

# Market Development for Specialty Crops: An Evaluation of Potential Opportunities for Tennessee's Grape and Wine Industry

*Center for Profitable Agriculture*

This project was funded in part by an agreement with the Tennessee Department of Agriculture in pursuit of opportunities for specialty crops.



# Foreword

Tennessee's winery industry has experienced steady growth since the state's grape and wine law was enacted in the late 1970s and early 1980s – growth in the form of additional farm wineries and increased sales. The market potential for Tennessee-grown grapes is highly correlated with the demand for grapes by Tennessee wineries.

Although the law mandates the use of Tennessee products in the commercial wine-making process, waivers for the purchase of wine fruits and wine juices from out of state are permitted when in-state supplies are not available. In such cases, a waiver must be approved by the state's Alcohol Beverage Commission (ABC) to allow acquisition from out-of-state sources. Although no precise study has analyzed the amount of out-of-state product obtained for commercial wine production, it is hypothesized to be a significant amount.

An accurate assessment of the volume, species and variety of raw product inputs normally acquired from out-of-state sources by Tennessee wineries may identify a production opportunity for existing and potential Tennessee growers. Such an assessment would identify and summarize patterns of requested waivers, quantify the amount of out-of-state input purchases and establish a rationale for possible production opportunities in Tennessee. The project results presented here utilize information from previously approved waivers for the purchase of wine fruits from out of state.

This report analyzes the requests from Tennessee wineries to purchase wine-fruit products from out-of-state sources in 2001 and 2002. An assessment of the amount of fruit purchased from out-of-state is given and an assessment of production possibilities for the products purchased out of state is made. Lacking multiple years of data and recognizing that variations exist in the information contained in the waivers for the years available, this report does not indicate actual or predicted market demands. Rather it provides a summary of the information provided in two years of waivers and indicates some possible production and value implications.

As with all activities in the Center for Profitable Agriculture, the goal of this Market Development for Specialty Crops project is to assist in the evaluation, analysis and development of opportunities for Tennessee's value-added agriculture industry.

Appreciation is extended to David Lockwood for his contributions and cooperation in the analysis of this project and to Charlie Hall and David Lockwood for their assistance in the peer review. Appreciation is also expressed to Mary Jo Holden and Gary Dagnan for their assistance and cooperation in the editing and layout and to Joe Gaines, Stanley Trout and Paul Nordstrom with the Tennessee Department of Agriculture for their assistance with the development and implementation of this specialty crop project.

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**Support for this project was provided by the Tennessee Department of Agriculture  
Division of Market Development, the United States Department of Agriculture and  
The University of Tennessee Center for Profitable Agriculture with the intent of  
improving opportunities for specialty crops.**

**December 2002**

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## **Executive Summary**

Although state law caps the amount of out-of-state fruit that can be used to make wine in Tennessee, wineries can request to purchase more than the cap if they have made good-faith efforts to grow or purchase from in-state sources or if extenuating circumstances prevent the availability of in-state supplies. Approximately 46 percent of the fruits used for winemaking in Tennessee are American variety grapes, 20 percent are of the Muscadine variety, 15 percent are of the French-American hybrid variety, 11 percent are of the Vinifera variety and 8 percent are other fruit varieties. In 2001, 11 wineries requested a waiver for 60 out-of-state purchases of 24 different varieties and in 2002, 12 wineries requested a waiver for 64 out-of-state purchases of 22 different varieties. It should be noted that the amount of fruit requested through the J-6 waivers is in addition to allowed fruit purchases from out of state under the 50 percent and 25 percent rules. This study indicates that Tennessee wineries represent a market for approximately 90 additional acres of annual fruit production in the state. The estimated market value of this production is approximately \$316,000 annually.

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## Fruit Growing for Wine in Tennessee

Grapes are grown throughout Tennessee. However, not all types of grapes or varieties of grapes are suitable for cultivation in all parts of the state. Similarly, grapes adapted to specific growing conditions in the state may not be suitable for winemaking or other consumer preferences. The increasing number of wineries in Tennessee and the development of new grape varieties suitable for Tennessee's growing conditions have contributed to increased production considerations.

As shown in Table 1, from 1978 to 1997 the number of acres of grape production increased by 71 percent from 231 to 395 acres while the pounds produced increased more than 200 percent from 158,829 pounds to 486,694 and per-acre production increased 80 percent from 878 pounds to 1,586 pounds.

<b>Table 1: Tennessee Grape Acreage and Production (Source: Viticulture Plan for the State of Tennessee - 2001)</b>			
<u>Year</u>	<u>Acres</u>	<u>Pounds Harvested</u>	<u>Yield Per Acre</u>
1978	231	158,829	878
1982	413	605,638	2,065
1987	459	876,504	2,712
1992	357	613,244	2,024
1997	395	486,694	1,586

Several different types of grapes are available for commercial production. Each type has a variety of characteristics that make it more or less desirable and/or suitable than other types in terms of adaptability and use. Grape varieties can be generally classified as American, French-American hybrid and European. Common American grape varieties are Concord, Niagara, Norton, Catawba and Delaware. Muscadine grapes are an American native and are often grown in the Southeastern states. However, commercial muscadine grape production in Tennessee is often difficult because of cold injury. Common French-American hybrid varieties include Vidal, Seyval, Leon Millot, Foch, DeChaunac, Chambourcin, Vignoles and Chancellor. The French-American hybrids are crosses between European varieties and certain wild species found in America and are used primarily for wine. Common European grape varieties include Chardonnay, Cabernet Franc and Cabernet Sauvignon.

