2024 Update on Pecan Disease Management

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Outline

- Root knot nematode
- Pecan bacterial leaf scorch
- Pecan leaf dieback
- Pecan scab
  - fungicides and cultivars

Pecan Root Knot Nematode

- All over Georgia, worst in sandy soils
- Damage most severe on young trees
- Standard soil sample to UGA lab or dig roots
- No resistant root stocks, but some nematicides, <u>best used at replanting in an infested field</u>

Pecan Root Knot Symptoms

(Look for these on uprooted trees)

Pecan Root Knot Symptoms

What about these roots?

You can dig an infected tree and replant, BUT, how do you deal with the nematodes in the soil?

Nematicide Options for Pecans

Fumigants (custom applied, Tri-Est in Tifton)

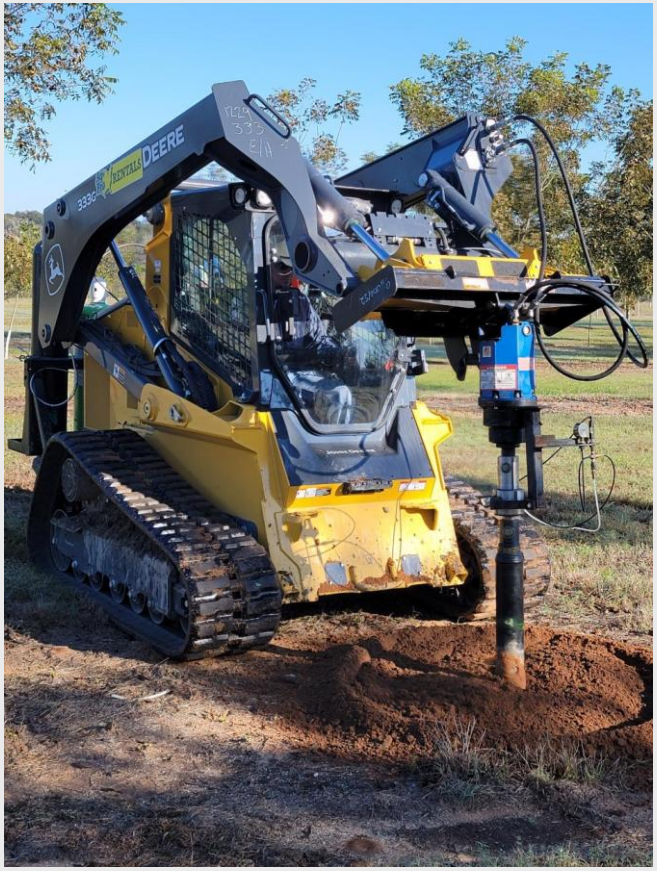
1. Telone

   (1,3-Dichloropropene)

2. Telone C-35

   (1,3-Dichloropropene + chloropicrin)

<u>Must be applied in the fall before planting</u>



BAYER

VELUM®

Net Contents:

1 Gallon

FLUOPYRAM	GROUP 7	FUNGICIDE

Broad-spectrum fungicide and nematicide for use as soil treatment for suppression of listed crop diseases and suppression of plant pathogenic nematodes.

For uses on: Artichoke, (Globe); Brassica Head and Stem Vegetables (Group 5-16); Brassica Leafy Greens (Subgroup 4-16B) (except watercress); Bulb vegetables (Group 3-07); Celtuce; Citrus (Group 10-10); Coffee; Corn; Cotton (subgroup 20C); Cucurbits (Group 9); Fennel, Florence (fresh leaves and stalks); Fruiting Vegetables (Group 8-10); Kohlrabi; Leafy greens (Subgroup 4-16A); Leaf petiole vegetables (Subgroup 22B); Legume Vegetables (Group 6-22) (except Dried Shelled Pulse Pea Legume Vegetables subgroup 6-22F); Mint (spearmint and peppermint, fresh and dried leaves); Peanut; Pome fruit (Group 11-10); Rapeseed (Subgroup 20A); Small Berries (caneberries and bushberries) (Subgroups 13-07A and 13-07B); Sorghum; Soybean; Stone Fruits (Group 12-12); Strawberry and other low-growing berries, except cranberry (Subgroup 13-07G); Sunflower (Subgroup 20B); Sweet Potato; Tobacco; Tree Nuts (Group 14-12).

ACTIVE INGREDIENT: Fluopyram: *N*-[2-[3-chloro-5-(trifluoromethyl)-2-pyridinyl]ethyl]-2-(trifluoromethyl)benzamide*	41.5%
OTHER INGREDIENTS:	58.5%
Contains 4.16 lbs FLUOPYRAM per gallon	**TOTAL: 100.0%**

*(CAS Number 658066-35-4)

EPA Reg. No. 264-1078
SUSPENSION CONCENTRATE

KEEP OUT OF REACH OF CHILDREN
CAUTION

See additional precautionary statements and directions for use on label.

Produced for: Bayer CropScience LP
800 N. Lindbergh Blvd.
St. Louis, MO 63167

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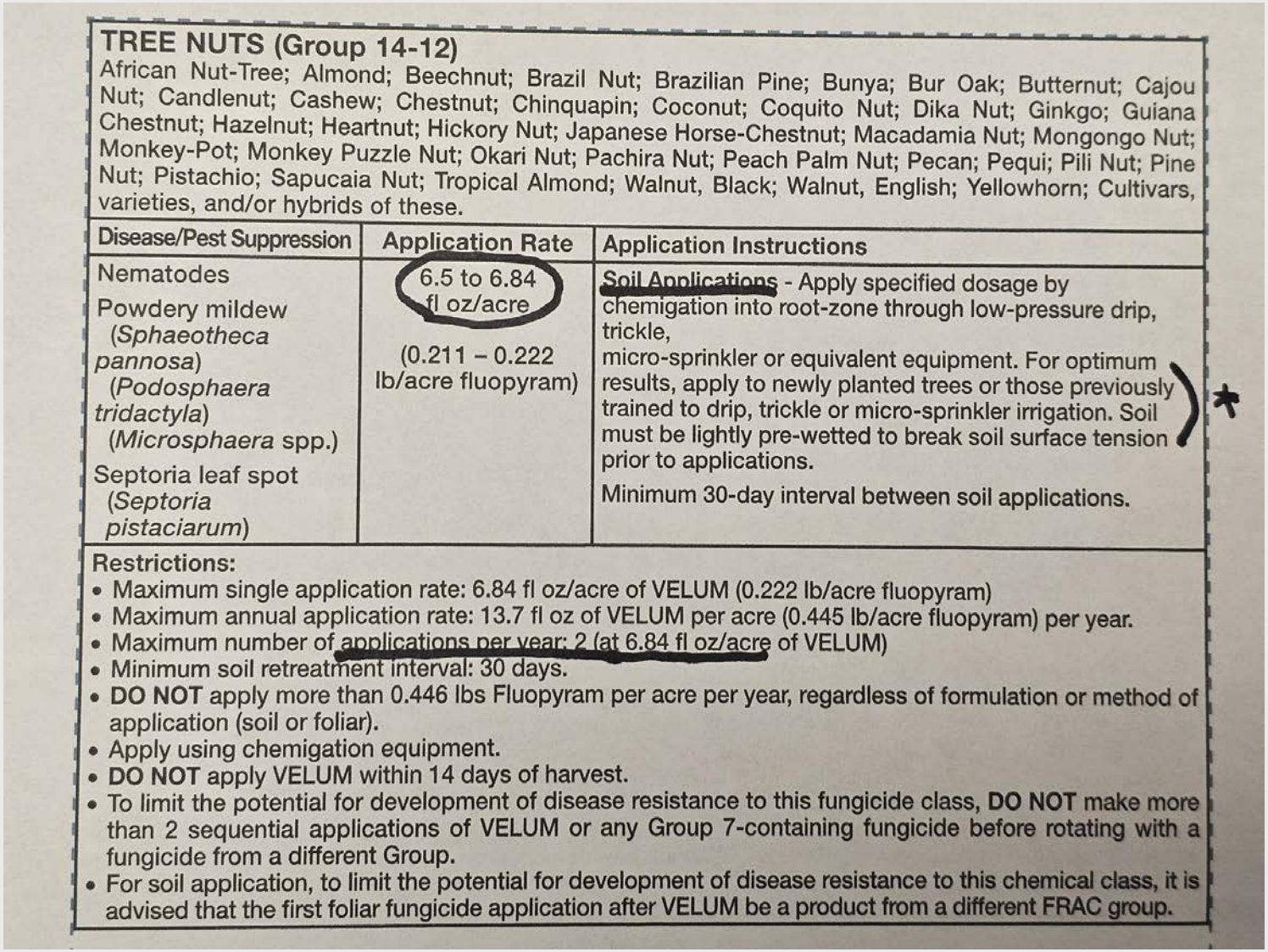
How to do it



