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SIMPLE SURVEY OF SOIL MICROBE ACTIVITY

**Exploring relationships between varieties, soil environment, and
disease.**

When all important factors are the same, why is there such significant variability?



Why care about variety interactions in the soil environment in the presence of soil borne diseases?



Explore the environmental aspect of the disease triangle



Identify potential opportunities to protect variety resistance



Begin understanding the role microbes play in plant health



Begin understanding why and when soil microbes can help

Measuring Soil Microbe Activity

Assessing Options

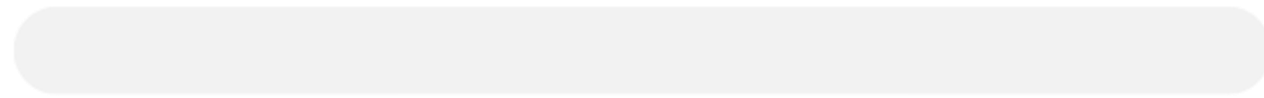
Commercial Sequencing Test



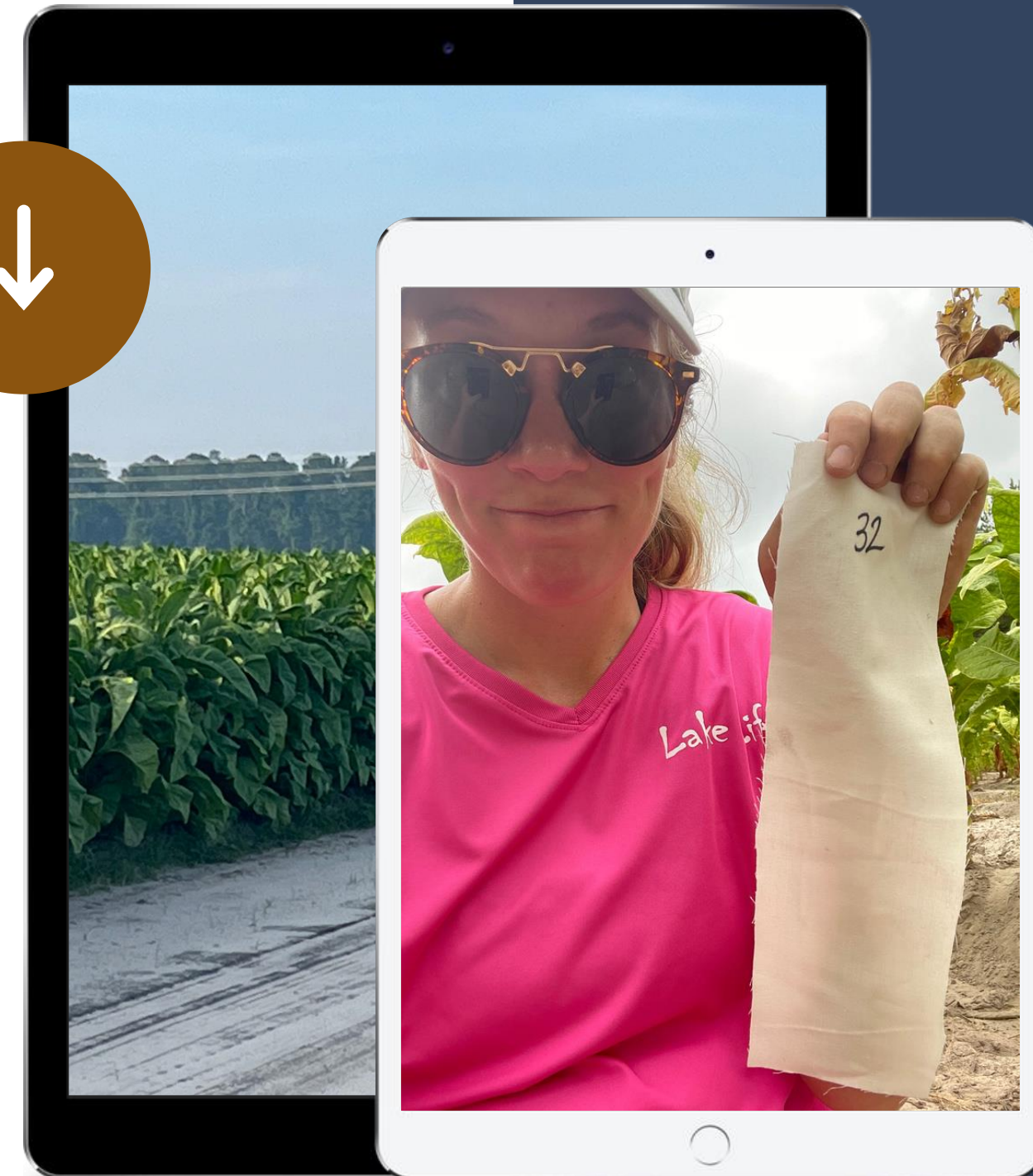
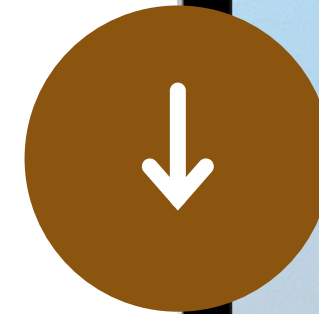
Soil Life Test



