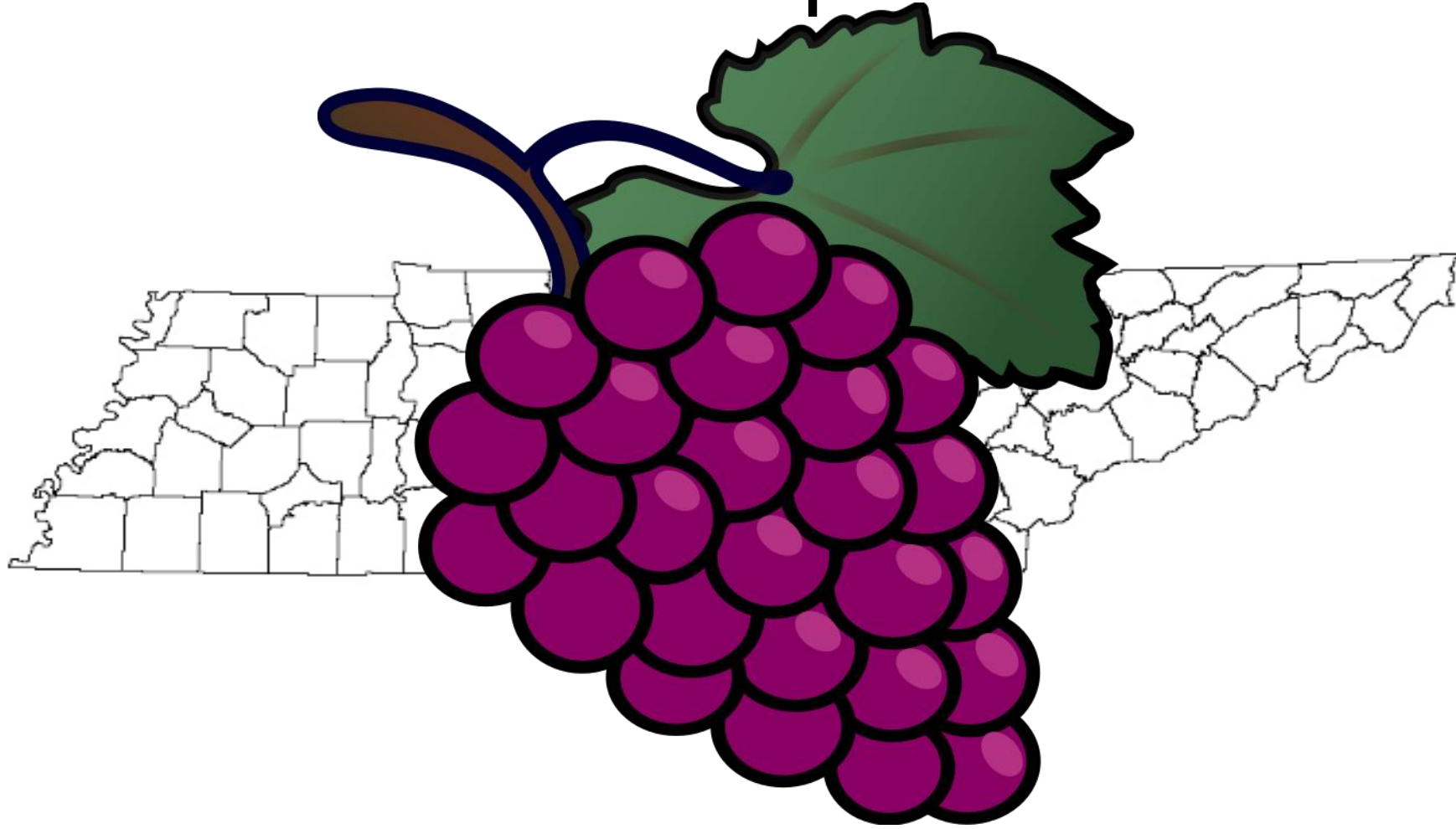


# ■ Opportunities for Grape Production in Tennessee January, 2020

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# Tennessee & Grape Production



# Producer Considerations

- Do you have a market?
- What varieties should be grown?
- Do you have a suitable site (location)?
- Do you have sufficient labor and capital?
- Do you have a harvest, processing, storage and marketing plan?
- What are price, yield and revenue expectations?

