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2024 TREE FRUIT DISEASE STATUS REPORT – VIRGINIA

Summary. Green tip 50% was recorded on Gala on 7 March 2024 in Winchester (about 10 days earlier than in 2023). The 2024 growing season was first wet, early in the spring, then extremely dry and with low-amount of rain in Northern VA. We had a wet and cool early spring until 26 May that switched to higher-than-average temperatures in June and July. Wet weather did favor apple scab and Juniper rust infections. Apple scab infections started from 1 April and lasted all the way until 8 May. The first major cedar apple rust infection occurred on 9 April (no cedar galls were visible before 4 April). Six major apple scab infections occurred from 1 April to 8 May 2024. Six fire blight infections were recorded in Winchester (11, 12, 15, 17, 19 April and 1st May). Apple bloom started on Fuji cultivar on 10 April with 80% King bloom open being on 15 April (Winchester, VA).

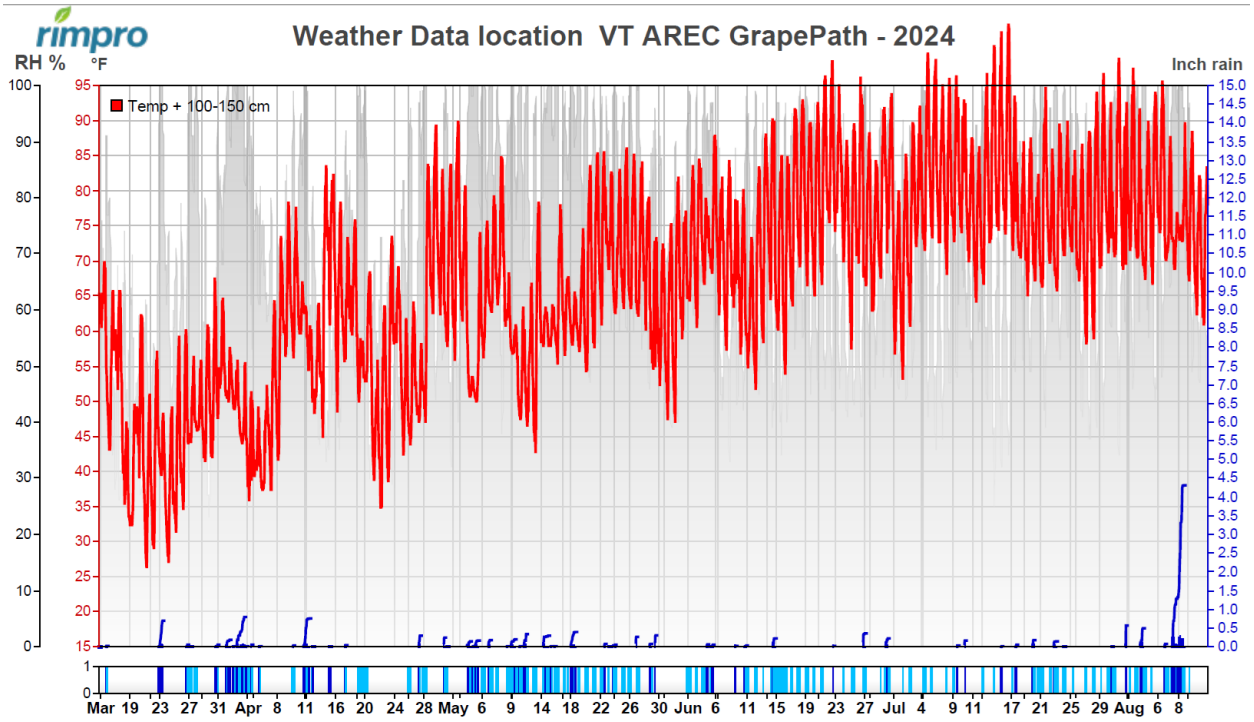

Figure 1. Weather conditions in Winchester, VA recorded by weather station. Top graph: red line shows temperatures (left y-axis in red), blue curved lines show rain lengths and amounts in inches (right y-axis in blue), grey background represent relative air humidity (RH) in % (far left y-axis in black). Bottom graph with dates shows the length of rain (dark blue) and of wetting periods after the rain stopped or from dew (light blue). Used by permission of RIMpro B.V., Netherlands: rimpro.eu

