Cost of Establishing a Vineyard in Iowa

Establishing and operating a successful commercial vineyard requires a substantial capital investment as well as sound management decisions from the initial planning stage through the sale or use of the harvested crop. To illustrate typical costs and returns, the following establishment and operating budgets were developed to assist potential grape growers in projecting income and expenses associated with a new vineyard planting.

Vineyard establishment and operating costs can vary considerably because of differences in the cost of land, labor, machinery, and materials. Costs are also affected by vineyard site, grape cultivar, vine spacing, training system, pest management strategies, and cultural practices. Because of these potential differences, several parameters were established to define the model enterprise used in these budgets. Alternative materials or practices that reduce operating costs may be substituted if they do not impair vineyard productivity or longevity.

Vineyard Layout

These budgets were developed for growing French hybrid wine grapes on a double-trunk, bi-lateral cordon training system with vines spaced 7 feet apart and rows spaced 9 feet apart (691 vines per acre). Trellising per acre consists of 11 rows 448 feet long with posts spaced 28 feet apart supporting two 12.5 gauge high tensile (HT) wires (a training wire at 42 inches above the ground, and a cordon wire at 5.5 to 6 feet above the ground). This system could also be used for most American and American hybrid wine, juice or table grape cultivars. The trellis design could also be used for the 4-cane kniffen system. For 6- and 8-foot in-the-row vine spacing, 24 foot post spacing is recommended and would require an additional 22 in-line posts and 1.7 pound of staples per acre. Nine foot between-row spacing is adequate, but wider spacing may be needed to acommadate larger equipment, or on steeper slopes to avoid potential problems with implement drift. At 10 feet between rows, an acre of trellis would consist of 10 rows of similar length with a corresponding reduction in trellis materials. The cost of one-year-old rooted cuttings was estimated at $1.75 per vine, but can vary from $.85 for common American cultivars up to $2.45 per vine for patented seedless cultivars. Un-rooted cuttings can be used to establish a vineyard at a substantial savings, but is risky without irrigation.

Labor

Labor was calculated at $8.00 per hour (hourly wage plus FICA, medical and workman's compensation). Harvest labor, excluding handling, was calculated on a piece-work basis. Time required to complete a task varies with such factors as organizational skills, weather, and the amount and quality of labor. Times shown in the budgets are averages.

Land

One of the principal capital outlays in establishing a vineyard is the cost of the land, and values can vary considerably throughout Iowa. Because of this variation in land value and because a potential grower may already own the property, the land purchase cost was no included in these budgets. However, a land charge equivalent to a rental fee was assessed annually.

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Machinery
Commercial vineyards of any size require some basic equipment. This includes a tractor large enough for spraying, mowing and other vineyard operations. For these budgets, excluding pre-plant land preparation, a 35 horsepower (hp) tractor is adequate. For pre-plant land preparation at least a 50 hp tractor would be required, and may be something already available, or hired. Two sprayers, one for spraying insecticides and fungicides on foliage and another for to applying herbicides for weed control, are required. Typically, insecticides and fungicides are applied with a tractor-mounted or trailer-mounted airblast sprayer, but can also be applied using a high-pressure hydraulic sprayer equipped with a vertical boom. For herbicide applications, a small low-pressure sprayer equipped with a boom for spraying under the vines is required. Other equipment needs for the annual operation of a vineyard include a 6-foot mower for mowing the sod between the rows and shredding prunings, a fertilizer spreader/seed broadcaster, and a flatbed wagon or trailer for hauling harvested grapes out of the field. Purchase of these items was not included in these budgets. Operating expense of the equipment and fuel cost (diesel at $1.30 per gallon on-the-farm) were included with fuel consumption adjusted to the power requirement if the various tasks.

In the planting year there is a need for a planter, posthole auger, and a hydraulic post driver. Tree planters suitable for planting grape vines are available, at a nominal fee, from many county conservation boards. Posthole augers can be rented, or borrowed from a local farmer. A hydraulic post driver is an important tool for installing a vineyard trellis. This is because posts driven 2 feet into the ground are as stable as posts set in an auger hole 3 feet in depth. Therefore, the use of a post driver can result in a substantial savings when purchasing posts. In addition, less labor is required to drive post compared to using an auger. Contact the Iowa Grape Grower Association concerning the availability of hydraulic post drivers. An alternative is to contract a fencing company to provide the materials and install the trellis. Also, a tree planting company could be contracted to plant the vines. Contact your district forester for information on these tree planting companies.

Financing
These budgets were prepared on the assumption that all capital was borrowed at the rate of 8% per year. The interest on annual operating costs was calculated for 6 months. Such a charge may be thought of as the interest cost associated with borrowing money for the first year's cash expense, and is included to reflect that capital invested into the vineyard could be invested elsewhere and earn interest.

Pest Control
The insect and disease control program used in these budgets was developed around the use of cost-effective pesticides recommended for Iowa as listed in PM-1375 *Iowa Commercial Small Fruit and Grape Spray Guide*. Application rates in the early years were adjusted based on the row-volume concept for estimating spray gallonage per acre and assumes that the vines develop a full canopy in the fourth year. Also, fewer sprays are required in the non-bearing years.

For pre-emergence weed control, the recommended practice is to alternate herbicides from year to year to avoid the buildup of resistant weeds. For simplicity, the same pre-emergence herbicides were used annually in the bearing years in the development of these budgets.

Browsing by deer can be a serious problem in the establishment years of a vineyard, and can delay production by a year or more. Perimeter fencing can be installed to control deer, but was not included in the development of these budgets.

Birds feeding on the maturing berries can be a serious problem for colored grape cultivars. The most effective control of birds is achieved through the use of netting to cover the vines. However, in the development of these budgets, the cost of netting and the annual labor to install it over the vines was not included.

Other Assumptions

- It is assumed that the site selected for the vineyard is elevated to minimize the risk of spring frost.
- The soil is well drained to minimize the risk of soil borne diseases affecting the longevity of the vineyard.
- Cultivars selected are climatically adapted to the site to minimize the risk of winter injury to the dormant cane buds, and the vines do not have to be taken off the trellis and mulched for winter protection. Such a practice greatly increases the annual operating expense.
- A good relationship has been developed with neighboring farmers to minimize the risk of 2,4-D herbicide drift and subsequent injury to the vines.