

## Practice

### Economics

Business planning, finances, and management are key components of a sustainable business model. The development of a business plan includes defining mission and goal statements, market research and strategies, management strategies, and economic forecasting and planning. Even an established business can benefit from the process of updating its business plan. Financial and management considerations include business loans, crop insurance, and regulatory compliance. While the planning and management of a viable business can seem overwhelming, there are many resources to guide entrepreneurs through the economic decision-making processes:

#### Small Business Resources

- Two guides for wine business plans are available from Dr. Gerald White of Cornell University linked at [wine.appstate.edu](http://wine.appstate.edu): [Writing a Business Plan, A Guide for Small Premium Wineries](#), and [An Example for a Small Premium Winery](#).
- The [SCORE](#) network, a nonprofit association of retired entrepreneurs dedicated to helping small businesses start, grow, and succeed nationwide, also provides business planning templates online. Local chapters provide free business mentoring.
- NC State University's Agricultural and Resource Economics program has developed [Crop Budgets](#) for muscadine grapes.
- The Washington Vinewise program provides detailed [checklists](#) to guide vineyard managers through business planning and financial decision-making.
- Licensing and Permits: see the North Carolina ABC board's page on [permits](#).
- The NC Department of Commerce's [Business Link NC](#) is a comprehensive business development resource for North Carolina businesses including wineries. Check out their website or see this [Overview of Business Financing Resources](#) presented by Business Link NC Manager Briles Johnson at ASU's Wine Business workshop held in May 2011.
- The CAN [Capital Access Network](#) is one such business financing resource.
- The [Small Business Center Network](#) is a community-based provider of training, counseling, and resource information comprised of 58 Small Business Centers throughout NC.
- [Small Business & Technology Development Center](#) offers training and education for business startups with local offices connected to the state's public universities.

#### **Marketing Strategy**

- Product strategy examines the products being sold, packaging, and position in the market.
- Pricing strategy discusses various methods of formulating price strategy and looks at the impact prices have on customers and profitability.
- Promotion strategy focuses on getting your product known. It examines promotional techniques such as advertising, public relations, sales promotions, and networking.
- Place strategy examines various distribution channels and discusses activities involved in moving goods from the producer to customer.

*Dr. Gerald White, "A Wine Marketing Plan That Supports Cash Flow."  
 Full presentation available at <http://wine.appstate.edu>*

## Environment



Organic and sustainable agriculture systems focus on identifying natural (as opposed to synthetic) methods of pest and disease prevention and control, as well as natural sources of plant nutrition. Agricultural decisions to pursue sustainable viticulture begin as early as vineyard establishment and varietal choice. Annual attention is then paid to soil health and water stewardship, pest and disease management, observation and education, and encouraging biodiversity in the vineyard.

### Vineyard Establishment

Planning, including appropriate site and varietal selection, contributes greatly to reducing disease and pest pressures.

Considerations for site location and preparation include:

- Check for hardpan layer in soil before planting.
- Soil testing for pH, mineral content, and potential biological problems will allow you to make amendments to soil before vines are placed.
- Landscape's aspect, altitude, and potential frost pockets
- Soil drainage
- Wind and sun exposure
- Humidity
- Plant only disease-free material.

### Varietals

Grape varietals differ substantially in their resistance to certain diseases and climate conditions. Muscadine grapes, which are native to North America, are grown widely in warmer areas of the North Carolina, but few of these varietals will survive the cooler temperatures of Western NC. European varietals are not grown commercially in warmer regions due to the risk of Pierce's Disease (PD), which is fatal to grapes. For more on the disease see the Texas [PD Research and Education Program](#), and California's [PD Control Program](#).

#### **Vineyard Establishment: Grower suggestions**

##### **Pat Colwell, Carolina Heritage, Elkin, NC**

Sites to best address these challenges (humidity and inconsistent weather year-to-year)

- >1000 ft altitude
- Sloping land
- Good airflow
- Open area with natural buffers on sides of property
- Ample water supply
- Good clay/loam soil
- No recent history of grape insect/disease issues

##### **Ed Boyce, Black Ankle Vineyards, Mount Airy, MD**

- Low vigor, well drained soils with low water holding capacity
- Windy site
- Low vigor, short season rootstocks
- Quality plant material - Test every graft union
- Tight spacing

Ed adds: "I believe Sustainability is more important for the Eastern US than any other wine growing region. Most of the work needed to achieve higher quality grapes also makes it possible to be more sustainable in the vineyard. Knowledge (along with wind and sun) are your best tools."

