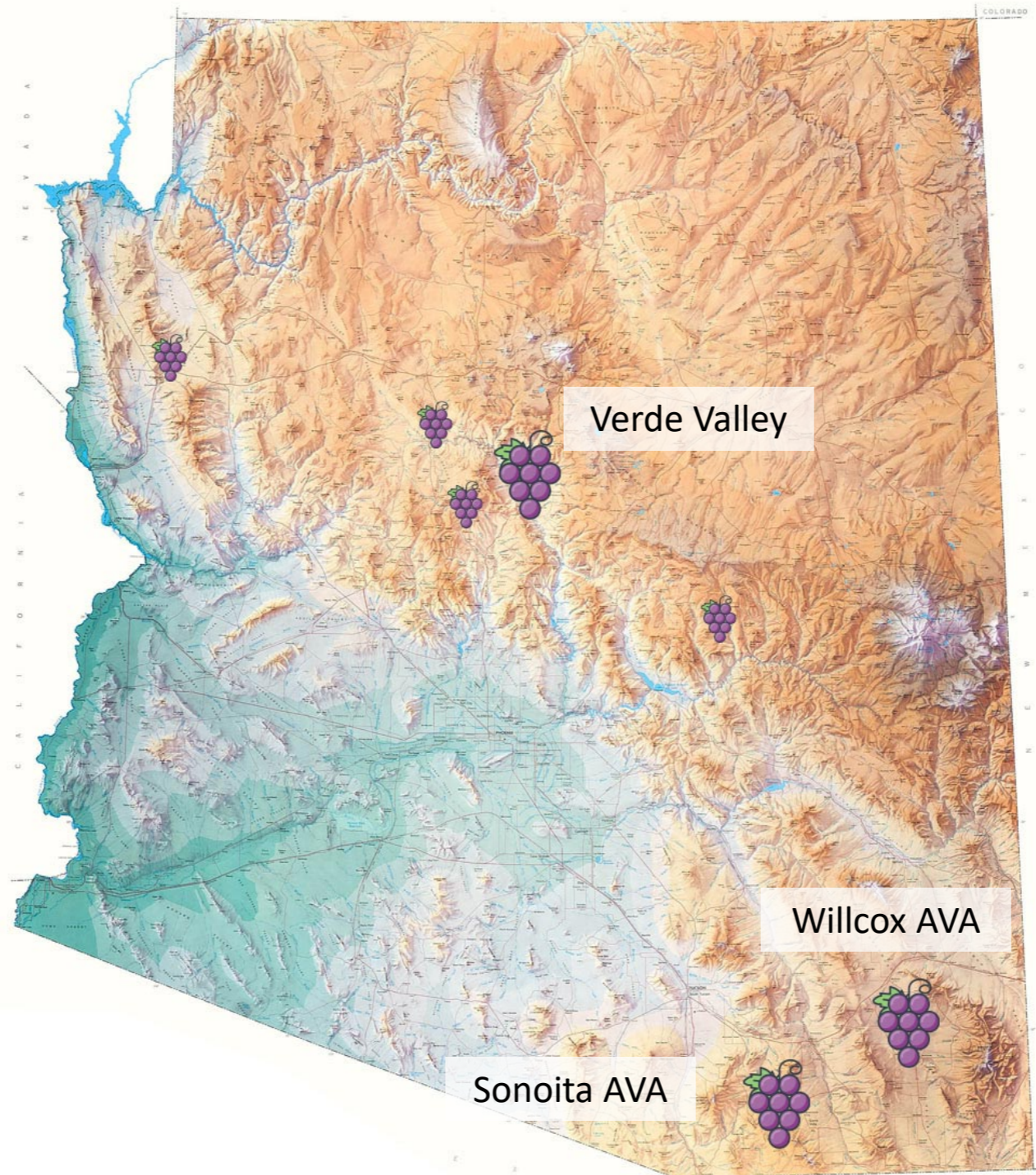


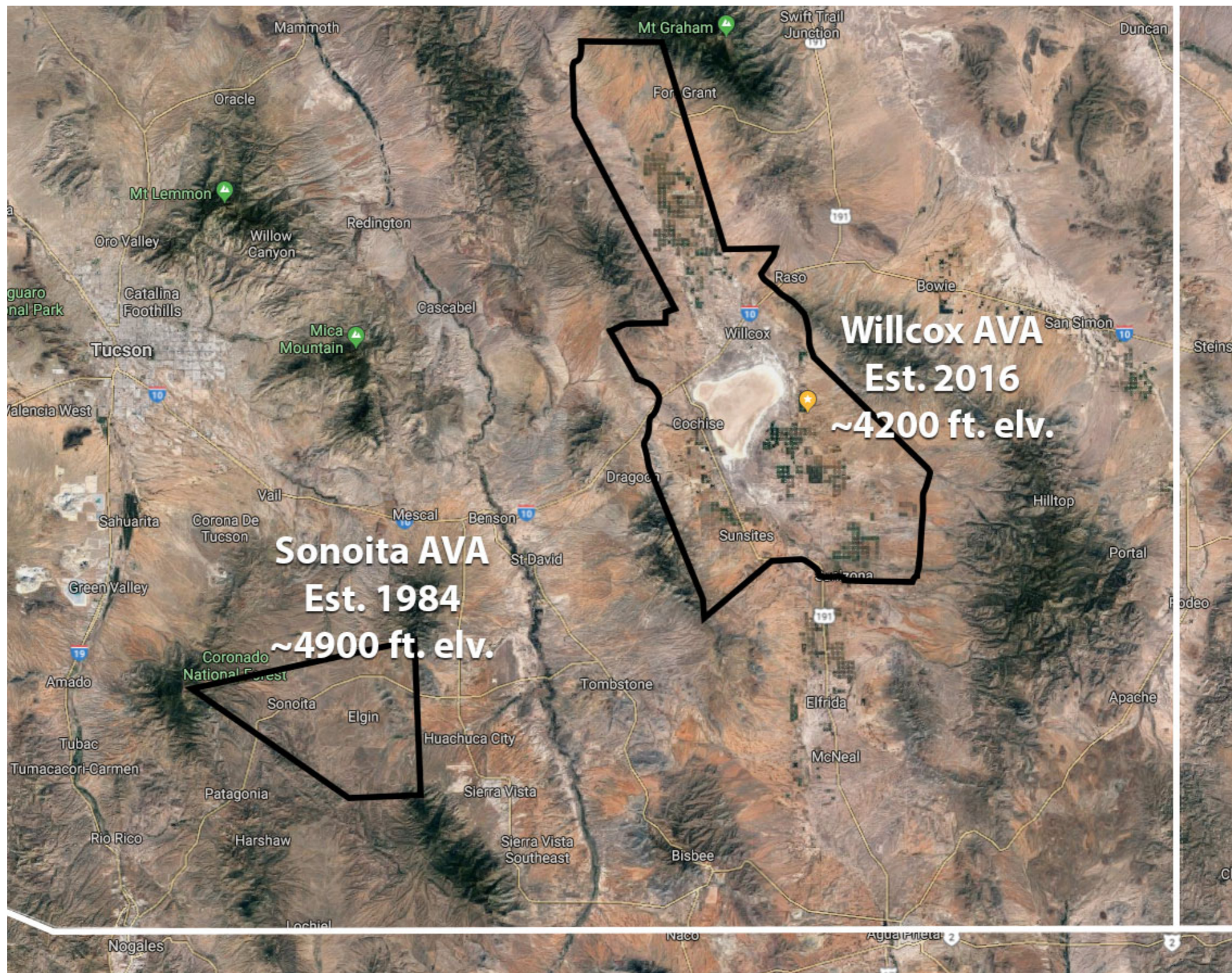
Arizona Wine Industry

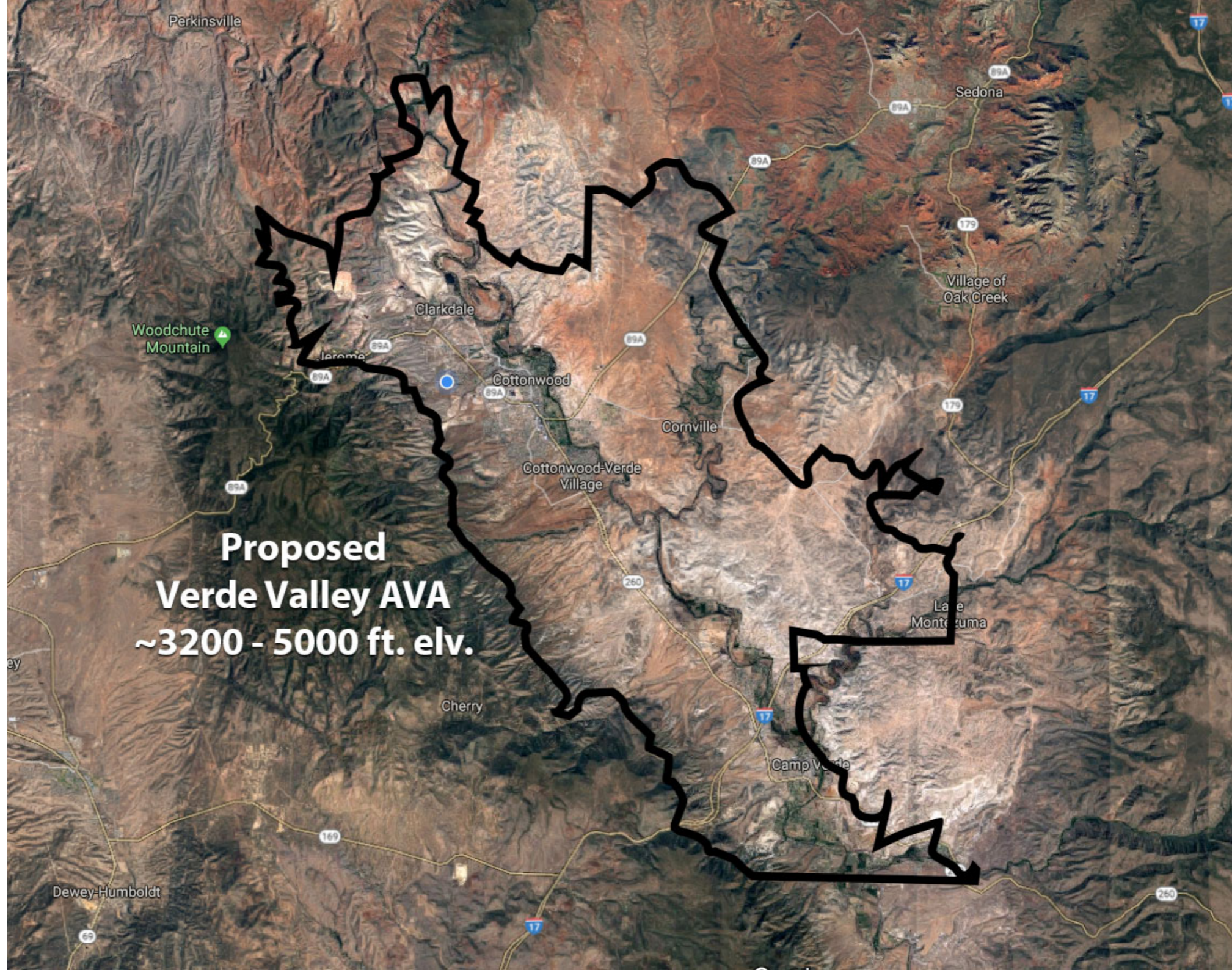
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Michael.Pierce@yc.edu









USDA Arizona Vineyard Survey - 2013

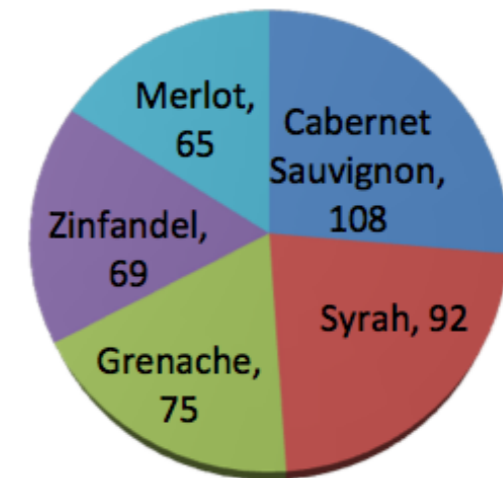
- 74 percent of all wine grape production came from the Willcox region.
- AZ growers intend to plant an additional 350 acres by the end of 2016.

The value of grapes grown by Arizona vineyards totaled \$2.2 million.

