

Gentle Pruning

Pruning grapevines with respect to sap flow and vine health



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What we will cover

1. Pruning Goals
2. What is a Grapevine?
3. Balanced pruning concepts
4. How to read the vine
5. Basic pruning practices



Goals of Pruning

Background: Why we prune

- a. To ensure balanced sap flow and sustained sap pressure throughout the plant
- b. prune to the individual capacity of each vine
- c. balance structural needs with fruit production
- d. grow healthy vines that live a long time with deep roots



What is a grapevine?

- Family: Vitaceae
- Genus: Vitis
- Species: many different ones!
 - Vinifera
 - Riparia
 - Labrusca
- We will be discussing pruning Interspecific Hybrid grapevines
 - These are crosses across species, i.e. vinifera crossed with riparia
- Interspecific hybrids typically have a drooping growth habit



The parts of a vine

Cordon
4 year old wood

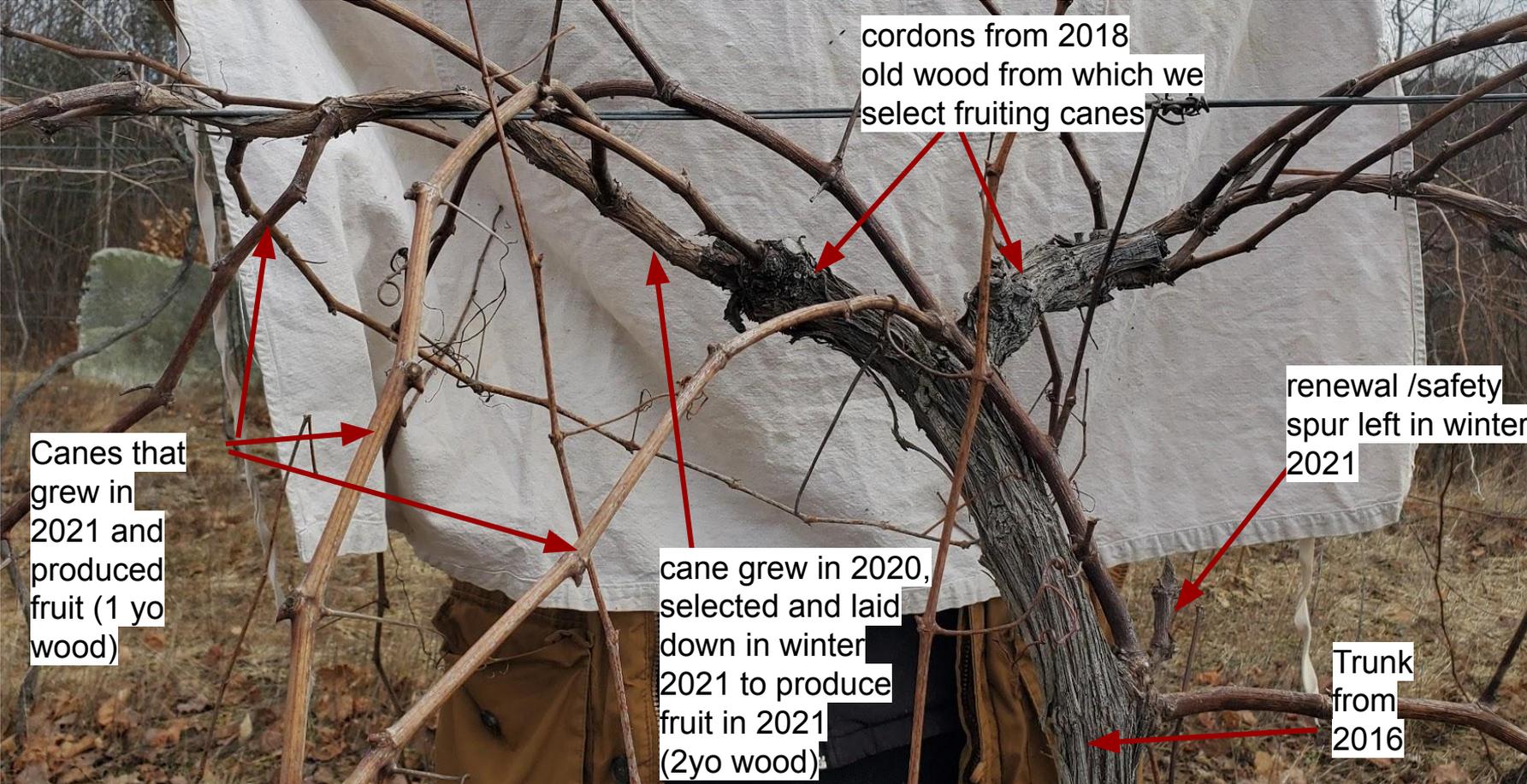


Canes
1 year old wood
Fruit potential!

