



PLANNING YOUR NEVADA BACKYARD VINEYARD

VINEYARD OWNERS PANEL:

**DAVE PERDUE, ADRIAN DYETTE, JASON
SCHULTZ AND JOE BERNARDO**

**NOTES BASED ON AN ARTICLE BY WES HAGEN AND AMENDED
FOR NORTHERN NEVADA**

SOIL TEST

- Do a soil test and check for available nutrients, pH, and potential soil problems?
- Grab a shovel and dig a nice deep hole (up to three feet for a good sample of subsoil) where you plan to grow some grapes. Once the hole is dug, scrape soil off the side of the hole into a large Ziploc bag. Scrape soil from 1 to 12 inches into one labeled bag, and scrape some soil from two feet and deeper into another labeled bag.
- Drop off at a local lab or mail to a lab. (see to web links)

<https://www.unce.unr.edu/publications/files/ag/2009/fs0938.pdf>

<http://www.growyourownnevada.com/resources/private-soil-testing-labs/>

WEATHER IMPACT

- Ideally you need between **150 to 200** frost-free days to produce mature vitis vinifera fruit, including renowned varietals like Chardonnay, Merlot and Cabernet Sauvignon. A lot depends on the timing of bud break and last frost.
- Pinot Noir, Gewürztraminer and Riesling do better in later frost areas and Chardonnay, Merlot and Cabernet, need 190 frost free days or more
- Consider some hybrids, such as Norton, Chardonnell, Chancellor, Baco Noir, Frontenac or Marquette so in a bad year you may still have grapes
- Find what your neighbors are planting and what vines produce the best wines.
- Ask one of the sales people at Inland Desert Nursery what they recommend.

GROW DEGREE DAYS (GDD)

- Reno GDD about 3000 F
- Spanish Springs ... about 2650 F
- Fernley about 3000 F
- Cold Springs/Stead about 2400 F

http://www.nvandw.com/gdd_project/

$$GDD = \left(\frac{T_{\max} + T_{\min}}{2} \right) - 50$$

Add the resulting numbers from 1 April thru 30 September to get the annual GDD

Regions	GDD	Wine regions	Grape varieties
Region I	<1390 C, <2534 F	Tasmania, Champagne, Burgundy Friuli, Chablis	Chardonnay, Pinot noir, Sauvignon blanc, Riesling
Region II	1391-1670 C, 2535-3038 F	Yarra Valley, Alsace, Boredeaux, Napa	Cabernet sauvignon, Merlot, Semillion, Syrah, Chardonnay
Region III	1671-195 0C, 3039-3542 F	Rioja, Piemonte, Clare Valley, Capetown, Barossa valley	Tempranillo, Grenache, Barbera, Syrah
Region IV	1951-2220 C, 3543-4028 F	Langhore Creek, Montpellier, Florence, McLaren Vale	Tempranillo, Mourvedre, Carignan, Cinsault
Region V	>2220 C, >4029	Sicily, Sardinia, Jerez, Swan Valley	Fiano, Primitivo, Palomino

<https://www.vineyardapp.com/blog/2017/03/01/why-the-need-to-calculate-growing-degree-days-in-vineyard/>

WINTER COLD

- Very cold temperatures will kill vinifera grapevines without severe pruning and mounding soil over vines. In vinifera varieties without a lot of mature fruiting wood, temperatures down to 20° Fahrenheit may kill and injure buds and canes.
- If it gets really cold in winter, you may want to choose hybrid vines that can tolerate cold winters. Foch, for example, has been known to survive temps as cold as -20° F.
- Vines do need some cold weather every year to be healthy. All vines have a chilling requirement — if it doesn't get cold in winter, the vines will not go dormant, and will eventually just give up and die..
- Heat is also a consideration. Photosynthesis maxes out at about 87° F. Super high temperatures can scorch plants, dry the grapes and make it difficult for a vine to respire and thrive. The best wines in the world are grown at the coolest edge of their climate zone.

