

Unravelling the Rose Rosette Management Puzzle

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If not actively managed for Rose Rosette, roses can be decimated in the Mid South



August 2011



May 2012



April 2014

Don't believe everything you see
on the internet!



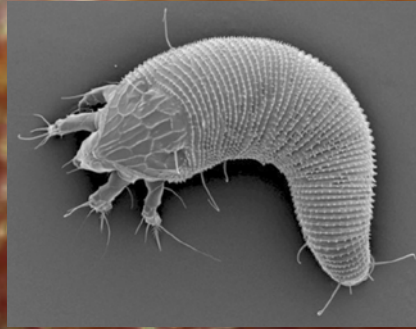
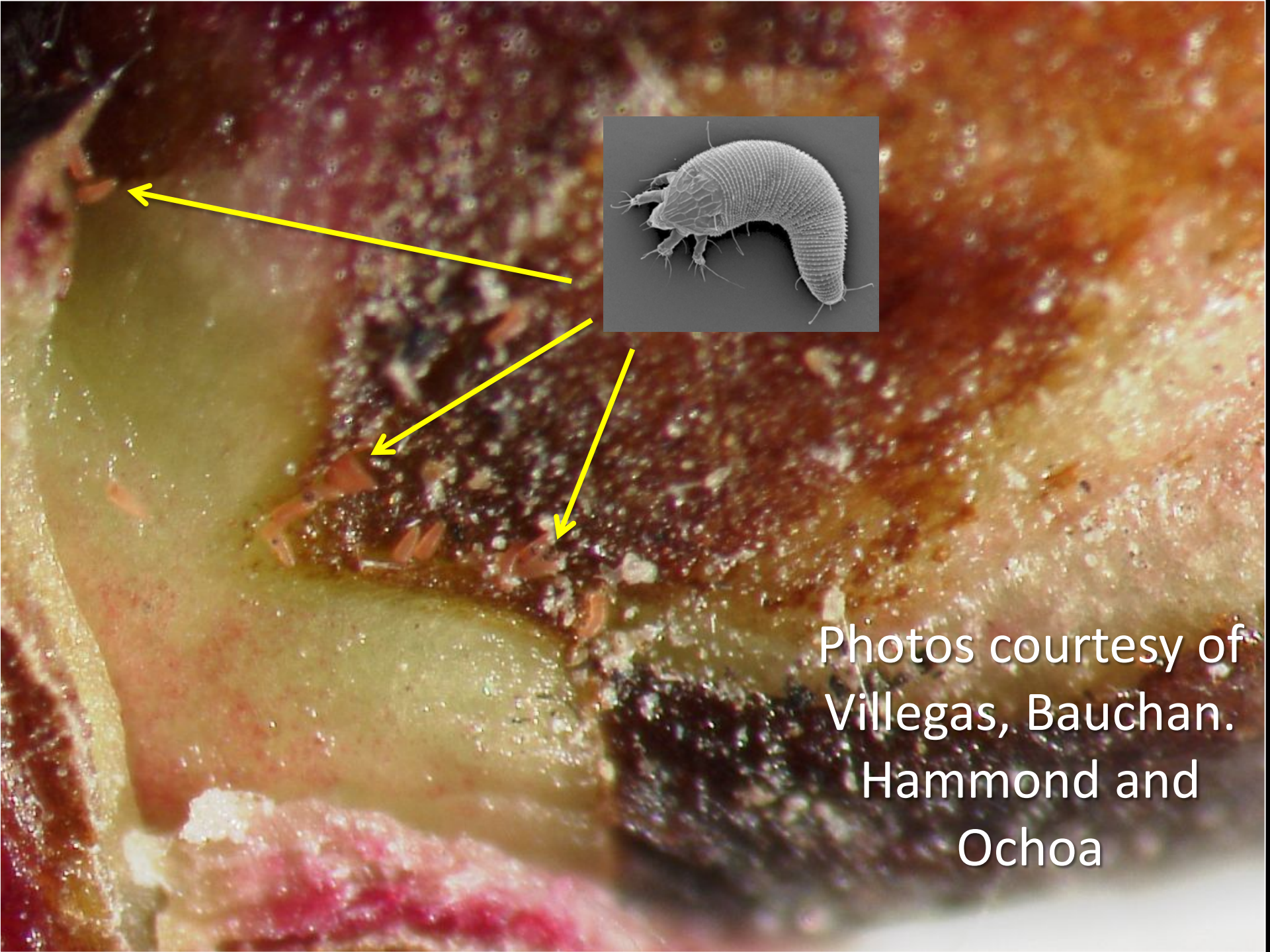
Phyllocoptes fructiphilus