Region	Value of Production 1/	Total Value
	-dollars-	-percent-
Sonoita/Elgin	385,000	17
Willcox	1,667,000	75
Verde Valley	143,000	6
Other Regions 2/	32,000	2
State Total	2,227,000	100

County	Acres Planted (bearing & non-bearing)	Acres Harvested	Yield Per Acre	Total Production
	-number-		-tons per acre-	-tons-
Santa Cruz	200	175	1.5	265
Cochise	630	495	2.0	1,005
Yavapai	70	60	1.2	75
Other Counties 3/	50	20	1.3	25
State Total	950	750	1.8	1,370

Top Five Varieties, Planted Acres, 2013



2020 statewide estimate is 1,650 acres in production

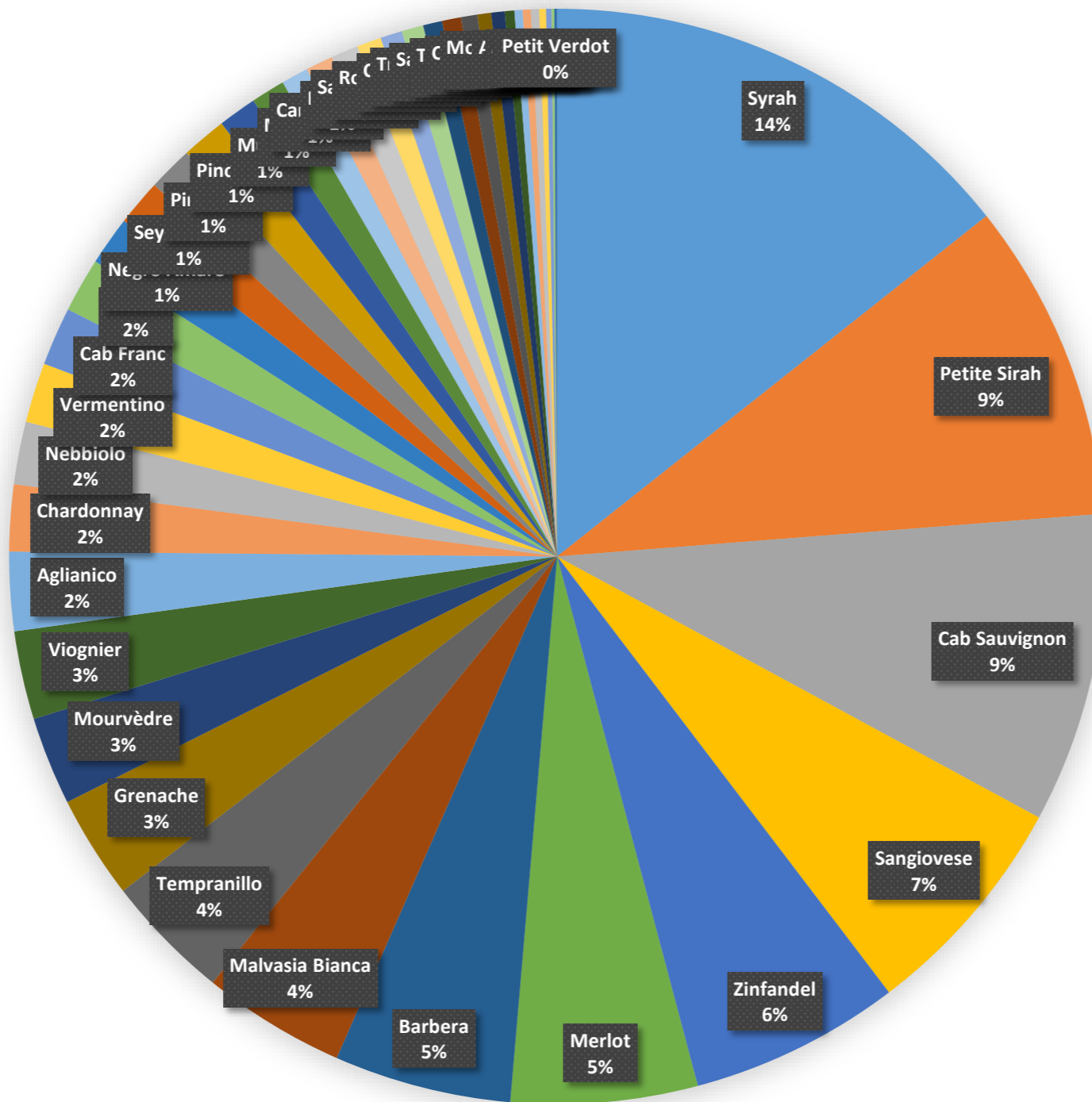
Accounts for 43% of total acreage

Verde Valley Vineyard Survey 2016

43 Different Varietals

23 Vineyards

124.6 Acres



	ACRES	%
REDS	101.01	81.1%
WHITES	23.59	18.9%
Total	124.60	

	ACRES	%
TOP REDS		
1 Syrah	17.85	14.3%
2 Petite Sirah	11.75	9.4%
3 Cabernet		
4 Sauvignon	11.40	9.1%
5 Sangiovese	8.40	6.7%
6 Zinfandel	7.75	6.2%
7 Merlot	6.85	5.5%
8 Barbera	6.51	5.2%
9 Tempranillo	4.65	3.7%
10 Grenache	3.80	3.0%
11 Mourvèdre	3.25	2.6%

	ACRES	%
TOP WHITES		
1 Malvasia Bianca	5.27	4.2%
2 Viognier	3.25	2.7%
3 Chardonnay	2.45	2.0%
4 Vermentino	2.20	1.8%
5 Seyval Blanc	1.70	1.4%





NAU / AOT Wine Economic Impact Study (2017)

