SDSU Extension

viticulture

NOVEMBER 2019

SOUTH DAKOTA STATE UNIVERSITY®
AGRONOMY, HORTICULTURE & PLANT SCIENCE DEPARTMENT

Starting a Commercial Vineyard in South Dakota

Rhoda Burrows | Professor & SDSU Extension Horticulture Specialist

Are you thinking of starting your own vineyard? The wine industry in South Dakota has experienced steady growth over the past 20 years, and demand for locally-grown high quality wine grapes is strong. In addition to the potential market opportunities, some people are attracted to grape growing because they like working outdoors, enjoy working with plants, and enjoy wine. Grapes may be a good alternative crop to traditional agronomic crops, especially on land that is marginal for cultivation. This publication provides a brief overview of the issues you need to consider in determining whether grape growing might be a good fit for you.

Vineyard in western South Dakota.

What You'll Need

Whatever your reasons for thinking about starting a grape vineyard, success in grape growing requires knowledge in all phases of plant production, pest management, post-harvest handling of fruit, business-planning and marketing. Contrary to the expectations of some prospective growers, growing grapes requires hard work and long hours in the vineyard.

To be successful at grape growing, you will also need to be able to manage finances, employees, and marketing. Grape growing requires a relatively large initial capital investment: $10,000 or more per acre to cover the cost of equipment, planting stock, supplies, and labor. Consult your banker or FSA lending agent about financing options. Some low interest loans may be available if you qualify as a first time or disadvantaged farmer, small business, etc.

If your experience is limited, you can gain valuable experience by working for a reputable grower. Many well-established growers use seasonal help, especially for pruning and harvesting. This experience is invaluable training for establishing your own vineyard.

If you decide to start a vineyard, you will need to make objective decisions on a wide array of factors affecting your venture. To start with, you should develop a business plan or prospectus. A written business plan is really a road map to business success, a set of guidelines for setting up and operating your vineyard business. In addition to helping you make sound decisions, an organized, comprehensive business plan will greatly enhance your chance of successfully arranging financing from banks or other lenders.

Selecting a Site

Site selection is one of the most important decisions a grower will make. The key to success in a vineyard operation is consistent production of high quality grapes, and that requires a good site. Conversely, a poor site can result in poor fruit quality, poor yields, or even vineyard failure.

There are three primary environmental concerns in site selection: temperatures, air movement, and soil drainage. Severe mid-winter cold can result in extensive bud, cane and even root injury. Sudden onset of very low temperatures in the fall can cause

damage to tissues that have not had a chance to fully harden. Similarly, freeze or frost injury can occur when fluctuating temperatures in late winter lead to deacclimation and early bud break. Do not plant in low areas such as river valleys where cold air settles and late spring or early fall frosts are much more likely. South-facing slopes should also be avoided for varieties such as Marquette or LaCrescent, which are among the first to break bud in the spring, and therefore are more vulnerable to spring frost damage. Another factor to consider is whether there is a history of frequent hailstorms in the area.

The presence of nearby crops or roadsides that will be sprayed with phenoxy-type herbicides is another potential risk, as grapes are very sensitive to these chemicals. Spray drift is a very real hazard, since the chemical drift can be carried by wind for a mile or more, especially if applied by airplane. Damage from these sprays can result in lowered fruit quality, crop loss over one or more seasons, and even vine death.

Most sites will require fencing to exclude deer, which can devastate a vineyard. Fencing assistance is sometimes available from South Dakota Game Fish & Parks.

Determine if irrigation water is available – new vineyards almost always require supplemental water as their roots are becoming established, and in a dry year, even established vineyards will require supplemental water.

Soils

Grapes are adapted to a wide range of soil types, but perform best in soils with good aeration, loose texture, low to moderate fertility, good internal and surface drainage, and adequate depth (preferably 30 to 40 inches). Soil drainage is critical for successful grape growing; a well-drained sandy loam is ideal. Soils that are consistently wet probably have impervious subsoil, high water table, or other drainage problem and should be avoided. Root growth is restricted on poorly drained soils, so plant growth and fruit yields are generally low, and vine survival is limited to a few years. Installation of drainage tile can greatly improve some sites for production of grapes and other fruit crops, but can be costly and is not necessarily a substitute for well-drained soils. The USDA Natural Resources Conservation Service can provide advice on dealing with drainage problems and has detailed maps available online that are helpful in determining the suitability of soils for grape production.

Be sure to take a soil test (see Additional Resources for more information). Soil tests can help you determine the site's pH and organic matter, among other characteristics. Soils with very high organic matter (5% or greater) are generally unsuitable, as they provide too much nitrogen to the plants, resulting in poor fruit quality, and the possibility that vines may not harden off properly for winter. A soil pH of 6.5 to 7.0 is ideal, but some vineyards have soils as high as 7.8 pH.

Cultivar Selection

Most vineyards in South Dakota produce grapes for use as wine, although smaller vineyards may also produce grapes for jams or jellies, or even for direct sale to consumers. There are currently no vineyards producing specifically for table grapes, in part because quality seedless grapes are not reliably cold-hardy. Most vineyards market their grapes directly to wineries as fresh fruit.