TREE NUTS (Group 14-12)

African Nut-Tree; Almond; Beechnut; Brazil Nut; Brazilian Pine; Bunya; Bur Oak; Butternut; Cajou Nut; Candlenut; Cashew; Chestnut; Chinquapin; Coconut; Coquito Nut; Dika Nut; Ginkgo; Guiana Chestnut; Hazelnut; Heartnut; Hickory Nut; Japanese Horse-Chestnut; Macadamia Nut; Mongongo Nut; Monkey-Pot; Monkey Puzzle Nut; Okari Nut; Pachira Nut; Peach Palm Nut; Pecan; Pequi; Pili Nut; Pine Nut; Pistachio; Sapucaia Nut; Tropical Almond; Walnut, Black; Walnut, English; Yellowhorn; Cultivars, varieties, and/or hybrids of these.

Disease/Pest Suppression	Application Rate	Application Instructions
Nematodes Powdery mildew (*Sphaeotheca pannosa*) (*Podosphaera tridactyla*) (*Microsphaera* spp.) Septoria leaf spot (*Septoria pistaciarum*)	6.5 to 6.84 fl oz/acre (0.211 – 0.222 lb/acre fluopyram)	Soil Applications - Apply specified dosage by chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. For optimum results, apply to newly planted trees or those previously trained to drip, trickle or micro-sprinkler irrigation. Soil must be lightly pre-wetted to break soil surface tension prior to applications. Minimum 30-day interval between soil applications.

Restrictions:

- Maximum single application rate: 6.84 fl oz/acre of VELUM (0.222 lb/acre fluopyram)
- Maximum annual application rate: 13.7 fl oz of VELUM per acre (0.445 lb/acre fluopyram) per year.
- Maximum number of applications per year: 2 (at 6.84 fl oz/acre of VELUM)
- Minimum soil retreatment interval: 30 days.
- **DO NOT** apply more than 0.446 lbs Fluopyram per acre per year, regardless of formulation or method of application (soil or foliar).
- Apply using chemigation equipment.
- **DO NOT** apply VELUM within 14 days of harvest.
- To limit the potential for development of disease resistance to this fungicide class, **DO NOT** make more than 2 sequential applications of VELUM or any Group 7-containing fungicide before rotating with a fungicide from a different Group.
- For soil application, to limit the potential for development of disease resistance to this chemical class, it is advised that the first foliar fungicide application after VELUM be a product from a different FRAC group.

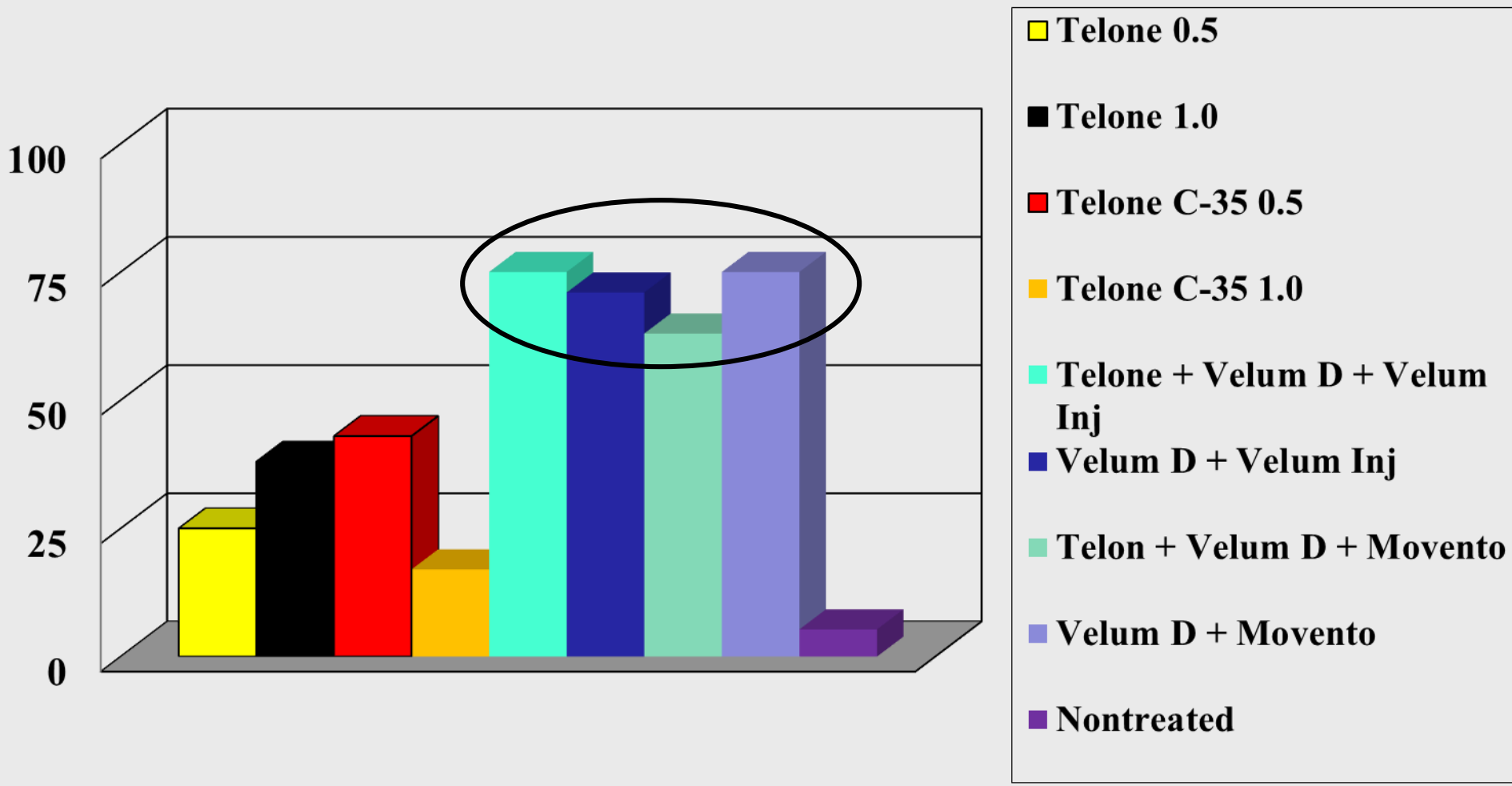
Perfect time to apply a treatment deep to both roots and soil

