

NC Grape Virus Survey and Establishment of Testing Service

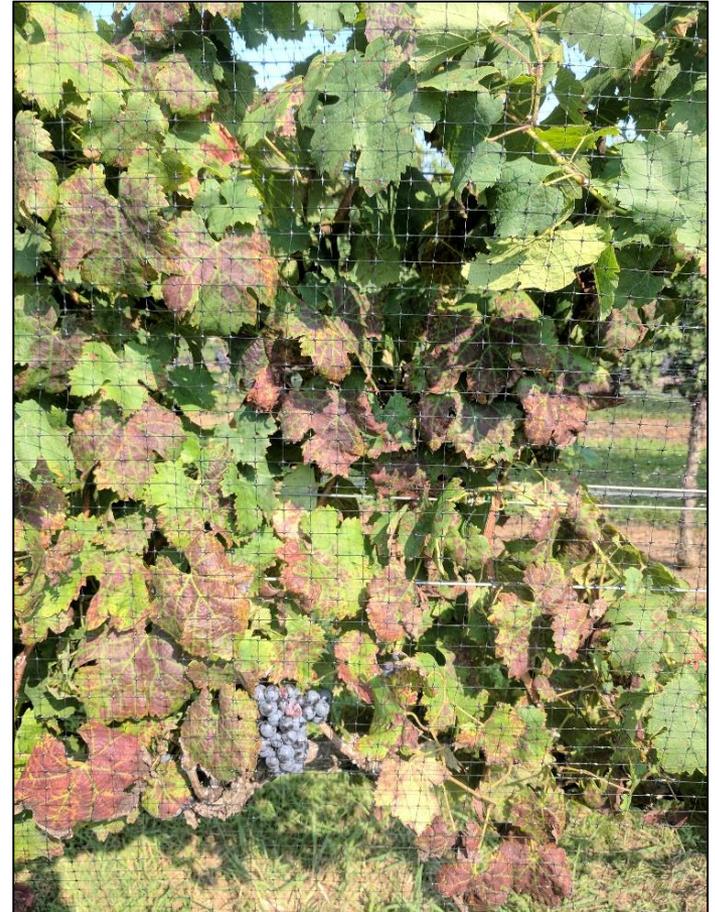
Mark Hoffmann, Maher AlRwahnih, Mysore Sudarshana, Win Talton, Christie Almeйда



