Aftermath of the 2007 Easter Freeze: Muscadine Damage Report

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Timeline

Easter Weekend

Temperatures were as low as 15-16ºF in some SE vineyards

Scouting green tissue damage

April 17

Started to see wood damage

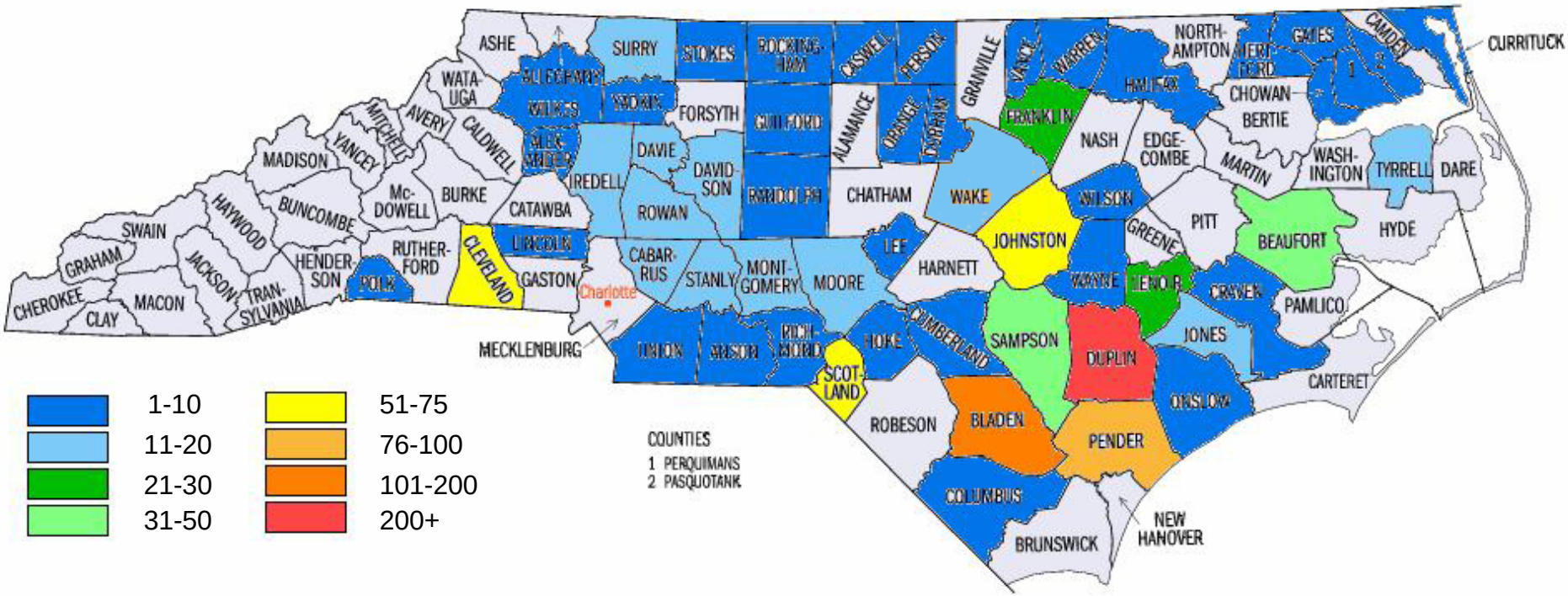
Whit Jones
Duplin County Extension

Present

Continue to assess damage statewide

With the help of County Extension Agents

NC Muscadine Acres*



*Planted, but not all currently producing. Data based on survey responses from County Extension Agents and from personal visits with growers

Initial Damage Assessment

Bark Splitting & Wood Damage

Bark Splitting & Wood Damage

Trunk Damage

What we've seen so far…

- Extensive damage to Carlos in SE NC
  - Carlos was the variety hit the hardest (breaks early)
  - Very little Carlos damage or yield loss in Western NC
- SE was hit harder than other parts of the state, mostly because the shoots were further along
- Younger vines seem harder hit than older vines, with 1-yr-old wood damaged even on older vines