Prior year fruiting cane
2 year old wood

Trunk
6 year old wood

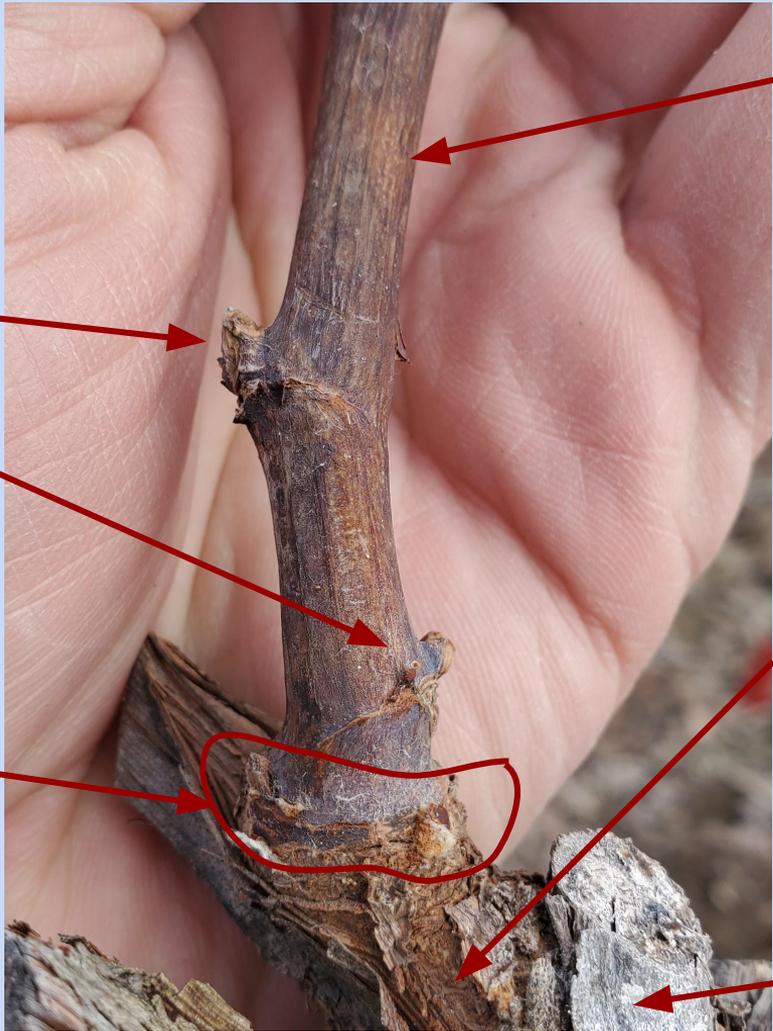
Parts of the vine Detail (before 2022 pruning)



Parts of the vine close up (winter 2022 before pruning)

Buds that will burst to produce a cane in 2022. the cane that grows in 2022 has fruit potential for 2022 harvest

this zone is called the crown. It is where the bud burst out of the safety spur to grow the cane you see here. It has two buds embedded in it.



Cane that grew in 2021 season from the one bud left on the safety spur selected in 2020

Renewal/safety spur that grew in 2020, cut back to one bud in winter 2021.

spur grown in 2019, cut to one bud winter 2020

Balanced Gentle Pruning Concepts

A vine has a fixed amount of energy for a given growing season.

The fixed amount of energy is allocated between the necessary functions to survive:

- grow shoots and leaves from buds to produce food (structure)
- flower, produce and ripen fruit (fruit)
- harden off (lignify) shoots grown in the season to prepare for winter (structure & fruit)

Gentle pruning seeks to **balance** the energy distribution between **structural** and **fruit** needs. Structure refers to the trunk and how the vine relates to the trellis. Fruit refers to the number of buds left on the vine after the winter pruning. We can think of each bud left as a “Fruit ask” of the vine.

This balance is achieved through learning to read the growth habit of the vine, pruning each plant to its energy budget, and making intelligent pruning cuts.

