The Grapevine Phenological Cycle

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WHAT IS GRAPEVINE PHENOLOGY?

Phenology is the study of the seasonal patterns of plant growth. In viticulture, phenology focuses primarily on **the timing of key growth and development stages** throughout the annual cycle.

It is important to understand the relationship between weather conditions (temp, sunlight, precip, soil moisture, etc.), timing of growth stages and intervals between them.

WHAT AFFECTS PHENOLOGICAL CYCLES?

Temperature: The timing of phenological events is mainly influenced by temperature. **Warmer temperatures generally accelerate the rate of plant development** and bring forward grapevine phenology (Keller and Tarara, 2010; Parker et al., 2011; Sadras and Moran, 2013).

WHAT ARE THE PRACTICAL IMPLICATIONS?

Understanding phenology is essential for accurate timing and optimizing viticultural practices and determining potential cultivar success at specific locations.

BENEFITS OF IDENTIFYING GROWTH STAGES:

- Helps with identifying stages to monitor for pest activity and implementing pest control strategies. E.g.: first pesticide application timing.
- Assists vineyard operators in identifying stages of plant development for cultural practices.
- Helps in assessing whether specific cultivars will grow and mature at various site locations.
- Enables comparison of cultivar potential performance across different sites, regions and environmental conditions.

USE L'ACADIE AS THE BENCHMARK CULTIVAR

L'Acadie is the most widely planted cultivar in Nova Scotia. Use L'Acadie as a standard or point of reference against which other cultivars may be compared or assessed.

E.g.: Does a cultivar's bud burst date start earlier/later than L'Acadie; bloom before or after L'Acadie. Where does a particular cultivar fit in the harvest schedule?

GRAPEVINE PHENOLOGICAL STAGE MONITORING

When selecting the simplest and most efficient method for any sized plot, the 9 stages below are the most important to record. While walking through the vineyard row, record the average phenological stage of a particular variety. Then move on to the next cultivar.

Please see the recording sheet attached. Include the date, L'Acadie date of a particular stage and the observed cultivar stage.

1. Bud break

2. 3-5 Leaves separated: Shoots 4-10cm long

3. 10-25cm Shoot growth:

4. Pre-Bloom: (florets beginning to open) About 5% of florets are open at this stage

5. Flowering: 50% of flower caps off

6. Berry Set: Grape cluster at right angles to stem, 50% of cluster presents with formed berries

7. Berry touch/bunch closure: Maturation stage. Some varieties have loose clusters meaning the berries will never touch

8. Veraison:
- Mid-Veraison. White and red cultivars
- Grape berries change colour
  - In white cultivars, from green to clear; In red cultivars, from green to red
  - The ripening stage begins after 50% of the cluster has gone through Veraison

9. Harvest: (Compositional)
- Mature Cluster. Clusters are completely red or clear, berries are soft to the touch and within the quality parameters the winemaker is looking for

PHENOLOGY CYCLE RECORDING SHEET					
Cultivar	L'Acadie Obs DATE:	CULTIVAR 1: DATE:	CULTIVAR 2: DATE:	CULTIVAR 3: DATE:	CULTIVAR 4: DATE:
Bud break					
3-5 leaves					
10-25cm Shoot growth					
Pre-bloom					
Full bloom					
Berry set					
Berry touch					
Veraison					
Harvest					