# Growth of Grape Acres in Tennessee

State	Farms	Acres	Acres per Farm	% Bearing Acres	% Acre Change 2012 vs. 2007
Tennessee	343	905	2.64	71.3%	56.0%
North Carolina	874	3,392	3.88	79.2%	6.5%
Virginia	660	4,371	6.62	85.4%	34.2%
Kentucky	411	626	1.52	73.2%	1.3%
Georgia	387	1,941	5.02	90.5%	17.9%
United States	27,878	1,139,146	40.86	91.6%	8.3%

**Source:** U.S. Census of Agriculture, 2007 and 2012

# Growth of Grape Acres in Tennessee

State	Farms	Acres	Acres Per Farm	% Bearing Acres	% Acre Change 2012 vs. 2007	% Acre Change 2017 vs. 2012
Tennessee	462	959	2.08	77.9%	56.0%	5.9%
North Carolina	797	2974	3.73	84.8%	6.5%	-12.3%
Virginia	688	4967	7.22	88.1%	34.2%	13.6%
Kentucky	361	565	1.57	59.5%	1.3%	-9.7%
Georgia	531	2086	3.93	89.2%	17.9%	7.0%
United States	27,878	1,139,146	40.86	91.6%	8.3%	
Source: U.S Census of Agriculture, 2007, 2012 and 2017						

# Profitability

- New enterprises should be budgeted closely with estimates of costs and returns.
- Many producers of new or unique enterprises tend to be overly optimistic about potential returns. (hemp)

# Profitability

- Kinds of questions to ask about a budget include:
  - “What if prices are 25% below these estimates?”
  - “What if some disease or weather factor cuts my yield by a third?”
  - “What if it takes twice as much labor as I have anticipated?”
- These types of questions can help evaluate both the relative profitability and riskiness of the enterprise.

# Profitability

- Profitability can be identified by deducting various kinds of expenses from total estimated revenue.
  - This can be estimated on a per acre, per head or whole farm basis.
  - The total revenue, can vary widely and will need to be revised when you come to developing marketing and risk factors.
- Still, an estimate of total revenue needs to be made using the best information available on what can be expected for yield and price.



# Profitability

- Other profitability factors to consider are length of run and comparative advantage.
  - A new enterprise with a payoff in five years may look good from a profitability standpoint but many not pay the bills between now and then.
  - Some enterprises have short productions cycles while others may require months or years to achieve profitability.
- Grape production will involve significant cash outlays in the initial establishment phase.

# Grape Production: Profitability

- Intensive management will be required during the early development phase.
- Cash revenue from future harvests may not be returned to the investment for years.
- Income needs and debt load of the vineyard figure heavily into the choice to pursue the enterprise.
- Alternatives for which a farm or a region has some relative advantage in production or lower cost is more likely to be successful.

# Establishment Costs

- Trellis Construction Costs
  - Examples:
  - Bilateral Cordon
  - Geneva Double Curtain
- Planting Costs
  - Varies greatly with varieties and between root stock and grafts
- Irrigation System Costs

# Other Cost Considerations

- Shipping
- Labeling
- Cooling
- Storage
- Testing
- Marketing/Contracting



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# Grape Prices in Tennessee

- No established (commodity) market
- Heterogeneous Product
  - Variety
  - Quality
  - Local Production
- Work with a winery(s) to determine grape characteristic preferences
- Spend time on marketing your product

# Other Market Opportunities

- Partnership with Local Wineries
- Agri-Tourism
- Co-operatives or machinery cost shares
- Custom work (spraying, harvesting, trellis construction)

