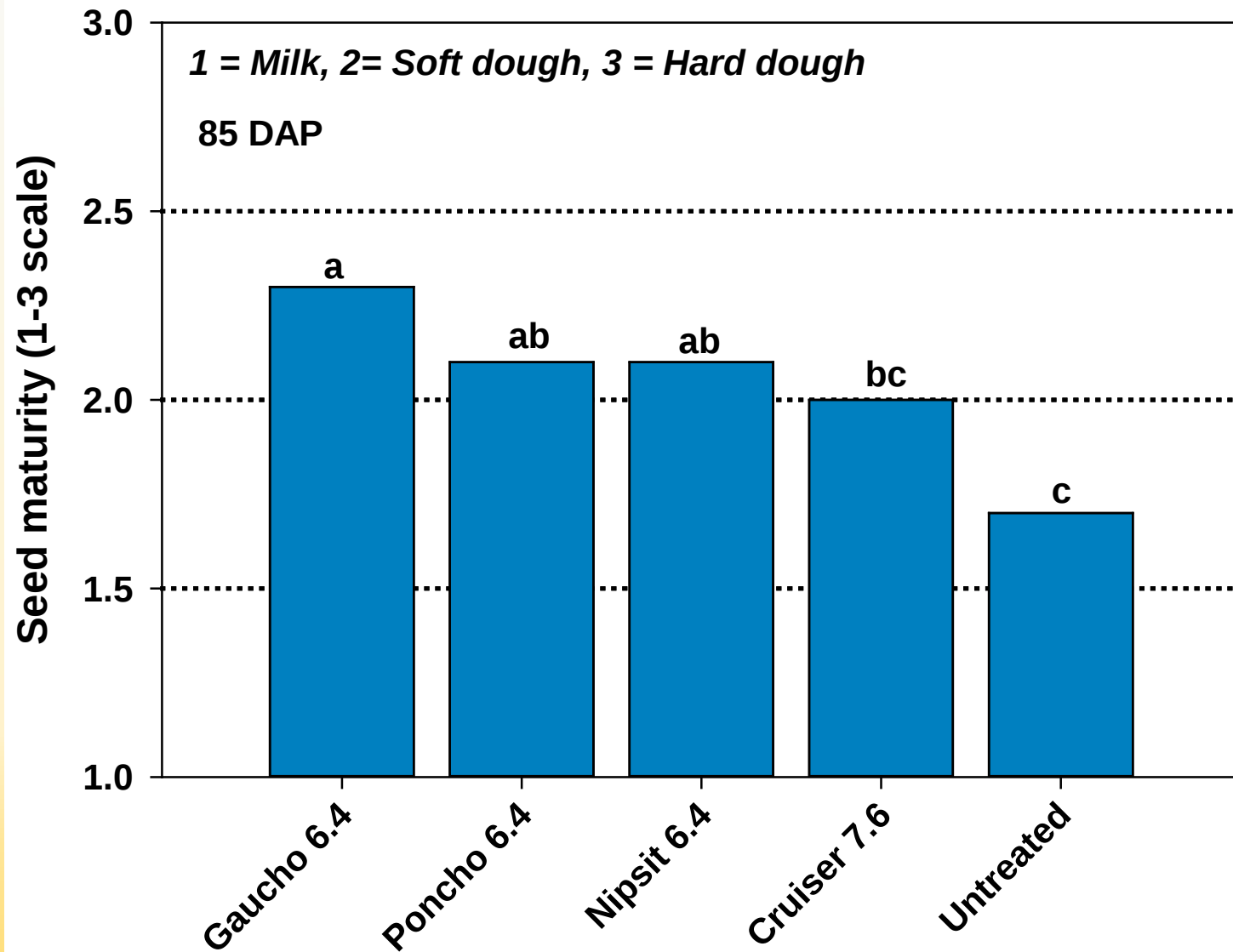


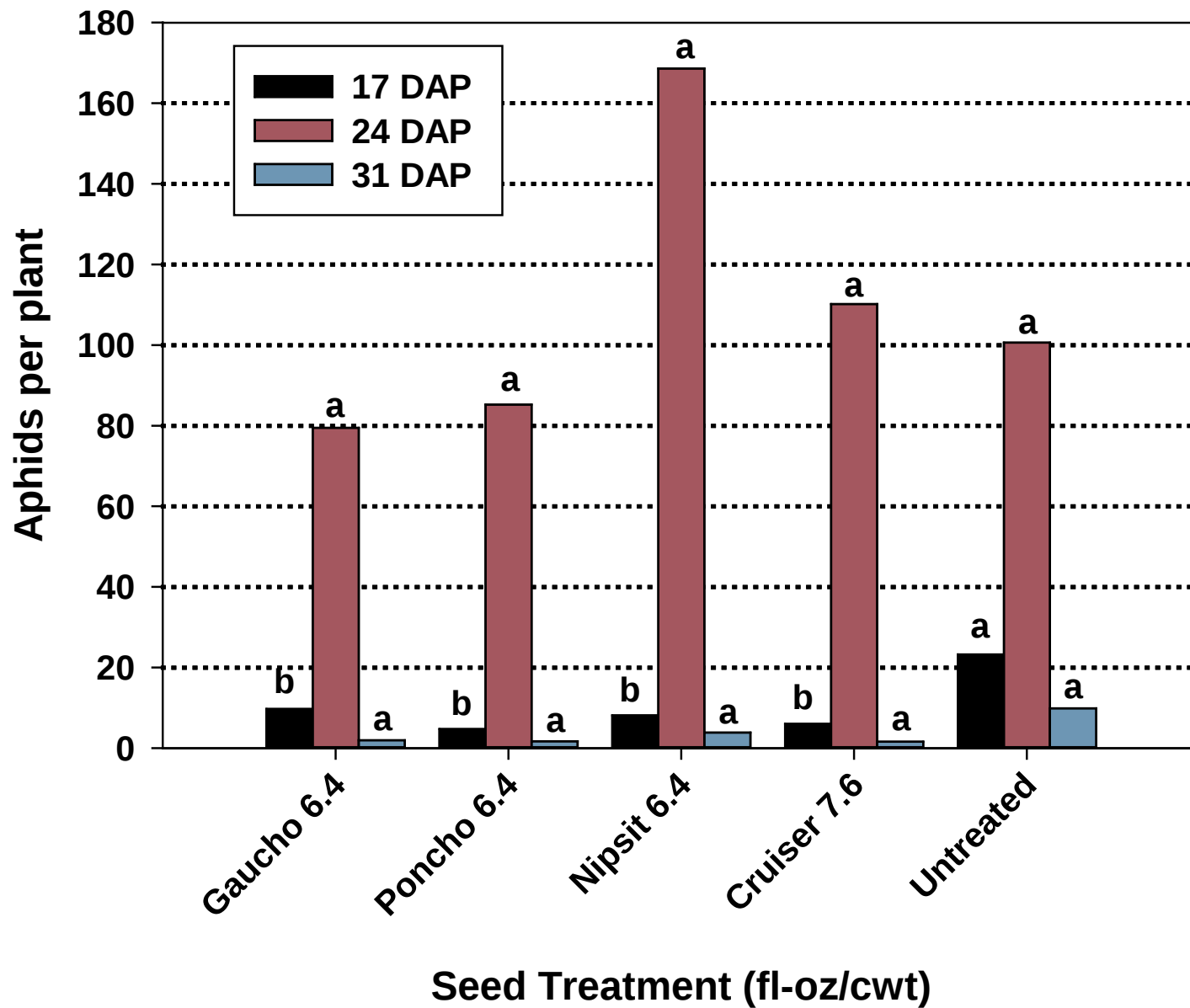
Insecticide Seed Treatments





Winnsboro, LA 2014

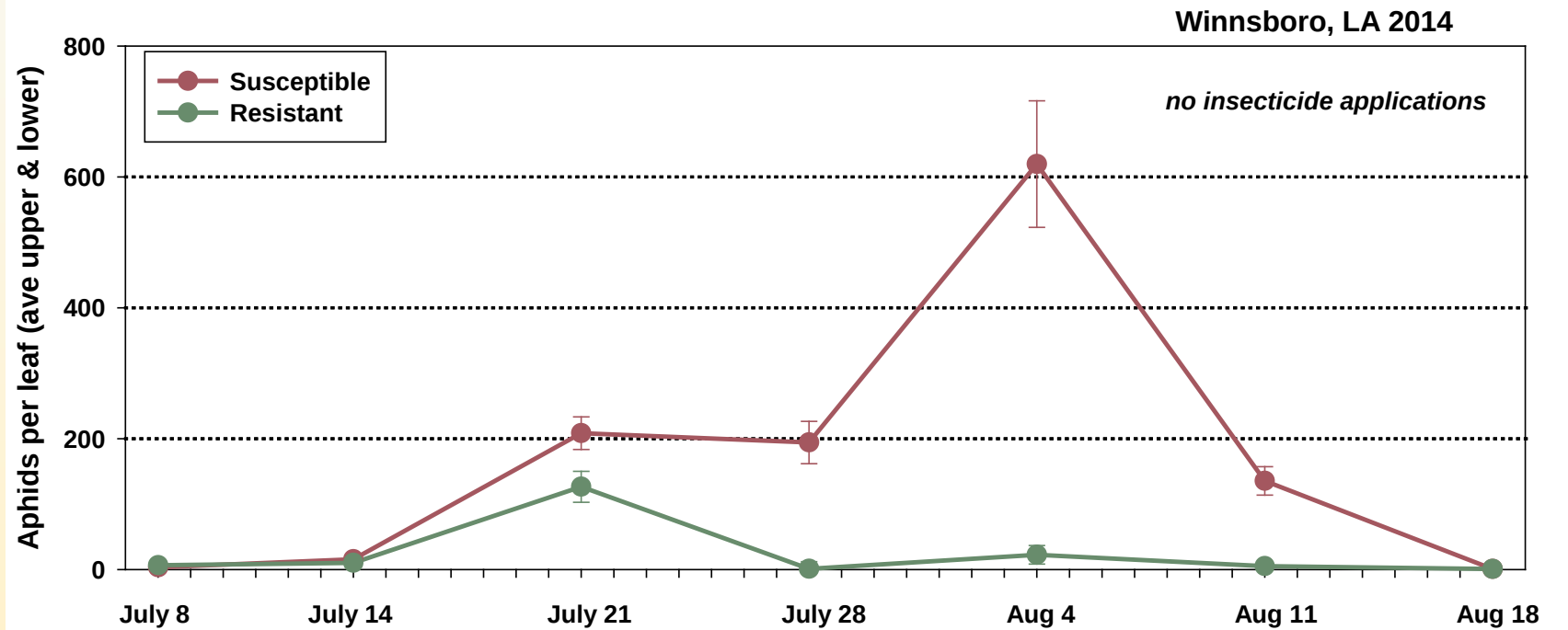




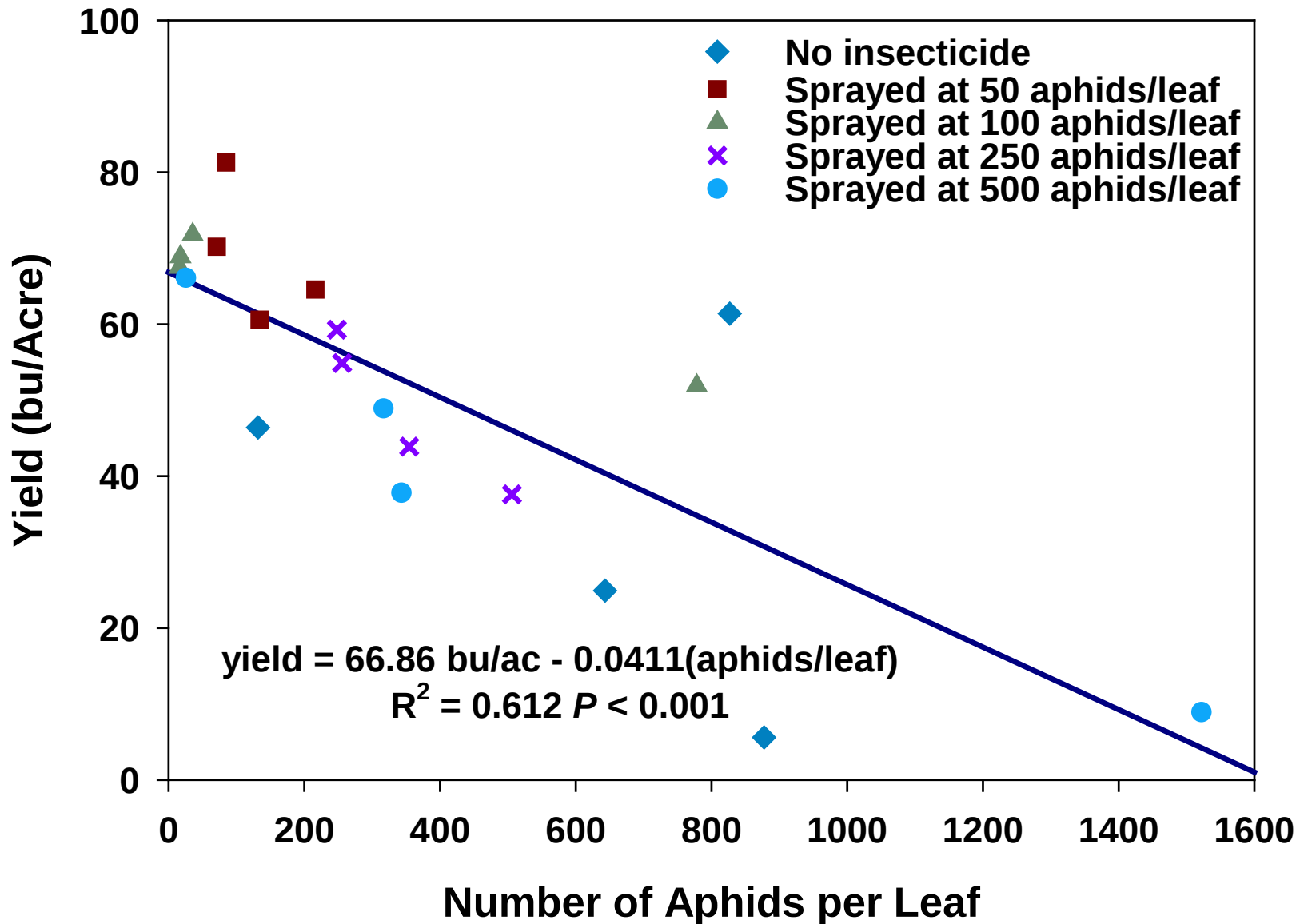
Foliar Insecticides & Timing



Susceptible vs Resistant (no sprays)



Impact on Yield



Economic Threshold

2015 Example		Control Cost \$15/acre Aphids/leaf		Control Cost \$20/acre Aphids/leaf		Control Cost \$25/acre Aphids/leaf	
Market Value	Location	EIL	ET	EIL	ET	EIL	ET
\$3.50/bushel \$6.25/cwt	OK	209	146	279	195	348	244
	UGC	164	115	218	153	273	191
	LGC	111	78	148	104	186	130
	AR	80	56	107	75	134	94
	NLA	71	50	95	66	119	83
	GA	62	43	82	57	103	72
\$5.00/bushel \$8.93/cwt	OK	146	102	195	137	244	171
	UGC	115	80	153	107	191	134
	LGC	78	55	104	73	130	91
	AR	56	39	75	53	94	66
	NLA	50	35	66	46	83	58
	GA	43	30	57	40	72	50
\$6.50/bushel \$11.60/cwt	OK	113	79	150	105	188	131
	UGC	59	41	88	62	118	82
	LGC	60	42	80	56	100	70
	AR	43	30	58	40	72	51
	NLA	38	27	51	36	64	45
	GA	33	23	44	31	55	39