PEST CHALLENGES

- Check with your local Ag. Extension office and ask what pests currently reside in your area. What insects are likely to feed on your vines? Do any of them carry disease, and if so, how can you protect your vines from infection?
- If you live in an area with wild pigs, deer, rabbits or large flocks of starlings — and you have no fencing or netting — I would dissuade you from wasting time and effort on a vineyard that will do nothing but feed wildlife. Are there gopher mounds every five feet? Better start trapping (or do some research to devise a more humane approach).
- Perhaps there are beneficial insects that can be released into your vineyard early, so when you plant there will already be a healthy population of “good bugs” to fight off the “bad” ones. Lacewings, praying mantises, spiders, lady beetles and other beneficial insects can be released in lieu of pesticides. In the long run, pests become resistant to chemicals and harder to kill.

SOIL INFESTED

- Is your soil infested with nematodes or the root-louse phylloxera?
- For the backyard vineyard, especially in Nevada Rocky soil they aren't much of a concern, especially in weed free fallow soil. Local growers and your Ag Extension office can help you find out.
- If so, you might want to choose a rootstock (such as 5C, 101-14 or 110 R) that is resistant to these pests. Viticulturists commonly use the hardy roots of an American vine grafted on to a vinifera "top." This way you get the benefits of a pest-resistant root system and the fruit of a European vinifera variety. Vines are usually grafted by the nursery, and can be ordered in any combination imaginable. If you are lucky enough to be free of these pests, vines can be planted on their own roots. Talk to your nursery.

IRRIGATION

- Is the water clean and usable for agriculture? If you're a perfectionist, you can have your water tested (many companies test water; look in the yellow pages under a category like "laboratories — testing.")
- In general, hose water will be appropriate for a home vineyard.
- Large vineyards, more than a "garden", may be restricted on city water use
- Applying the water through the ground or by "drip irrigation" is much more efficient than by sprinkler. Try to keep water off the fruit and vines; otherwise you might have problems with rot and mildew.
- Do not over water. Wine grapes like just enough water to keep alive. Do not water early before May 1st, or the vines can produce leaves but no grapes.
- With young vines water regular until they are well started (2 years)
- Before harvest cut back/eliminate

VINEYARD PLOT

- Can the land be cleared in a way that is legal (HOA) and City (almost all cities allow “gardens”)
- Will it upset the natural balance of the site (Is your site erosive)?
- Amend IAW the soil test
- As far away from buildings and trees as possible for good air
- Remember that keeping the land healthy and full of biodiversity will help your vines help themselves. Nature attacks the weak. You want your vineyard to be healthy enough that pests will look for easier pickings.

VINEYARD ASPECT

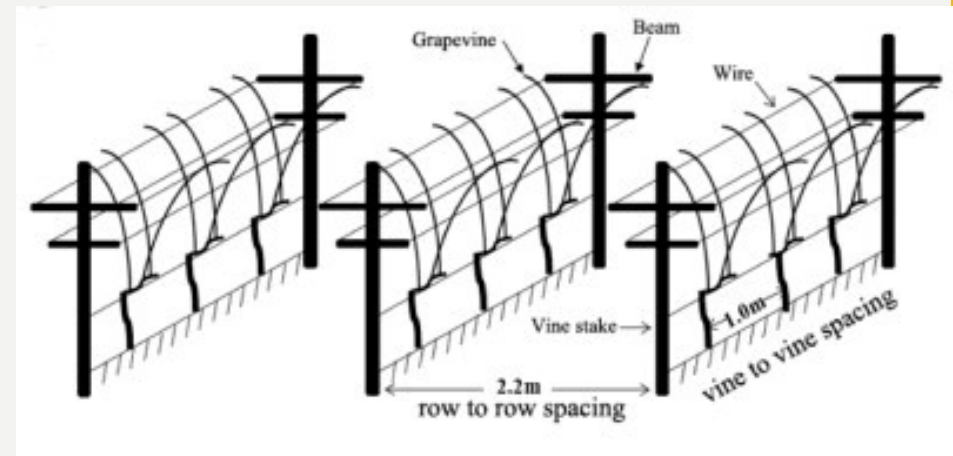
- Full Sun, Sloped to assist drainage, Well drained soil
- Aspect – Direction of vineyard
 - Eastern - later bud break and less chance of frost damage
 - South - better production