- Wind-borne
- RRV may multiply in vector
- First described: Clarksburg, CA on buds of wild rose *Rosa californica*



Look for eriophyid mites on surface of leaf sheath

Photos courtesy of Baldo Villegas



Photos courtesy of
Villegas, Bauchan,
Hammond and
Ochoa

Where Can Rose Rosette Hide?



Distribution of multiflora rose



Multiflora rose can be found in wooded areas, along roadsides, in pastures, disturbed sites (like power-line right-of-ways, even as an ornamental

Where else does rose rosette hide?



In retail
businesses



Club sales,
swaps and
giveaways

Commercial
/public
plantings



Are Knock Out[®] roses more susceptible to RRV?



- Knock Out[®] roses are NOT more susceptible to rose rosette!

- Due to commonality of Knock Out[®] roses in mass plantings, rose rosette is often seen on these roses



- Unpruned Knock Out[®] roses may grow tall and intercept 'ballooning' eriophyid mites . This phenomenon may explain why susceptible miniature roses are rarely reported with RRV

RRV found in a bed of Drift® roses at a garden center that sells hundreds of roses annually



We instruct landscapers/nursery owners that being observant is critical or things can go bad quickly!



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Being observant and detecting rose rosette early is critical



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When to catch RRD

Action stage!

“Behind the 8 ball” stage!



Don't get "behind the 8-ball"!



- You have lost the plant
- Mite populations have ballooned to other plants
- Other plants likely to be infected

Make sure you get enough of the roots
so the rose won't spout again!