Pruning can be thought of a dialogue between the vine, humans, and the weather:

Vine: here’s how I grew last year, and I liked this and not this.

Pruner: Ok, let me cut and remove what wasn’t working, and leave buds and canes that better fit what you like.

Vine (when it wakes up in spring): thanks, I’ll grow as you pruned, and let you know how I liked it next winter when you return to prune.

RULES:

We only cut the vines while they are dormant in the winter and their sap isn’t running (Jan-May)

The vine “volunteers” shoots in May and June from hidden buds. we remove the ones that are causing congestion by hand before they are longer than 8 inches.

We never hedge the vine or trim the shoots during the growing season. This is because the vine has woken up in the spring, assessed how many buds we left in the winter pruning, and creates a plan about how to allocate its energy for the growing season. If we hedge or trim the vine during the growing season, the vine’s energy budget calculations are thrown off, and the vine reacts by growing much more vegetation to make up for the hedging, which diverts energy away from ripening the fruit and lignifying the canes.

Structure Details

- Structure is the physical alignment of the vine relative to trellis, and neighboring vines.
- To prune we need to use our imagination. How do we want the vine to look in 2-3 years? Does it need to be closer or farther from the trellis? Are there parts of the trunk or cordons that need replacing due to damage? Is the trunk straight, or curved, causing the vine to grow into the vine next to it?
- The vine stores carbohydrates in its old wood that make up the structural elements of the vine, so the structure is also an energy reserve for the vine to draw on to fight disease, ripen fruit and lignify canes, which is why we make big structural changes carefully and incrementally over time.