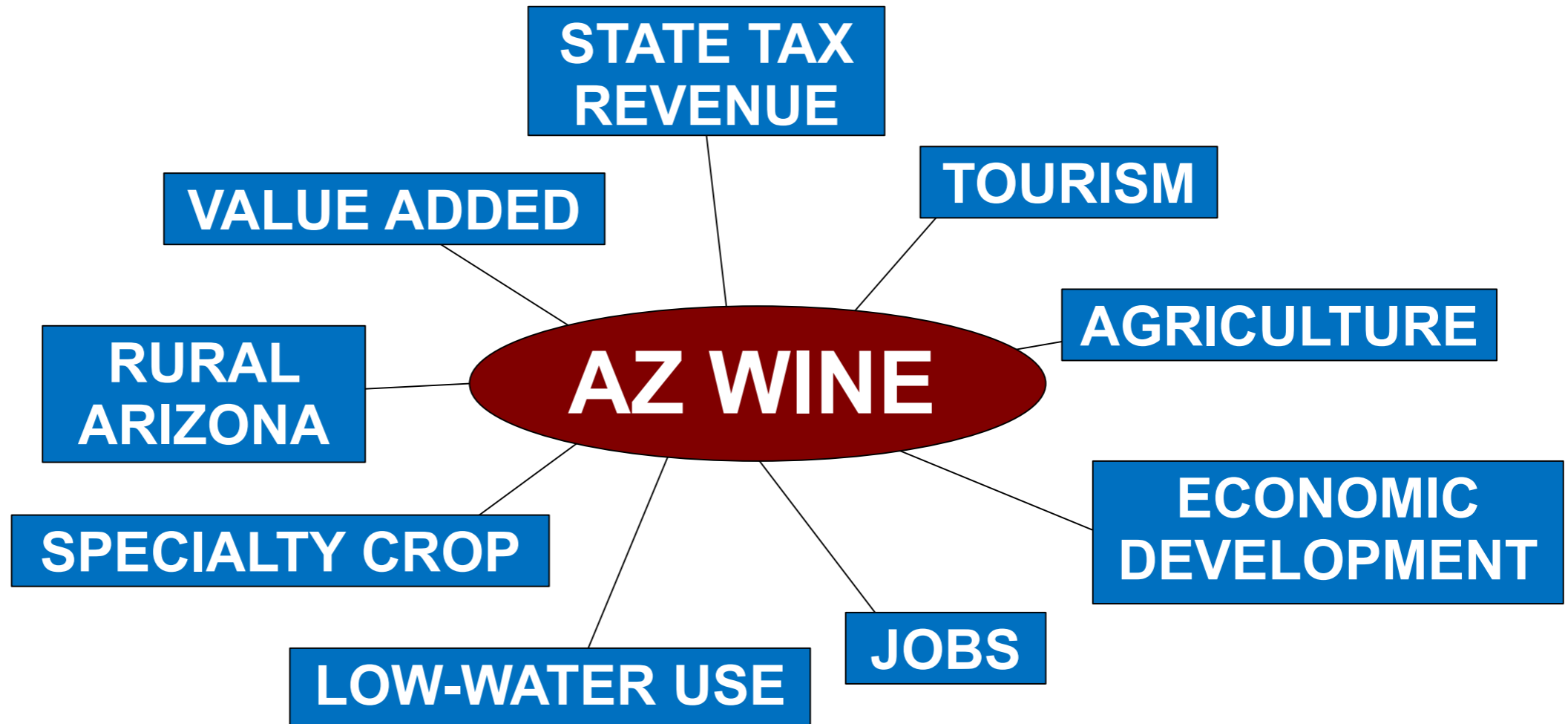
- Arizona wine tourism = \$56,178,643 in total economic output
- \$3.6 million in local and state taxes generated from Arizona wine tourism
- AZ wine tourism industry creates an estimated 640.6 full-time equivalent jobs
- Approx. 57% of visitors to wineries were day visitors
43% of visitors spending the night in the region
- 600,000 visitors to vineyards and tasting rooms annually



What a Ton of Grapes Can Do?

- Average vineyard yield; 1.5-2.5 tons per acre
- Planting density varies by region, variety and grower
 - Ranges 500-1000 vines/acre
- One ton of wine grapes can produce 170 gallons of juice
- A case of wine is 2.4 gallons or 9 liters
- Current market value ranges \$2,000-\$2,750/ton
- A ton of grapes produced to wine can return \$10K-\$15k

What is the Arizona Wine Industry?





Modern Arizona Wine History

Dr. Gordon Dutt, University of Arizona soil scientist

- 1973 helped grape and raisin producers near Yuma with soil problems
 - Wanted to study wine vineyards in the state
- Established an experimental vineyard at Page Ranch, a research farm for the U of A
 - Had some mixed results





Modern Arizona Wine History

From the lessons learned at his Tucson vineyard he realized he needed a vineyard site with higher elevation and a more acidic soil composition

- 1975 Dr. Dutt partnered w/Blake Brophy a rancher from Sonoita
- Planted a second experimental vineyard at the Ignacio de Babocomari Ranch
- 1979 planted Sonoita Vineyards (4800 ft)
- AZ's first commercial wine vineyard post-prohibition

Modern Arizona Wine History

Robert Webb, established R.W. Webb vineyard in 1983

- 20 acres planted in Kansas Settlement area south of Willcox (4300 ft.)
- Cabernet sauvignon, Petite Sirah, and French Colombard
- At the time, Arizona did not have a winery licence
- Producing wine was not technically permissible



Modern Arizona Wine History



Robert Webb 2013

- 1986, partnered with Dr. Dutt to create an AZ winery license
 - Domestic Farm Winery License
- Sold his vineyard to Al Buhl in 1990
- Buhl established Dos Cabezas Vineyard and added 40 acres
- Currently 108 active winery licenses (series 13)
- Currently 31 active tasting room licenses (series 19)



Al Buhl



Viticulture

The science, production, and study of grapes.

Grape vines are classified under the genus *Vitis*

Vitis vinifera (European wine grape)

Vitis labrusca (Native to northeast U.S.)

Vitis rotundifolia (Native to southeast U.S.)

Vitis arizonica (Native to southwest U.S.)