Add Velum to transplant water or flood in soon after planting

Treated (2019) vs Untrt Trees, Summer 2023

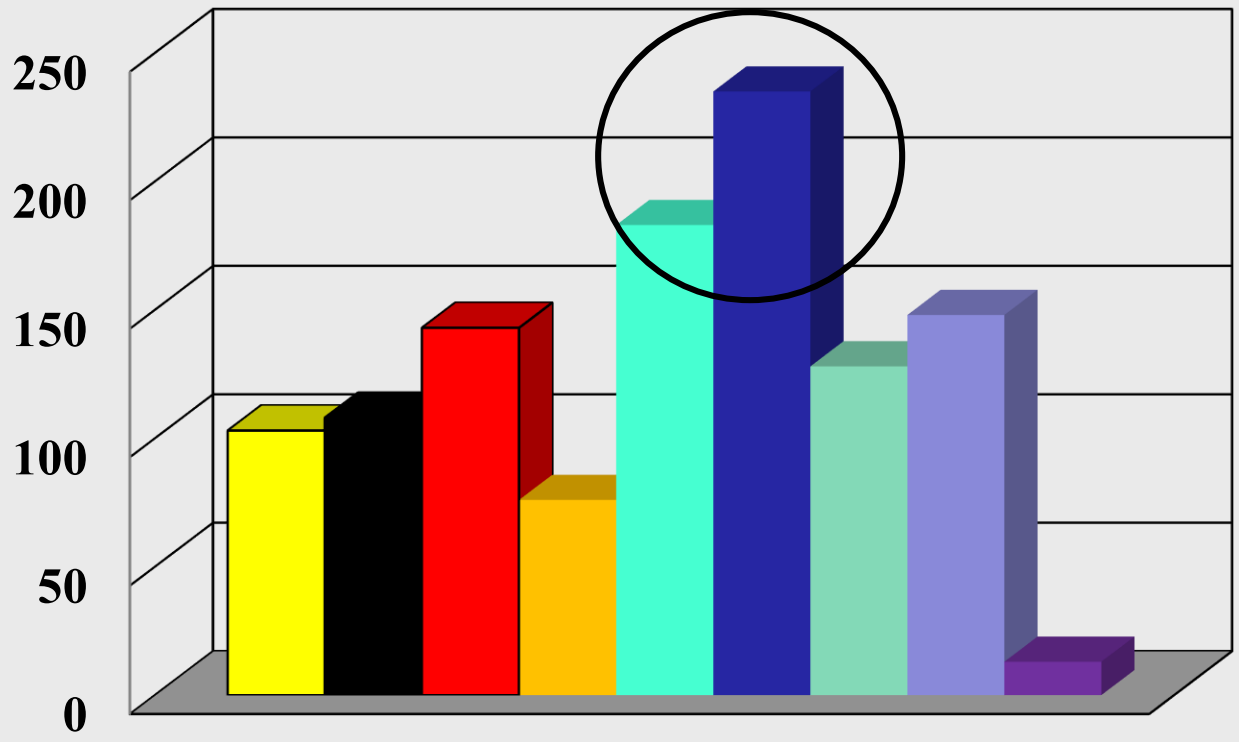
Trees w/ nuts in 2023 (planted 2019)

(LSD = 49.2)



Nut Yields, 2024 (lb / A)

(LSD = 109.6))



- Telone 0.5
- Telone 1.0
- Telone C-35 0.5
- Telone C-35 1.0
- Telone + Velum D + Velum Inj
- Velum D + Velum Inj
- Telon + Velum D + Movento
- Velum D + Movento
- Nontreated

Bacterial Leaf scorch (*Xylella*) vs Leaf Dieback (*Neofusicoccum*)

(Why does it matter?)

Leaf Dieback, like scab, is driven by WET weather (Bacterial leaf scorch is NOT)

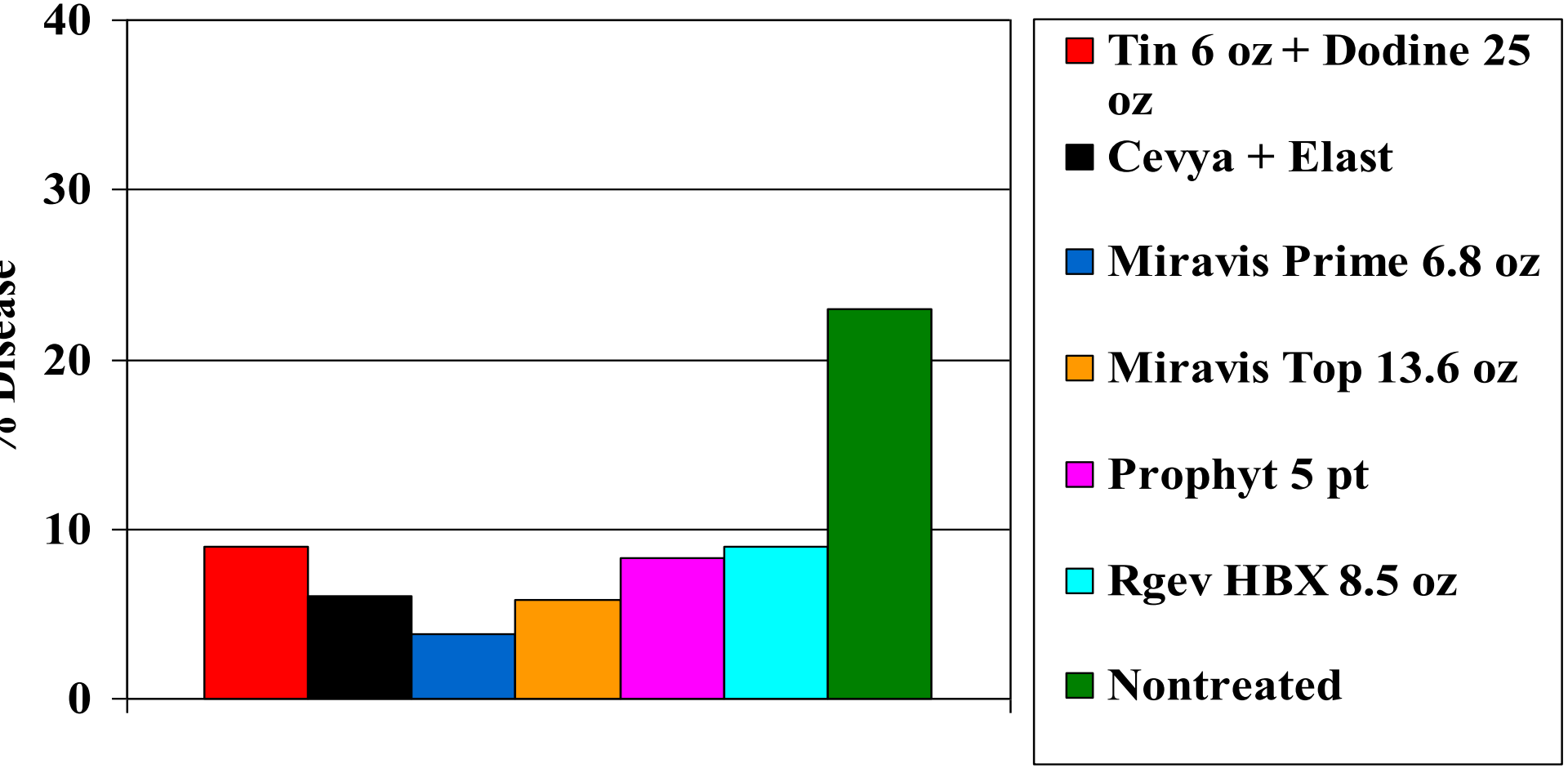
June growth flushes w/ leaf die back and scab from early rain