# Grape Production Revenue

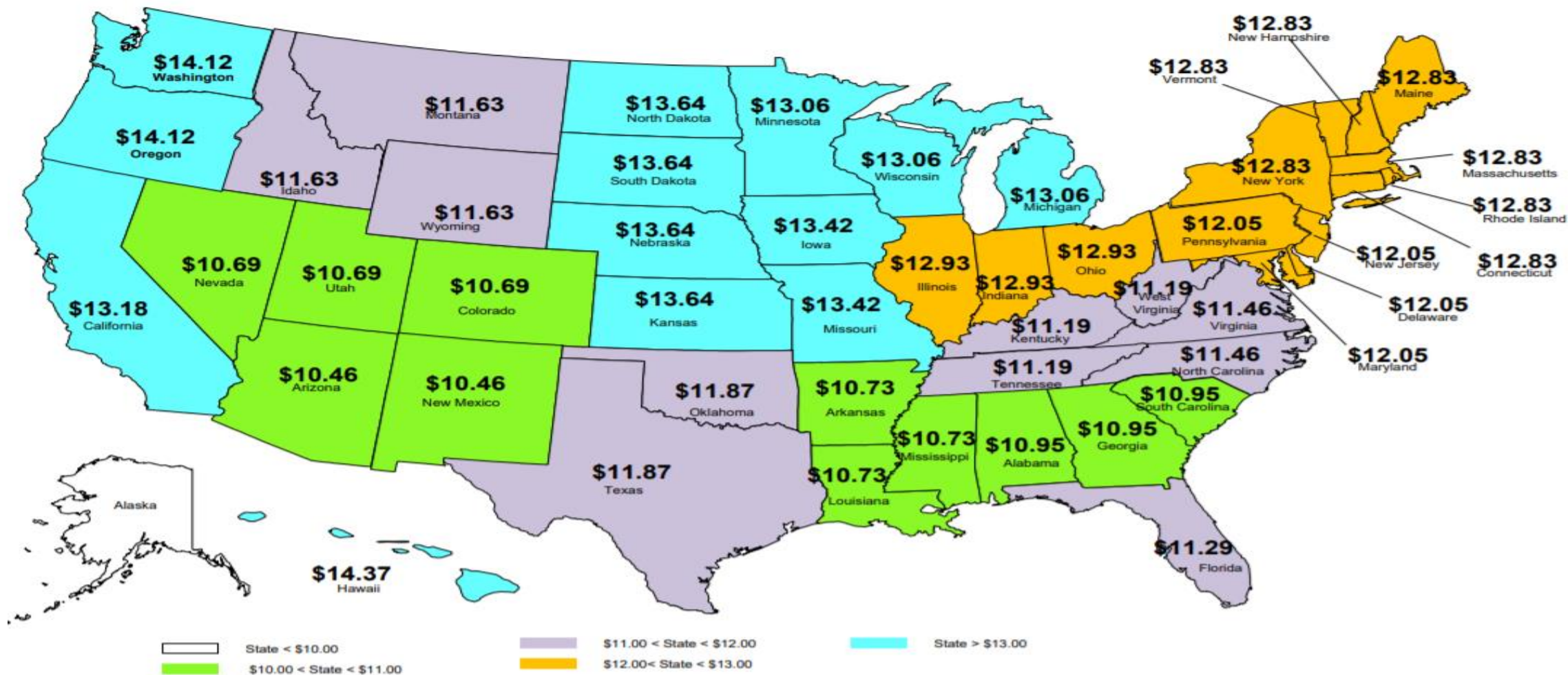
- Lower expected yield in years 3-4 compared to years 4+?
- Yields x Variety
- Prices???
- Gross Return per Acre = ???
- Farmer's Tax Guide, Publication #225

# Physical Resources Available to You

- Labor is very important for certain types of agricultural production.
- Labor has become one of the largest issues in agriculture.
  - Will you be able to physically plant, maintain, and harvest your produce?
  - Will you need H2A labor for certain fruit/vegetable production?
    - **Working with a reputable agency that can help source this labor pool is very important.**
  - How many workers can you afford to employ either full-time or part-time?



## FY 2018 Adverse Effect Wage Rates



# Costs of Establishing One Acre Vineyard

## Trellis Materials

Items	Specifications	Unit Cost
End Posts	Wood 10 ft. in length x 5 to 6 in diameter	\$17.50
Line Posts	Wood 8 ft. in length x 5 to 6 in. diameter	\$9.99
	Steel Posts 8 ft. length	\$6.30
Wire	#11 crimped, hig-tensile with class III galvanized coating, 250 ft. roll	\$8.95
Fence Staples	1 1/2 inch \$2.45 per pound	\$0.04
Anchors	40 inch screw in type	\$9.95
Deadend	Wire tightener	\$4.95
Splice	Repair wire (splice)	\$3.95
Cross Arms	4 ft. length for geneva Double Curtain System	\$8.00

# Costs of Establishing One Acre Vineyard Trellis Materials for a Bilateral Cordon System

## Example 1:

Vine spacing 8 ft. inrow x 10 ft. between rows.