Cultivar selection should be based both on cultivar adaptation and market demand. Growers planning to sell their grapes to a winery should contact the winery or wineries prior to planting to find out what cultivars they are interested in buying in the future, as desired cultivars change over time. Winter temperatures in South Dakota limit grape production to hardy hybrid cultivars; the European vinifera cultivars are not hardy enough for successful commercial production. All the named cold-hardy cultivars are self-fruitful with the sole exception of "St. Pepin" which requires a second variety for pollination. The native Vitis riparia grape has separate male and female plants.

There are a variety of hardy cultivars available; in addition to consulting with prospective grape buyers, contact SDSU Extension for a current list of recommended cultivars. A beginning producer should select early-maturing grape cultivars that are known to have good cold hardiness. The southern half of the state with its longer growing season and less damaging winter temperatures is better suited for grape production; growers in the northern areas will need to be very careful in both site and cultivar selection.

Growers should start with a small planting of two

or more varieties, and observe each cultivar's characteristics and its interaction with the particular site, before planting on a large scale. Once that information is gained, it is better to concentrate on growing more vines of each of a few selected varieties rather than a broad selection of cultivars, as wineries will want to purchase larger quantities of a single type of fruit rather than a less predictable blend.

Vines and cuttings should be purchased from licensed nurseries to avoid importing insect and disease problems, and to assure that if the cultivars are patented they have been legally propagated.

Trellis Systems

Trellises are best installed before or at latest shortly after planting the vines. See Additional Resources for more information on the various types of training systems and trellis details. It is critical that trellises be built with heavy gauge wire and strong bracing (earth anchors are recommended) to hold a heavy crop load and withstand strong winds. Steel posts will outlast wood, especially if the wood is not treated.

Fruit Quality

Fruit quality is extremely important to the winemaker, and bonuses are often paid for fruit with high quality. In order to produce high quality fruit, producers must be able to identify and control various grape diseases and insect pests, protect the fruit from birds and other predators, and manage vine growth and fruit load for optimal flavor development. Growers also need to understand common ripeness parameters such as Brix, pH and titratable acidity as grapes must be harvested when fruit quality is at its peak for the desired wine type. It is desirable to develop a close association with the winemaker and include them in crop management decisions, including picking date.

Economics

Grape growing can be profitable if production is consistent and price and demand remain high. Variable costs (not including land and equipment expense) are about $8,000 per acre over a three-year period to bring an acre of grapes into production. It will take 4 to 5 years for new vines to come into full production. Once in production, an acre of grapes should cost about $1,500-$2,000 per year to manage and can bring gross returns of $2,500 to $6,000 annually. Annual returns depend on yield and price. Yield is dependent on the suitability of the site, the cultivar, management practices, and the weather. Yield must be balanced against vine growth for both fruit quality and longevity of the vine. Price is related to availability, demand, quality, and marketing expertise. Budget templates are available online to calculate an individual vineyard's variable costs.

Timeframe for Establishment

Vineyard establishment is a long process. Ideally, site preparation for the vineyard should begin the season before planting, with any needed amendment of soils, and control of existing perennial weeds, etc. If the existing vegetation is to be replaced, an annual cover crop can be planted to reduce weeds and erosion, and then the permanent cover crop seeded in early fall before planting the vines the following spring.

Labor Requirements

The number of employees needed to manage a vineyard will depend on the acreage. Once the vineyard is established, one fulltime person can handle most of the management for up to 6 acres, with help seasonally for pruning and harvest. For larger vineyards, help will be needed for most vineyard management tasks. The vineyard business is inherently a seasonal activity that makes it ideal for added seasonal and part-time labor (e.g. migrant workers, students, retirees, etc.).

Establishing the vineyard will require extra time for marking rows, setting up irrigation, and of course trellis construction, in addition to the actual planting process.

Where to Go for Help

The best approach to starting in grape growing is to first acquire as much knowledge as possible about the grape and wine industry, business management, vineyard management, and marketing. Many resources are available to aid you in this process. Printed publications, web sites, one-on-one consultations, site visits, workshops, and conferences are all available educational opportunities. As stated above, visiting and even working with experienced growers can help immensely. Your SDSU Extension Horticulture specialist can also assist you with interpreting soil and tissue tests, and specific questions.

Starting a commercial vineyard is an exciting and challenging process. It can also be personally and financially rewarding if you take the time and make

the effort to learn the business, and develop a sound business plan. In other words, you'll be much more likely to achieve success in the vineyard business when you look before you leap.

Additional Resources

- South Dakota State University horticulturists maintain a listserv for South Dakota grape growers – http://sdgrapes.sdstate.edu. Contact Dr. Rhoda Burrows at rhoda.burrows@sdstate.edu to sign up.
- "Soil Testing for Vineyards in South Dakota" SDSU Extension publication, https://extension.sdstate.edu/soil-testing-vineyards-south-dakota
- "Vineyard Work Calendar" SDSU Extension publication
- "Grape Production" – https://extension.sdstate.edu/tags/vineyard
- Midwest Grape Growers Guide – https://plantpathology.ca.uky.edu/files/mw_grape_productn_b919.pdf or https://ohiograpeweb.cfaes.ohio-state.edu/grape-growing/midwest-grape-production-guide

P-00139