



## Grape Cultivars for Ohio

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Before establishing a commercial vineyard, you should consider the viticultural characteristics and market demand of the cultivar(s) to be planted. The major challenge in growing grapes in Ohio is winter injury, which is likely to occur during the grapevine life. Therefore, the first and most important criteria for selecting a cultivar should be its winter (cold) hardiness. Other considerations for cultivar selection include fruit characteristics, ripening season, disease susceptibility (especially bunch rot), yield potential, growth habit, cultural requirements, and consumer acceptability. A descriptive list of recommended cultivars for Ohio is published in the Midwest Grape Production Guide, OSUE 919 (<https://extensionpubs.osu.edu/midwest-grape-production-guide/>). The following tables are based on the cultivar list from the grape guide with some updates of newly introduced cultivars and selections. The following tables include six (6) categories each briefly described below.

**Grape type:** There are three types of grapes grown in Ohio – American (or Heritage), Hybrids, and European (or *Vinifera*). *Vinifera* are the most challenging to grow but produce high quality wines and typically are the highest priced grapes (>\$1,000/ ton). To date, *Vinifera* acreage is expanding the most. Hybrids are typically more cold hardy and less disease susceptible than *Vinifera*, they produce high quality wine and acreage is also expanding. *American* cultivars have been grown the longest and have done well in Ohio. However, their acreage is declining, and new planting is limited due primarily to their lower price per ton. Each cultivar in the table is followed by a letter in parenthesis to denote if it is processed into red (R) or white (W) wine.

**Winter hardiness:** Winter or cold hardiness of a given cultivar measures the critical temperature at which 50% bud injury occurs. Based on the publication “Winter Injury to Grapevines and Methods of Protection”, grape species and cultivars are divided into six (6) classes of winter hardiness: **very tender**, winter injury in dormant buds is expected to occur at > -5F; **tender** (-5F to -8F), **moderately tender** (-8F to -10F); **moderately hardy** (-10F to -15F); **hardy** (-15F to -20F); and **very hardy** (< -20F). The frequency of occurrence of extreme subfreezing temperatures is also important and depends on the vineyard site: the best sites have less frequent (e.g., once in 8 to 10 years) winter damage than poor sites (every 2 to 3 years).

**Ripening season:** Grape cultivars ripen at different times of the season and are thus classified into categories based on number of days between bloom (typically occurs 4-6 weeks after bud break) and harvest, and corresponding months as follows:

- *Early season:* includes cultivars that have less than 95 days between bloom and harvest and ripen in late August
- *Early-Midseason:* 95-100 days, ripens early to mid-September
- *Midseason:* 100-105 days, ripens mid- to late September
- *Mid-Late season:* 105-110 days, ripens early to mid-October
- *Late season:* 110-115 days, ripens mid- to late October
- *Very late season:* 120-130 days, ripens in November.

**Geographic locations of grape growing regions:** Based on the USDA Plant Hardiness Zone Map (see below), there are three (3) zones in Ohio: zone 5b (coldest), zone 6a, and zone 6b (mildest). For example, in zone 5a, the 30-year average of minimum extreme temperatures ranged between -10F and -15F every year between 1976 and 2005. As a guidance, grape cultivars should have bud cold hardiness 5F or lower than the zone where they are grown (see winter hardiness section above). The suggested geographic distribution of grape growing regions is work in progress and based primarily on winter hardiness of grape cultivars.

Zone 5b (-15 to -10F): This zone includes the coldest vineyard sites (frequent occurrence of -15 F and below) in the state. Thus, these regions are best suitable for the *cold hardy* and *very cold hardy* cultivars.

Zone 6a (-10 to -5F): Most of the state surface area is in this zone. *Moderately hardy*, *hardy* and *very hardy* hybrids and American cultivars are best suited for these regions. Vinifera cultivars are risky and only the best sites and most cold hardy Vinifera cultivars should be considered.