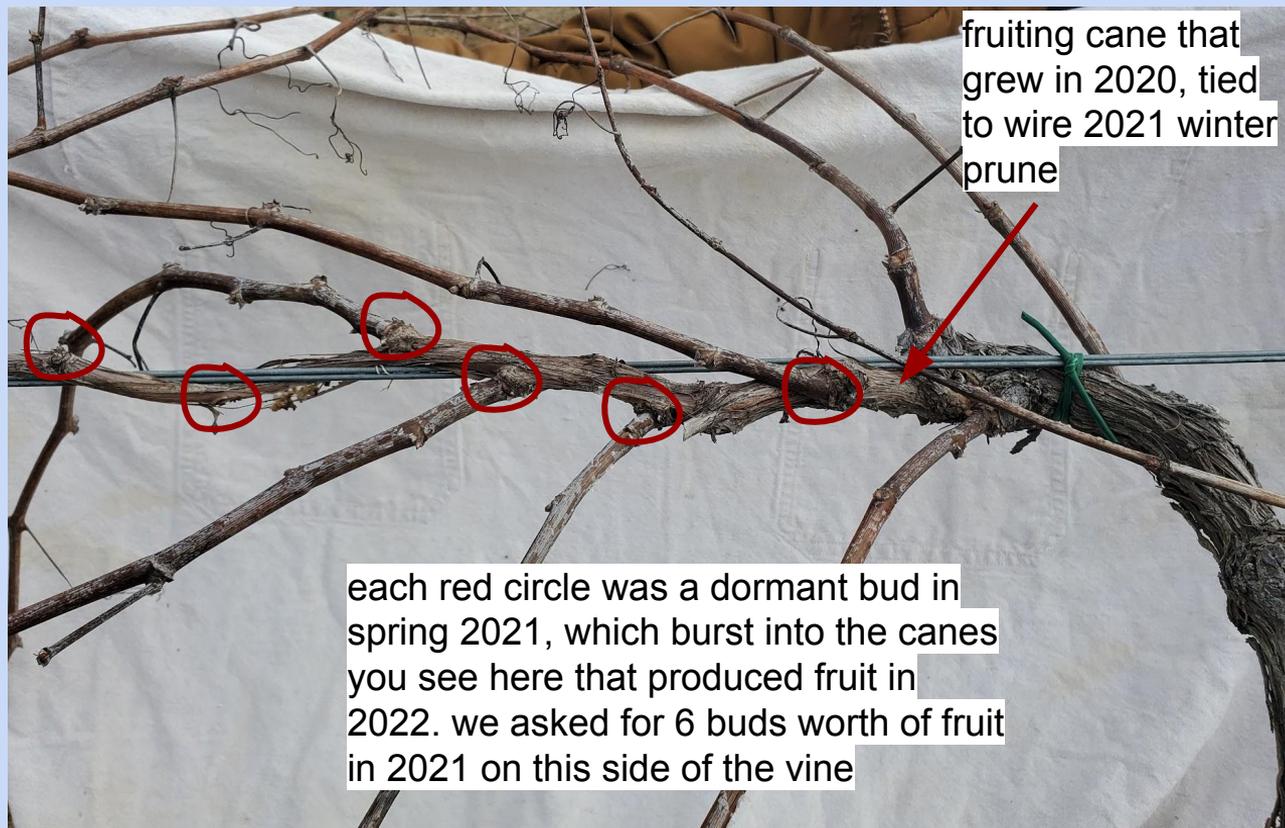


Short
Cordons

Trunk

Fruit Details

- Fruit is the number of buds left on the vine after winter pruning. Each bud left is an ask of the plant “can you make fruit here please?”
- 1 year old canes produce fruit, and leaves, so they can be considered both structure and fruit.
- **Asking for too much fruit:**
 - overextends the energy budget of the plant
 - leads to uneven ripening and poor hardening off
 - weakens the vine over time
- **Asking for too little fruit:**
 - means there aren't enough buds remaining on the plant.
 - this means there aren't enough canes growing to produce enough leaves the vine needs for life processes
 - The vine will respond by growing large thick canes (bull canes) that produce no/poor quality fruit and excess vegetation



Balanced pruning provides healthy fruit and enough vegetation to create energy to ripen fruit and harden off the canes.

How do we find the balance between Fruit and Structure in pruning?

We know the vine has a fixed amount of energy per year. This energy budget is a factor of the following:

- **Weather conditions in the prior growing season**
 - was it rainy and the plants didn't have a lot of sunlight to create energy reserves?
 - rainy weather tends to cause more disease problems, which affect photosynthesis