Soil Your Undies



BASICALLY FREE



Soil Your Undies Test

Agriculture

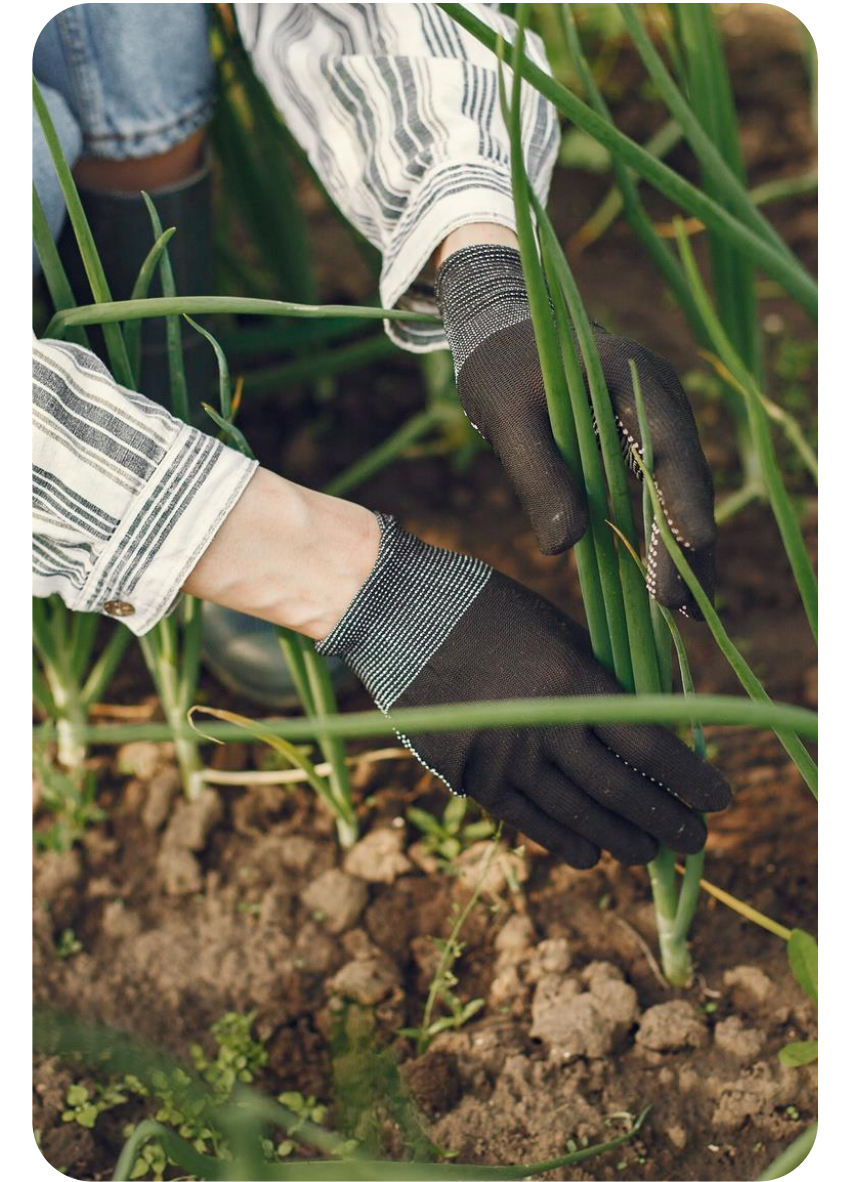
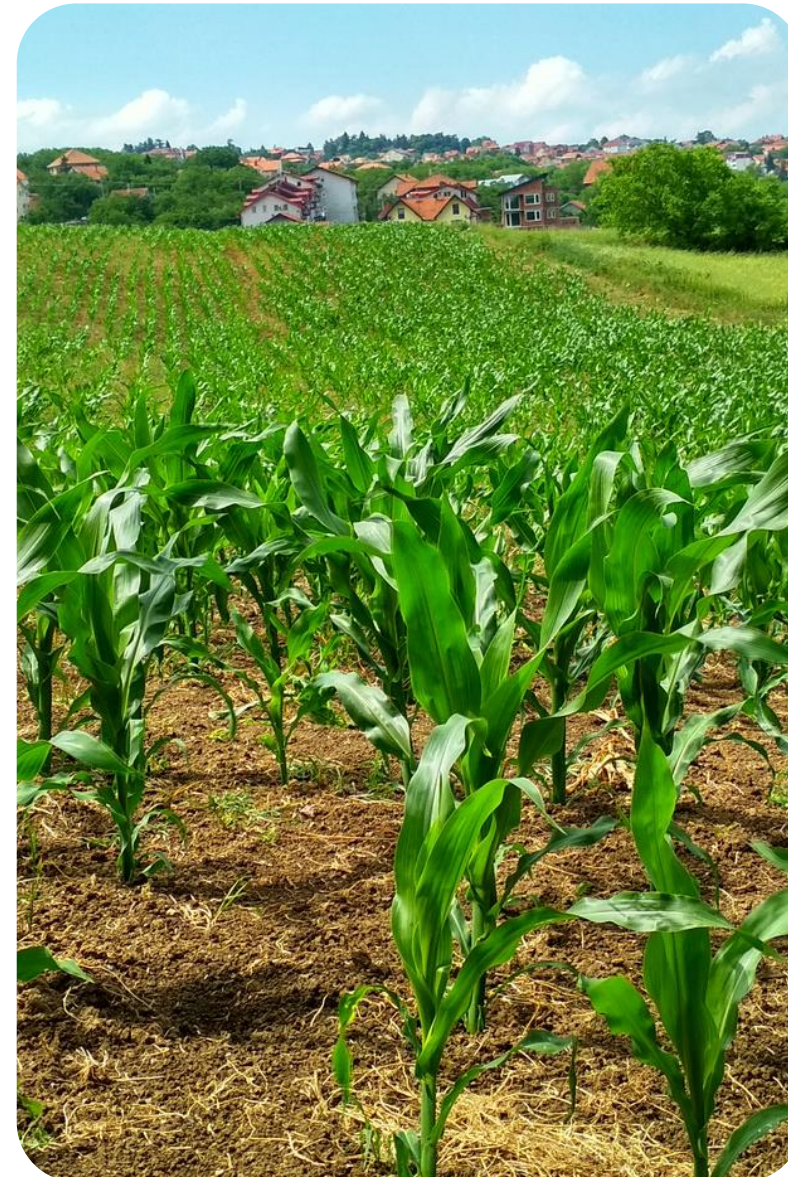