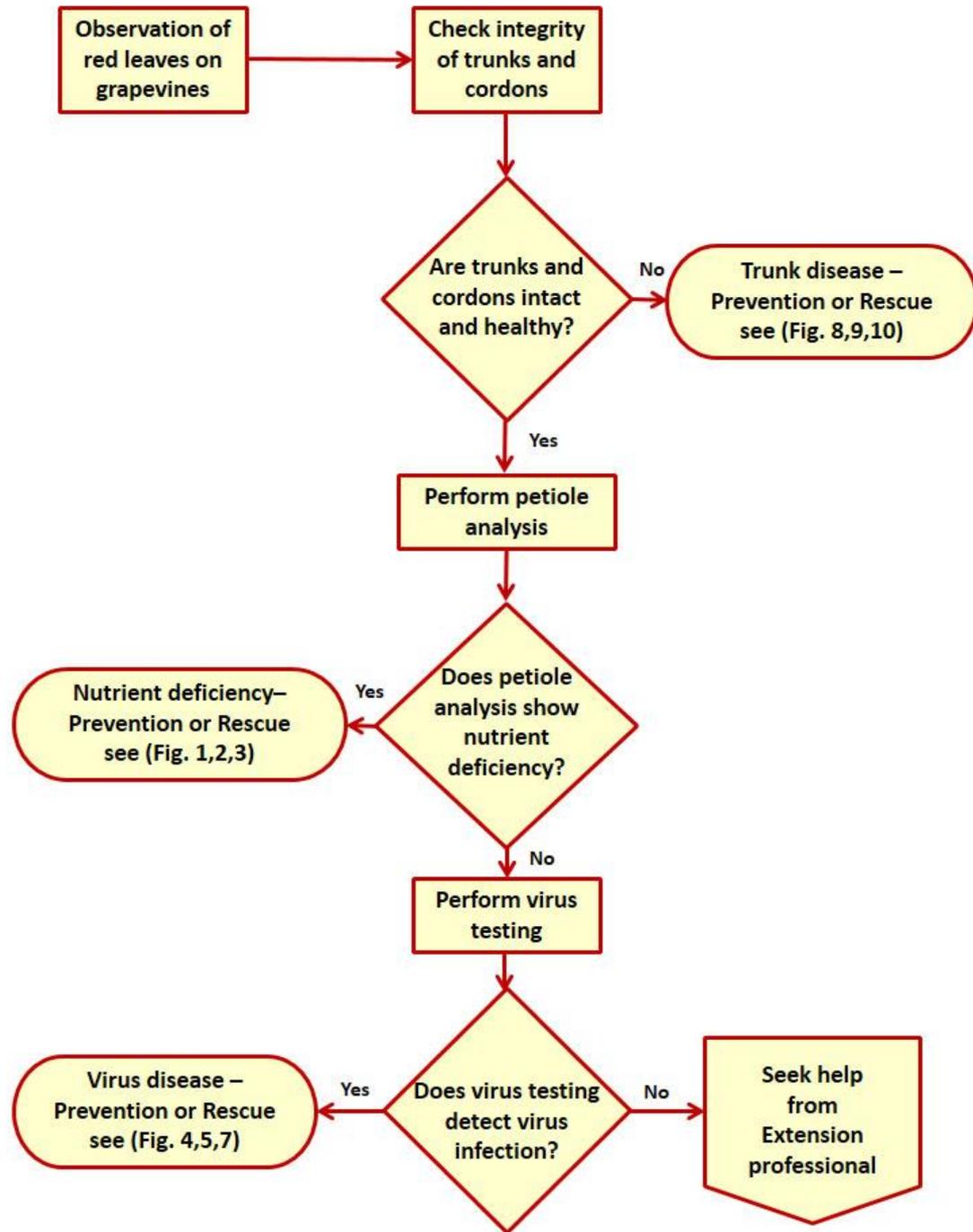
Virus Survey

Project Objectives:

- Establishment of molecular protocols and detection methods
- **Virus survey** in selected vineyards in NC (2018-2020).









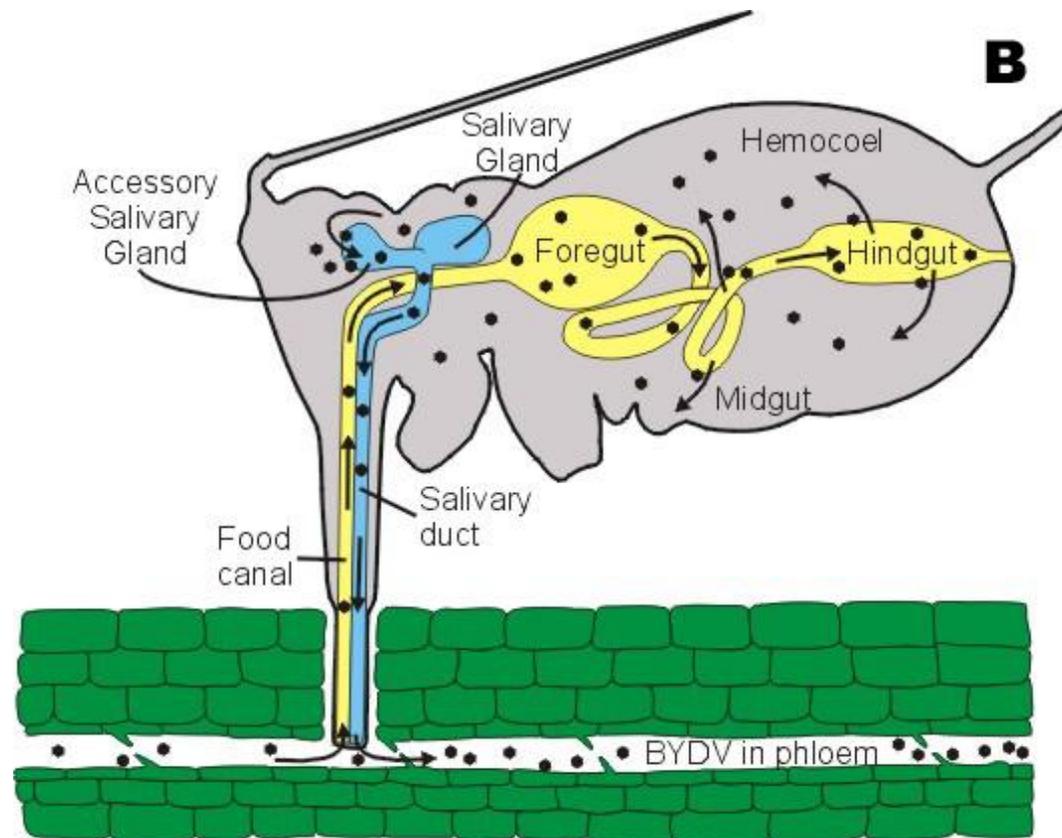
	Virus Diseases
<i>Type of Pathogen</i>	Virus (RNA/DNA)
<i>Lethal to vine</i>	No
<i>Plant Age</i>	Mature and young
<i>Resistance/Tolerance</i>	Some native species seems to be more tolerant
<i>Can come with nursery stock?</i>	Yes
<i>Transmitted?</i>	Insect Vectors
<i>Systemic</i>	Yes
<i>Severity in NC</i>	?