 - was it very sunny and the plants accumulated energy?
- **Historical and current vineyard management practices**
 - Is the vineyard managed conventional or organic? What is sprayed on the vines? How is under the vine managed?
- **Disease pressure**
 - disease pressure affects leaves, reducing photosynthetic potential. Also affects hardening off, potentially reducing the amount of viable buds for fruit in the coming year
- **Age of the Vine**
 - younger vines usually need more management for structure, and as they age and structure is established, the pruning is more balanced between structure and fruit.
- **Soil type, site selection, vine training and trellis techniques**
 - these factors influence vine vigor, structural elements of the vine, and fruit potential
- **Historical and current pruning practices**
 - If a vineyard was managed for maximum fruit production in the past, you may make more structural choices to bring the vine back in balance. This takes 2-4 years, as structural changes are done slowly and incrementally so we do not shock the vine.

Reading the vine to allocate energy between fruit & structure needs

We have three tools:

Observation

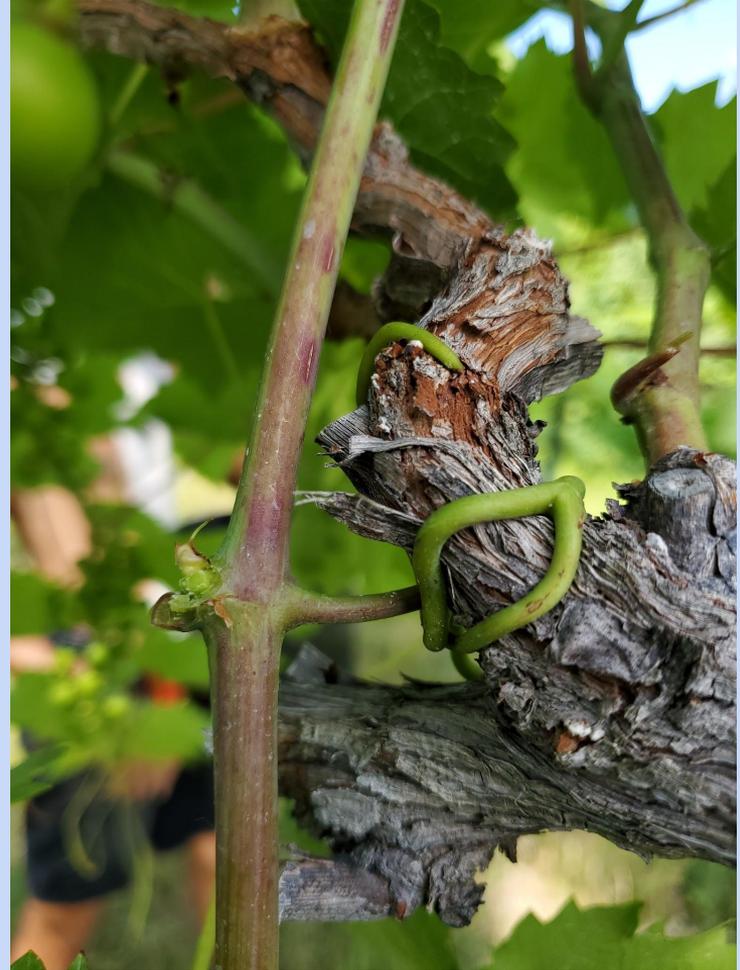
- looking closely at all elements of the vine - trunk, cordons, canes, tendrils