Aspect				
<u>Parameter</u>	<u>North</u>	<u>South</u>	<u>East</u>	<u>West</u>
Time of bud-break	Retarded	Advanced	Retarded	Advanced
Daily maximum vine temperature	Less	Greater	Less	Greater
Speed of foliage drying in morning	-	-	Advanced	Retarded
Radiant heating of fruit	Less	Greater	Less	Greater
Radiant heating of vines in winter	Less	Greater	Less	Greater
Minimum winter air temperatures	Lower	Higher	-	-
Length of growing season	Shorter	Longer	-	-

CROP SIZE

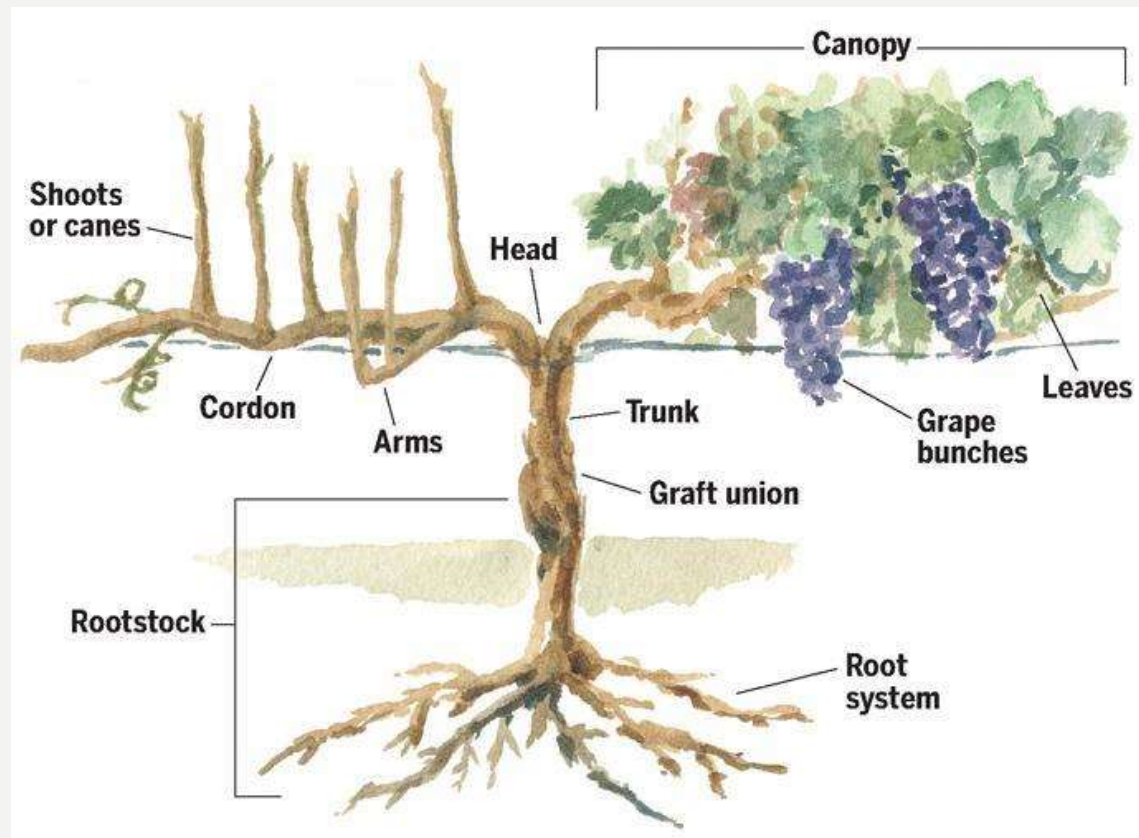
- At five pounds of crop per plant (assuming low to moderate yield), you will need 200 to 250 vines to assure that in a “regular” year you’ll have enough fruit for two 30-gallon barrels of wine plus extra for topping. You can use this ratio (250 vines = 60 gallons) to figure approximate wine yield.
- Different vines and different soils produce different crop levels, obviously. You may well be able to push more yield from your vines.
- Another rule of thumb is that you need approximately 20 pounds of fresh fruit for each gallon of homemade wine. If each vine produces five pounds and you’d like to make one five-gallon batch from your own grapes each year, then plant 20 vines (plus a few extra, just in case).