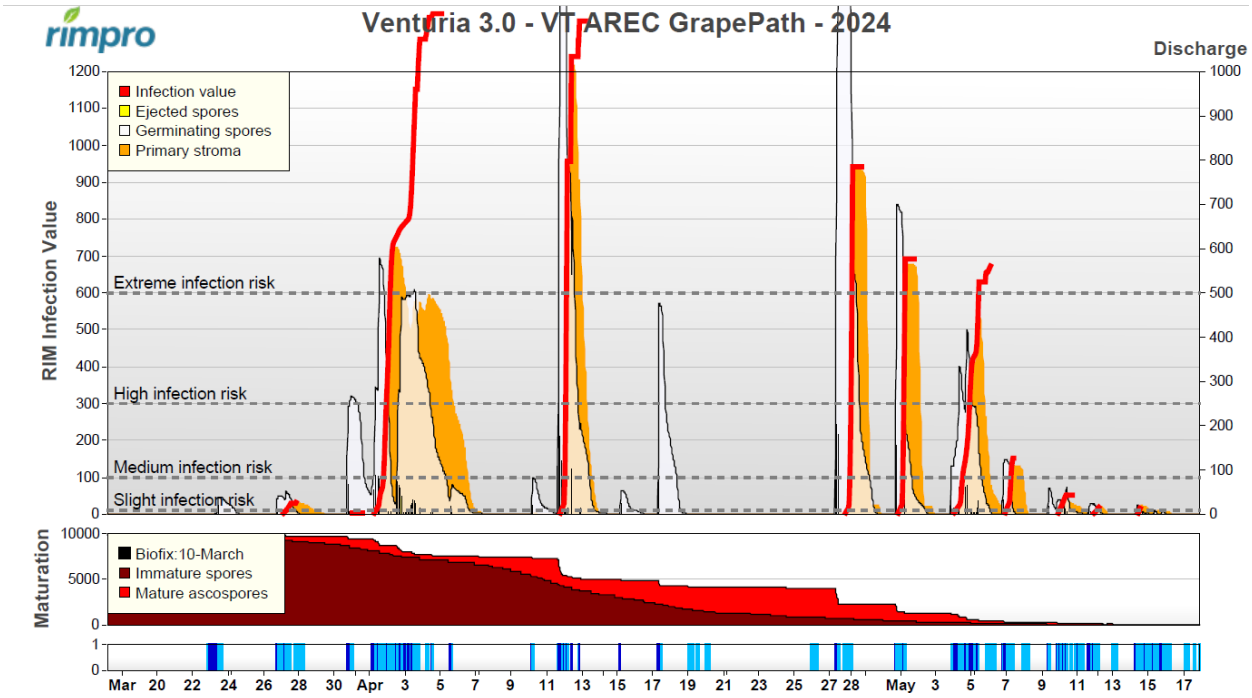

Figure 2. Apple scab infection periods in 2024 for Winchester VA in RIMpro model. White camel hump-like areas labelled "Germinating spores" show cumulative number of *Venturia inaequalis* ascospores that germinate over time and are read on the right-side vertical Y-axis scale that is labelled "Discharge". The red curved lines are the RIM infection values which, when divided by 100, are roughly the percentage of the total season's ascospores that are likely to cause infection in any given infection period. Read each curve's peak RIM infection value/s using the vertical Y-axis scale on the left side of the graph labelled "RIM Infection Value". Orange areas called "Primary stroma" just after each red curved RIM line represent scab lesions that were initiated by infection and are incubating in the leaf. Orange depicts the time during which kick-back fungicides can be applied. The light red areas in the middle "Maturation" graph is the proportion of mature ascospores that are ready for discharge with wetting events, whereas the dark red area is the proportion of immature ascospores remaining in leaf litter. Image used by permission of RIMpro B.V., Netherlands. https://www.rimpro.eu/

1. Apple scab. Based on historical (actual) weather data (Fig. 2), scab had six major infections based on the RIMpro apple scab prediction model (starting from 1 April). Before the first major infection on the 1 April one period of ascospore release without being a threat was recorded on 30 March. We detected the first apple leaf scab lesions in Winchester on 15 May on 'Gala' trees. The prevailing cool and wet weather this spring has favored infections and promoted disease symptom occurrence. This result was observed after three years (2021, 2022 and 2023) of me introducing dead scab leaves in 'Gala' block. In Winchester, primary scab season was over on 8 May (all ascospores were discharged from pseudothecia according to RIMpro's maturation model).

2. Fire blight conditions in Virginia were favorable early- to mid- to late-bloom with the first infections predicted from 6 to 7 April (Fig. 3). In the experimental apple orchard in Winchester, which we inoculated with *E. amylovora* on 15 April 2024, first fire blight symptoms were visible on 5 May: **1. Fire Blight Visible as of 5 May in Northern VA; 2. Rust and Powdery Mildew Visible as of 15 May in Northern VA; 3. Primary Scab Season Over But Cedar Apple Rust Still a Significant Risk,** blog from May 16, 2024.