Reading the vine

- Trunk health
- Structural health/direction
- Overall vigor
- Hardening off/lignification
- Disease presence
- Sap flow issues
 - past pruning cuts too close
- Growth expression
- Intuitive assessment

Imagination

- how will the vine grow this coming year if we prune this way compared to that way? Which way are the buds facing?
- How do we want the structure of the vine to look in 2, 3, 4 years from now? How can we prune to anticipate the growth of the vine, and make incremental as opposed to drastic changes in the structure.



Reading the vine: disease and hardening off

These are all examples of incomplete hardening off due to disease pressure. You can see in mottled, splotchy nature of the cane color - this was mildew infection preventing full lignification. We would avoid using these canes for next years fruit, prune them out, and burn them to take the fungal spores out of the vineyard.

Did not lignify due to disease, died over winter



partially hardened off, alive but diseased



Reading the vine: full lignification



Consistent dark-brown/burgundy color, well-defined ridges on the cane. These are what we are looking to select for fruiting canes and safety spurs, if available.



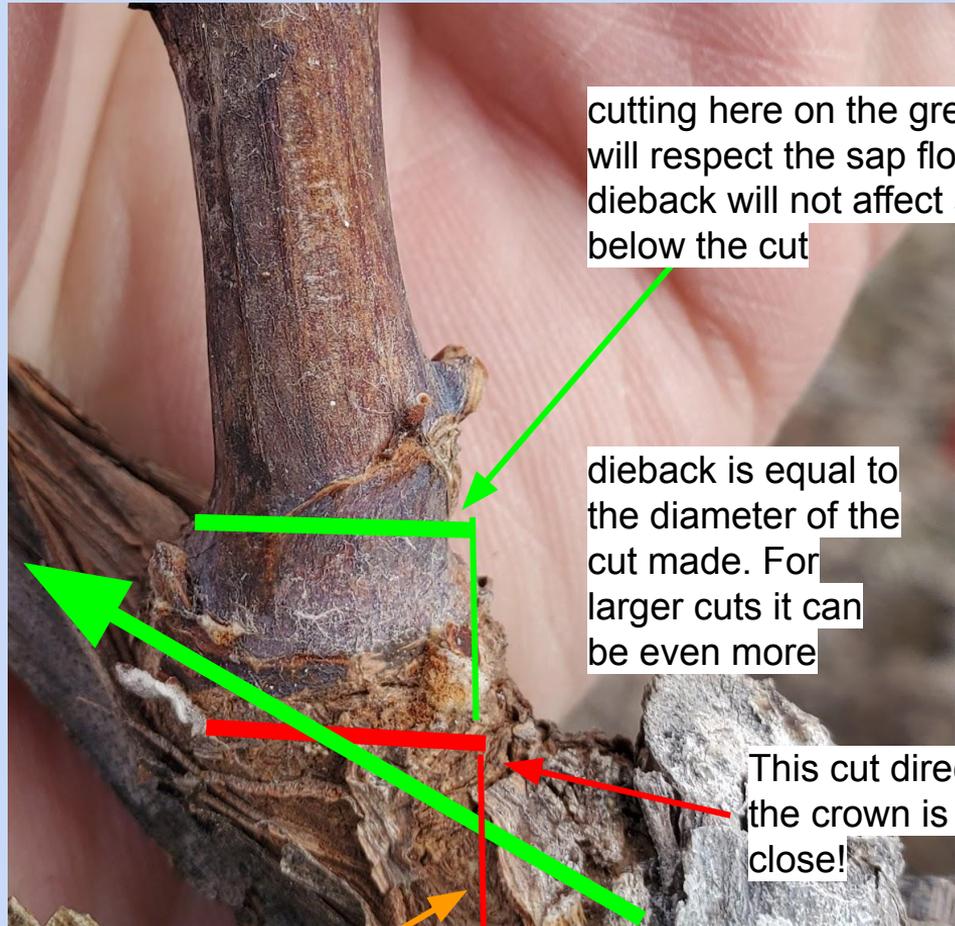
Gentle Pruning Practice

When you make a cut on a cane, spur, or trunk, it will cause the wood behind the cut to die, known as dieback cone.

If the cut is too close, the dieback cone extends into the zone of active sap flow, which will restrict active sap flow, weakening the vine.

Leaving a stub will ensure that your pruning doesn't restrict active sap flow.

This is one of the most essential elements of gentle pruning.



cutting here on the green line will respect the sap flow. The dieback will not affect sap flow below the cut

dieback is equal to the diameter of the cut made. For larger cuts it can be even more

This cut directly through the crown is way too close!