ET 2014 = 50-125 aphids per leaf; 2015 = 35-135 aphids per leaf

Louisiana ET = 20% infested plants with 50 or more aphids per leaf

Insecticide Choice

Insecticide	Label	Rate/acre	PHI
Transform	Section 18	1.0-1.5 oz	14 days
Sivanto	Section 3	7.0-10.5 fl oz	21 days
Sivanto	2ee	4.0-7.0 fl oz	21 days
Lorsban	Section 3	1 pt-1 qt	30-60 days

Control - Success or Failure

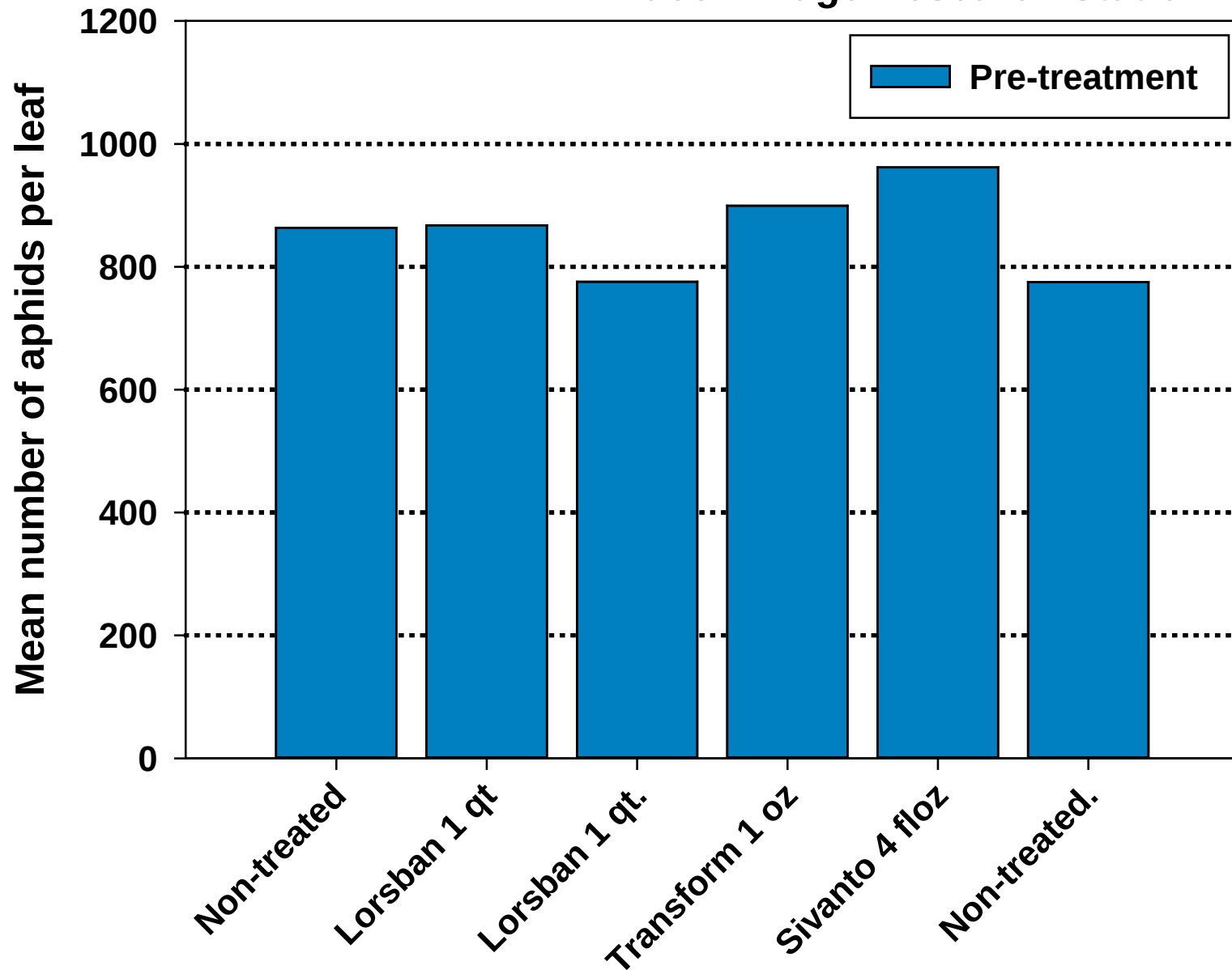


Observed everything work and everything fail

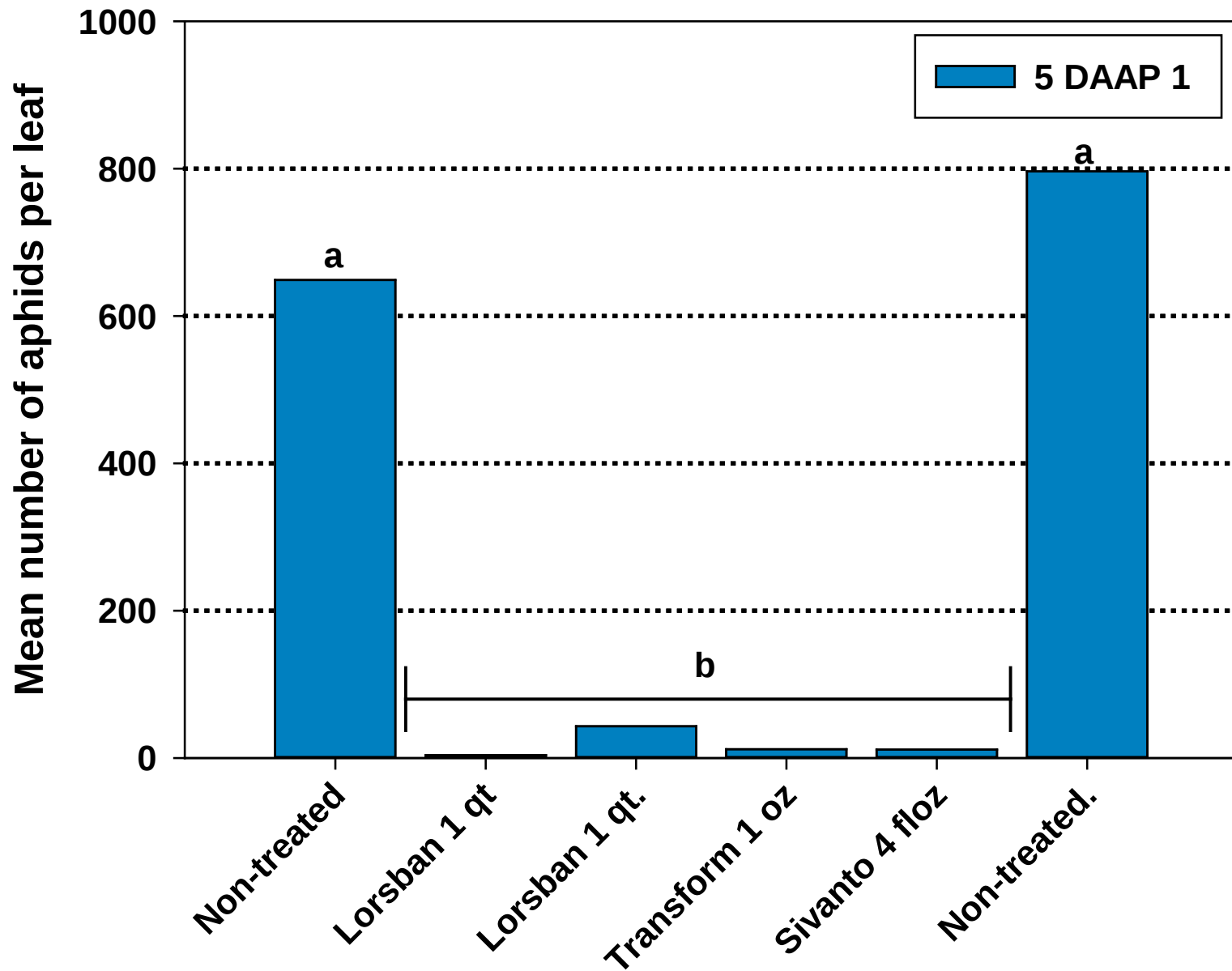
- Success
 - A great many insecticides look efficacious on a declining aphid population
 - Good coverage is essential
 - Treating before aphids are overly abundant
- Failures
 - Transform mixed with a pyrethroid
 - Transform sprayed under cool conditions
 - Poor spray coverage
 - Treating a robust, increasing aphid population
 - Short residual control
 - Honey dew/sooty mold covered leaves