Zinner, June 25, 2024 (wet April and May)

Effect of Fungicides on Leaf Dieback

(Desirable I, Tifton, 2024; LSD = 4.9)

("Alternating " programs w/ Tin 6 oz + Dodine 25 oz)



Bacterial Leaf scorch (*Xylella*) vs Leaf Dieback (*Neofusicoccum*)

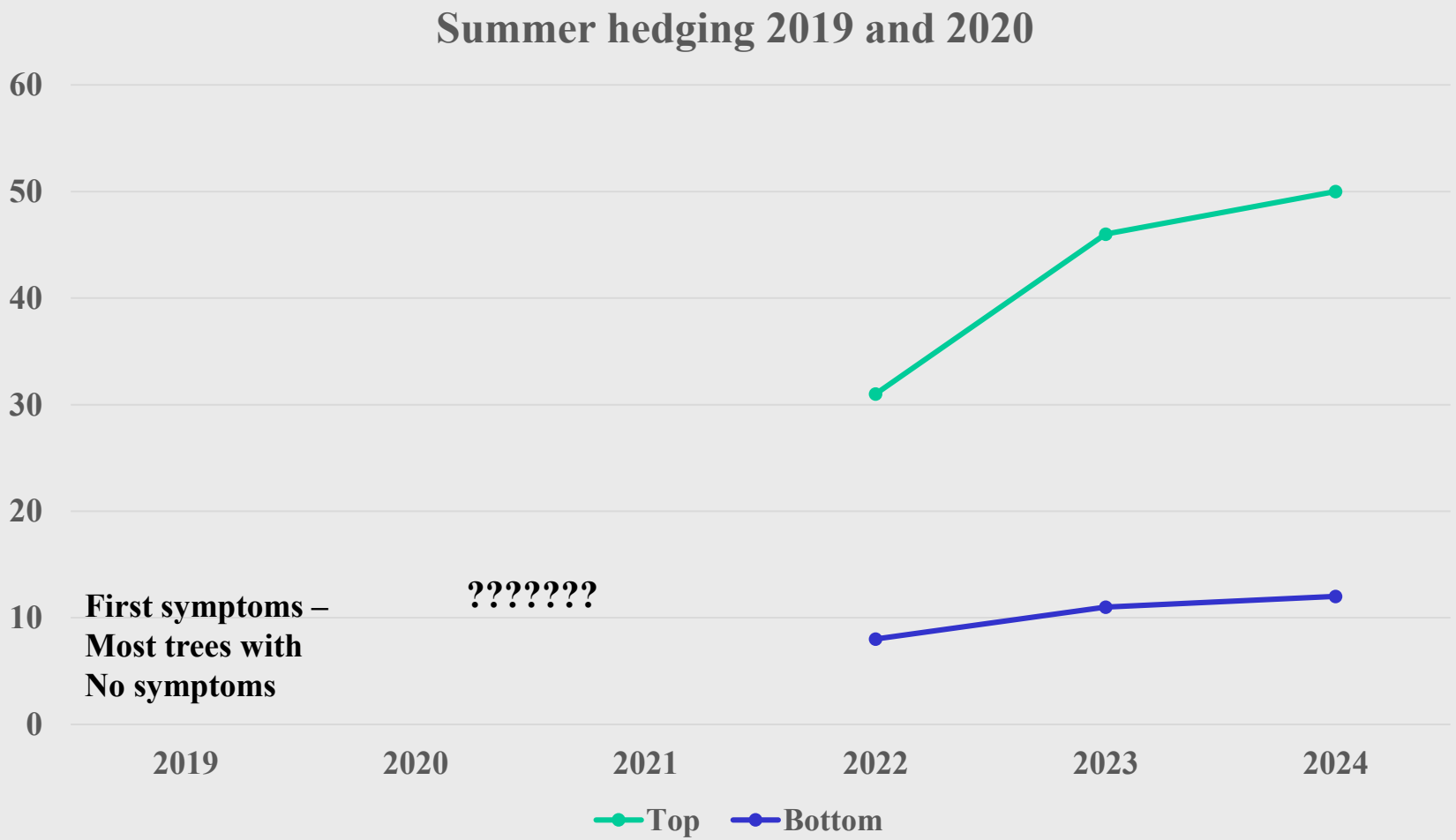
(Why does it matter?)