Soil Health

Used to measure soil microbe activity, cover crops, biomass, etc.

Simply & Easy

Just use cotton strips, bury, and recover weeks later



Can it be used to measure plant and disease relationships?

Limitations



- 01 Too Few Data Points
- 02 Materials and Tools
- 03 Limited Genetic Variability

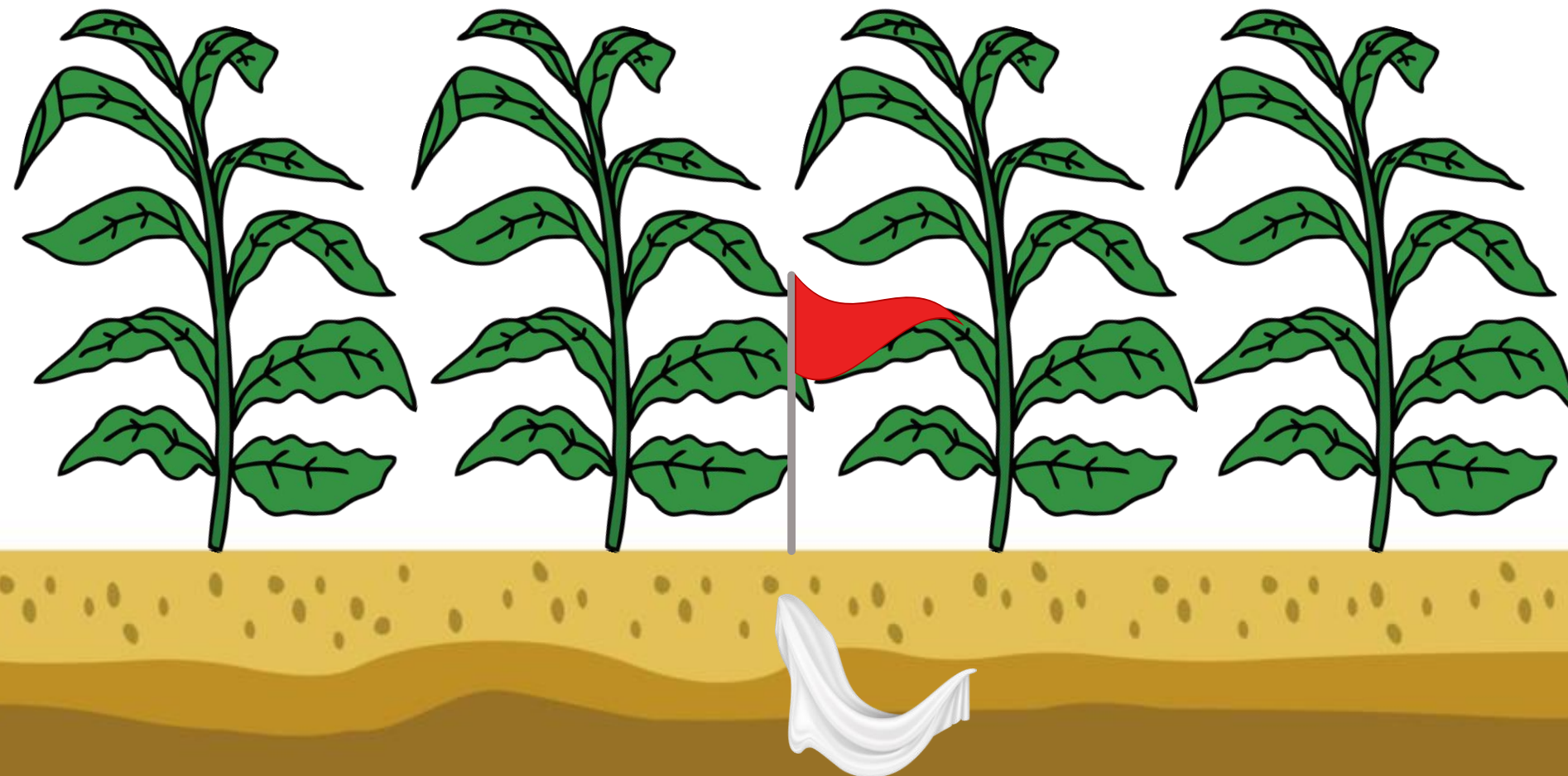