Systems Test - Week 1

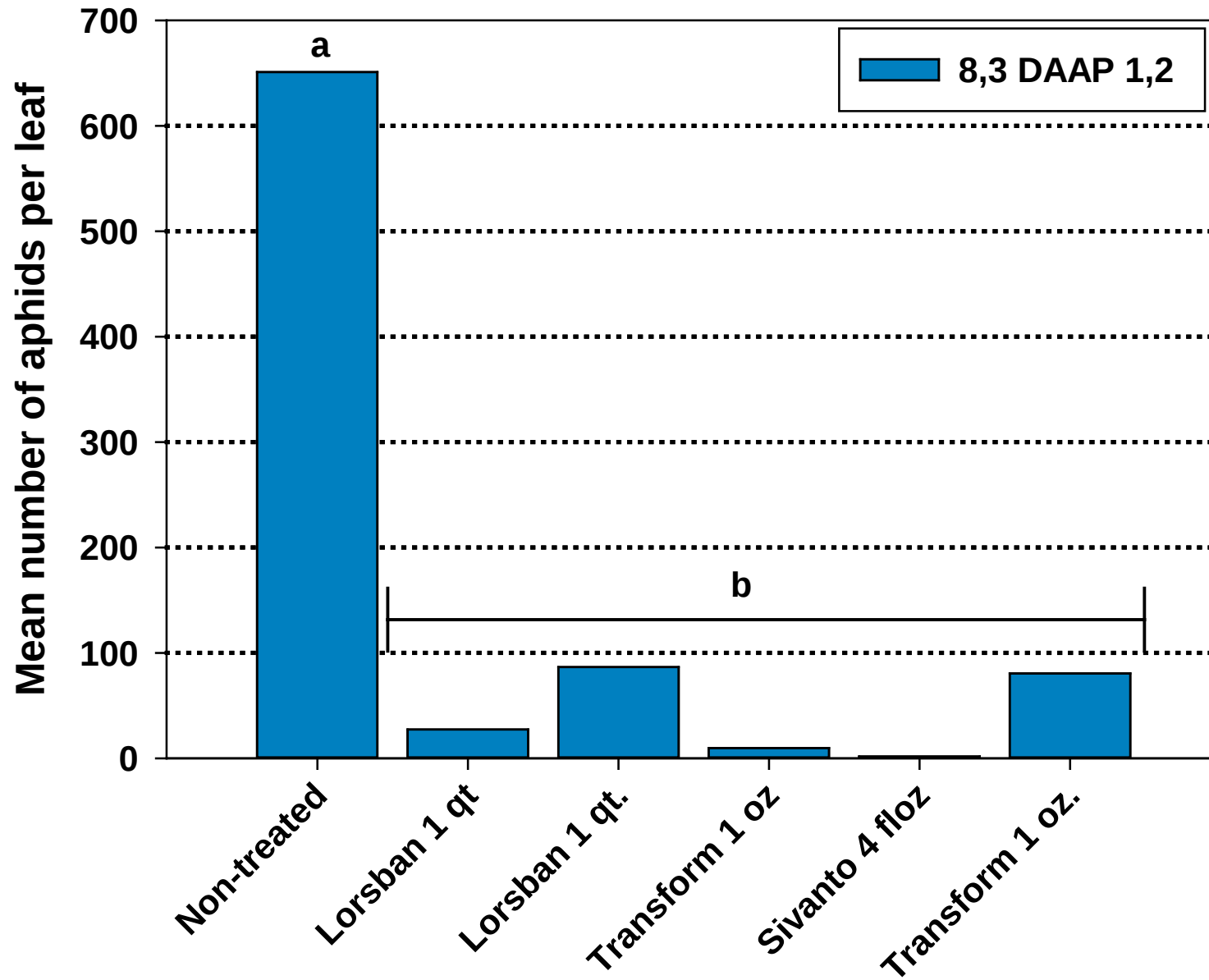
Macon Ridge Research Station



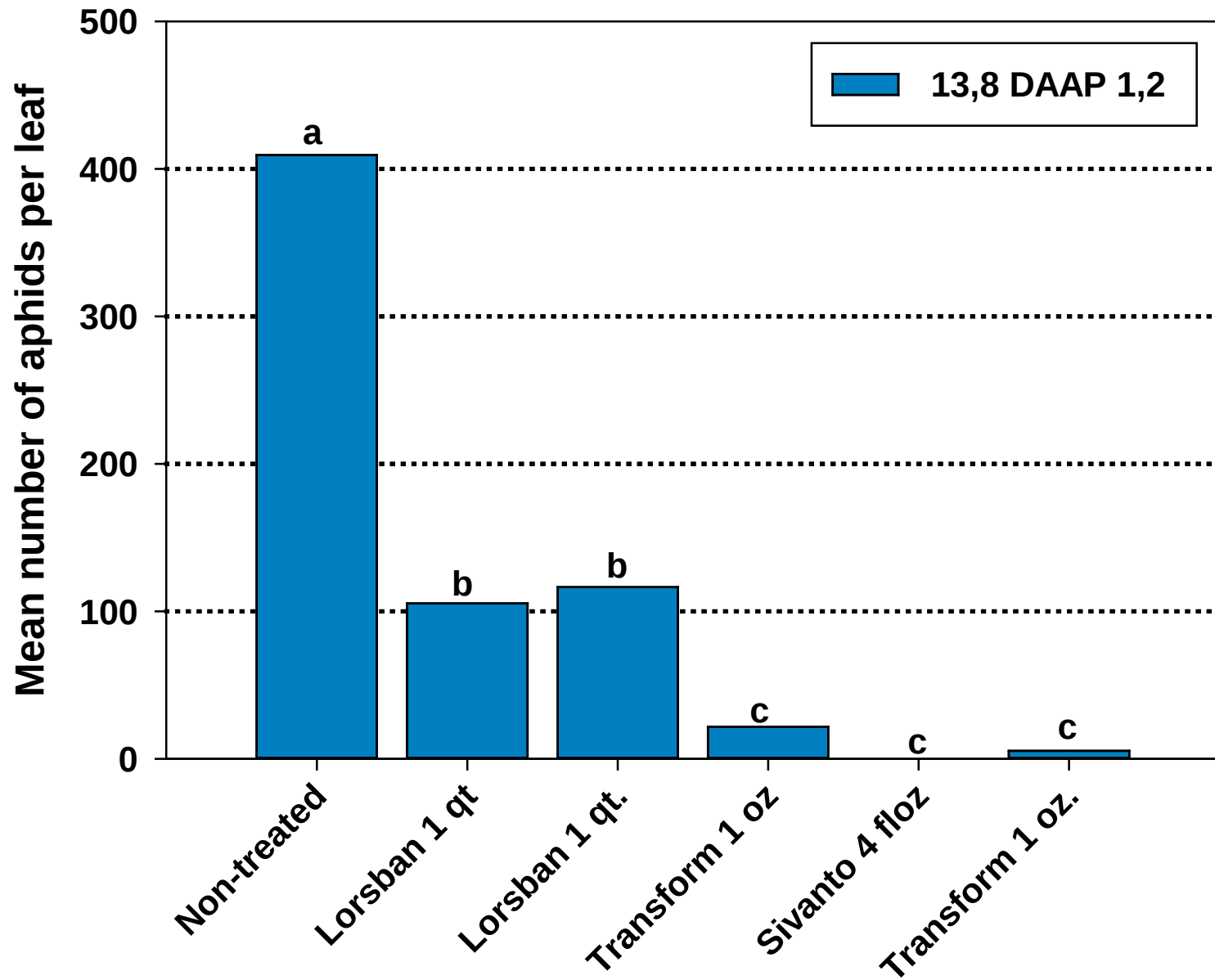
Systems Test - Week 2 Macon Ridge Research Station