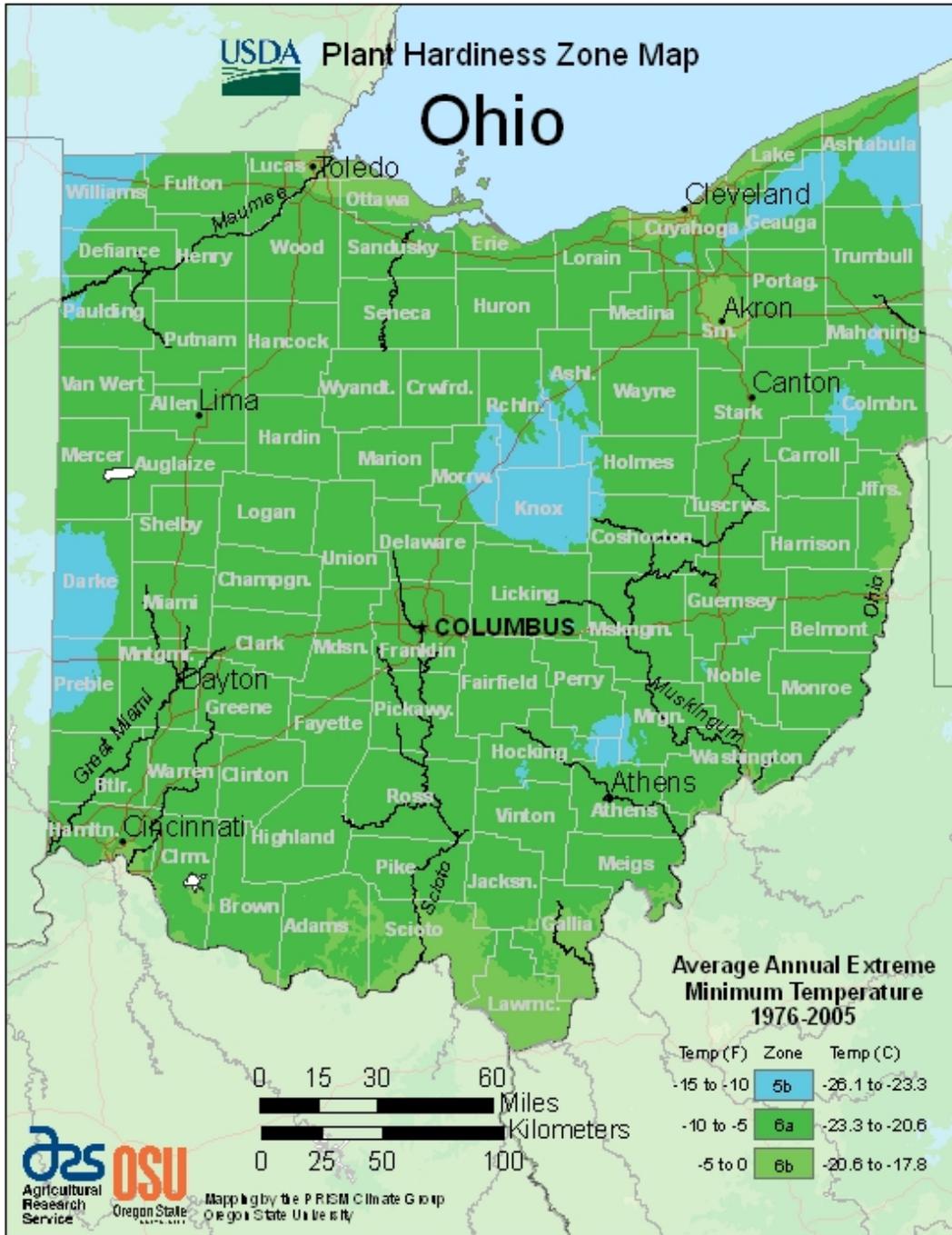
Zone 6b (-5 to 0F): includes the warmest sites (-5F or warmer) and the sites with the longest growing season (FFD >170) in the state. These sites have been the most successful in growing Vinifera and some hybrid cultivars. This zone is geographically located in northern (or 6b N) and southern (or 6b S) Ohio. In the north and along Lake Erie shores, zone 6b N is characterized by moderate winters, and a cool but long growing season. It is best suited for cool-season cultivars including several Vinifera (only on the best sites) and some hybrids. In the south and along the Ohio River Valley, zone 6b S is characterized by moderate winter temperatures and warm and long growing season. This area is best suited for warm-season and late-ripening Vinifera and hybrids.