One of the primary determinants of the quality of wine is the quality of the fruit used in production. Fruit should be at the appropriate ripeness, should not have excessive browning and should be free of rot and mold.

Fruits used for winemaking have a variety of characteristics, such as acidity, sugar, color and the presence of seeds, that influence the winemaking process. Many of these characteristics are

influenced by growing conditions, such as climate, rainfall and site. The environment in which grapes are grown can influence the acidity level of the wine juice; and therefore, can influence the end wine product. The amount of sugar contained in the fruit influences the production process and the end product. Depending on the type of wine being made, the sugar-to-acid ratio of the juice often requires adjustments for acid content. Sweet wines tolerate higher acidity levels.

Grapes are the most-often used product for fermenting into wine. However, other wine-fruit products are also used. Table 2 contains statistical information from the 1997 Census of Agriculture for Tennessee’s production of other crops used for wine fruits by Tennessee wineries.

<b>Table 2: Tennessee’s Production of Other Crops Used for Wine (1997 Census)</b>			
<u>Crop</u>	<u>Number of Farms Growing</u>	<u>Number of Acres Grown</u>	<u>Number of Trees/Vines</u>
Apples	810	2,226	214,506
Blackberries	120	112	166,734
Blueberries	90	117	150,849
Cherries	112	30	1,276
Grapes	258	396	184,528
Peaches	504	1,074	109,922
Pears	192	70	3,803
Plums	112	35	1,610
Raspberries	45	34	137,226
Strawberries	156	450	2,560,855

## **Commercial Winemaking Laws**

Grape and fruit production are part of a long history of diverse agricultural production in Tennessee. These crops have had various uses ranging from home use to processing and winemaking. During the late 1800s, vineyards were scattered across Tennessee. Grapes were often grown on land believed to be unsuitable for other agricultural crops.

In the early 1900s, prohibition curtailed production of grapes and fruits intended for commercial winemaking. In the early 1970s, the Tennessee Viticultural and Oenological Society (TVOS)

spearheaded efforts to enact legislation that would encourage the growth of the Tennessee grape and wine industry through commercial wineries. Prior to this legislation, winemaking in Tennessee was legal for home consumption only.

The original legislation enacting the grape and wine law was developed in the late 1970s. The language documenting and authorizing the law is available in the Tennessee Code Annotated, 57-1-209 and 57-3-207. Chapter 0100-7 of the Rules of the Alcoholic Beverage Commission describes procedures for proper production, sale and transport of wine in Tennessee.

The law states (in subsection J-6) that the Alcoholic Beverage Commission may grant a waiver of the requirement to use a minimum percentage of Tennessee-produced wine fruits or wine juices to wineries that have made a good-faith effort to either grow or buy the required amounts in the state. The waiver can also be granted if extenuating circumstances, such as low in-state production or adverse growing conditions, prevent the availability of Tennessee-grown products. A waiver allows wineries to then seek out-of-state suppliers.

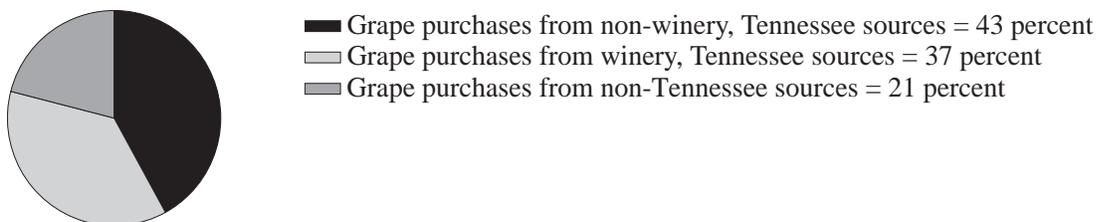
Because of this requirement to use a minimum percentage of Tennessee-grown products, the legislation provides some degree of market protection for growers (and potential growers) of wine grapes and fruits. For a new winery, 50 percent of the grapes (or other fruits) used to make wine must be grown in Tennessee. After three years of operation, the winery must use at least 75 percent Tennessee-grown products. That is, a winery with more than three years of operation can routinely obtain 25 percent of its grapes (or other fruits) from out of state without a J-6 waiver. A J-6 waiver is required only when a winery exceeds the maximum allowable out-of-state amounts.

By the mid 1980s, several commercial wineries had been licensed for commercial production and sales. In 2002, 25 commercial wineries were licensed in Tennessee.