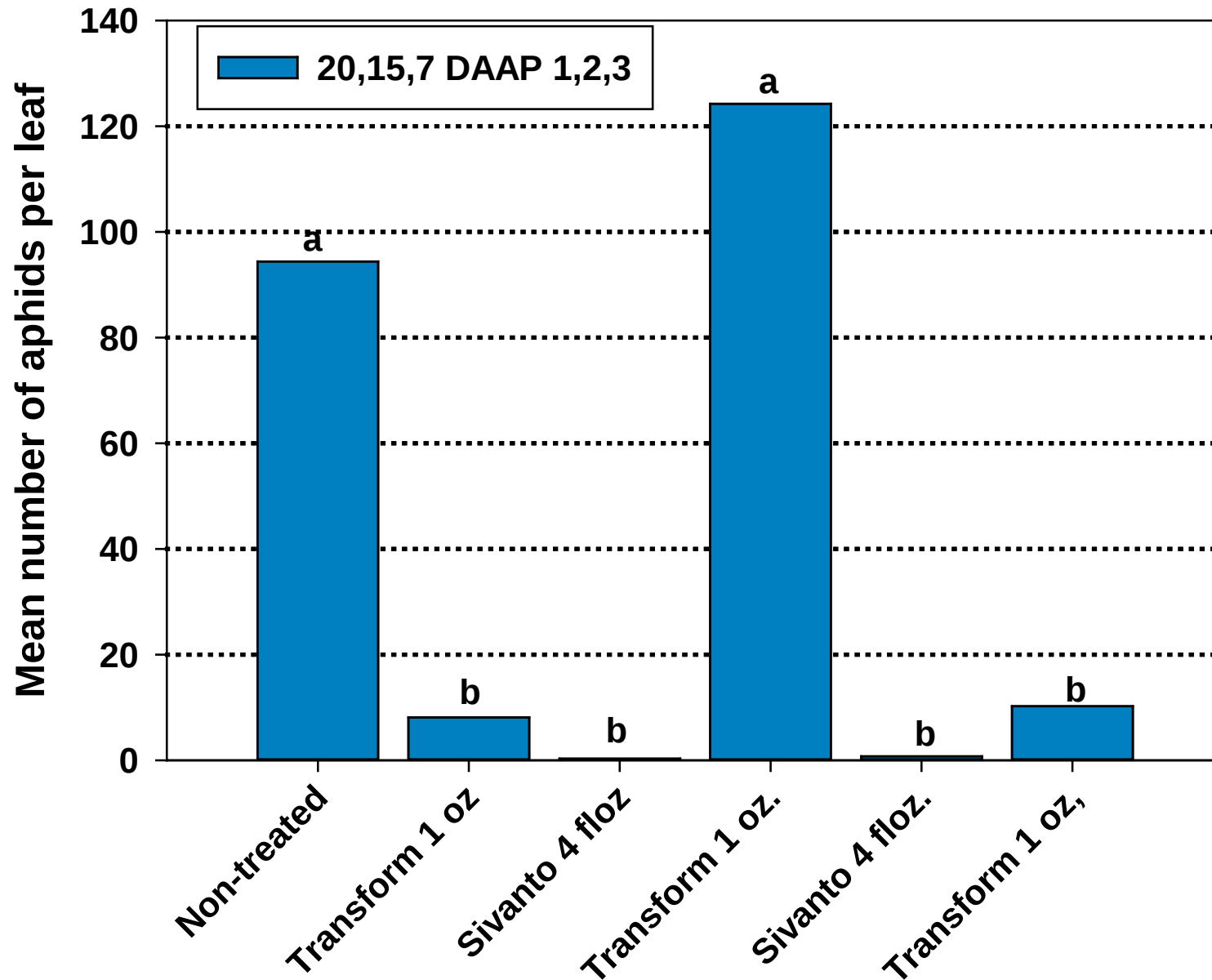
Systems Test - Week 3 Macon Ridge Research Station