Virus Survey

Virus	Name
GLRaV-2	Grapevine leafroll associated viruses 2,3,4,7 Associated with Grape Leafroll Disease. Can be transmitted by mealybugs.
GLRaV-3	
GLRaV-4	
GLRaV-7	
GRBV	Grape Red Blotch Virus. Causes Red Blotch Disease
GVA	Grapevine Virus A
GVB	Grapevine Virus B
GRSPaV	Grape Rupestris Stem Pitting associated Virus: is in environment
TMV	Tobacco Mosaic Virus
<i>X. fastidiosa</i>	Causal agent of Pierces' Disease

Grape Viruses

Viruses are often transmitted by insects
(‘vectors’)



Grape Viruses

Grape Leafroll associated Virus (GLRaV)

**Green
veins**



**Rolling
edges**

Grape Viruses

Grape Leafroll associated Virus (GLRaV)

- Transmitted via Mealybugs
- Please contact Hannah Burrack

hannah_burrack@ncsu.edu



Grape Viruses

Grape Red Blotch associated Virus (GLRaV)



Red veins

**No rolling
edges**

Grape Viruses

Grape Red Blotch associated Virus (GLRaV)

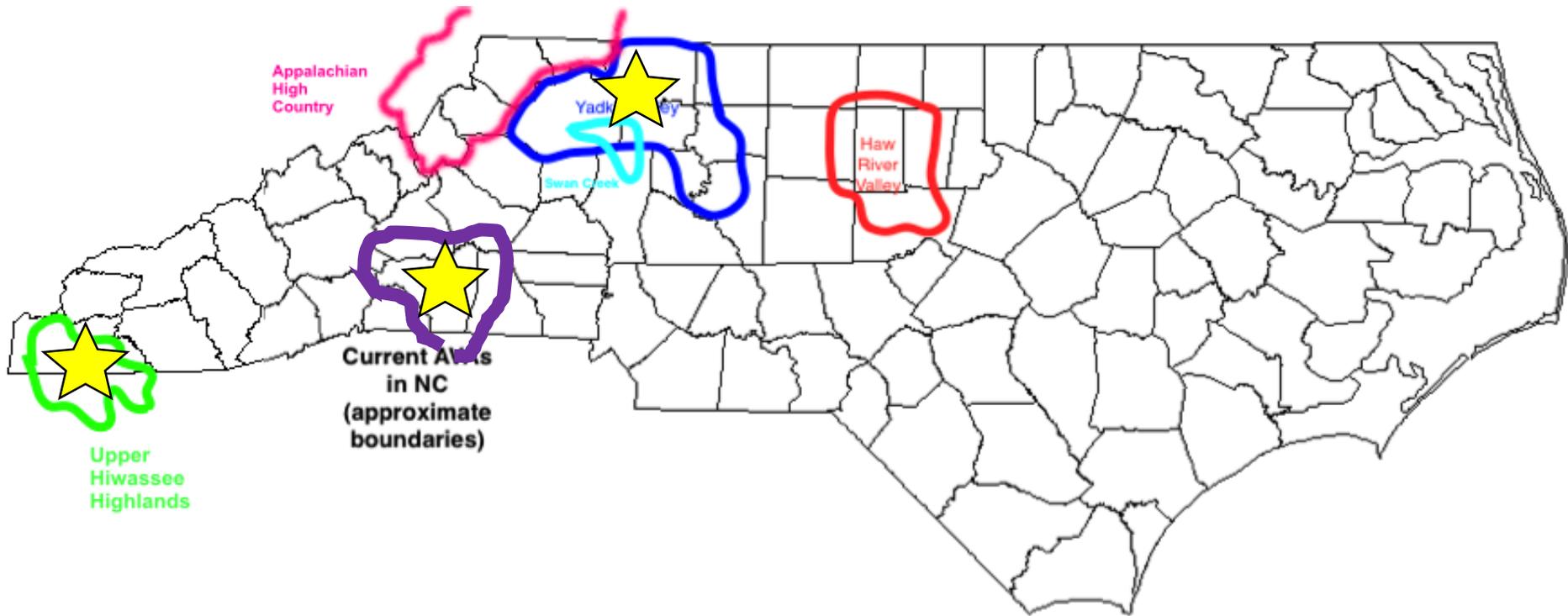
Three-cornered alfalfa hopper (*Spissistilus festinus*).