Update on Bacterial leaf scorch in Byrd orchard after hedging

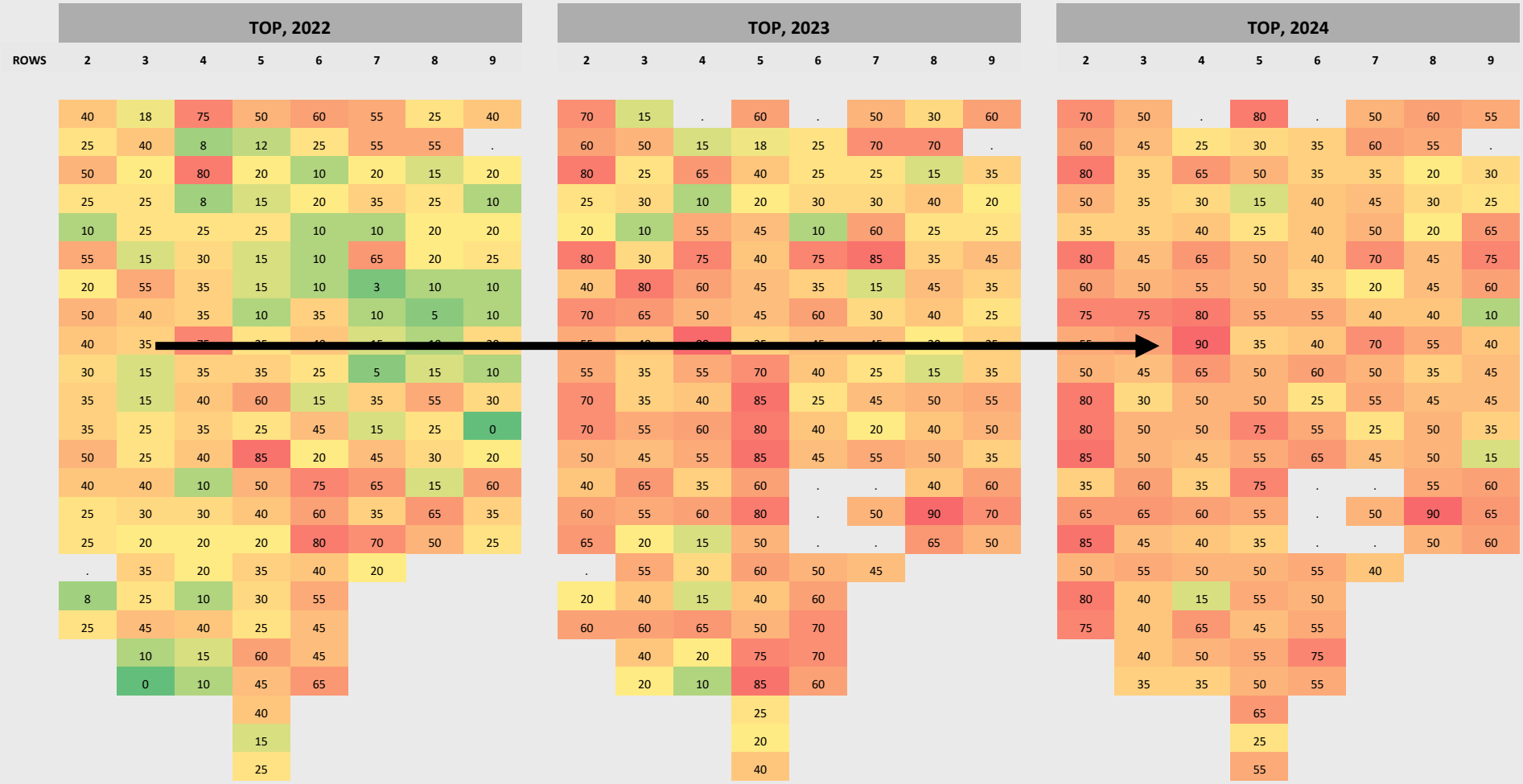
Foliage in regrowth was positive for *Xylella*, lower tree was negative

Each tree visually rated for symptoms in fall of 2022-2024 (upper vs lower)

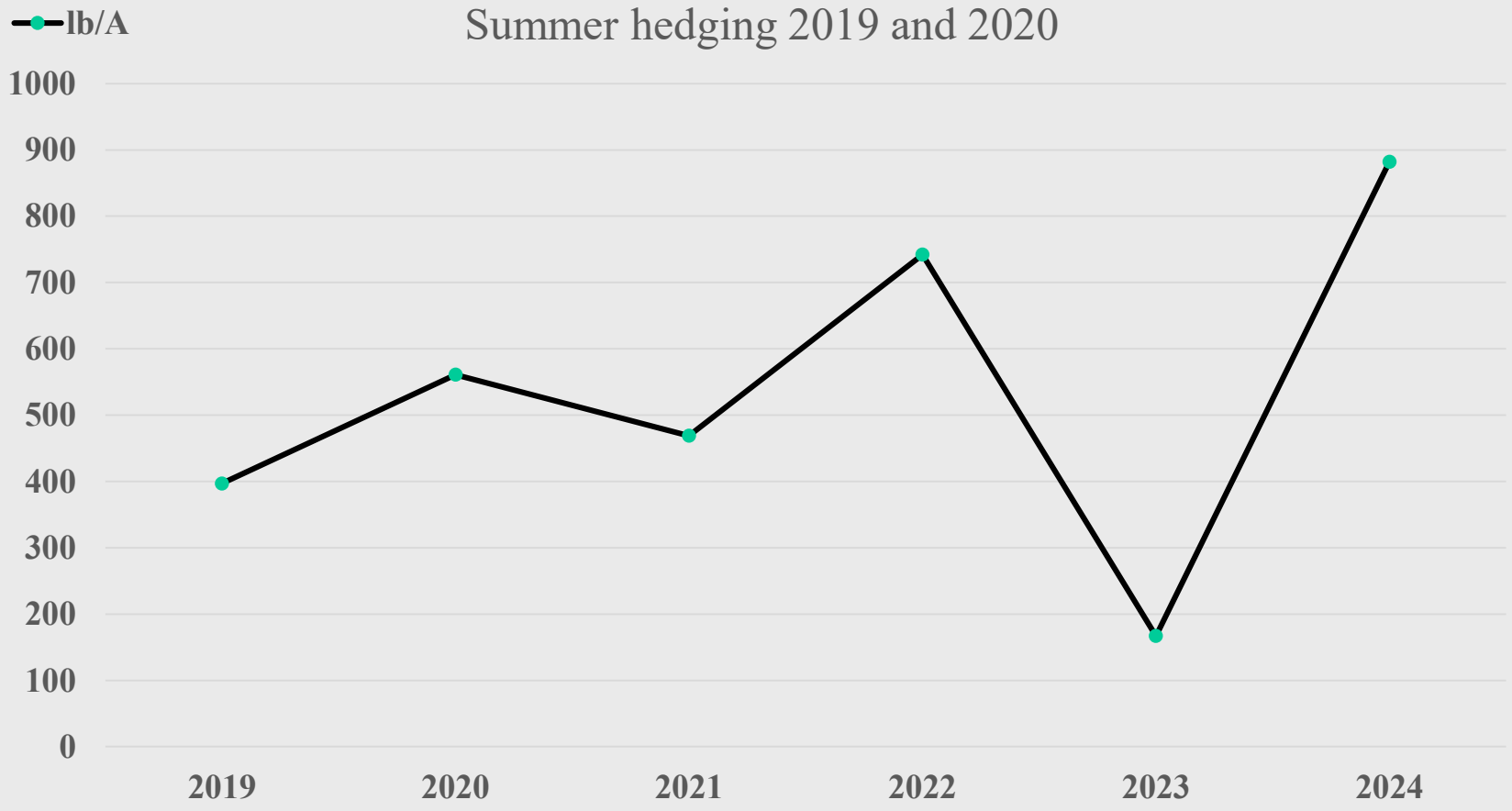
3 year visual rating of Bacterial leaf scorch (Byrd planted 2012)