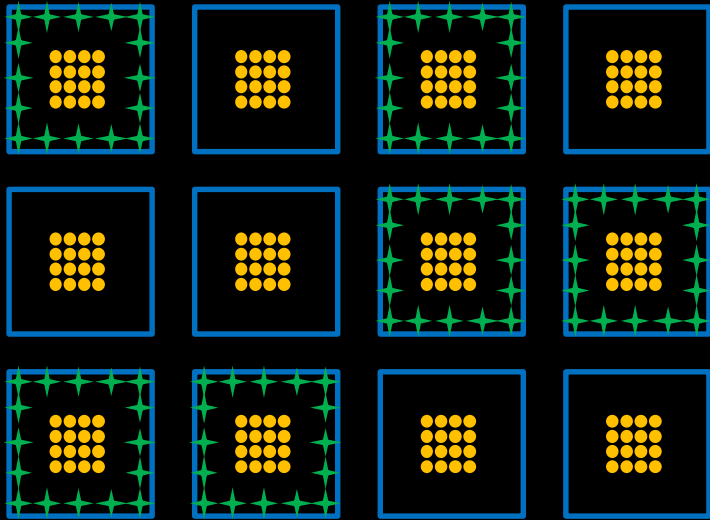




Development of a Rose Rosette Best Management Plan for Rosarians

A partnership between the American Rose Society
and TN AgResearch

Experiment 1: barriers



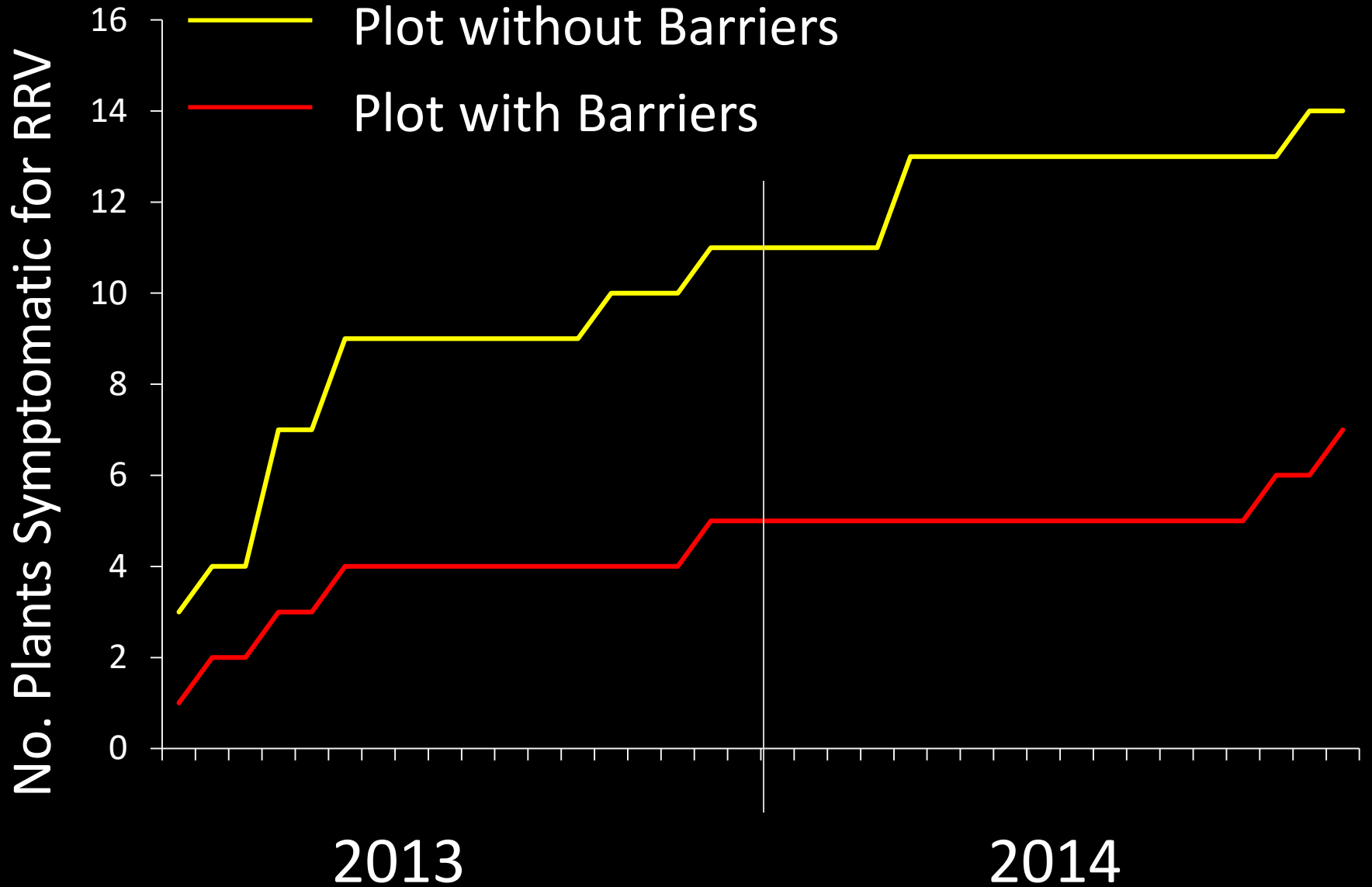
- Knock Out® Rose

- ★ *Miscanthus sinensis*

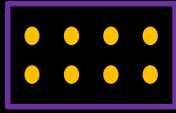
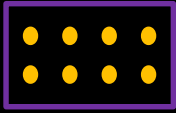
Each plot contains
16 roses



Incidence of RRV in barrier expt. - 2013

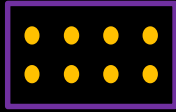
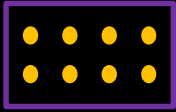


Experiment 2: miticides



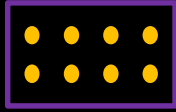
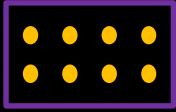
Akari

Kontos



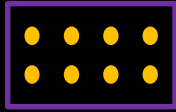
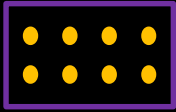
Avid +