This test addresses personal curiosity

Statistical analysis was conducted, but no significance was identified

Methodology

Weigh, Bury, & Initial Counts

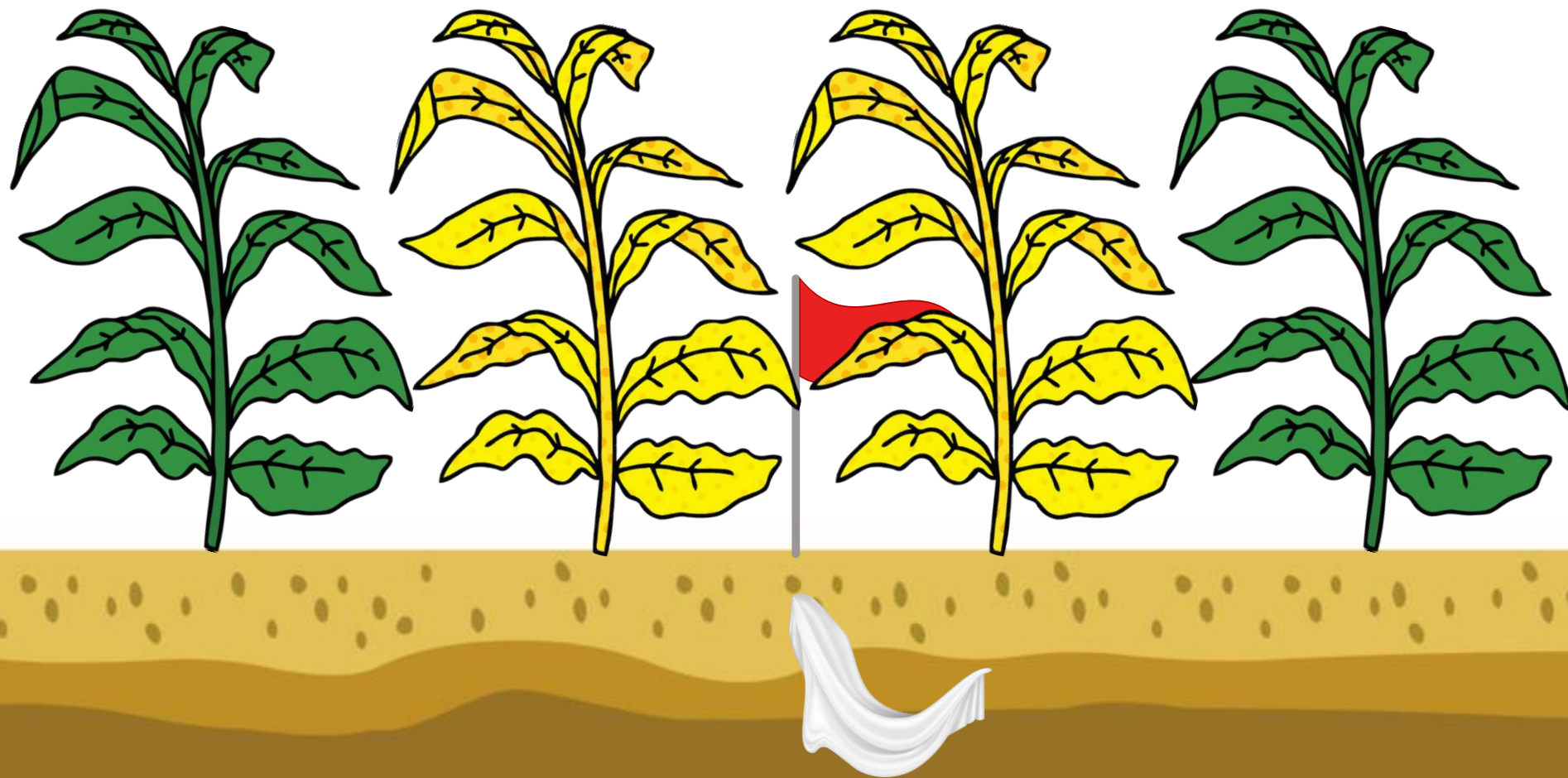
- Cloth buried in a line and at the same depth after topping
- Counted Disease five plants in each direction
- Rated each plant 0-10 (0=health, 10= 100% dead)