Row length - 240 ft. (end post to end post)

Training system - bilateral cordon

(240 ft. inrow length x 180 ft. (18 rows 10 ft. apart) = 0.99 acre)

# items/row	Item	Unit cost	Row Cost	Acre Cost	
2	End posts		\$17.50	\$35.00	\$630.00
14	Wood line posts		\$9.99	\$139.86	\$2,517.48
	(1/2 steel @\$6.30, 1/2 Wood @ \$9.99			\$114.06	\$2,053.08
1	Roll Wire		\$8.95	\$8.95	\$161.10
2	Anchors		\$9.95	\$19.90	\$358.20
2	Deadends (wire tightener)		\$4.95	\$9.90	\$178.20
32	Staples		\$0.04	\$1.25	\$22.46
				\$214.86	\$3,867.44
	(Substituting steel line posts for 1/2 the wood line posts)			\$189.06	\$3,403.04

# Costs of Establishing One Acre Vineyard Trellis Materials for a Geneva Double Curtain System

## Example 2:

Vine spacing 8 ft. inrow x 12 ft. between rows.

Row length - 240 ft. (end post to end post)

Training system - Geneva Double Curtain

(240 ft. inrow length x 180 ft. (15 rows 12 ft. apart = 0.99 acre)

# items/row	Item	Unit cost	Row Cost	Acre Cost
2	End posts	\$17.50	\$35.00	\$525.00
14	Wood line posts	\$9.99	\$139.86	\$2,097.90
	(1/2 steel @\$6.30, 1/2 Wood @ \$9.99		\$114.06	\$1,710.90
3	Roll Wire	\$8.95	\$26.85	\$402.75
2	Anchors	\$9.95	\$19.90	\$298.50
2	Deadends (wire tightener)	\$4.95	\$9.90	\$148.50
16	4' crossarms	\$8.00	\$128.00	\$1,920.00
32	Staples	\$0.04	\$1.25	\$18.72
			\$360.76	\$5,411.37
	(Substituting steel line posts for 1/2 the wood line posts)		\$334.96	\$5,024.37



# Irrigation Installation per Acre

Irrigation System Costs per One Acre					
Materials	Quantity	Unit	Cost/Unit	Total Cost	
Mainline (10' 3/4" PVC)	40	Sections	\$2.10	\$84.00	
Laterals (1/2" poly)	5	Roll (1000')	\$120	\$600.00	
PVC Fittings (risers)	180	Fitting	\$0.49	\$88.20	
Poly tube fittings	40	Fitting	\$0.54	\$21.60	
Irrigation pump	1	Pump	\$280	\$280.00	
Pump Fittings	4	Fitting	\$8.00	\$32.00	
Pressure regulator	1	Fitting	\$12.50	\$12.50	
Mesh Filter	1	Filter	\$18.00	\$18.00	
Black Poly Tank (5000 gal)	1	Tank	\$2,300	\$2,300.00	
Drip Emitters (1000 total)	4	Bags	\$62.50	\$250.00	
Zip Ties (2000 ties)	2	Bags	\$24.50	\$49.00	
Labor					
Dig Mainline trench	12	Hours	\$12.00	\$144.00	
Install mainline	50	Hours	\$12.00	\$600.00	
Zip Tie laterals	16	Hours	\$12.00	\$192.00	
Install Drip Emitters	14	Hours	\$12.00	\$168.00	
Tank and Pump Setup	5	Hours	\$12.00	\$60.00	
Total Irrigation System Costs				\$4,899.30	

# Plant (vine) Costs Per One Acre

Varieties	Price Range	Vines per Acre: Bilateral Cordon Trellis	Vines per Acre: Geneva Double Curtain	Vine Cost per Acre: Range Bilateral Trellis	Vine Cost per Acre: Range Double Curtain Trellis
American	\$1.25 - \$2.00	540	450	\$675 - \$1080	\$562.50 - \$900
French-American	\$1.80 - \$2.55	540	450	\$972 - \$1377	\$810 - \$1147.50
Seedless	\$3.10 - \$3.50	540	450	\$1674 - \$1890	\$1395 - \$1575
Vitis Vinifera	\$4.70 - \$7.45	540	450	\$2538 - \$4023	\$2115 - \$3353
Muscadines	\$1.90 - \$6.75	226		\$429 - \$1526	