What we've seen so far…

- Very little damage to other muscadine varieties statewide


LuMil, Bladen County


Castle Hayne, New Hanover County

What we've seen so far…

- No sprays were successful at reducing damage
- One or more growers burned hay bales around their vineyards which may have saved some fruit on the perimeter of their fields, but will contribute to uneven ripening and may pose problems for wineries at harvest

- Hard to put a number to the extent of the damage
  - Most of the 1-yr-old Carlos wood in the SE has damage (which will greatly reduce yield)
  - Some cordons and trunks as well
  - Younger vines show more damage than older vines

Damage is still presenting itself

- Each week we are continuing to see further damage
  - Worse where the vines are water stressed

We are also seeing crown gall, possibly from winter cold damage in the west.

This if callus, not crown gall, of a vine that has tried, unsuccessfully to repair itself.

Could anything have been done?

- Dr. Poling believes that the crop could have been saved with continuous overhead irrigation (like used on strawberries)
  - It may be worth looking into in the future if we continue to receive similar weather events in coming years
  - He doesn't believe that it will increase disease pressure
  - There are many new irrigation inventions to consider (such as a "flipper" that would only wet the row)

Something else to consider…

- Grand Period of Growth

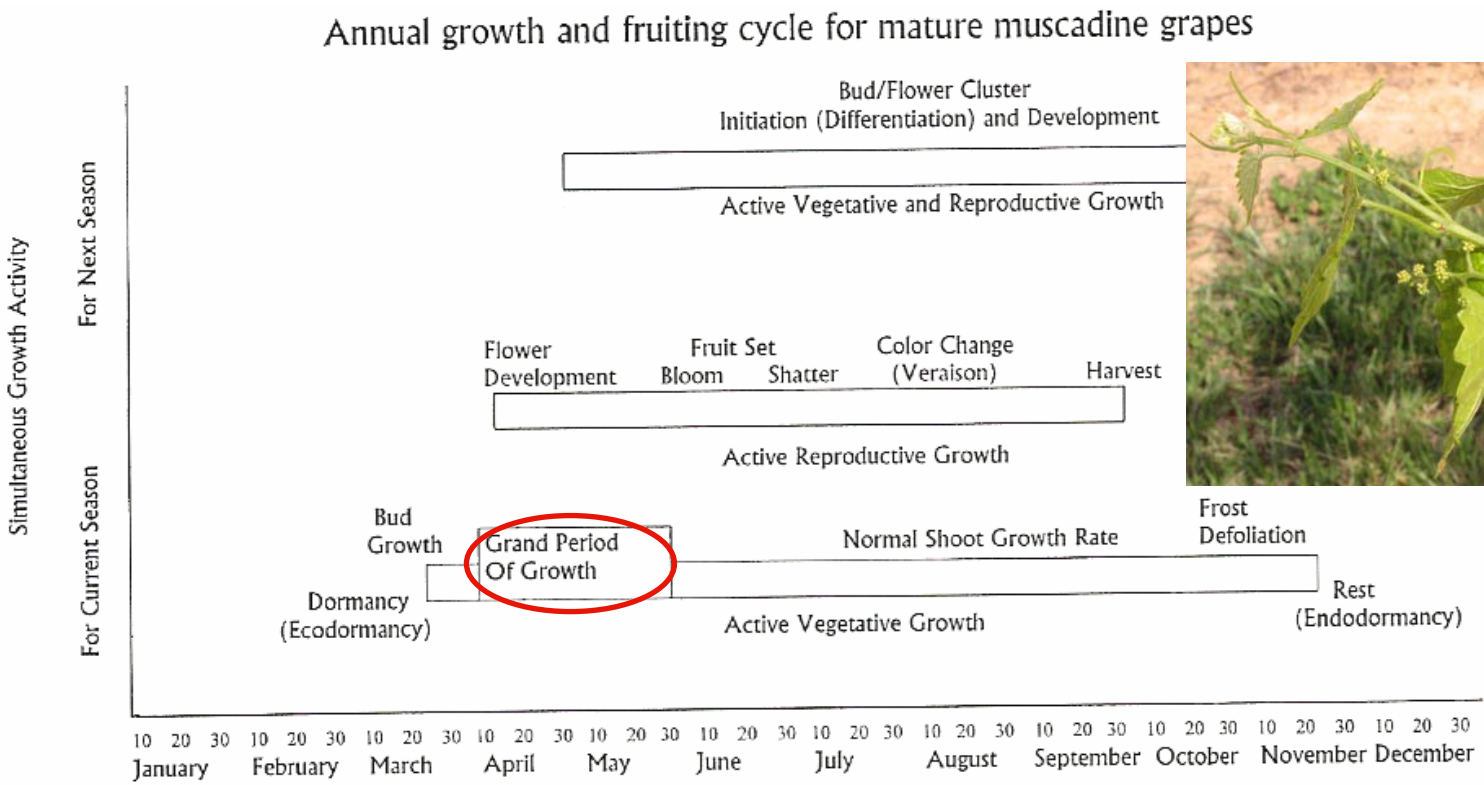


Fig. 6-1. Annual growth and fruiting cycle for mature muscadine vines.

From Ch. 6, Muscadine Grapes

Base and Latent Buds Breaking

- Even if flower clusters appear, they may only be weakly developed
- If wood is not damaged, these buds will form shoots and leaves that will supply photosynthates for vine survival

Hope for a small crop

- We have seen flower and fruit clusters develop from buds that we didn't expect to be very fruitful
  - If vine is damaged these newly shoots may still collapse before harvest as reserves in the cordon are depleted

- May lead to uneven maturity at harvest
- May be looking at a late harvest this year and potential for fall cold injury

Recommendations after the freeze

- Prune back to healthy wood
  - Allows the vine to put all its resources into developing new spurs or cordons