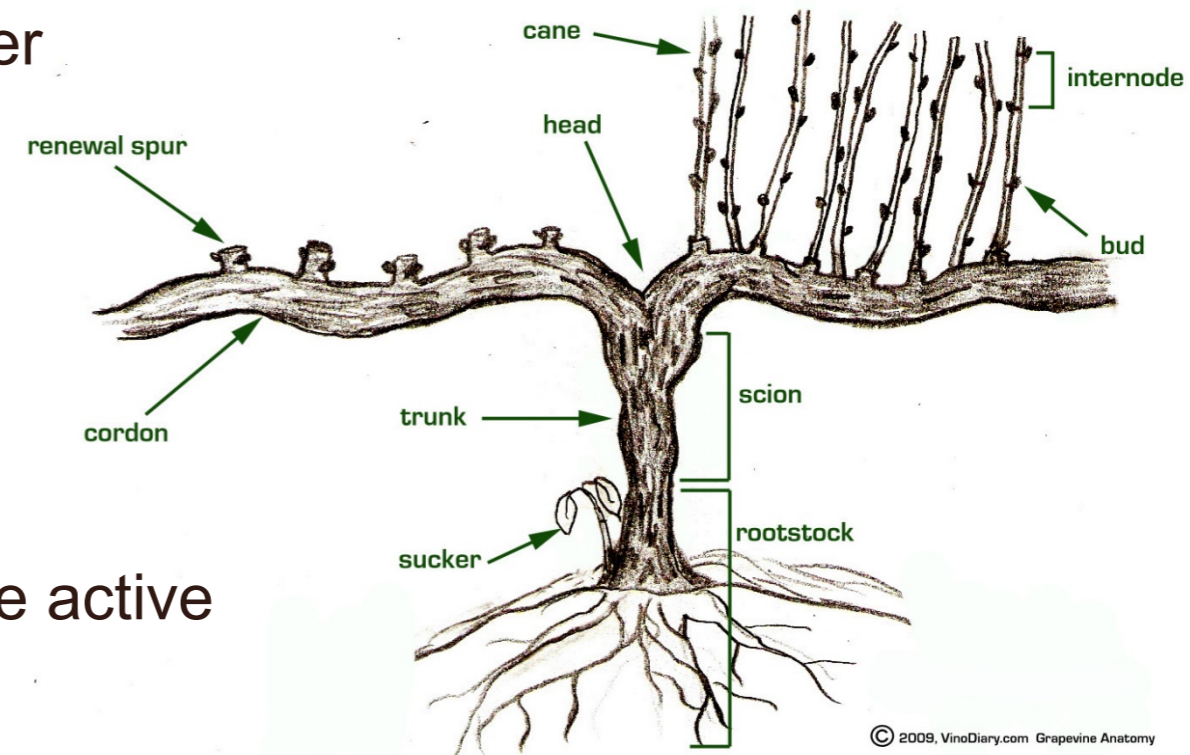
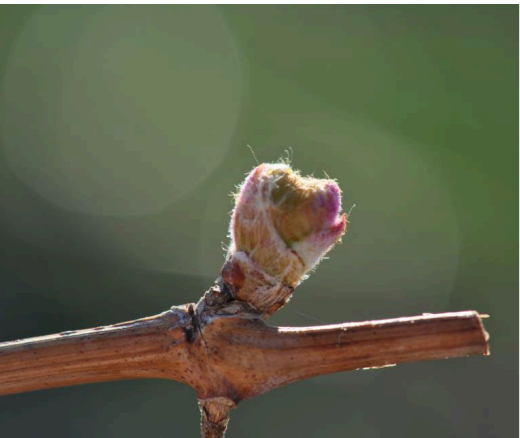
Well over 5,000 different varieties of *V. vinifera*

One of the few fruit crops that get picked when ripe

Vitis vinifera

Deciduous, woody perennial plants

- 3-5 years until maturity (first crop)
- Useful commercial crop 30+ years
- Wind-pollinated with hermaphroditic flowers
- Each successfully pollinated flower becomes a grape berry
- Shoots come from buds developed during the previous growing season
- Average temp 50F+ vines become active