### Grower Suggestions for Native and Hybrid Grapes

*Pat Colwell of [Carolina Heritage Vineyard and Winery](#), Elkin NC provides these suggestions for choosing varieties for organic vineyards in NC:*

Grapes which are best suited for micro-climate of location

# Growing-degree-days (GDD)

Varieties with early budbreak ⇔ Location with late spring frosts?

Varieties which ripen early ⇔ June Bug Infestations?

Varieties which ripen late ⇔ Location with early autumn frosts?

Native grapes: Natural defenses against native pests and diseases

Muscadines: Not all varieties are cold-hardy (ie. < 9 degrees F)

Not all varieties make good wine, etc

Native hybrids (eg. Norton): Sometimes a bit challenging to get started

European/American Hybrids: more disease/pest tolerant

*Chuck Blethen, [Jewel of the Blue Ridge Vineyard & Greenhouse](#), Marshall, NC, is an advocate for cold-hardy muscadines, and reports that:*

“Katauh Muscadines are cold-hardy to at least 0°F. They will grow best at elevations above 1600 feet - tested to up to 4200 feet. They are disease resistant to Black Rot and Downey Mildew. Totally immune to Phyloxera.”

Popular muscadine cultivars grown in North Carolina include Carlos, Noble, Doreen, and Magnolia. Find out more about growing muscadine grapes at NC State’s [Muscadine Grapes](#) page.

French-American hybrid grapes are bred to be more disease tolerant than European varieties. Newer cultivars have also been bred to reduce some of the “foxy” flavors often attributed to hybrid grapes and have good commercial potential.

Popular hybrids grown in North Carolina and other East Coast viticultural areas include Seyval blanc, Traminette, and Vidal blanc (whites), as well as Frontenac, Chardonnay, and Chambourcin (reds). For more on hybrids see “[Interspecific Hybrid \(French-American\) Wine Grapes](#)” by Eric Stafne of Mississippi State University via the eXtension online network for the Cooperative Extension Service, or Cornell’s extensive [research](#) on disease and cold tolerances in wine grape varieties.

Although muscadine and hybrid grapes are more disease resistant than European varieties, vineyards across the East Coast have shown that vinifera can be grown successfully with sustainable practices in regions previously considered too challenging. Successful brands such as [McRitchie Winery and Ciderworks](#) (NC), [Black Ankle Vineyards](#) (MD), [Red Tail Ridge](#) (NY), and [Shinn Estates Vineyards](#) (NY) have shown that a range of sustainable agricultural practices are viable for vinifera grapes in the east.



The following chart is adapted from Cornell’s [“Relative susceptibility of wine and juice grape varieties to low temperature injury, disease, and leaf damage resulting from sulfur applications.”](#)

Established Low and Moderate Susceptibility in Wine Grape Varietals				
Black rot	Downy mildew	Powdery mildew	Winter Hardiness*	Winter Hardiness*
"+"	"+"	"+"	"Slightly Hardy"	"Hardy"
Cascade	Colobel	Cayuga White	Chambourcin	Ives
Cayuga White	Horizon	Traminette	Baco noir	LaCrosse
Chancellor	LaCrosse	Isabella	Dutchess	Léon Millot
Chelois	Léon Millot	Chambourcin	Colobel	Maréchal Foch
De Chaunac	Ravat 34	Melody	Villard blanc	Concord
Elvira	Saint Pepin	Ives	Vidal blanc	Fredonia
Fredonia	Villard noir	"++"	Cabernet franc	Catawba
Ives	Vincent	LaCrosse	Siegerrebe	Delaware
Traminette	Cascade	Léon Millot	White Riesling	Horizon
Vidal blanc	Chelois	Ravat 34	"Moderately Hardy"	Saint Pepin
Vignoles	Frontenac	Vincent	Cayuga White	Esprit
"++"	Maréchal Foch	Cascade	Traminette	"Very Hardy"
Chardonnay	Baco noir	Frontenac	Isabella	Frontenac
Delaware	Concord	Maréchal Foch	Melody	Saint Croix
Frontenac	Moore's Diamond	Baco noir	Ravat 34	Elvira
Isabella	"++"	Concord	Vincent	Ventura
Maréchal Foch	Chardonel	Saint Croix	Cascade	
Merlot	Esprit	Elvira	Vivant	
Rougeon	Saint Croix	Vivant	Niagara	
Ventura	Villard blanc	Dutchess	Villard noir	
Vivant	Cayuga White	Fredonia	Chelois	
	De Chaunac	Catawba	Moore's Diamond	
	Elvira	Niagara	Chardonel	
	Traminette	Delaware	De Chaunac	
	Vidal blanc		Vignoles	
	Vignoles		Aurore	
	Isabella		Seyval	
	Ventura		Chancellor	
	Vivant		Rougeon	
	Aurore			
	Chambourcin			
	Dutchess			
	Melody			
	Seyval			