Virus Survey 2018

10 vineyards in NC



Virus Survey

Vinifera vineyard survey:

Nine symptomatic blocks in vineyards in the **Upper Hiwassee Highlands AVA**, **Yadkin Valley AVA** and **Henderson Co. AVA** were surveyed in October 2018 (10 random plants per block). Given is the percentage of plants positively tested for the presence of virus.

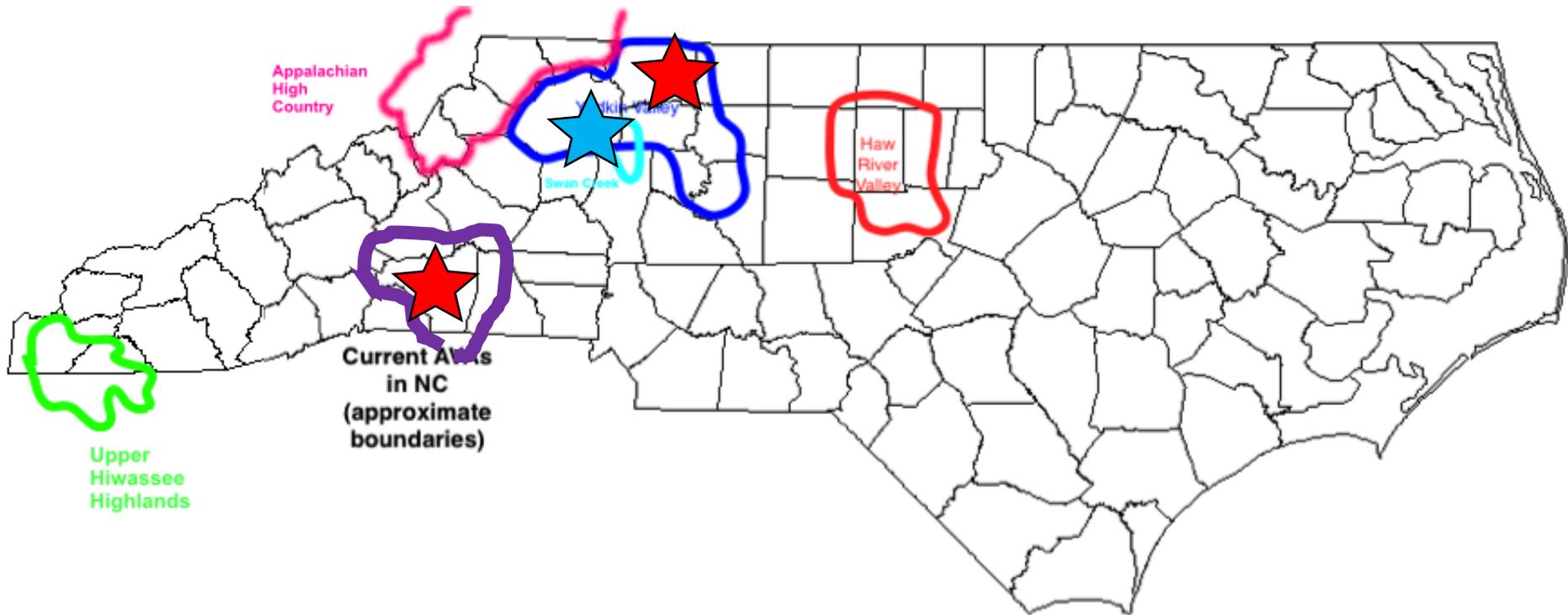
GLRaV-2	GLRaV-3	GLRaV-4	GLRaV-7	GRBV	GVA	GVB	GRSPaV	TMSV	X.f.
1 %*	22 %	0 %	0 %	23 %	0 %	0 %	72 %	0 %	7 %

Grapevine Leafroll associated Virus – 3: 22%

Grape Red Blotch Virus: 23%

Virus Survey 2018

10 vineyards in NC



Current AVs
in NC
(approximate
boundaries)

Upper
Hiwassee
Highlands



Grapevine Leafroll associated Virus



Grapevine Red Blotch Virus

Virus Testing Service – MPRU and PDIC at NC State

Plant Disease and Insect Clinic in
collaboration with the
Micropropagation and Repository
Unit

Web Site:

<https://projects.ncsu.edu/cals/plantpath/extension/clinic/>

Tentative Fee Structure

- *\$ 75 per submitted sample*
- *\$ 25 per requested virus test*

Virus: Planned Activities

- NC wide survey continues:
October 2019 and October 2020, we will survey more vineyards in NC, including muscadine vineyards
- MPRU will start to test muscadine in TC for viruses

**Thank you for your
attention**

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