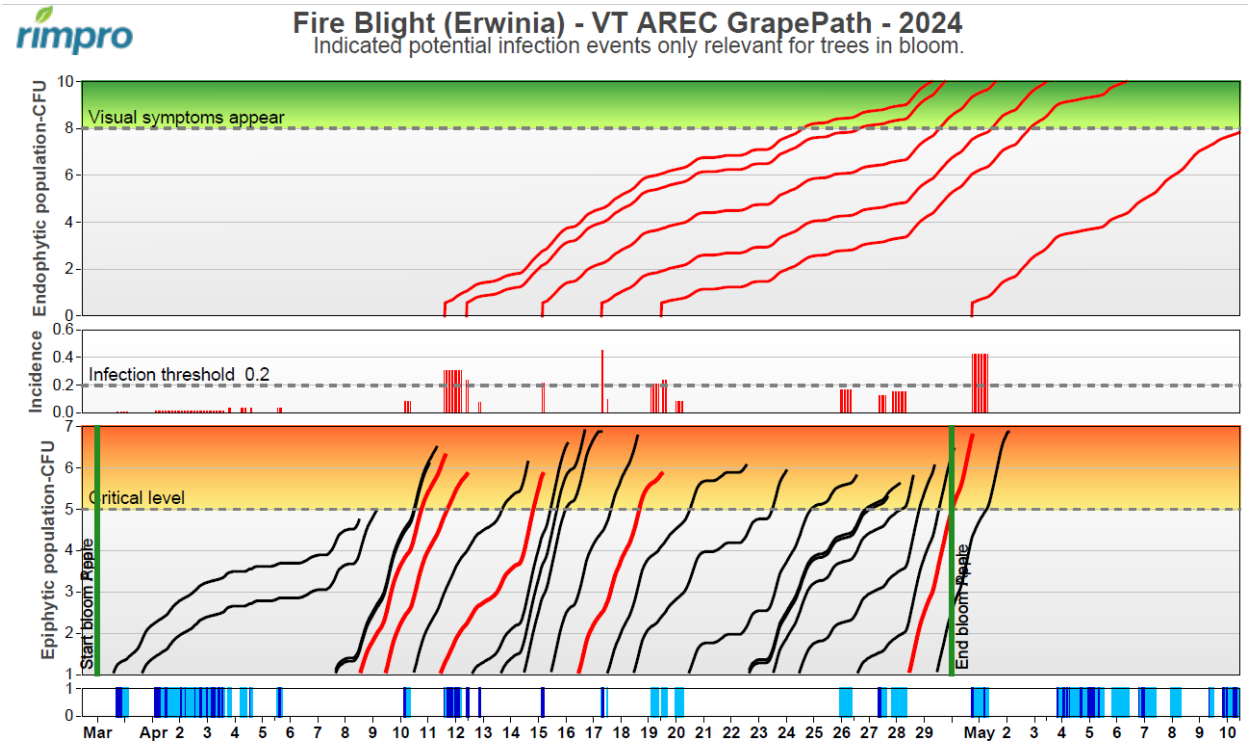

Figure 3. Fire blight infection periods in 2024 for Winchester VA in RIMpro model. Graph interpreter: Blossom blight infections are predicted to occur when the red bars in the center graph go through the dashed line indicating an infection threshold of 0.2. Upper graph red curved line indicates incubation of the infections and the time needed for visual symptoms to occur (blossom blight). Black/Red curved lines at the bottom graph show how bacterial populations grow on flowers: Any wetting that occurs after these line/s reach the orange area can trigger an infection. Lines start at 59°F when bees become active. Image used by permission of RIMpro B.V., Netherlands. https://www.rimpro.eu/

3. Cedar apple rust. The first orange, fully developed galls on cedars were visible on 4 April and were reported in a Aćimović Lab Blog post on 8 April: 1. Apple Scab and Rust Infections in All Virginia with Rains From 9 to 12 April; 2. Fire Blight Risk Low But Keep Looking at the NEWA EIP/RIMpro Models. First cedar apple rust symptoms on spur leaf surface of the 'Gala' apple trees were visible on 15 May 2024: 1. Fire Blight Visible as of 5 May in Northern VA; 2. Rust and Powdery Mildew Visible as of 15 May in Northern VA; 3. Primary Scab Season Over But Cedar Apple Rust Still a Significant Risk.

4. Bitter rot. This disease was favored by very few rain events in summer 2024 in Northern Virginia which still led to severe infections on fruit and leaves if fungicides were not applied. The first bitter rot symptoms in untreated inoculated and untreated uninoculated control trees appeared on 15 June 2024, i.e., much before the usual calendar harvest dates for 'Idared' and 'Golden Delicious'. The first bitter rot symptoms on untreated uninoculated control trees 'Gala' fruit were detected on 14 June 2024.

5. Powdery mildew. The first symptom in Winchester were visible on 15 May: **1. Fire Blight Visible as of 5 May in Northern VA; 2. Rust and Powdery Mildew Visible as of 15 May in Northern VA; 3. Primary Scab Season Over But Cedar Apple Rust Still a Significant Risk,** blog from May 16, 2024.