VINE SPACING



- Vine spacing recommendations are all over the map
- Consider slope, solar radiation, frost and heat pockets
- Hagen is a big fan of fruit grown on tight spacing — less than 8 ft between rows and less than 4 ft between plants — w/southwest aspect
- Cox likes bigger spaces in cool regions — 8 ft between vines and 8 ft for rows
- Exposure is increasingly important in places where the climate is almost too cool to ripen a crop; more sunlight can compensate for cool climate
- Close spacing encourages less vigor and more competition

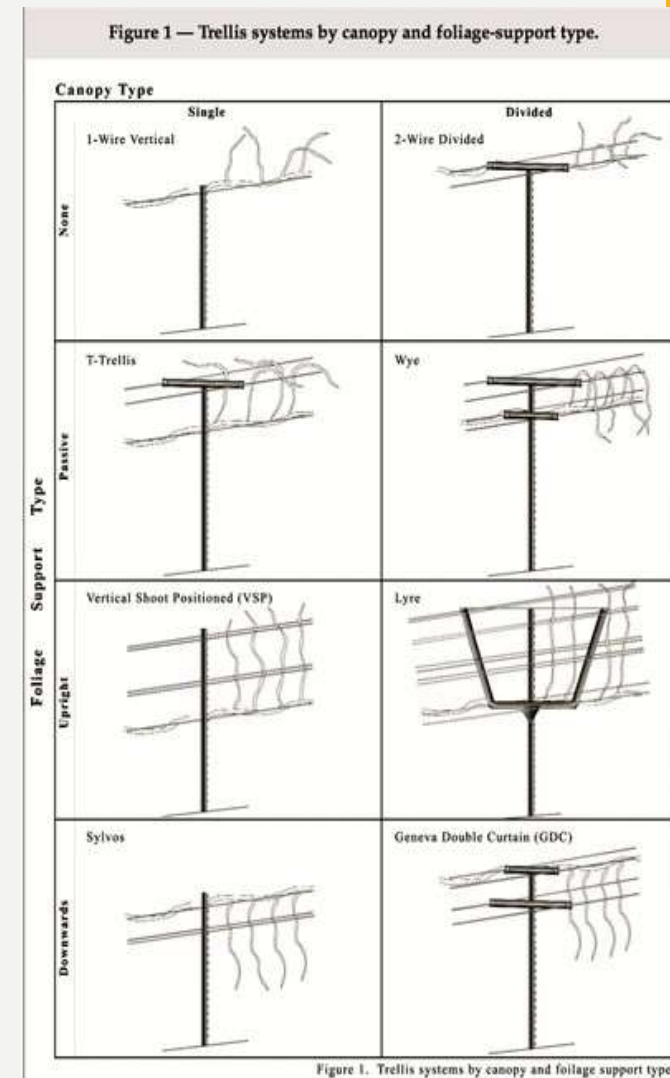
GRAPE VINE



- <https://www.evineyardapp.com/blog/2017/05/30/overview-of-grapevine-structure-and-function/>