  - Minimizes colonization by *Botryosphaeria* and crown gall
- Do not apply any more fertilizer at this point
  - Take a leaf tissue sample in late May and submit to NCDA&CS for analysis - if N is low fertilizer can be applied in mid-June
  - It is important to not exceed 2.75% N, otherwise vines will not harden off properly in the fall

What to do now…

- Minimize vine stress and maintain a healthy canopy
- Don't expect normal yields - if vines are damaged or struggling it will be better in the long run to cut off flower clusters this year
- Irrigate as necessary to avoid drought stress
  - Irrigation will encourage replacement shoots to develop on 1- and 2-year-old vines
  - Irrigation will facilitate shoot growth on mature vines during the Grand Period of Growth (Ch. 6, *Muscadine Grapes*) – we only have one month left

What to do now…

- Continue to monitor and document the damage - it may not appear for weeks, months, or even years (vines Clay Parker's vineyard in Orange Co began to die 2 years after the initial damage)
  - Dates, temperatures, pictures of damage, records of your cultural activities and spray applications
- There is nothing to spray for *Botryosphaeria* or crown gall, but the usual foliar diseases and insects need to be controlled as usual to maintain a healthy canopy and prevent build-up for next season

Nurseries Also Hit Hard

- NC Nurseries reported damage to exposed green tissue, but think vines will pull through
- Bottom's Nursery in Georgia reported losing 50% of their fresh market varieties
- They recommend that if you plan to get plants next year to place orders as soon as possible

In the future…

- Need to research freeze protection strategies
  - Overhead irrigation
- Duplin Winery and others have indicated that they will experiment with other varieties besides ‘Carlos’ for wine production
- In the long term, support re-establishment of NC grape breeding program
  - Develop wine and fresh varieties that are especially suited to NC’s climate, provide a longer harvest window, have higher antioxidant activity, etc.

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Questions?

If you have further questions, please contact Connie Fisk, Extension Associate - Muscadine Grapes, NCSU at connie_fisk@ncsu.edu or call the Duplin Cooperative Extension Office 910-296-2143.