To find out the cold hardiness zone of your area, click the following link then enter your zip code area:  
<https://planthardiness.ars.usda.gov/PHZMWeb/>

**Strengths and weaknesses:** This category outlines pros and cons of each cultivar based on research findings and/or observations and experience from commercial growers. A cultivar followed by an asterisk indicates that there is limited research information and/or commercial production experience in Ohio. Those cultivars are being evaluated in OSU research vineyards.

USDA Plant Hardiness Zone Map

# Ohio



## Suggested *Vinifera* Cultivars for Ohio

Grape Type / Cultivar <i>VINIFERA</i>	Winter Hardiness	Ripening season	Regions grown / suggested	Strengths	Weaknesses
<i>Arneis</i> * (W)	Tender	Midseason	6b	Medium vigor, medium size compact cluster, trailing growth, adapts to cool and warm regions, unique wines with floral, full body, aromatic (pears, peaches, and apricots) attributes	Due to limited winter hardiness, <i>Arneis</i> should be grown only on best sites. Limited commercial planting in Ohio
<i>Auxerrois</i> (W)	Moderately tender	Midseason	6b N	Productive and ripens well, lower acidity	Thin skin, susceptible to bunch rot
<i>Cabernet franc</i> (R)	Moderately tender	Late season	6b	Flagship red cultivar for Ohio. Good hardiness, ripens well under Ohio conditions	Overcrops easily, poor color development and herbaceous flavors in some years
<i>Cabernet Sauvignon</i> (R)	Tender	Very Late	6b	Complex tannin development in good years, clusters resistant to rot, important component in Bordeaux blends	Should be grown only on best sites, requires a long growing season
<i>Chardonnay</i> (W)	Moderately tender	Late Midseason	6b	Productive, reliable, and adaptable to cool and warm ripening period	Early bud break and prone to spring frost
<i>Dolcetto</i> * (R)	Tender	Late Midseason	6b	Highly productive with large clusters. Excellent wine quality from OSU trials	Tendency to overcrop, thus requires cluster thinning. Berry shriveling at fruit maturity. Should be grown only on best sites. Limited planting and experience in Ohio
<i>Gamay noir</i> * (R)	Moderately tender	Midseason	6b N	Compared often to Pinot noir, but it is easier to grow, has better winter hardiness, better color and ripens earlier, promising cultivar for Ohio. Like Pinot noir, Gamay is best suited to cooler climate of northern Ohio	Early budbreak. Tends to overcrop, thus cluster thinning is sometimes required. Limited planting and experience in Ohio