Methodology

Recover, Dry, Final Counts

- Used seive to recover any pieces left behind
- Bagged and dried
- Soil removed with paint brush post drying



38%



Average Disease Counts

3.4



Average Disease Intensity

34%



Average Weight Loss

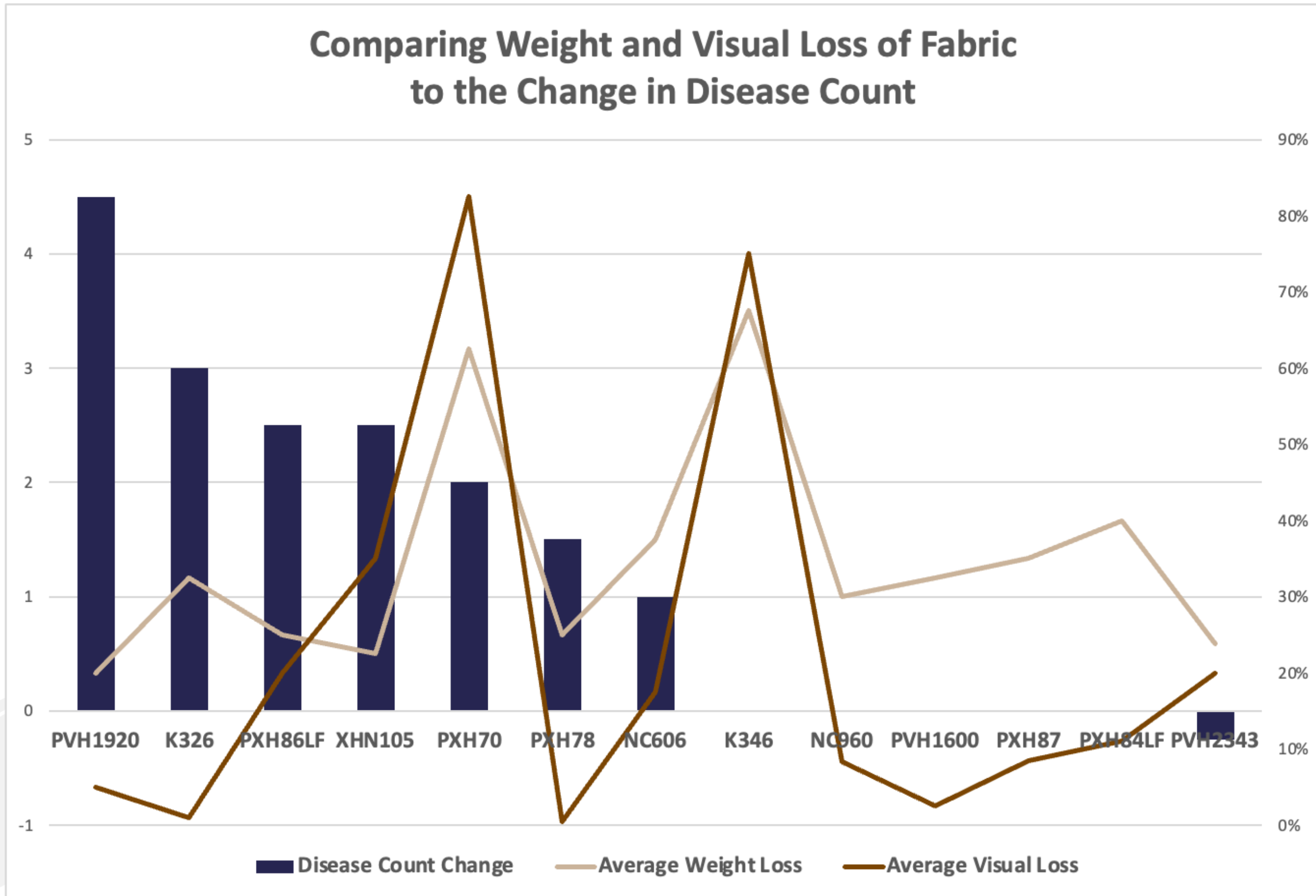
22%



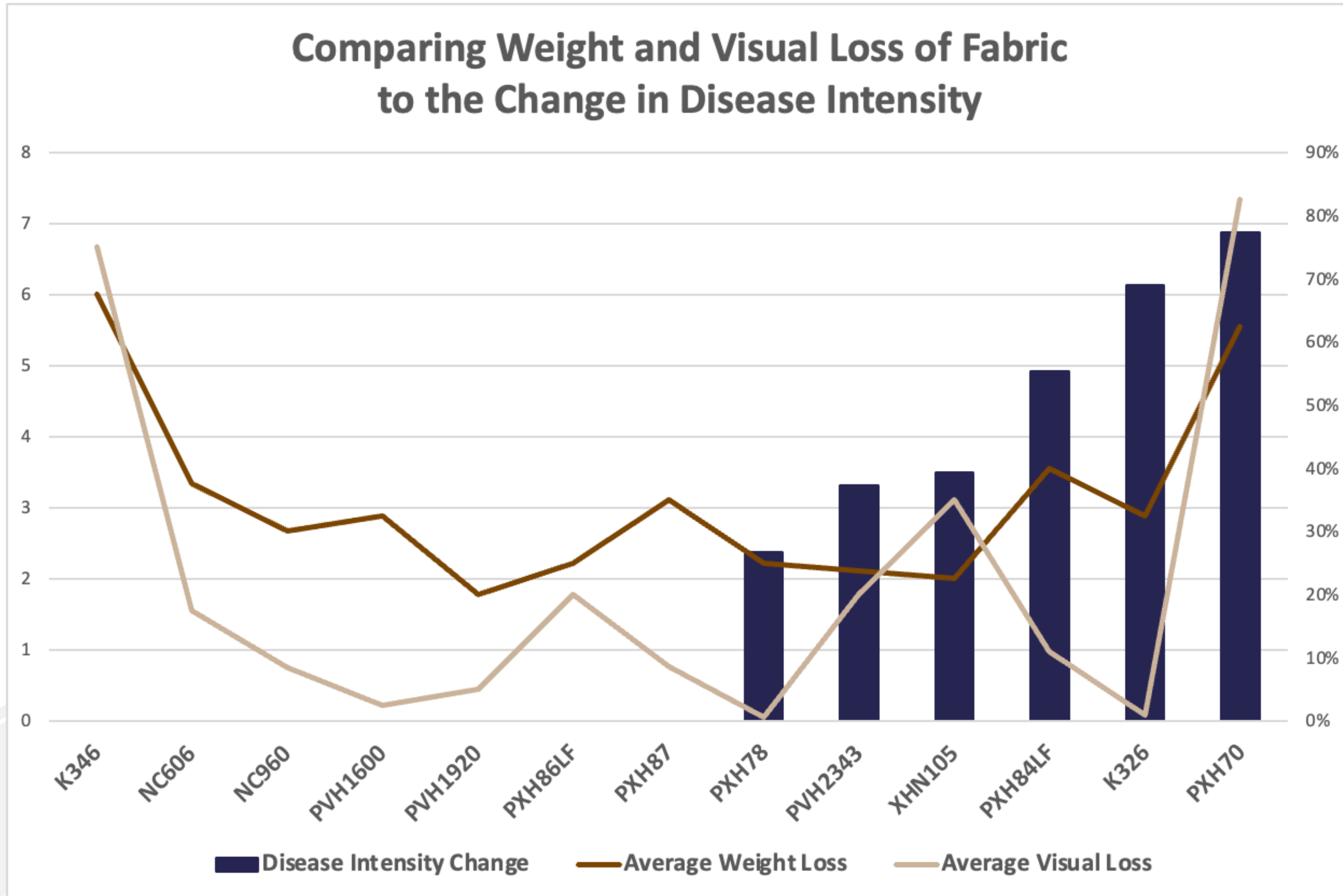
Average Visual Loss



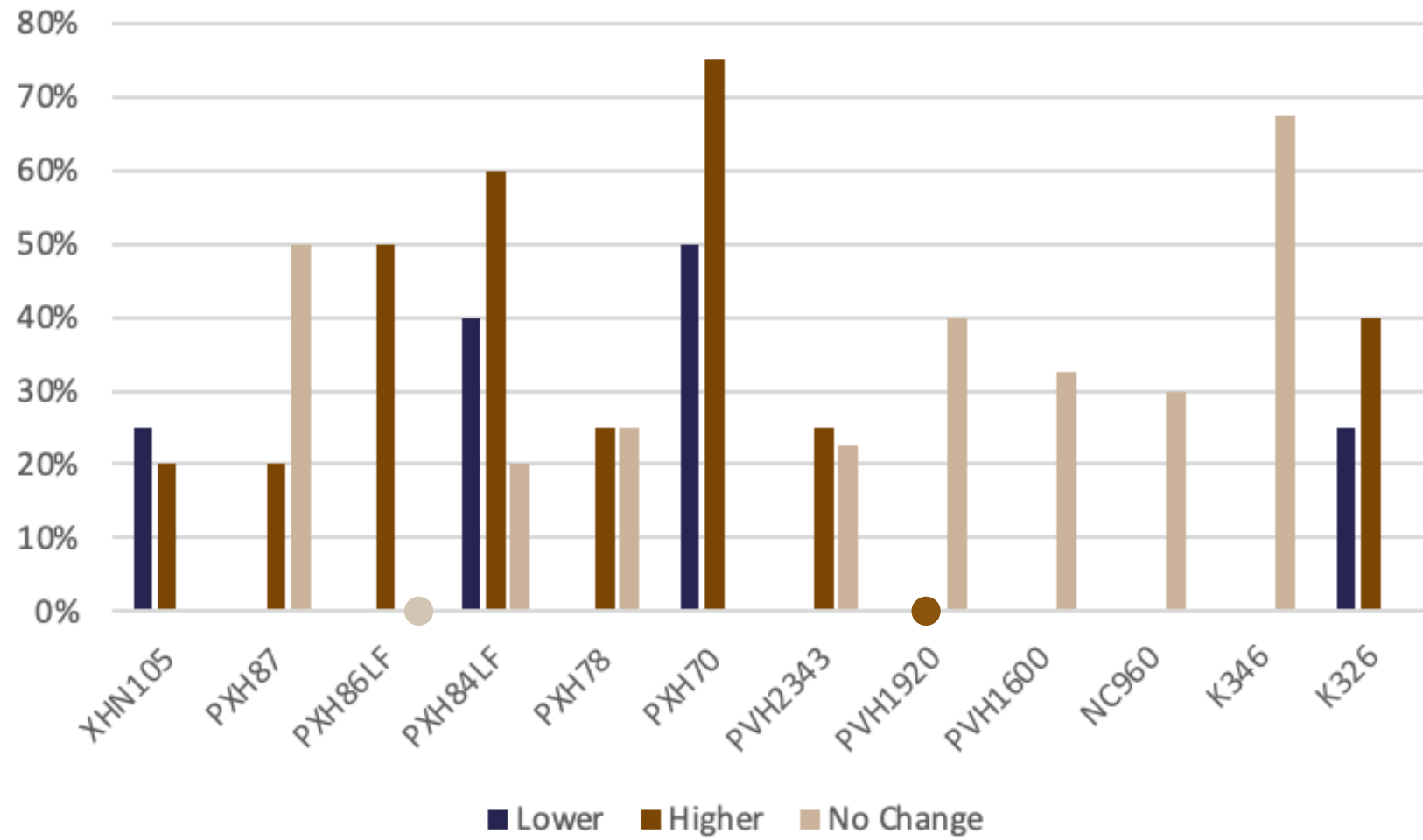