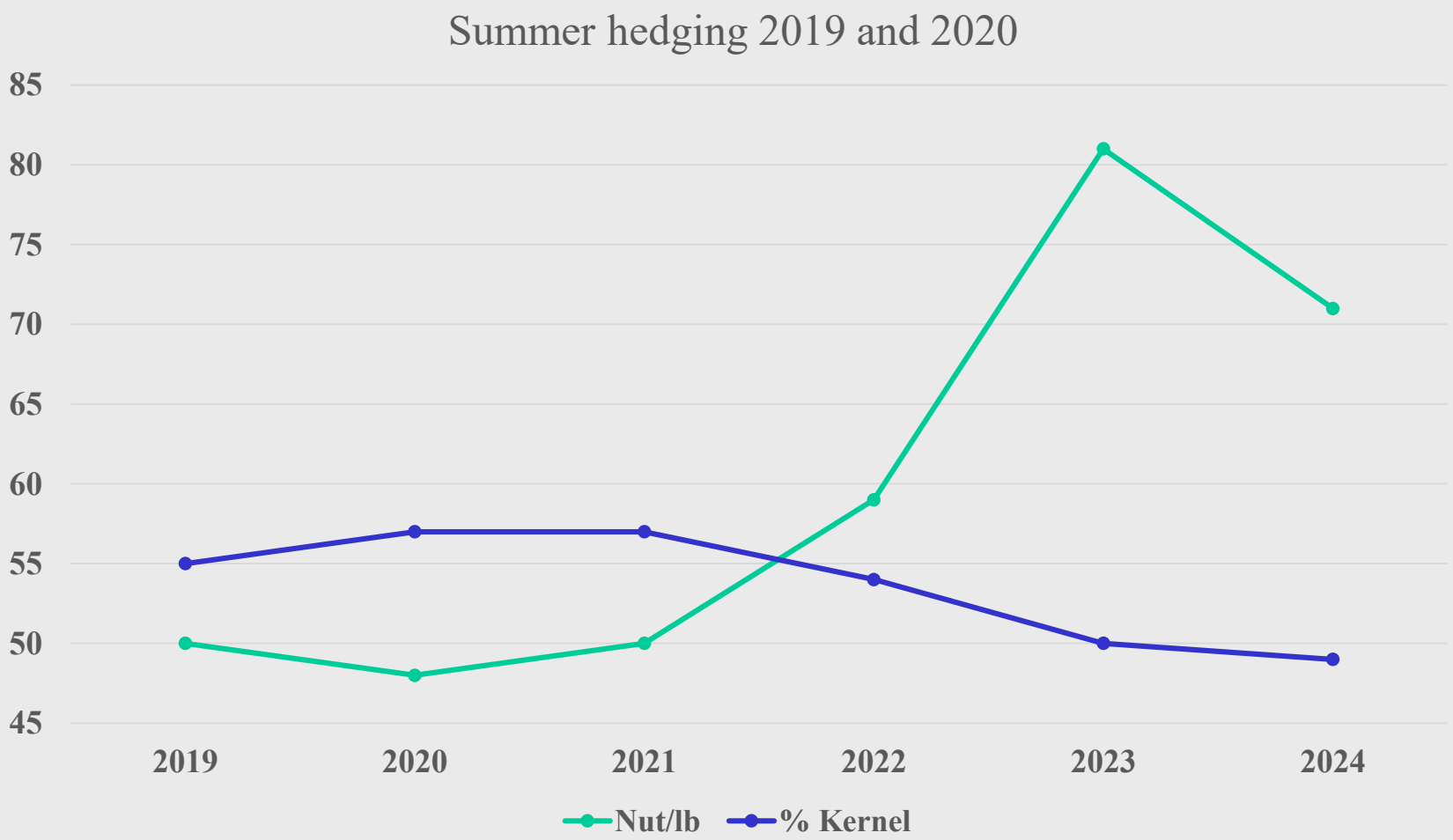
Bacterial leaf scorch map, top ½ of Byrd trees



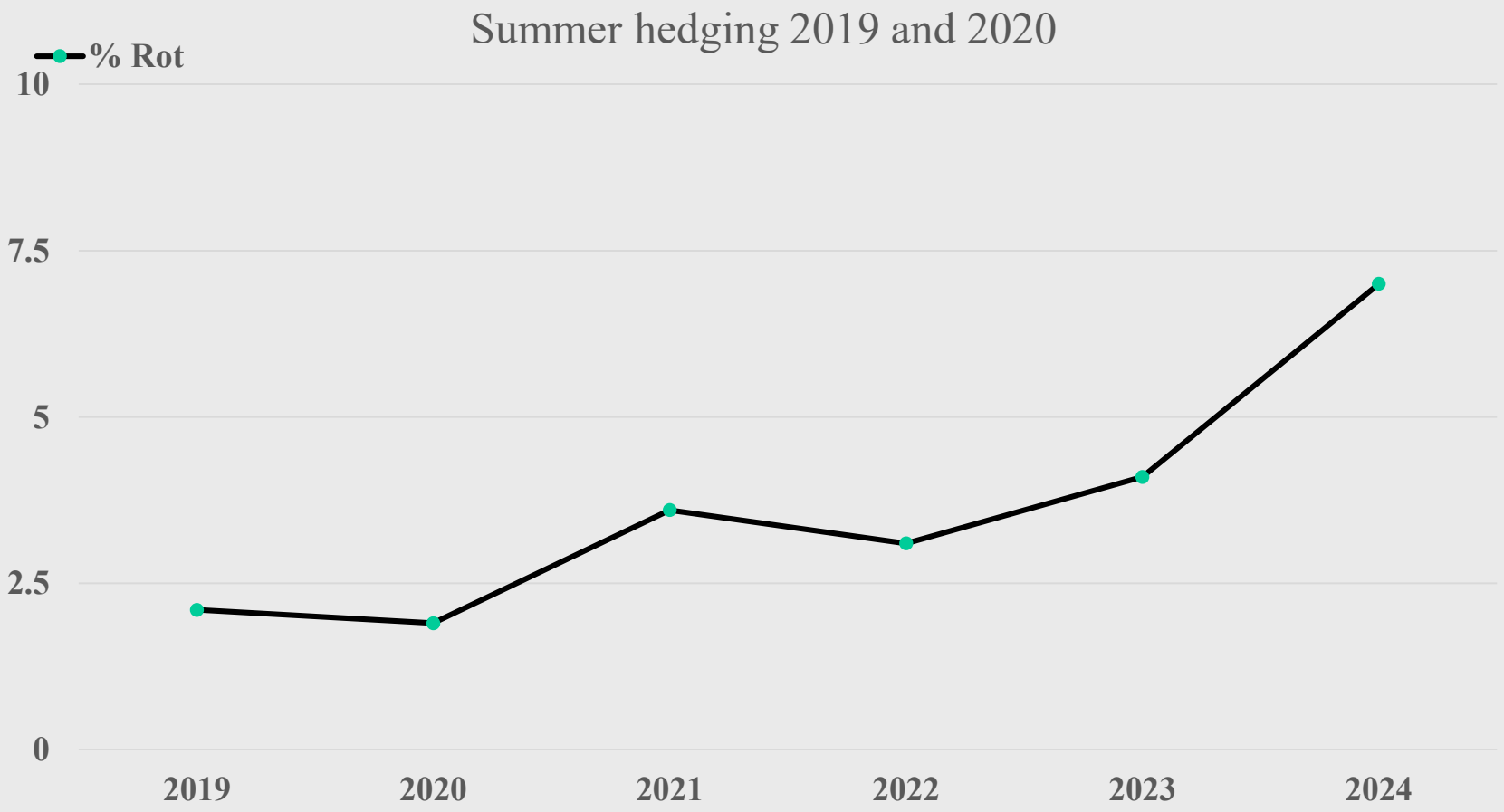
Effect of Bacterial leaf scorch on nut yield (Byrd planted 2012)



Effect of Bacterial leaf scorch on nut quality (Byrd planted 2012)



Effect of Bacterial leaf scorch on kernel rot (Byrd planted 2012)



Is Bacterial Leaf Scorch (Xylella) damaging to pecans?