# Planting & Trellis Labor Costs

Labor Operation	Quantity	Unit	Cost/Unit	Total Cost
Plantings	60	Hours	\$12	\$720
Trellis Construction	70	Hours	\$12	\$840
Total for Plantings and Trellis Construction	130	Hours	\$12	<b>\$1560</b>

# Establishment Costs Summary

Cost Category	1 Acre Cost
Total Trellis Construction Costs	\$4707.00
Total Planting Costs	\$1820.00
Total Irrigation System Costs	\$4899.30
<b>Total Establishment Costs (estimated)</b>	<b>\$11,426.30</b>



# Annual Costs

- Pre-Harvest
  - Fertilization
  - Weed/Insect/Disease Control
  - Plant/trellis/irrigation maintenance
  - Equipment
  - Land rent/taxes
  - Labor
- Harvest
  - Equipment
  - Labor
  - Handling/transportation
- Return to management



# Example: Price of Tennessee Grapes

	17 Brix			16.9 - 16 Brix			15.9 - 15 Brix	
	Price Per lb	Price Per Ton		Price Per lb	Price Per Ton		Price Per lb	Price Per Ton
Muscadine	\$ 0.60	\$ 1,200.00		\$ 0.57	\$ 1,140.00		\$ 0.53	\$ 1,060.00
	18 Brix			17.9 - 16 Brix			15.9 - 15 Brix	
	Price Per lb	Price Per Ton		Price Per lb	Price Per Ton		Price Per lb	Price Per Ton
Labrusca	\$ 0.64	\$ 1,280.00		\$ 0.57	\$ 1,140.00		\$ 0.51	\$ 1,020.00
	19 Brix			18.9 - 17 Brix			16.9 - 16 Brix	
	Price Per lb	Price Per Ton		Price Per lb	Price Per Ton		Price Per lb	Price Per Ton
Hybrids	\$ 0.72	\$ 1,440.00		\$ 0.67	\$ 1,340.00		\$ 0.58	\$ 1,160.00
	22 Brix			21 - 20 Brix			19.9 - 19 Brix	
	Price Per lb	Price Per Ton		Price Per lb	Price Per Ton		Price Per lb	Price Per Ton
Vinifera	\$ 1.31	\$ 2,620.00		\$ 1.23	\$ 2,460.00		\$ 1.13	\$ 2,260.00

# Per Acre Annual Costs: Chambourcin & Vidal Blanc Grapes For Commercial Production in Tennessee

Year	Yield (Tons per Acre)	Total Cost (\$ Per Acre)	Total Revenue (\$ Per Acre)	Net Return (\$ Per Acre)
0	0.0	2,662	0	(2,662)
1	0.0	3,535	0	(3,535)
2	0.0	1,252	0	(1,252)
3	2.0	1,807	2,070	263
4 - 20	5.0	2,248	5,175	2,927

# Per Acre Annual Costs: Cayuga White Grapes for Commercial Production in Tennessee

Year	Yield (Tons Per Acre)	Total Cost (\$ Per Acre)	Total Revenue (\$ Per Acre)	Net Returns (\$ Per Acre)
0	0.0	2,662	0	(2,662)
1	0.0	3,535	0	(3,535)
2	0.0	1,252	0	(1252)
3	3.0	1,915	2,761	846
4 - 20	7.5	2,517	6,902	4,385

# Per Acre Annual Costs: Muscadine Grapes for Commercial Production in Tennessee

Year	Yield (Tons Per Acre)	Total Cost (\$ Per Acre)	Total Revenue (\$ Per Acre)	Net Return (\$ Per Acre)
0	0.0	5,225	0	(5,225)
1	0.0	3,959	0	(3,959)
2	1.2	2,874	1,125	(1,749)
3	3.7	3,215	3,330	115
4-20	10.0	4,105	9,000	4,895



# Per Acre Annual Costs: Net Returns

Financial Concept	Muscadine	Cayuga White	Vidal Blanc-Chambourcin
<b>Breakeven Year</b>	Year 6	Year 5	Year 5
<b>Accumulated Net Return</b>	\$242,811	\$249,919	\$142,747
<b>Net Present Value</b>	\$72,397	\$67,942	\$42,573
<b>Internal Rate of Return*</b>	25.6%	40.2%	31.3%
* At 5.5% discount rate.			