Sevin



Horticultural oil

Talstar



Forbid

Water Spray,

Horticultural oil

Control



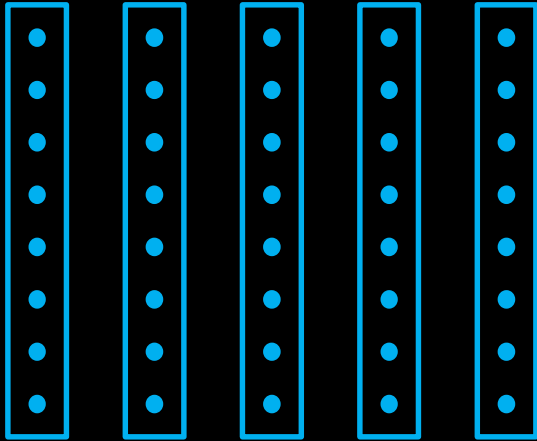
Miticide control expt. status

- ✓ Akari (warning), Forbid (caution, professional use only), Kontos (caution) and Talstar (caution, restricted use only)



- ✓ Allington et al. (1968. J. Econ. Entomol. 61:1137-1140): spider mites are predators of *P. fructiphilus*. Will loss of spider mites in miticide treatments affect our results?

Experiment 3: pruning



Hypothesis: RRV can be eliminated by pruning out symptoms of RRV if pruning is done at the right time.



Has worked in 70 % of symptomatic roses when pruned at first symptom. More work needed.

Rose rosette and the Beall Family Rose Garden – roguing as a strategy





- Roses are inspected for RRV symptoms daily
- Symptomatic roses dug, bagged and discarded
- No adjacent plant to a rogued plant has become symptomatic
- Garden opened in 2009, 2-4% roses rogued each year
- 4-5% of roses replaced each year to keep garden fresh
- Public (and garden director) oblivious to problem

Can we learn to live with rose rosette?

We do successfully every day in the
Beall Family Rose Garden



Management summary for rosarians

- ✓ Constant vigilance for rose rosette symptoms is critical
- ✓ Rogueing is an effective strategy for maintaining gardens with minimal losses
- ✓ A green barrier on windward side of garden and miticides are useful
- ✓ Pruning is a 'crap shoot'. It's worth a try **if** you catch the symptoms early and you vigilantly watch the pruned plant and neighboring ones for a year

NIFA Proposal 2014-07901: Combatting Rose Rosette Disease: Short Term and Long Term Approaches



Dave Byrne

- Dave Byrne (Texas A&M) is Principle Investigator
- 18 CoPIs at universities and federal labs across the country and scientists from rose companies
- Fully funded proposal! \$4.6 million over 5 years

1. Easy detection methods

- a. must be easy to use, quick and inexpensive
- b. symptoms on different types of roses

2. Best Management Practices

- a. directed toward producers
- b. miticide treatments – expanded
- c. antiviral compounds
- d. predatory mites

3. Epidemiology

- a. effect of temperature on mite survival
- b. virus movement in plants
- c. understand how and the rate of spread in rose beds

4. Resistance studies

- a. 350-400 *Rosa* species / rose cultivars tested for resistance to virus and mite
- b. Optimize digital genotyping for creating a diploid and tetraploid rose map using 1000 SNPS
- c. Discovery of markers associated with resistance