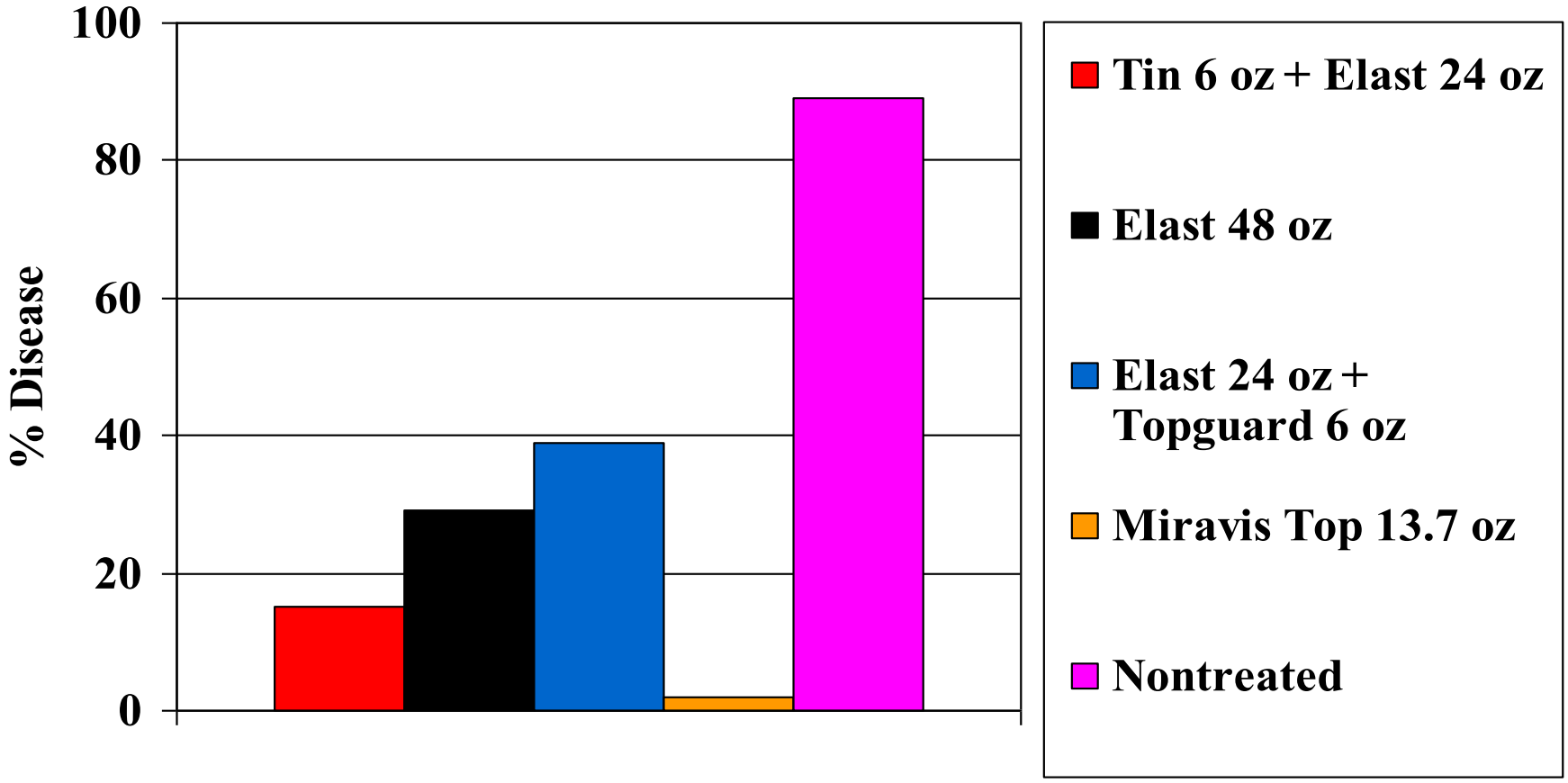
- Most cultivars appear to resist severe symptoms
- Highly susceptible cv. like Byrd or Cape Fear can be devastated, and hedging sometimes appears to make it develop much faster (if it is present –not in every orchard)
- Other new cultivars susceptible????

How did our fungicides perform in 2024?

- For the most part our fungicides did what they were supposed to do
- Very heavy pressure late (Photo was late June, unsprayed Wichita)
- Dry periods could stretch intervals, but not much room for error on susceptible cultivars

Effect of Full Season Sprays on Nut Scab Severity (10 sprays of same product – please do NOT do this!))

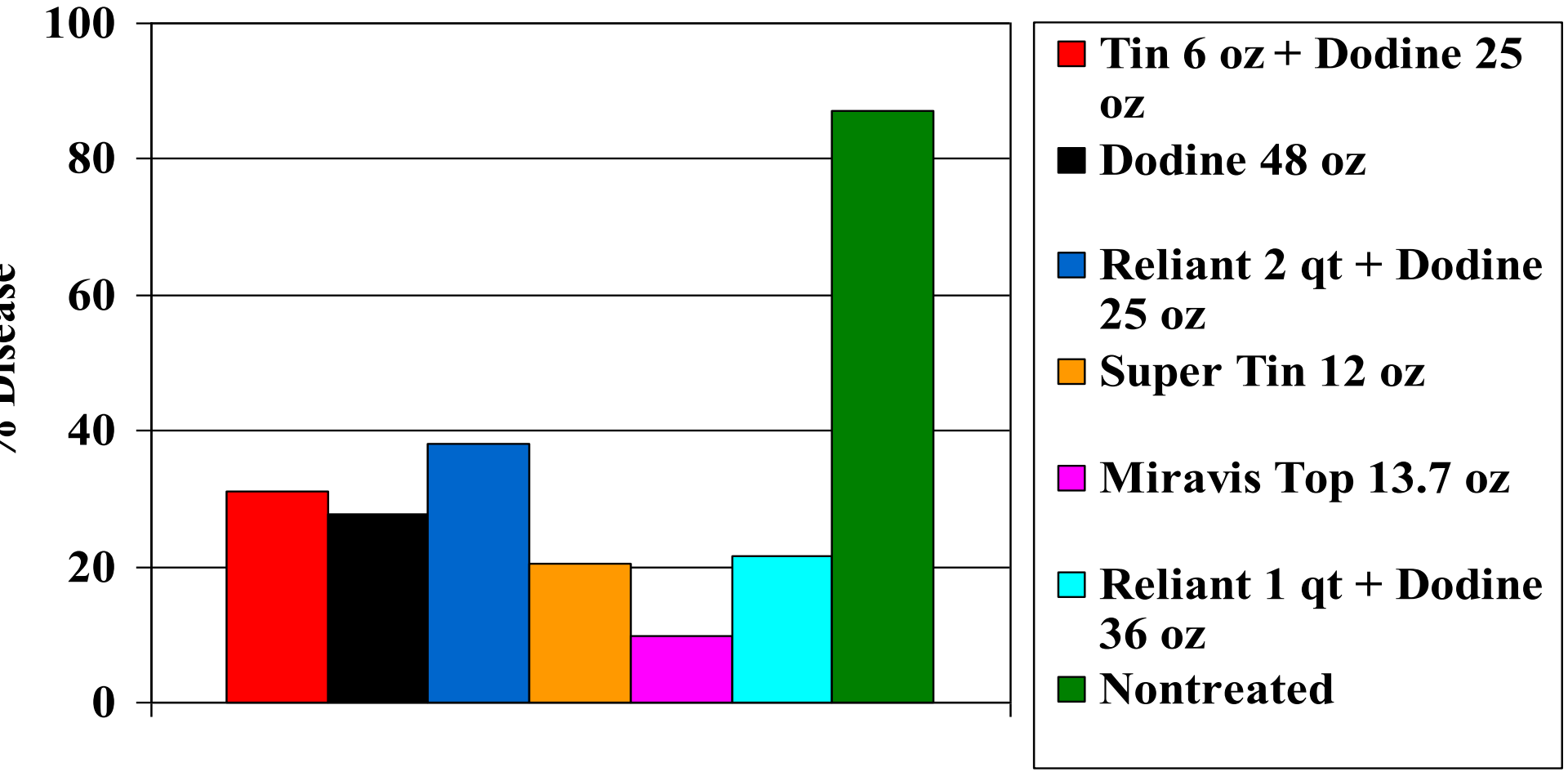
(Desirable, Tifton, 2024; LSD = 15.0)