Berry Development

Anthesis: Flowering
40 to 80 days
after bud break



**Fruit Set
or Berry Set**



Véraison:
onset of ripening

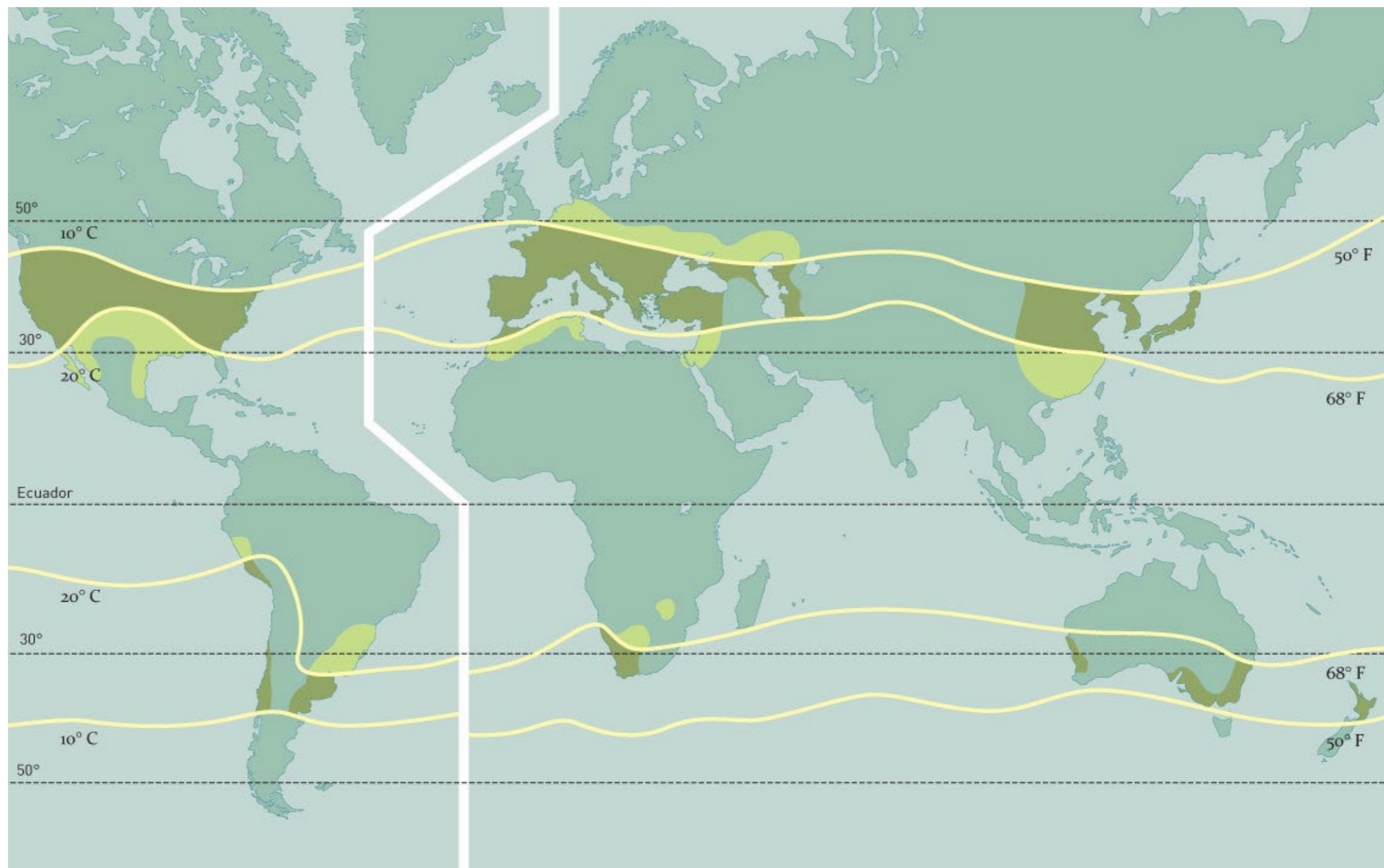


Engustment:
Compounds Accumulate
Harvest 6-8 weeks after
Véraison



The time period from bud break to harvest is normally around 140 to 160 days

Could be as short as 110 days or as long as 200



Verde Valley = 34.7322°N

Willcox = 32.2556° N



Enology

The science and technical study of winemaking.

From the Greek word for wine "oenos"

(pronounced as if the first o isn't there -- "ee-nus")

O is typically dropped from most spellings



6th century B.C.
Greek Amphora





What is wine?

Wine: A beverage resulting from the fermentation of grapes by yeast

Wine is synonymous with grape juice because grapes are the perfect fruit for fermentation

- High concentration of fermentable sugar
- High nitrogen content for fermentation
- Wild yeast are naturally present on the grape berry surface
- Grapes have conditions that inhibit spoilage (high acid & tannins)





How Wine Is Regulated

Wine is a **food** product. Alcohol is a **drug**.

Federal

- Alcohol, Tobacco Tax and Trade Bureau - TTB
- U.S. Treasury
- Food and Drug Administration



State

- Department of Liquor License and Control (AZDLLC)
- Department of Agriculture
- Local City, County Zoning, and Health Districts
- Department of Revenue





Federal Excise Tax

Current Tax Rates*

Alcohol Content	Tax per Gallon
Less than 16%	\$1.07
16-21%	\$1.57
21-24%	\$3.15
Naturally Sparkling	\$3.40
Artificially Carbonated	\$3.30
Hard Cider	\$0.226

*Small producers tax credit lowers these rates

Producers under 30,000 gallons of annual production can qualify for up to \$0.90/gallon credit

A portion of these credits are set to expire in 2022

How High Are Wine Taxes in Your State?

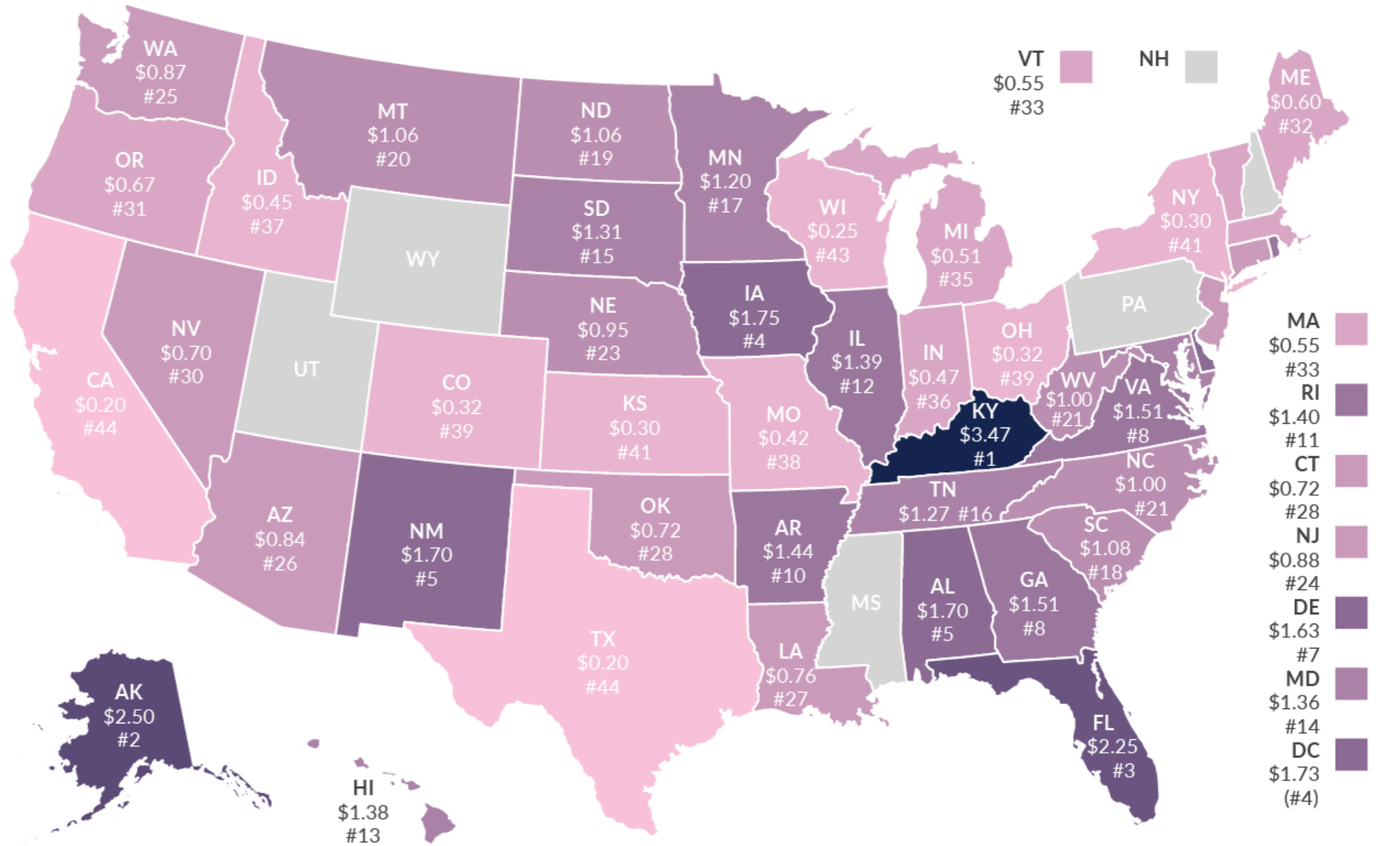
State Wine Excise Tax Rates (Dollars Per Gallon), 2018

Arizona Wine Excise Tax \$0.84/gallon

Paid by the wholesaler
at the end of the month
the wine was sold.