Key: + = slightly susceptible or sensitive, ++ = moderately susceptible or sensitive

## Soil Health and Water Stewardship

Natural soil amendments such as compost provide bio-accessible nutrients and can improve soil structure, allowing for both improved water drainage and retention in the vineyard. Increasing organic matter also feeds the microbial organisms that are vital to the healthy functioning of nutrients and balance of disease and pest levels in the soil. These amendments can often be prepared on site. For practical information on composting see the article “[Compost Use in Vineyards](#),” by Fritz Westover of Texas AgriLife Extension provided by the eXtension network; for details on the myriad of life that supports soil health, see the “[The Living Soil](#)” descriptions posted by Soil Food Web Oregon and Dr. Elaine Ingham.

A well-chosen cover crop can reduce the pollution of waterways by soil erosion, contribute to increased organic matter and structure in soil, compete with weeds, and encourage biodiversity. In order to reduce soil erosion and runoff, many growers utilize cover crops between-row and under-vine and avoid herbicides when possible. Resources on cover crops include the [Overview of Cover Crops and Green Manures](#) from the National Sustainable Agriculture Information Service, and the University of California publication, [Cover Cropping in Vineyards](#).

### **Choosing a Cover Crop and Management System**

Criteria that should be considered when choosing cover crop species and a management system for a particular site include:

- Soil erosion considerations
- Relative vigor of the vineyard
- Soil moisture availability
- Frost hazard
- Pest management objectives
- Aesthetics
- Ease of maintenance
- Cost of seed and planting.

*Ingles and McGourty, [Cover Cropping in Vineyards: A Grower's Handbook](#), 44*

## Pest and Disease Management

Efficient management or exclusion of synthetic inputs including pesticides, herbicides, and fertilizers is the foundation of most sustainable viticulture programs. This entails introducing Integrated Pest Management (IPM) into your practices with frequent vineyard monitoring (e.g. weekly) of pest activity. In addition to limiting ecological harm from synthetics, the reduction of broad-based pesticides can encourage beneficial predators. Cultural techniques such as canopy management to encourage adequate airflow, cane pruning, and removing old wood from the vineyard can help reduce disease pressure.

Extension professionals can help with pest identification if you run into something you don't recognize. The NC State [plant pathology clinic](#) will evaluate high-quality digital pictures of diseased plant material as well.

Resources for Pest and Disease Management include:

- The [NC Small Fruit and Specialty Crop IPM](#) blog. Entomologist Dr. Hannah Burrack's informative blog on managing insects in commercial small fruits production.
- Cornell's [IPM for grapes guide](#).
- Ohio State University's “[Organic Small Fruit Disease Management Guidelines](#)” by Mike A. Ellis and Mizuho Nita.
- For a practical example, see our website for an “[average year](#)” [spray schedule](#) from Black Ankle Vineyards.



## Whole Farm Ecosystem Management

Beneficial organisms from microbes to mammals can help control vineyard pests. Parasite, predators, and competitor species can mitigate pest populations when given sufficient habitat and not threatened by broad-spectrum insecticides or other hazardous inputs.



Examples include:

- Encourage biodiversity by removing broad-spectrum insecticide and herbicide use.
- Provide habitats for beneficial organisms: this can be as simple as introducing cover crops between rows or as involved as installing blue bird and owl boxes, or introducing beneficial nematodes to the soil. A study published in 2001 found that fewer leafhoppers and thrips were found (as well as higher density of predatory insects) in vineyard rows within 20 to 30 meters of a wildflower corridor composed of flowering plant species which cut across the vineyard connected to a surrounding riparian habitat (Nicholls et al 2001).
- Crop diversity and rotation, achieved in the vineyard through cover cropping between rows.
- Use of Integrated Pest Management.
- Improving operating efficiency through the use of appropriate sprayers/attachments will limit over-application, waste, and reduce fuel usage.
- Consider using biodiesel when/where applicable. Black Ankle Vineyard of Maryland, for example, powers their [tractors with biodiesel](#).