Effect of Fungicides on Nut Scab Severity

(Desirable II, Tifton, 2024; LSD = 8.9)

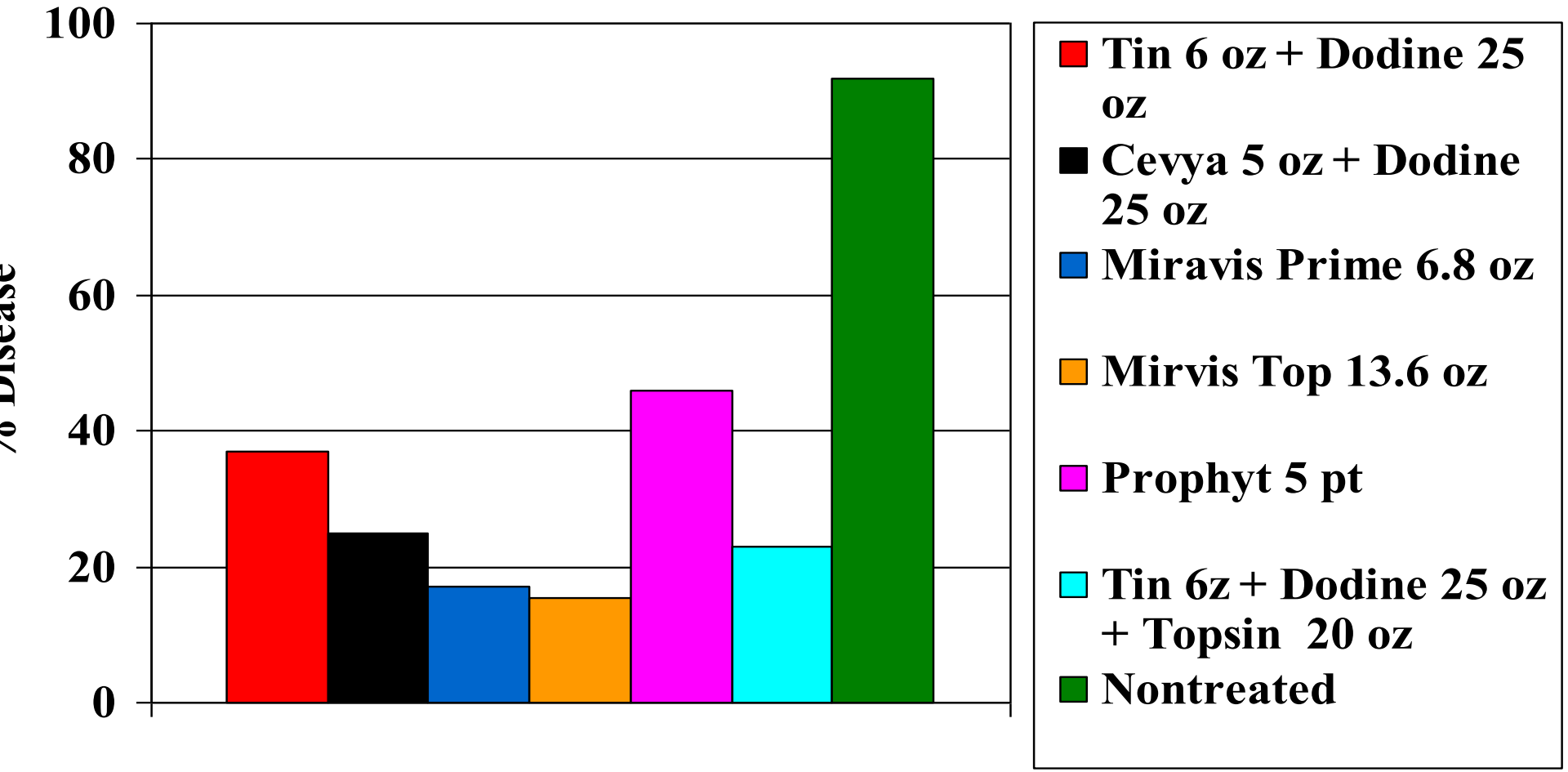
("Alternating " programs w/ Tin 6 oz + Dodine 25 oz)



Effect of Fungicides on Nut Scab Severity

(Desirable, Tifton, 2024; LSD = 9.5)

("Alternating " programs w/ Tin 6 oz + Dodine 25 oz)



General Fungicide Notes

- Phosphites still excellent on leaf scab
- Ziram is no longer available
- Dodine and Elast are virtually the same product. Still a great choice for nut scab and combines with multiple partners
- Miravis Top is outstanding for nut scab, as is Miravis Prime (more $ but w/ new MOA). Max of 4 applications per season total of the two.
- Alternate fungicide chemistries and use them when they best fit (ie. leaves vs nuts)

Do we need to spray scab resistant cultivars like Excel?

- "Yes" for Best Management Practices
- Scab is developing at low levels with increasing frequency – new strains of scab will increase
- Seeing more "minor" diseases like powdery mildew (ex. McMillan) and leaf dieback
- Suggest maybe 3 sprays
  - April Phosphite
  - May Phosphite or Absolute
  - June Miravis Top or Tin/Elast (Dodine)

Smart Sprayers?
(Are they still performing?)

- YES – growers generally pleased
- Had 3 on-farm trials in 2024. Gave same scab control with 22-45% less spray than conventional
- Can save a lot of time and $, especially in an orchard w/ gaps and mixed tree sizes

Acknowledgements

Bayer Cropscience
Tri-Est
Mason Pecan Farms
Nilo Plantation
Shiloh Farms
Tim Sikes
Dr. Intiaz Chowdury

The Georgia Agricultural Commodity Commission for Pecans

My plan for the future!