Systems Test - Week 4 Macon Ridge Research Station

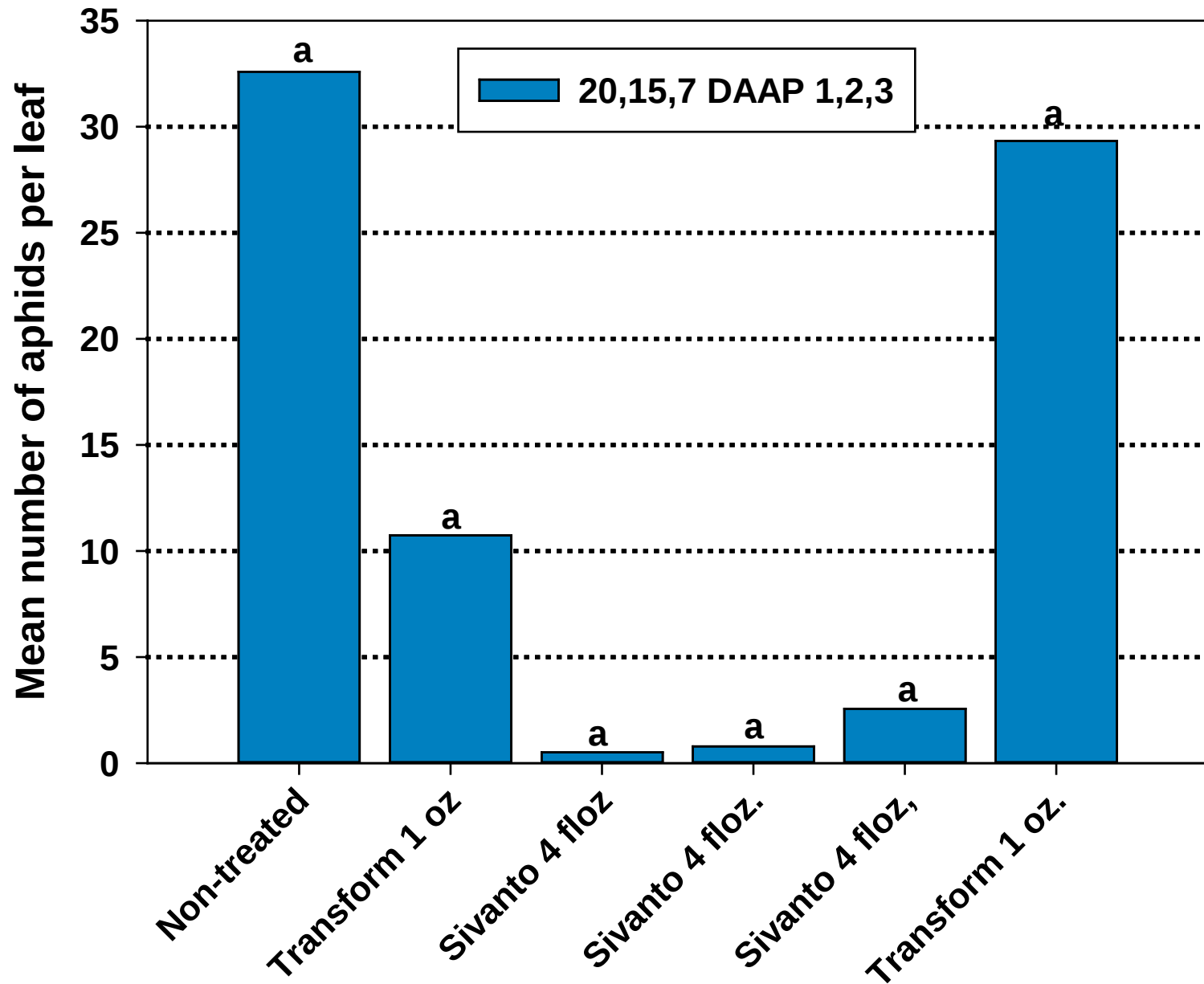


Systems Test - Week 5 Macon Ridge Research Station

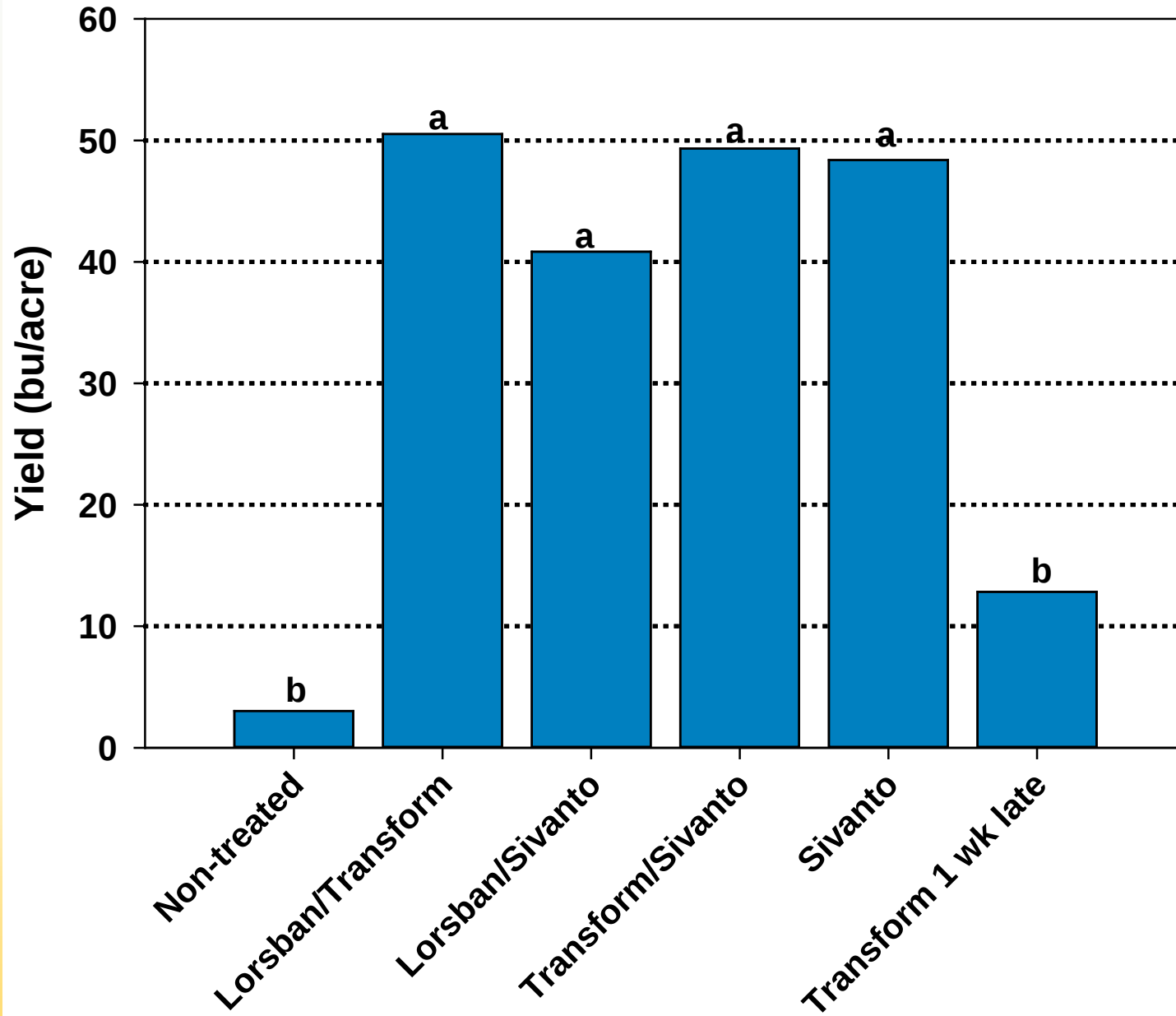


Systems Test - Week 6

Macon Ridge Research Station



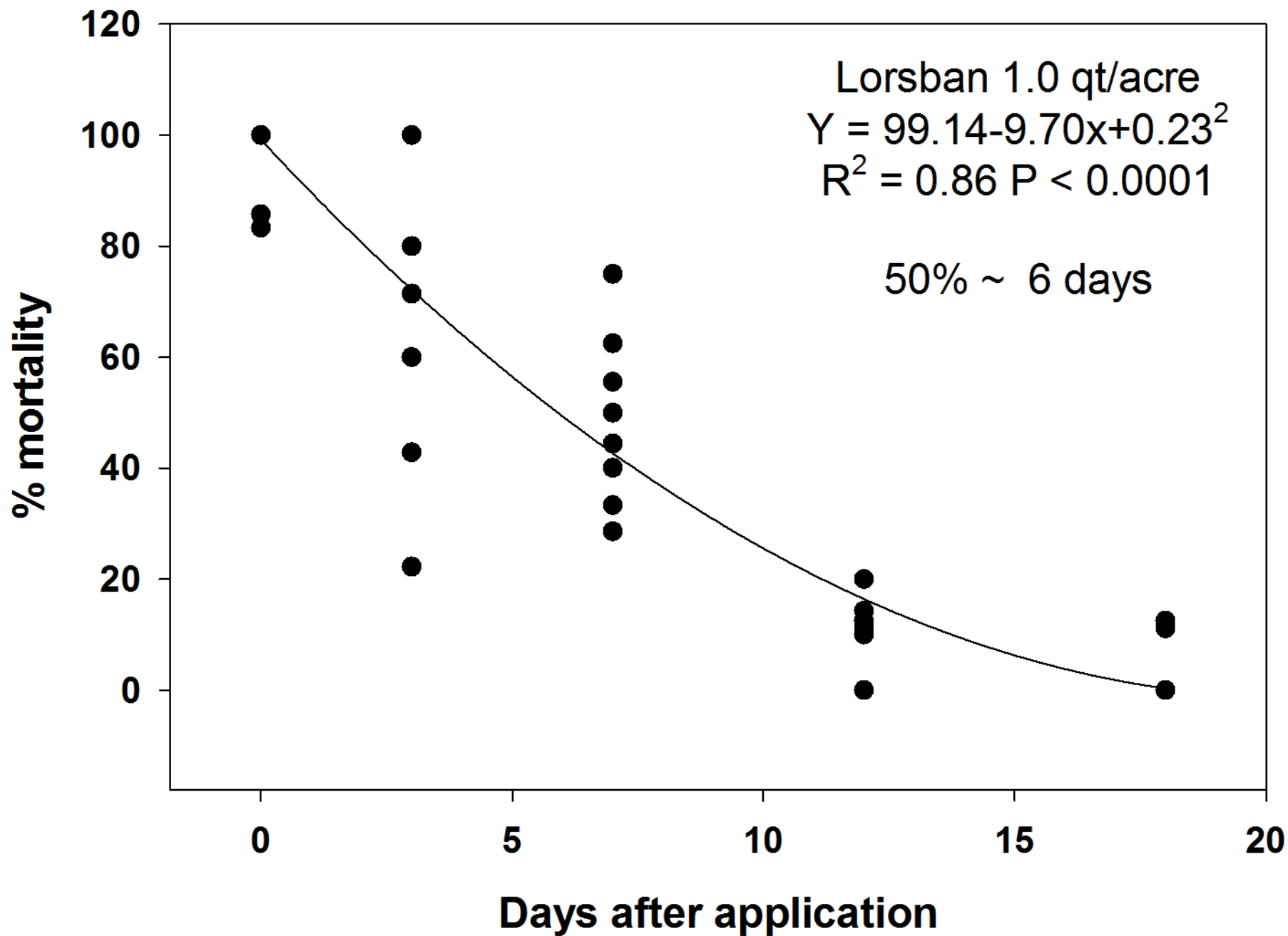
Systems Test Macon Ridge Research Station