# History of the Operation –Why is it important?

- If you are an experienced producer, it is important to consider how you have gotten to where you are.
- List successes and failures you have experienced.
- Identify key opportunities and challenges that you have encountered.
- Doing this can provide insight on the future decisions that you will make.

# History of the Operation –What if I am a new business?

- Think about what has made you want to begin a business.
- What past experiences have triggered your desire to farm?
  - 1. Personal
  - 2. Economic
  - 3. Environmental
  - 4. Community
- Learn about the land that you plan to farm or property you plan on purchasing.
- Learn more about the markets that you intend to sell in.

# Assessing Your Current Situation

- Four main business management functions:
  - Marketing
  - Operations
  - Human Resources
  - Finances



# Marketing Situation

- Traditionally, in agriculture we ask the following of a farmer:
  - 1. How many acres do you farm?
  - 2. What type of crops do you grow?
  - 3. What livestock do you raise?
- The focus was on raising an undifferentiated, non-value added commodity that was sold to anonymous buyers.

# Marketing Situation –Key Questions to Ask

- Product: What is our product?
- Customers: What markets do we serve?
- Unique Features: What are the unique features that distinguish our products?
- Distribution: How do we distribute our products?



# Product-Grapes

- What product do we want to raise?
- This is an important question to ask because it will determine what resources will be needed to produce the product.
- Good follow up questions are:
  - 1. Will our land be able to produce this product?
  - 2. Do I have the labor to raise this product?
  - 3. What machinery will I need?

# Unique Features

- Product differentiation may be a large component of your business.
- Example of value-added product differentiation:
  - Locally grown Grapes
  - Certified organic produce
- Something to consider: Marketing terms such as “natural” have no official definition by the USDA, but is a marketing technique. It is advisable to only make claims on your products that you can substantiate.

# Distribution

- A very important part of your business is getting your products to your customer.
- Whether you are selling retail or wholesale, the task of getting your products to market is crucial.
- Key things to consider:
  - What market channels will we sell through? (i.e. grocery stores, restaurants, etc.)
  - Will you sell directly to customers, through a farmers market, online?

# Pricing

- The price of your products should be based on your production costs.
- Businesses that do not factor in expenses into their prices are setting themselves up for failure.
  - In agriculture, unless you are truly producing a value-added product that is differentiated from others products, we tend to be price takers. Beef and row crop producers are subject to this.

# Market and Industry

- As time goes on, markets and industries change.
- On the supply side, new competition might emerge.
- On the demand side, customer perception can change and influence purchase decisions.
- It is your goal as the owner of the business to adapt to these changes and capitalize on the opportunities market changes present.

# Operations Situation

- Resources: What physical resources are available to you?
- Production: What production systems will you implement?
- Management: What management systems will you use in your operation?
  - What skillset do you have that can help you manage your business?
  - How can you improve to be a better manager?
    - Do you need to hire someone with a certain skillset that you do not have or cannot acquire?



# Resources

- Land
- Equipment
- Labor



# Physical Resources Available to You

- Land is the foundation to agricultural production.
  - What is the lay of your land and what type of agricultural production can it sustain? **You must consider the total land area!**
  - What is the soil profile of your property?
  - Is there water available for irrigation of crops?
  - How close are you located to your customer base?
  - Are you permitted to do what you want to do on your property?
    - Environmental regulations, lease agreements, easements, conservations agreements, and zoning regulations may impact what you can do on your land.

# Grape Production Systems

- When deciding where to plant and what to plant:
  - You need to understand what your farm is capable of doing.
  - If it is highly fertile, then you have more possibilities.
  - If it has thin soils and eroded soils, your options will be limited.
  - Total land area for production is very crucial as well.

# Physical Resources Available to You

- Equipment may be needed to start agricultural production.
  - What equipment do you already have?
  - Do you need a particular piece of machinery for a new enterprise?
  - Do you buy new or used equipment?
  - Do you know how to operate the machinery and/or work on the equipment if needed?
  - Can you afford the pieces of machinery that you will need?

# Human Resource Situation

- People are essential to a farming operation and you need to be able to answer a few very important questions.
  - Current Work Force: Who is involved in our business and what roles do they play?
  - Skills: What is our current skill set and what skills do we lack?
  - Changes in Labor: Will our labor situation change soon?
    - Will someone be joining the operation?
    - Will someone retire?
    - Does part of the family have any health issues?