Comparing Weight and Visual Loss of Fabric to the Change in Disease Count



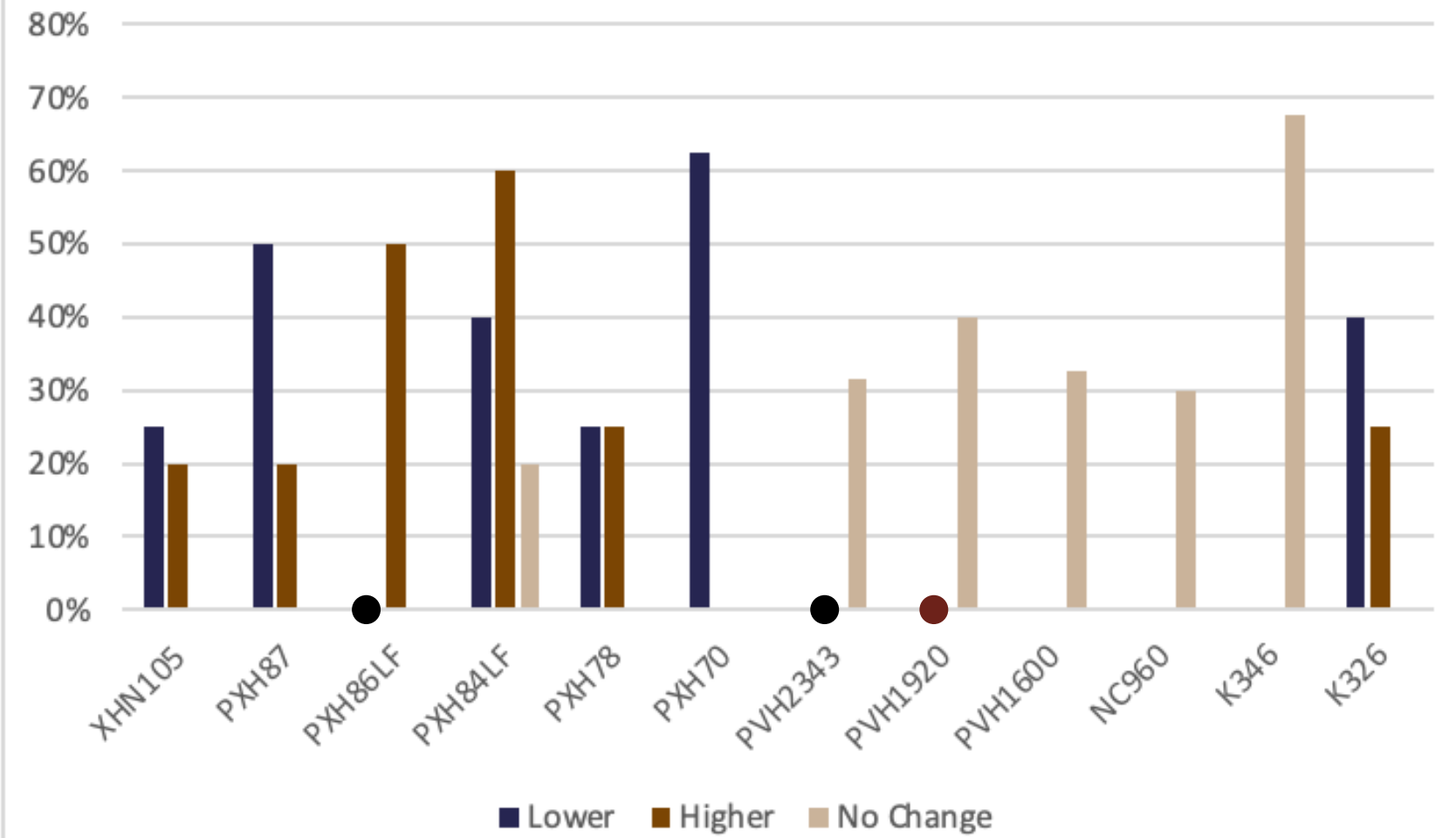
Comparing Weight and Visual Loss of Fabric to the Change in Disease Intensity