When the winery sells
directly, the winery
serves as the wholesaler
and pays this tax.

State and city sales taxes
are also applied to the
wine sales transaction.



Note: Rates are those applicable to off-premise sales of 11% alcohol by volume (a.b.v.) non-carbonated wine in 750ml containers. Federal rates vary by alcohol content and type of wine, ranging up to \$3.15 for 21-24 percent alcohol and \$3.40 for sparkling wine. D.C.'s rank does not affect states' ranks, but the figure in parentheses indicates where it would rank if included.

State Wine Excise Tax Rate
(Dollars Per Gallon)





State Purview

The 21st amendment repealed prohibition

- Granted the states the right to govern sales, distribution and consumption of alcohol

All states must follow the federal regulations

- Have the freedom to enlarge upon the federal regulations

To produce, distribute, or sell alcohol in the state of Arizona requires a license to be held by the acting party

[4-201. Licensing; application procedure in city, town or county; burden of proof](#)

A. A person desiring a license to manufacture, sell or deal in spirituous liquors shall make application to the director on a form prescribed and furnished by the director.



Farm Winery License

Licensed Arizona Farm Wineries are able to operate in all three tiers of the wine industry*

1. **Produce** (on the licensed premise)
2. **Distribute** (to other licensees)
3. **Sell** (on the licensed premise; festivals*; internet*)

-
- Stackable in certain cases
 - Series 12, Restaurant
 - Series 7 & 10 (issued before January 2014)
 - A farm winery may hold up to two remote tasting room licenses (series 19)
 - **Sampling & sales on premises**

Farm Winery Qualifications

To qualify for a Farm Winery License

Must control 5 acres of vineyard **or** produce wine

- Holds a TTB basic permit

C. A person may be licensed as a farm winery to sell wine produced or manufactured if in a calendar year it produces at least two hundred gallons and not more than forty thousand gallons of wine and if the winery either holds a winery permit issued by the United States alcohol and tobacco tax and trade bureau or has a contract pursuant to subsection E of this section for the production or manufacturing of wine from grapes or other fruit grown on at least five producing acres of land owned or controlled by the applicant and the land has been devoted to fruit growing for at least three consecutive calendar years. A licensed farm winery may make sales and deliveries of wine only as specifically provided in this section and as follows:



Arizona License Growth

	<u>2012</u>	<u>Today</u>
Restaurants	3,118	4,121
Wineries	36	108
Microbreweries	31	118
Special Events	1,362	4,000 (est)



Arizona House Bill 2876 (Bi-partisan)

Farm Winery Production

Written to remove arbitrary production limits currently imposed

Allows for continued sales privileges at all levels of production

Passed Commerce Committee unanimously on Tues.



Cost of Goods Sold – SWC Wines

Grapes w/shipping = \$2,500/ton = **\$3.82 / bottle**

Glass w/shipping = \$7.66 / case = **\$0.64 / bottle**

Cork w/shipping = \$321.00 / 1,000 = **\$0.32 / bottle**

Label w/shipping = **\$0.305 / bottle**

State & Federal Excise tax = **\$0.28 / bottle**

Barrel costs = **\$0.16 / bottle**

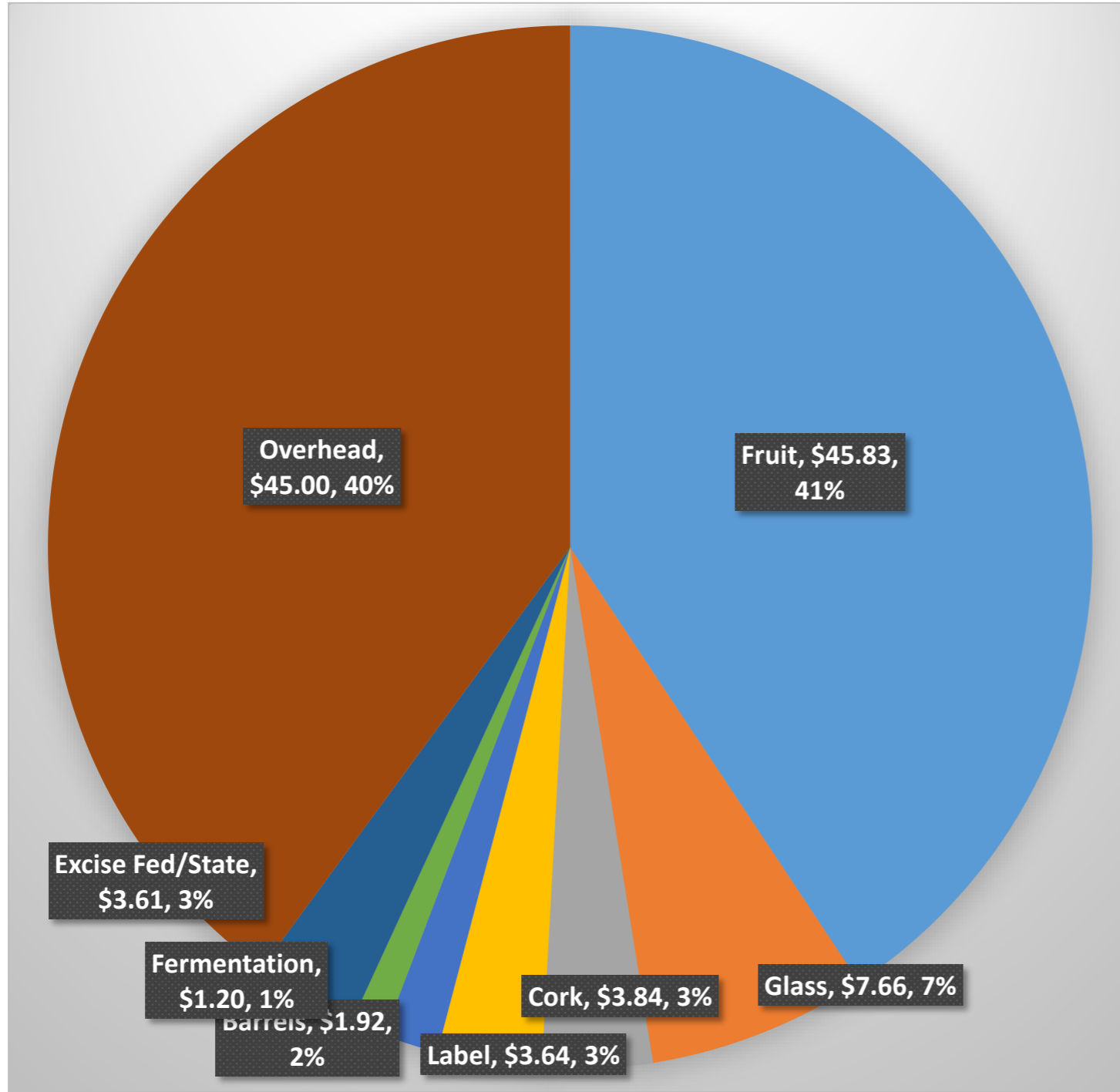
Fermentation supplies = **\$0.08 / bottle**