Active sap flow

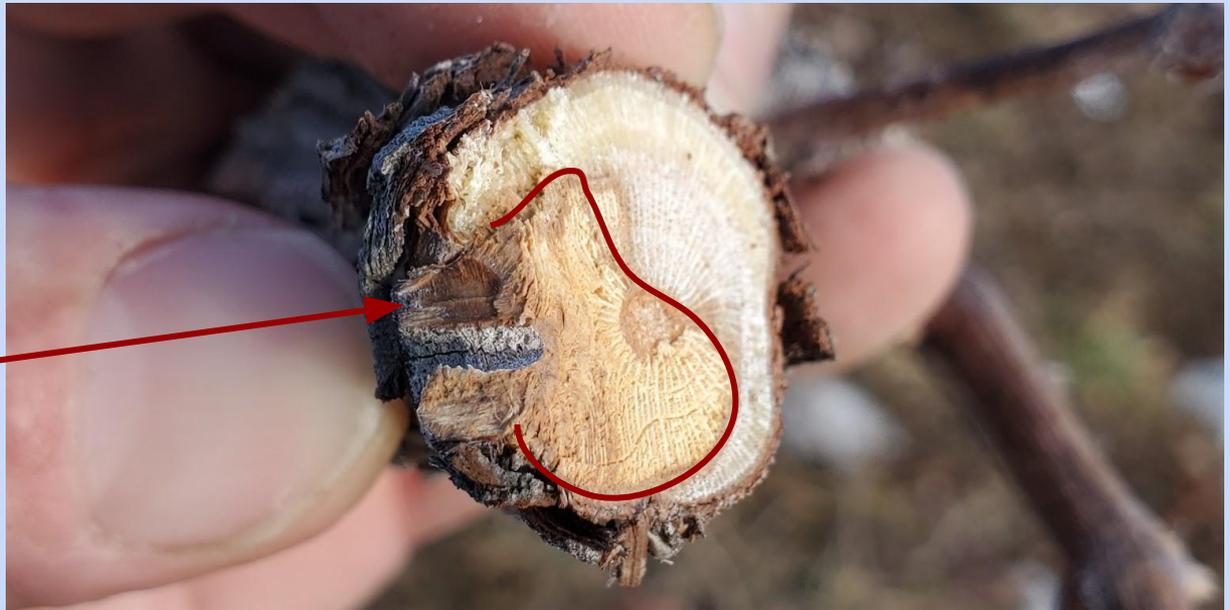
dieback into active sap flow

Dieback Examples

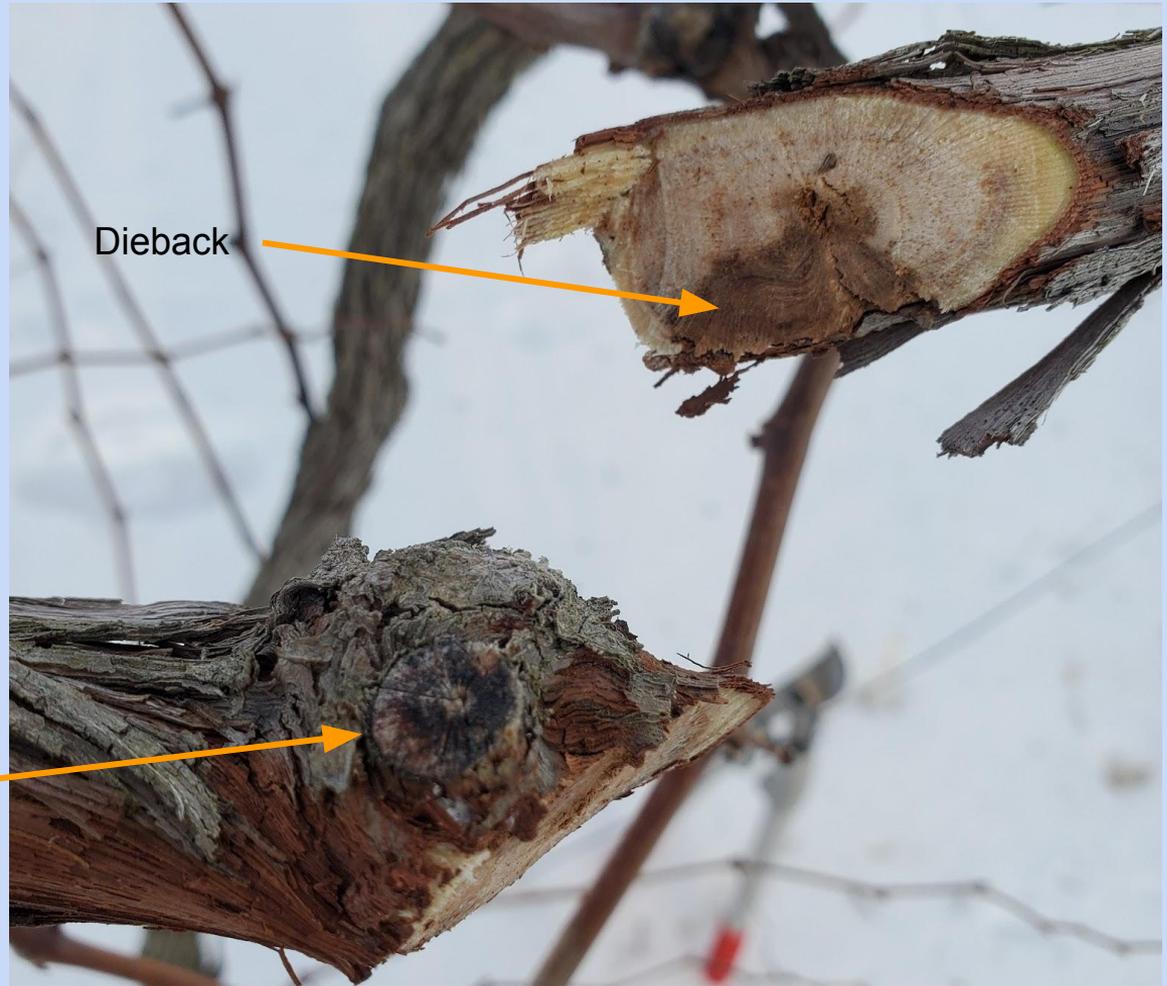
Here you can see an old pruning wound circled in red which is about 4 - 5 years old. This is on an old cordon, which was showing weak growth and a few dead zones with no new shoots pushing out.



Cutting through the old pruning wound (red arrow), we see the extent of the damage. Everything within the red line is dead, blocking at least 50% of sap flow in the whole cordon.



More Dieback



Dieback

This cut too close

Dieback, continued.

Another example of an old pruning wound cut too close. As the cordon got older, the too-close wound sinks into the active sap flow zone. This is why we advocate for cane pruning, and renewing short cordons every 3-4 years, so that pruning wounds are removed before they can cause sap flow issues.



Reading the Vine: other things to look out for

Cane borer. If this cane is selected for fruit, it will break when flexed and tied to the trellis wire.



Damage on cane, maybe from rough handling during netting, or harvesting



Girdling on the base of the trunk, voles nibbling in the winter

Reading the Vine: other things to look out for



These are examples of damage from rubbing on the trellis wire, caused by shoots incorrectly placed or not tied down to the trellis tightly enough. these should be cut below the damage.



Thanks for your Attention!



Part 2: join me in-person for live pruning demonstration

March 10th, 3-5pm

Concord, NH, USA

RSVP: email

NicholasOKimberly@gmail.com

or

[@nokvino](#) on instagram