## Suggested Vinifera Cultivars for Ohio (cont'd)

Grape Type / Cultivar	Winter Hardiness	Ripening season	Regions grown / suggested	Strengths	Weaknesses
<i>VINIFERA</i>					
<i>Gruner Veltliner*(W)</i>	Tender	Late season	6b	Productive even after frost, ripens well under Ohio conditions, potential for still and sparkling wines, promising cultivar for Ohio	Limited planting in Ohio
<i>Lemberger (R)</i>	Tender	Late Midseason	6b	Productive, excellent potential for rosé or red wine	Vigorous, requires cluster thinning, prone to fruit rot, susceptible to crown gall
<i>Malvasia bianca*(W)</i>	Tender		6b	Very productive, large berries and clusters. Outstanding and consistent fruit and wine quality with Muscat flavor. Performed well in OSU trials	Winter tender, only for the best sites. Susceptible to bunch (sour) rot in wet years. Limited experience in Ohio
<i>Kerner*(W)</i>	Tender	Early-Midseason	6b N	Consistent yields, loose clusters (no rot issues), ripens earlier and more evenly than Riesling, medium to high acidity, wines reminiscent of Riesling. Performed well in OSU trials	Cool climate cultivar with early ripening thus best suited to northern Ohio. Lack of industry interest, and therefore, limited in commercial plantings in Ohio
<i>Merlot (R)</i>	Very tender	Late mid-season	6b S	Excellent wine quality and blending component of Bordeaux wine style	Very winter tender among Vinifera, suited only to the best sites
<i>Petit verdot (R)</i>	Moderately tender	Very Late	6b S	Excellent tannin structure, blending potential is very good	Very late ripening, suitable to long and warm growing season
<i>Pinot gris (W)</i>	Tender	Mid-season	6b N	Reliable, productive, well established reputation in Ohio, adaptable to many wine styles	Prone to fruit rot, requires intensive shoot and crop load management
<i>Pinot noir (R)</i>	Tender	Late Mid-season	6b N	Clonal selection and mixing 3+ clones are important for success	Prone to fruit rot, requires intensive crop and canopy management to avoid uneven ripening, low yield may not be economical for some operations

## Suggested Vinifera Cultivars for Ohio (cont'd)

Grape Type / Cultivar	Winter Hardiness	Ripening season	Regions grown / suggested	Strengths	Weaknesses
<b>VINIFERA</b>					
<i>Pinotage</i> * (R)	Tender	Mid-Late season	6b	Productive, easier to grow than Pinot noir (parent) on VSP with less compact clusters thus no fruit rot.	Winter tender and very susceptible to crown gall. Thus, suitable only to the best sites. Inconsistent wine quality. For quality control, fruit maturity is critical to avoid high pH and poor wine quality. Needs further evaluation
<i>Riesling</i> (W)	Moderately tender	Late season	6b N	Flagship white cultivar for Ohio. One of the hardiest vinifera cultivars, and one of the best white wines produced in Ohio	Susceptible to bunch rot due to tight clusters, requires long cool ripening season thus wine quality suffers in warm sites
<i>Sauvignon blanc</i> * (W)	Tender	Mid-season	6b	Performed well in OSU trials with consistent high-quality fruit and wine over the years, productive (>5tons/acre), differential clonal performance. Very promising future in Ohio	Vigorous and best suited in less fertile soils. Winter tender, thus planted only on the best sites. Choosing a suitable clone is critical for winter hardiness. Limited commercial experience in Ohio
<i>Siegerrebe</i> * (W)	Moderately tender	Early season	6b N	High yield with large clusters. Excellent flavor of fruit and wine. Better winter hardiness than many tender and very tender vinifera cultivars	Very early ripening thus only suitable in northern Ohio on best sites. Susceptible to animal depredation. Unique Muscat flavor may not be desirable. limited commercial experience in Ohio
<i>Syrah (Shiraz)</i> * (R)	Very tender	Late Mid-season	6b S	Productive, good wine quality	Among the most winter tender Vinifera cultivars, thus planted only on the best sites, limited planting in Ohio
<i>Teroldego</i> * (R)	Tender	Late season	6b	Good to high quality wine from OSU cultivar trials, deeply colored red-wines with intense fruity characteristics and ripe tannins.	Winter tender, only for the best sites, susceptible to bunch rot. Limited commercial experience in Ohio
<i>Viognier</i> * (W)	Tender	Midseason	3b	Good demand, excellent fruit quality, good bunch rot resistance	Early bud break, weak growth, modest yields linked to bud necrosis