Disease Intensity Variations & Fabric Weight Loss by Variety



Disease Count Change Variation & Fabric Weight Loss by Variety



Future Questions

(with limitations)



01

Can measuring this activity impact how we manage the disease?

02

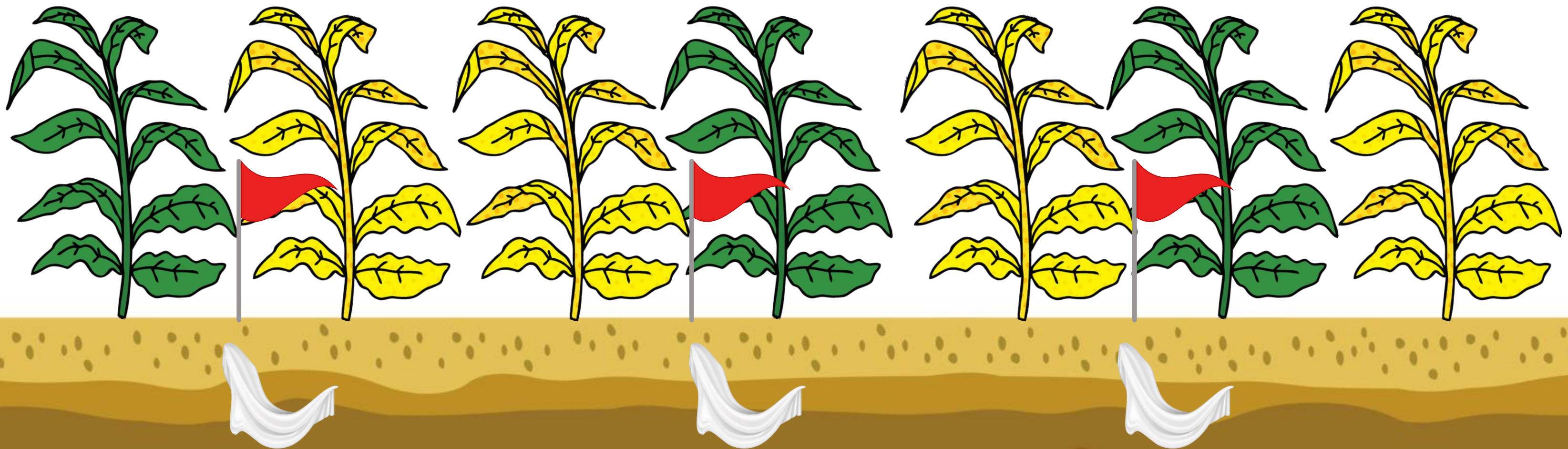
What environment is needed to influence beneficial support?

03

For biological amendments, how do we support an environment that influences control?

If I could have done it differently

- Bury more in a plot
- Set up replications ahead of time as part of the whole test
- Utilize tools with more accuracy
- Increase genetic diversity present in the demo plot



Thank You

Teamwork Is The Key



Frank Scott
Scott Brothers, Inc.
Wilson, NC

Cooperator
Innovator
Great advocate for young farmers



NCSU Tobacco Team
Dr. Matt Vann & Jeremy
Machacek

Transplant Production & Delivery
Support for other ideas



Norman Harrell
Wilson County Ext.
Director

Emergency Support
Disease Diagnostics
Sound Board



Dr. Daisy Ahumada
NCSU Tobacco
Pathology

Soundboard
Supporting Curiosity



Dr. David Reed
Tobacco Extension
Specialist

The List doesn't end, but
Transplant Support
Knowledge Check



Thank you industry partners for continuing to innovate, seek opportunities, and advocate for farmers

Tobacco still pays families' bills.

Tobacco is still needed in US Agriculture.