TRELLIS THE VINES

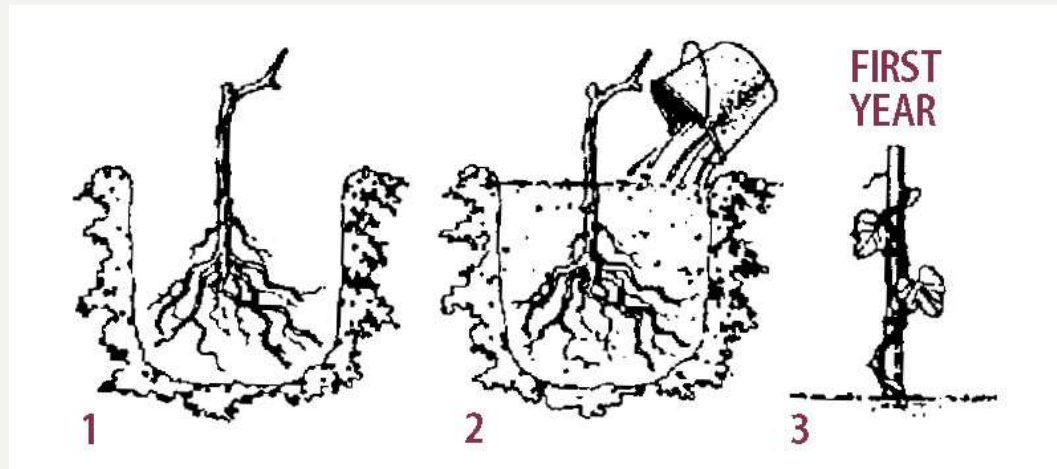
- Low vigor sites (mature shoots are less than 6 feet tall) are easily managed with a “vertical shoot” system (sets of wires to direct all shoot growth straight up)
- High-vigor sites (mature canes are in excess of 6 feet) may be left to ‘sprawl’ on a common wire trellis. They can be trained onto a more complicated trellis system
- Not necessary the 1st year, but plan it out. The first year just tie vines to garden stakes



GRAPE STOCK

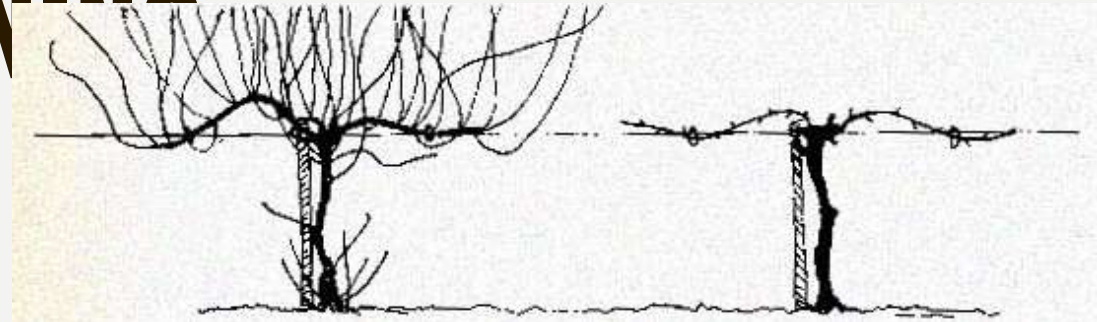
- Bare root
 - Plant in spring after frost (May)
 - Order certified stock (against virus and disease) either grafted or their own root.
- Green-Potted Vines (be prepared to protection after planting if a freeze is forecasted)
- Buy from certified California Nursery or from Washington Nursery
 - Recommend Washington as the vines may be more acclimated to similar climate as Nevada
 - Inland Desert Nursery (<http://inlanddesert.com/>)

PLANTING



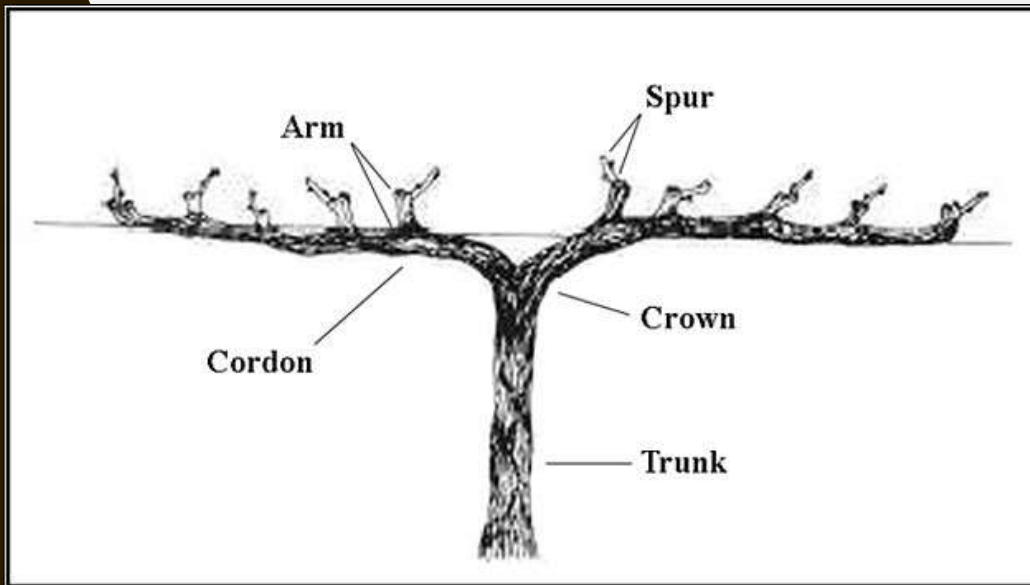
https://www.youtube.com/watch?v=zyO_c6kIXCk