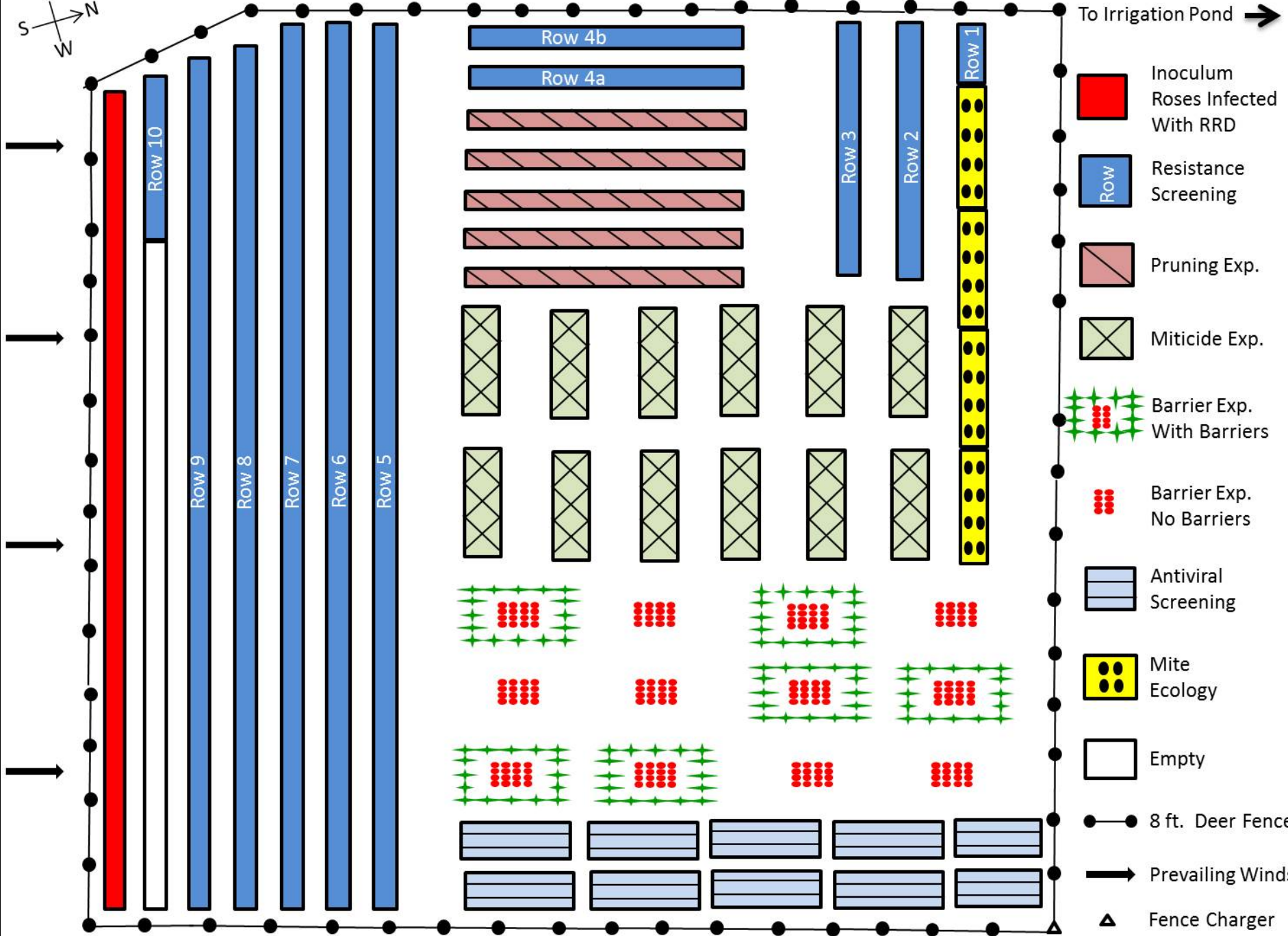
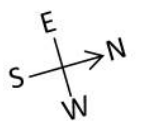
5. Economics of rose rosette

- a. Cost of RRD at all levels
- b. Benefit of BMP and resistant roses at all levels

6. Outreach

- a. Monitoring network
- b. Best Management Practices for all levels
- c. Training modules for county agents, master gardeners and consulting rosarians

Plateau Research and Education Center Rose Rosette Facility



To Irrigation Pond →

- Inoculum
- Roses Infected With RRD
- Resistance Screening
- Pruning Exp.
- Miticide Exp.
- Barrier Exp. With Barriers
- Barrier Exp. No Barriers
- Antiviral Screening
- Mite Ecology
- Empty
- 8 ft. Deer Fence
- Prevailing Winds
- Fence Charger



The Holy Grail: RRD resistant roses!



Rosa palustris

Resistant to RRV?

Rosa setigera

Resistant to
P. fructiphilus?

Worse than RRD among your plants?

Live Oak Gardens, New Iberia, LA - 2016





Questions? Comments?

East Tennessee really is
BIG ORANGE country!