Variable Costs = \$5.60 / bottle (does not include fixed overhead costs)

Estimated Overhead = \$45.00/case = \$3.75 / bottle

COGS = \$9.35 / bottle

Cost of Goods Sold – SWC Wines



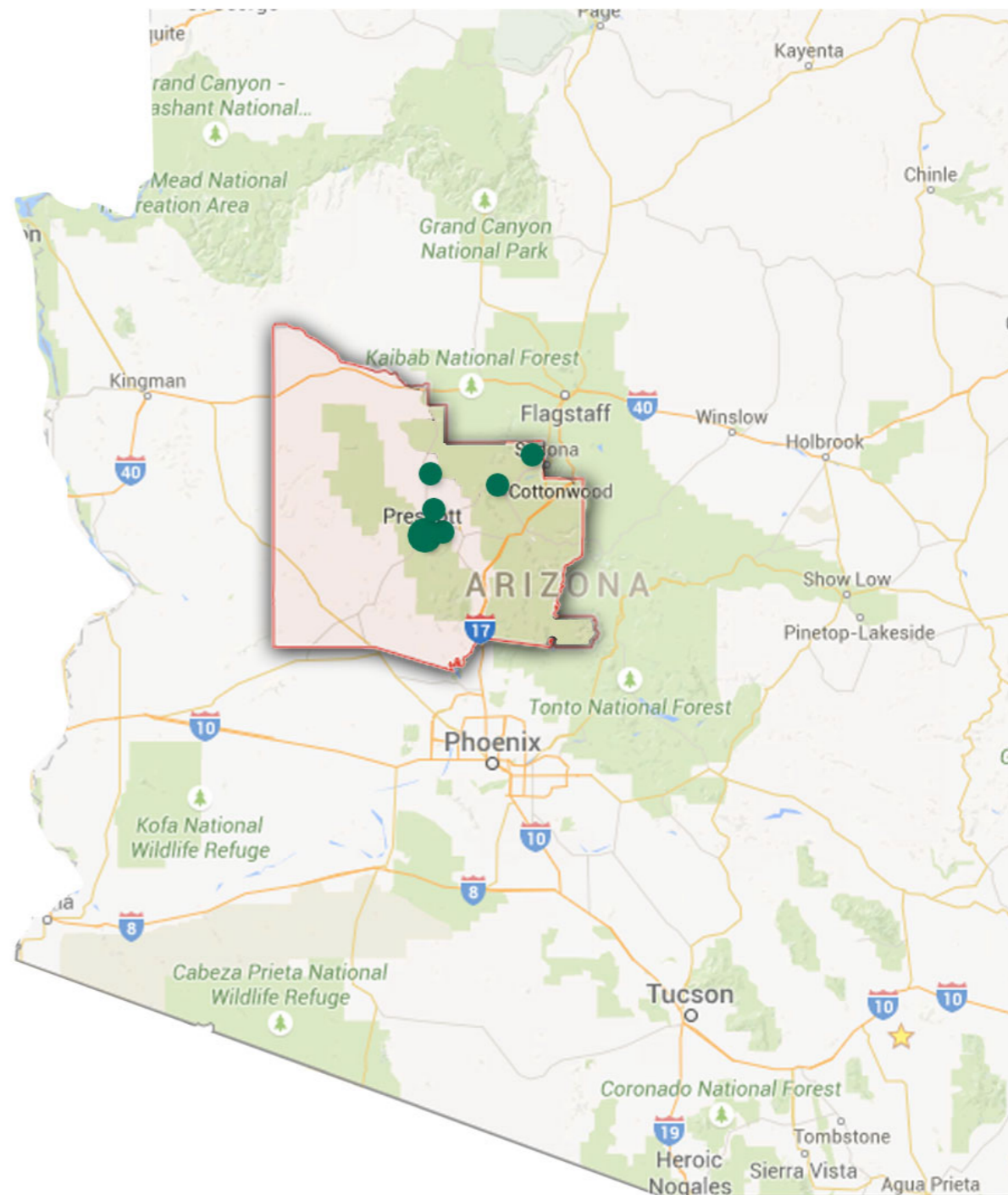
COGS = \$9.35 / bottle

Case = \$112.20 / case



Yavapai COLLEGE life explored

Prescott
Prescott Valley
Chino Valley
CTEC
Sedona
Verde Valley





An Education In Wine

Associate of Applied Science Viticulture and Enology (62 credit hours)

Certificate in Enology (23 credit hours)

Fundamental Chemistry

Wines of the United States

Wines of the World

Winemaking Practicum (x3)

Science of Winemaking I

Science of Winemaking II

Science of Winemaking III

Viticulture Certificate (24 credit hours)

Soils

Entomology

Water Management

Introduction to Viticulture

Establishing Vinifera Vineyard

Maintain Vinifera Vineyard

Viticulture Practicum (x3)

Southwest Wine Center – est. 2009

Online, evening, and weekend classes.

18 acre vineyard as of 2016

3,000 case capacity teaching winery and tasting room

Average student
age is 48.5

Launching a
Certificate in
Brewing
Technology
Fall 2020





SOUTHWEST
WINE CENTER

EST. 2009

YAVAPAI

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**Tasting Room Open
Thursday – Sunday
12 pm – 6 pm**