TRAINING/PRUNING



Before

After



- Leave 5 to 8 spurs on each cordon
- 2 buds on each spur

<https://www.youtube.com/watch?v=Kz3QgdxRc5s>

<https://www.youtube.com/watch?v=jyreR2HIj7g&list=PLGtnfMolNcCBnEMoaqNVf5QcNC4WCGnLk&index=3>

<https://www.youtube.com/watch?v=i0Z8I2WCLNk&list=PLGtnfMolNcCBnEMoaqNVf5QcNC4WCGnLk>

LEAF AND CLUSTER THINNING

- **Leaf Thinning** - Studies have shown that a proper cluster zone leaf removal can:
 - improve air circulation around the cluster
 - increase exposure of clusters to sunlight and allowing light penetration
 - reduce potential disease pressure of grapevine disease, especially Botrytis, downy mildew, and oidium
 - allows better spray penetration i.e. cluster coverage of fungicides
 - improve grape quality – improve flavor compounds, color, decrease titratable acidity, and pH
- **Cluster Thinning** – Remove flower clusters before the bloom
 - Promotes vine capacity to make adequate wine grapes
 - Helps to ripen fruit in cool climates
 - Promotes fruit quality if not overdone
 - Reduce bunch rot
 - Reduce to clusters per spur (10 -16 per plant and less when young)
- <https://www.youtube.com/watch?v=i0Z8I2WCLNk&list=PLGtnfMoINcCBnEMoaqNVf5QcNC4WCGnLk>



HARVEST - (AFTER 3 OR 4TH YEAR)

- Color of the grapes. Naturally, red grape varieties will gradually turn from green to yellow or red as they ripen. It will take many weeks, depending on weather and variety.
- Color of the stems and grape seeds: When ripe they will be brown.
- Grapes will plump up as sugars increase, and they will be easier to pull from a cluster the riper they get.
- Taste the grape and seeds. Seeds will also brown and are easily chewable when ripe.
- Ripe grapes are sweet, with no hint of bitterness in the flesh or seeds. Experienced winemakers look for the ultimate “varietal” flavors and balance to show through and don’t need to test the fruit.
- Test the Brix (sugar) with a Refractometer or Hydrometer (<https://www.youtube.com/watch?v=ZnB35bks4o8>)
- Test the pH and titratable acid (pH meter and acid test kit)
- Red Wine - 22-25 BRIX, 3.3- 3.6 pH, 0.6%-0.65 acid
- White Wine - 20-22 BRIX, 3.0 – 3.4 pH, 0.7%-0.75 acid

QUESTIONS

Recommended reading – From Vines To Wines, by Jeff Cox. In stock at Reno Homebrewer

SOME YOUTUBES ON VINEYARDS

- <https://www.youtube.com/watch?v=xNIZS4sW7Wc>
- https://www.youtube.com/watch?v=zyO_c6kIXCk
- <https://www.youtube.com/watch?v=Kz3QgdxRc5s>
- <https://www.youtube.com/watch?v=jyreR2Hlj7g&list=PLGtnfMoINcCBnEMoaqNVf5QcNC4WCGnLk&index=3>
- <https://www.youtube.com/watch?v=i0Z8I2WCLNk&list=PLGtnfMoINcCBnEMoaqNVf5QcNC4WCGnLk>
- <https://www.youtube.com/watch?v=JP3myPcOriU&list=PLGtnfMoINcCBnEMoaqNVf5QcNC4WCGnLk&index=5>