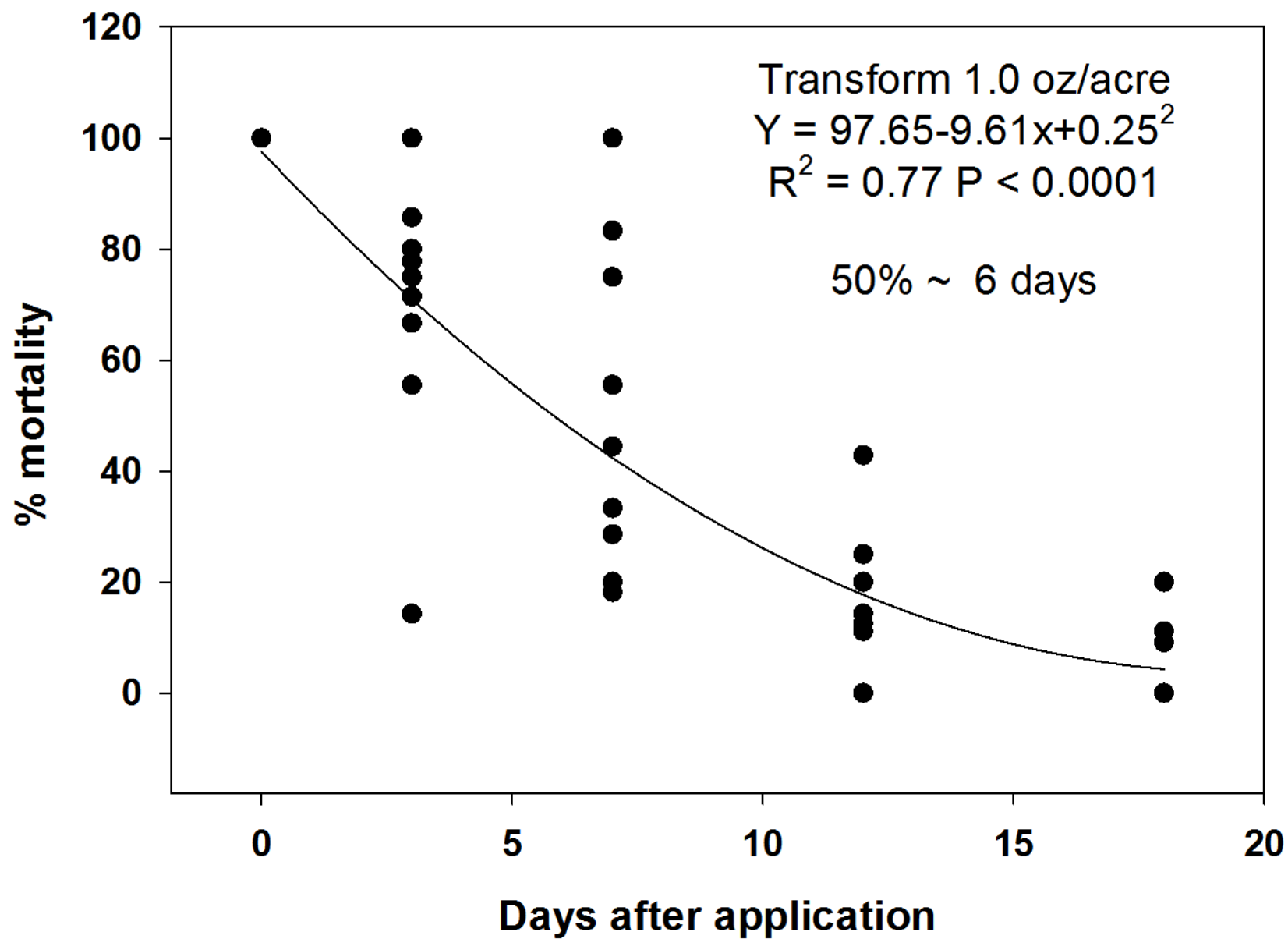


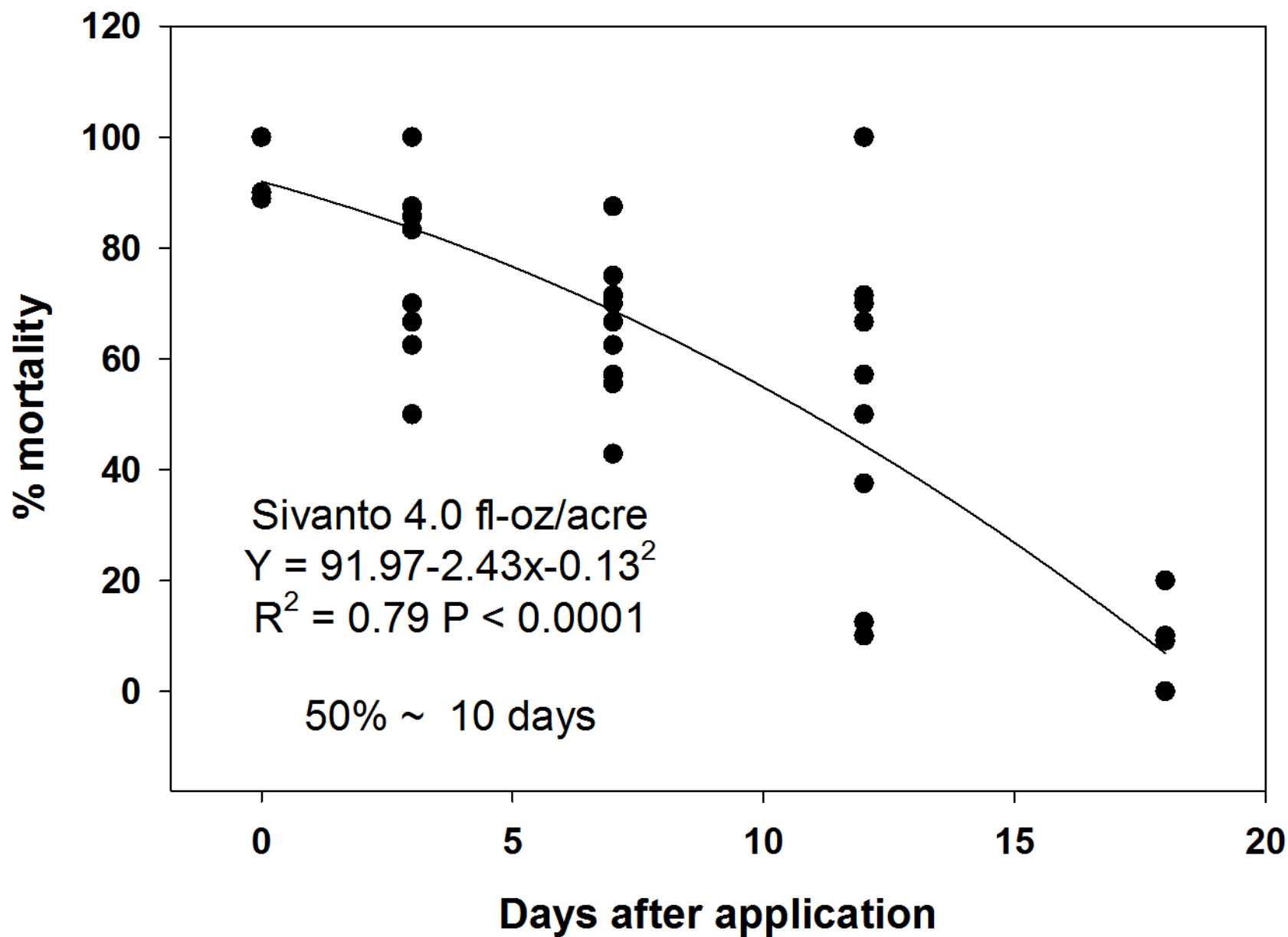
How long do these insecticides really last?