# Financial Situation

- Detailed information on current finances is crucial to any business.
- Your financial assessment should answer these questions:
  - Financial need: What are your current family living expenses?
  - Financial performance: How well has your business done?
  - Risk: What type of risk do you face on your farm?
  - Financial environment: What is the current business environment?



# Measuring Financial Performance

- Financial information is the only way to determine the profitability of the business.
- You will need to have the following documents to evaluate your farm:
  - Income Statement
  - Balance Sheet
  - Accrual Adjusted Cash Flow
- These will be used to measure your financial performance.

# Risk Exposure

- In production agriculture, you are exposed to many types of risk.
  - 1. Production Risk
  - 2. Price Risk
  - 3. Market Risk
  - 4. Personal Risk
- Tools to manage some of this risk: planning, crop insurance, contracting prices, insurance, and luck.
  - Farm Service Agency, (NAP) Noninsured Crop Disaster Assistance Program

# Types of Records

- Production or Performance Data
  - Evaluate the enterprise (grape) efficiency
  - Evaluate individual varieties within the enterprise
  - Assist in establishing goals
- Financial or Cost and Return Data
  - Evaluate the profitability per acre or per plant
  - Aid in making informed decisions

# Cash Flow Statements

- Tracks all farm and nonfarm income and expenses, debt payments, and loan receipts (monthly or annual basis)
- Evaluate debt repayment ability and planning credit
- Grape production will require cash flow planning

# Financial Records

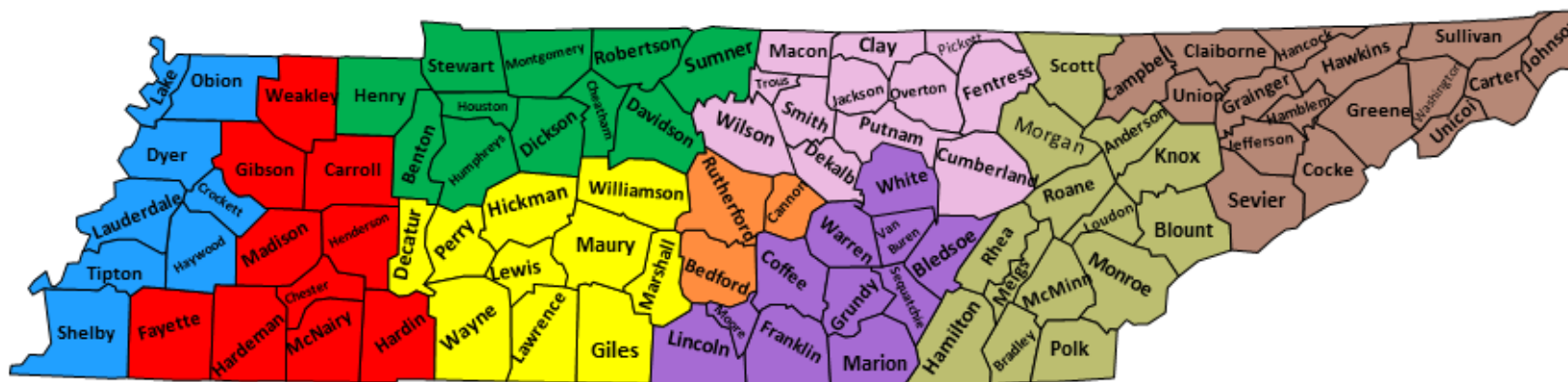
- Balance Sheets (Net Worth Statements)
  - All Assets minus All Debts
  - Typically – Beginning / End of Year
  - Track / Measure financial progress
- Enterprise Budgets
  - Income / expenses identified by enterprise
  - Requires detailed production records
  - Identify strengths and weaknesses
  - Difficult to assign some expenses to enterprise










# Vineyard Production Summary

- Establish the need to assess the current market
- Identify tangible assets that we can use
- Consider what regulations and rules we must operate under
- Detail vineyard production systems
- Evaluate the overlap between each enterprise
  - Struggle to balance finances, equipment, and labor between them all
- Assess human resources and what skillsets we have



# MANAGE Agents



	VACANT		Galloway		Manning
	Morris		Cui		Bilderback
	Humpal		Ferguson *		Hopkins

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