## Suggested Hybrid Cultivars for Ohio

<b>Grape type / cultivar</b>	<b>Winter Hardiness</b>	<b>Ripening season</b>	<b>Regions grown / suggested</b>	<b>Strengths</b>	<b>Weaknesses</b>
<b>HYBRID</b>					
<i>Aromella (W)</i>	Hardy	Mid-season	6a, 6b	Excellent Muscat flavor wine, highly productive, clusters are large and loose, more cold hardy than parent Traminette	Highly vigorous, occasional leaf phylloxera problems, observed berry shatter in dry hot years, sensitive to auxin-type herbicide drift.
<i>Cayuga white (W)</i>	Moderately hardy	Mid-season	6a, 6b	Cold hardy, disease-resistant, high yields, good wine quality	Overripe fruit produces wine with strong labrusca character, should be picked before full maturity, excessive vigor in fertile sites
<i>Chambourcin (R)</i>	Moderately tender	Late season	6a, 6b S	Productive, moderate vigor, good resistance to bunch rot and downy mildew, high wine quality, perhaps the highest quality among red hybrids	Overcrops, thus requires cluster thinning, requires long season and heat units (>2700 GDD) for best wine quality, sensitive to sulfur
<i>Chardonel (W)</i>	Moderately hardy	Late Mid-season	6a, 6b S	High yields, loose clusters, less susceptible to bunch rot than parents Chardonnay & Seyval, more cold hardy than Chardonnay. Best in warmer regions where Chardonnay is not suitable	Less hardy than Seyval, susceptible to crown gall in wet sites, susceptible to root Phylloxera and fan leaf virus and thus should be grafted
<i>Corot noir (R)</i>	Moderately hardy	Late Mid-season	6aa, 6 b	Very productive, good powdery mildew and Botrytis rot resistance, wines are free of the hybrid aromas typical of many red hybrid grapes, suitable for either blending or the production of varietal wines	Vigorous and productive, cluster thinning is usually required to avoid overcropping. Susceptible to downy mildew and Phomopsis. Tendency to produce secondary crop on summer laterals
<i>Frontenac (R)</i>	Very hardy	Late season	5b, 6a	Very winter hardy (< -30F), productive, loose clusters, very resistant to downy mildew, High sugars, unique flavor attributes (cherry, plum, blackberry and black current), makes excellent port- and rosé -style wines	Susceptible to foliar phylloxera, requires thinning, may require blending due to the high acidity of wine.

## Suggested Hybrid Cultivars for Ohio (Cont'd)

<b>Grape type / cultivar</b>	<b>Winter Hardiness</b>	<b>Ripening season</b>	<b>Regions grown / suggested</b>	<b>Strengths</b>	<b>Weaknesses</b>
<b>HYBRID</b>					
<i>Frontenac gris (W)</i>	Very hardy	Late season	5b, 6a	Similar vine performance to Frontenac. Very winter hardy, promising wine quality	High acid, limited experience in Ohio
<i>Frontenac blanc* (W)</i>	Very hardy	Late season	5b, 6a	Similar vine performance to Frontenac. Very winter hardy, promising wine quality	Limited experience in Ohio
<i>Itasca* (W)</i>	Very hardy	Early season	5b, 6a	Among the most cold hardy Minnesota cultivars, very productive, moderate acidity level conducive for drier wine styles, disease and foliar phylloxera resistance, promising wine quality	Early bud break, high vigor, limited experience in Ohio
<i>La Crescent (W)</i>	Very hardy	Midseason	5b, 6a	Among the most cold hardy cultivars grown in Ohio. Moderate disease resistance, loose clusters. Excellent wine quality with Muscat flavor	Fruit shatter at maturity in some years, sensitive to auxin-type herbicide drift.
<i>Marechal Foch (R)</i>	Very hardy	Early season	5b, 6a	Very winter hardy, medium vigor, early ripening, adapts to short growing season in northern Ohio, good wine quality	Tight clusters, very susceptible to bird damage, sensitive to sulfur, uncertain future demand
<i>Marquette (R)</i>	Very hardy	Midseason	5b, 6a	Cousin of Frontenac and grandson of Pinot noir. Very winter hardy. Good resistance to downy, powdery, black rot, good wine quality, finished wines are of good quality with no hybrid flavor but desirable aromas of cherry, berry, and black pepper. Performed well in OSU trials	Early budbreak thus susceptible to spring frost, early ripening thus should be grown in northern Ohio (GDD < 3000), prone to late-season berry shrivel, high pH in fruit and wine, inconsistent quality