Pat Porter, Texas A&M AgriLife Extension



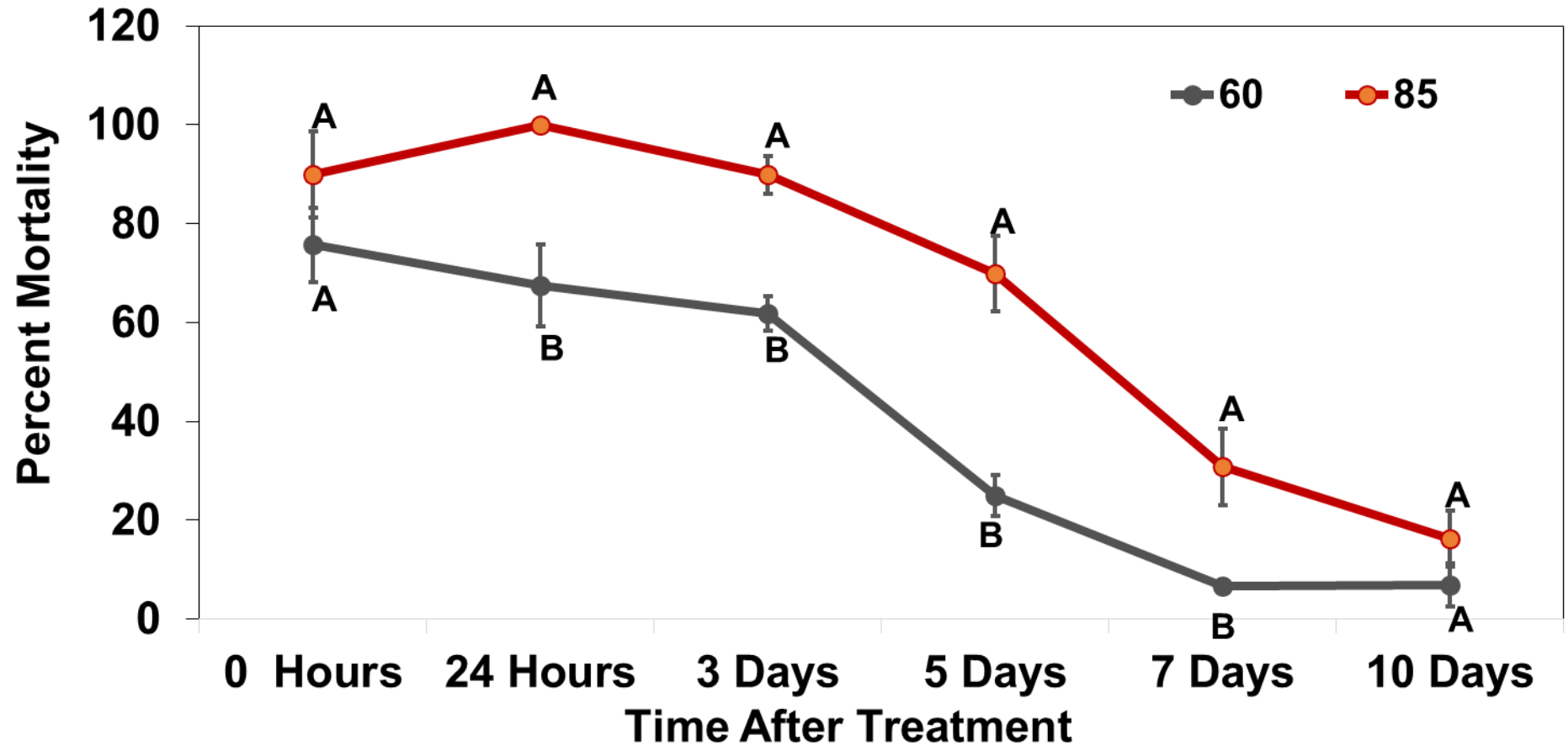




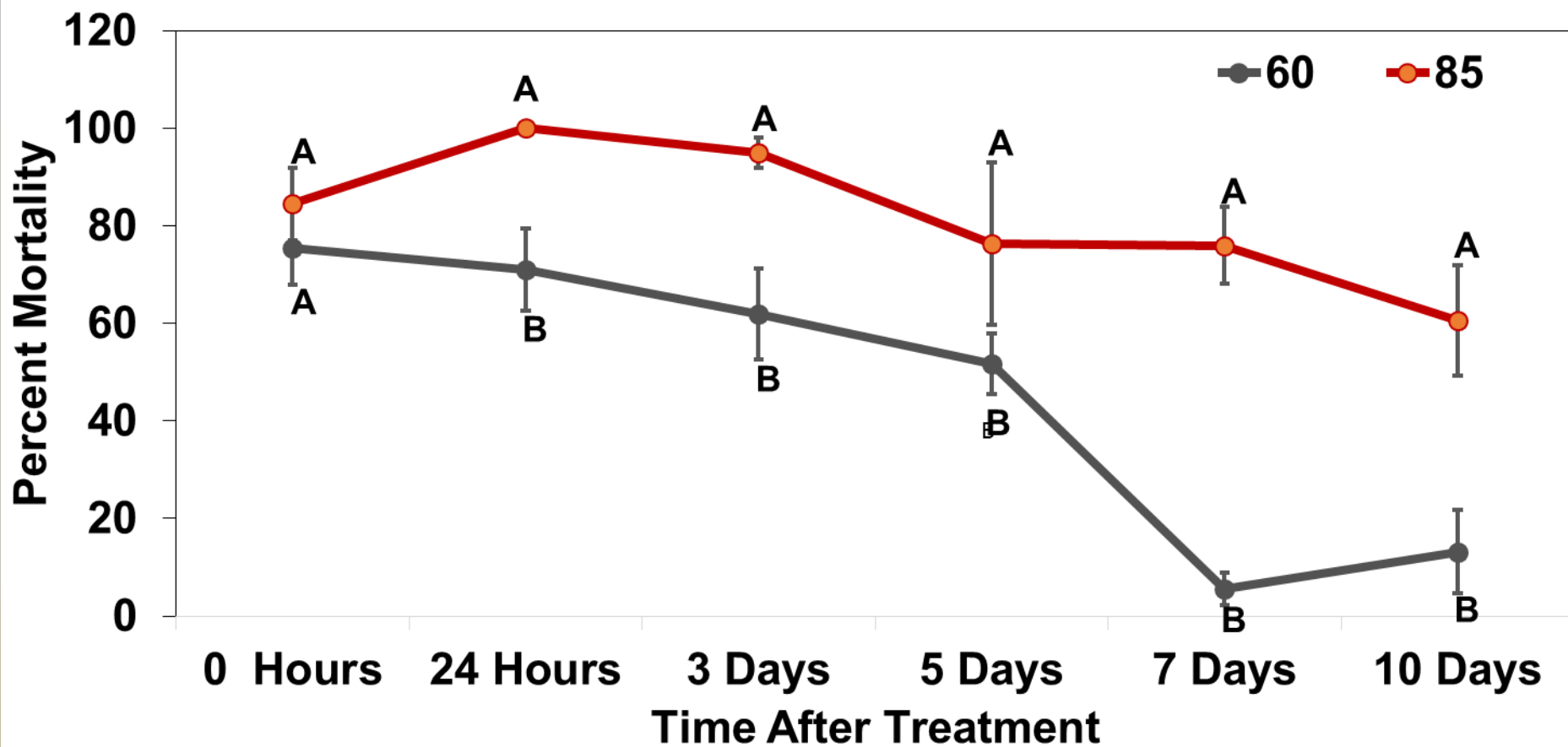
Effects of temperature on insecticide efficacy



Efficacy of Sulfoxaflor at 60 and 85 Degrees Fahrenheit



Efficacy of Flupyradifurone at 60 and 85 Degrees Fahrenheit



Sugarcane Aphid Management Points

- Eliminate Johnson grass
- Plant early
- Plant a SCA resistant hybrid
- Use an insecticide seed treatment
- Do not let SCA populations develop to large numbers
 - Treat when 20% of leaves checked have 50 or more SCAs
 - Use common sense concerning pending weather, number of fields needing to cover, etc.
- Use an efficacious insecticide; preferably one that is soft on beneficials
- Avoid pyrethroids for other pests if possible
- Save a low PHI insecticide for the harvest window
 - Tank-mix with crop desiccant if needed

Thank you



***Question? Feel free to contact
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