## Observation and Education

Knowledge and observation of the disease and pest challenges in your vineyard allows you to promptly address challenges in the vineyard, avoiding unnecessary sprays. Regular scouting to locate and track disease/pest occurrences in the vineyard, and monitoring their development (increase, peak, decrease) in relation to the economic threshold for treatment are key to managing a thriving sustainable system.

## Community

Maintaining a business' sustainability in regards to the people and community who interact with it involves careful thought and action in employment practices, human resources, employee training, and consideration of neighboring property owners. Social equity in employment and human resources encourages consistency and engagement in your workforce. Many businesses also become actively involved in the local community. The establishment of AVAs are an example within the wine community of group engagement that benefits all the participants.

**Grower Example: [Benjamin Vineyards & Winery](#), Saxapahaw, NC**

***Social Equity:*** At Benjamin Vineyards, we believe in giving back to the community. Nancy is on the board of directors of the Chapel Hill-Carrboro Public School Foundation and is on the Board of Directors of the Haw River Assembly. She serves as the secretary for the Carrboro Farmers' Market Board of Directors. Andy is past-President of the Hawbridge School Board, a Saxapahaw environmental charter school and serves on the Board of Directors of the Durham and Pittsboro Farmers ' Market. We allow local non-profit charitable organizations use of our facilities for fundraising and contribute a percentage of our gross revenues to local charities.

Examples include:

- Have a system in place to address employee conflict and concerns.
- Making sure employees are properly trained to do their jobs safely.
- Reduction of pesticide and herbicide use improves quality of life of vineyard employees as well as the environmental health of the vineyard.
- Providing adequate water and shade to vineyard employees.
- Maintaining open communication with vineyard neighbors to prevent or address complaints regarding sprays, noise, etc.
- Making community associations and contributing to local events can lead to mutually beneficial relationships down the road.

**Components of an [employment plan](#) from the Washington State Vinewise program:**

- Ethics
- Cultural responsibility/sensitivity
- Communication
- Expectations
- Safe work environment
- Proactive
- Source of labor pool
- Hiring procedures
- Documentation
- Orientation
- Disciplinary action

*See more suggestions for sustainable Human Resources management at <http://www.vinewise.org>*

## Vineyard Examples

### [Carolina Heritage Vineyard and Winery](#), Elkin, NC

The Colwells of Carolina Heritage Vineyard and Winery in Elkin, North Carolina, maximize their grapes' potential by selecting a site with ideal soil, sun, and air characteristics. They chose to pursue naturally disease and pest resistant hybrid and native grape varieties. Their winery is also one of the first in North Carolina to utilize a solar power system.



### [Benjamin Vineyards and Winery](#), Saxapahaw, NC

Sustainable economics, environment, and community engagement are all integrated into winemaking for Andy Zeman and Benjamin Vineyards. From composting vineyard wastes to participating in the local Chamber of Commerce, the winery shows a commitment to environmental stewardship, social equity, and economic viability.

### [Black Ankle Vineyards](#), Mount Airy, MD

Black Ankle owners Ed Boyce and Sarah O'Herron paid great attention to site selection before planting their vineyard. Setting the vineyard in a soil type, altitude, and location with appropriate sun exposure and air circulation has given them a great advantage in improving their vines' resistance to pests and disease pressure, thereby reducing dependence on synthetic inputs.



*Composting at Black Ankle*



### [Shinn Estates Vineyards](#), Long Island, NY

Despite the often-cited misconception that *vitis vinifera* cannot be grown organically on Long Island due to humidity and disease pressure, Barbara Shinn and David Page of Shinn Estates continue to make quality wines from their grapes grown only with natural inputs. In the Shinn vineyard, various species of cover crops planted between rows year round build and protect the soil and encourage biodiversity. Compost, compost tea, and other natural amendments provide nutrients to soil and vines. Much of the compost and compost teas are created on-site. Frequent scouting and thorough vineyard monitoring allows Shinn to stay one step ahead of disease and pest pressures.