## Suggested Hybrid Cultivars for Ohio (Cont'd)

Grape type / cultivar	Winter Hardiness	Ripening season	Regions grown / suggested	Strengths	Weaknesses
<b>HYBRID</b>					
<i>Noiret (R)</i>	Moderately Hardy	Late Mid-season	6a, 6b	Relatively easy to grow, productive, requires minimum canopy management. Resistant to powdery mildew and Botrytis bunch rot. Wine richly colored and has notes of green and black pepper, tannin structure, no hybrid flavor	Performs poorly on VSP thus should be grown on high cordon training system. Good alternative to Chambourcin for northern Ohio
<i>Petite Pearl* (Red)</i>	Very hardy	Mid-late season	5b, 6a	Later bud break than other similar cold hardy cultivars, productive secondary buds, moderate vigor, good mildew and rot resistance, moderate acidity with higher tannins for drier red wine styles, promising wine potential	compact, very dense clusters. Limited experience in Ohio.
<i>Regent* (R)</i>	Moderately tender	Early-midseason	6b N	Moderately disease resistant, productive and easy to grow on VSP. Dark red wine, full bodied, Bordeaux style, gaining popularity in Ohio. Performed well in OSU trials.	May require cluster thinning. Due to its early ripening, it is best suited to regions with < 3000 GDD. Good alternative to Chambourcin for northern Ohio
<i>Valvin Muscat (W)</i>	Moderately hardy	Mid-late season	6a, 6b	Produces excellent, high quality muscat wine, without bitterness, that may be made into a dessert wine or used in blending	Low vigor, thus consider grafting in less fertile soils and plant with closer vine spacing
<i>Vidal (W)</i>	Moderately hardy	Late season	6a, 6b	Productive, large and loose clusters with thick berry skin, easy to grow, good resistance to bunch rot, late bud break thus less prone to spring frost injury. Versatile wine styles including ice wine.	Tends to overcrop, thus cluster thinning is sometimes required, susceptible to viruses (tomato and tobacco ring spot) and, therefore, should be grafted
<i>Vignoles (W)</i>	Hardy	Midseason	6a, 6b	High quality wines, especially dessert wines, late bud break	Moderate vigor and low yields, very susceptible to bunch (sour) rot due to tight clusters, uncertain future demand

## Suggested American (Heritage) Cultivars for Ohio

Grape type / cultivar	Winter Hardiness	Ripening season	Regions grown / suggested	Strengths	Weaknesses
<b>AMERICAN</b>					
<i>Catawba (R)</i>	Hardy	Late season	6a, 6b	Used for wine and sherry, historically significant to Ohio	Uncertain future demand
<i>Concord (R)</i>	Hardy	Late season	6a, 6b	Number one grape grown in Ohio (acreage and production) for juice production, well adapted to Ohio climate and soils	Early bud break thus susceptible to spring frost injury, sensitive to sulfur, decline demand, and not economical to plant for wine production with current pricing
<i>Delaware (R)</i>	Hardy	Mid-season	6a, 6b	Produces pleasant wines, originated from Ohio thus historically significant	Uncertain future demand
<i>Niagara (W)</i>	Hardy	Late Mid-season	6a, 6b	Used for wine and white juice, cream sherry is excellent	Strong labrusca flavor, limited market and uncertain future demand, susceptible to crown gall
<i>Norton (Cynthiana) (R)</i>	Hardy	Very Late	6b S	Excellent cold hardiness, high fruit and wine quality, excellent disease resistance, requires the lowest pesticide input among all commercial grape cultivars, increased demand by wineries, promising future in southern Ohio	Low yields, should be trained on Geneva Double Curtain in fertile soils, shoot positioning and leaf pulling is required to lower pH and K in the fruit and wine, sensitive to sulfur and auxin-type herbicides