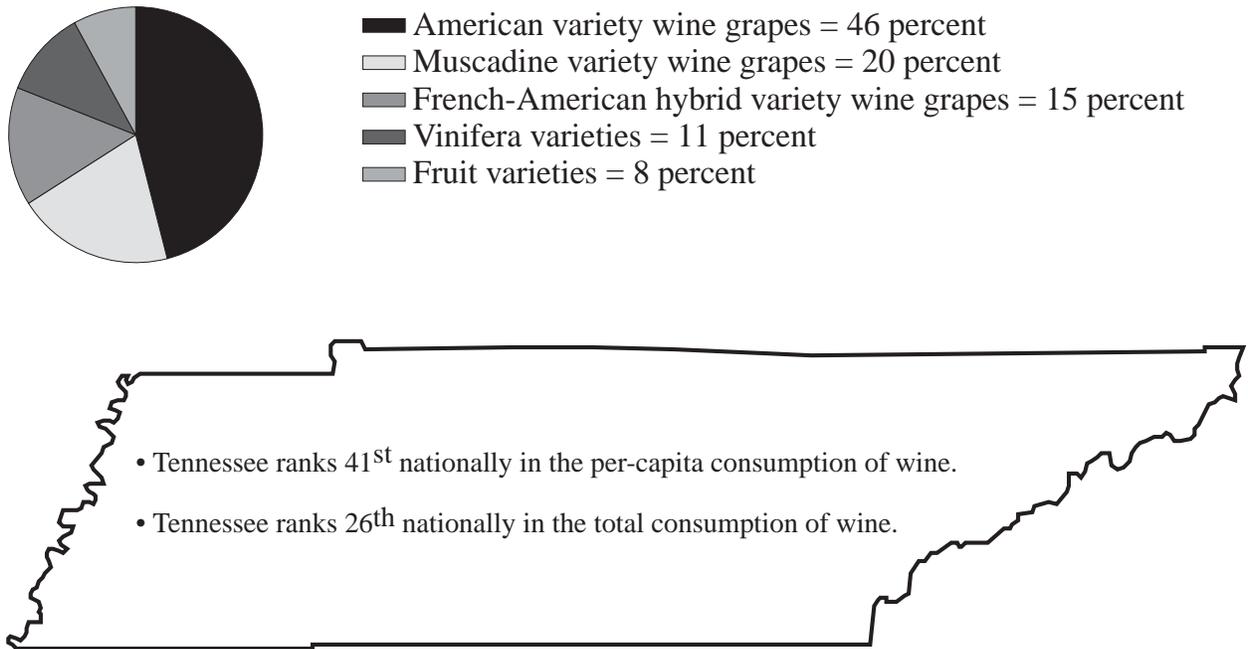
## Tennessee Winery Statistics

In the late 1990s, Greg Pompelli, former agricultural economist with The University of Tennessee, conducted various research studies for Tennessee's wine and wine grape industries. His research provided the following statistics:

**Figure 1. Wine grape purchases by Tennessee producers**



**Figure 2. Fruits used for winemaking in Tennessee**



## Results and Implications of the Study

Until 2001, according to personnel with the Tennessee Alcohol Beverage Commission, wineries could request a waiver to purchase fruits and juices from out-of-state sources without having to specify the type, variety or amount to be purchased. Therefore, data prior to 2001 were not available for this study.

In 2001 and 2002, requests for “J-6” waivers by Tennessee wineries were submitted in writing and included variety and amount requested to purchase from out of state. However, when trying to analyze the waiver requests for this study, it was observed that both gallons and pounds were used by wineries to quantify the amount to be purchased. Where appropriate in this study, units have been converted so that requests for the same variety by different wineries can be totaled. Unfortunately, some species/varieties are commonly available in gallons of juice and gallons of fruit and, in these cases the units requested were not converted. Summary statistics for these species/varieties are reported in both pounds and gallons. A summary of the varieties, amount requested and the number of wineries requesting waivers for 2001 and 2002 is presented in Table 3. It should be noted that the requests for out-of-state purchases submitted via the J-6 waivers are in addition to any out-of-state purchases that are allowed under the 50 percent of 75 percent required minimum rule. Therefore, the results of this study only concern out-of-state purchases occurring after a winery exceeded its allowed out-of-state maximum.

**Table 3: Summary of Varieties Requested, Amount Requested and the Number of Wineries Requesting Waivers for 2001 and 2002**

Variety	Unit	2002		2001	
		Total Amount Requested	Number of Wineries Requesting	Total Amount Requested	Number of Wineries Requesting
Merlot	lbs.	25,000	5	26,000	2
Cabernet Sauvignon and or Franc	lbs.	37,000	6	44,000	6
Rhubarb	lbs.	500	1	na	na
Muscadine	lbs.	292,000	9	264,600	6
Riesling	lbs.	51,000	6	49,500	3
Concord	gal.	43,850	6	28,240	6
Niagara	gal.	11,600	5	12,672	8
Foch	gal.	550	1	550	1
Seyval	gal.	900	1	2,500	3
Cayuga	gal.	2,000	2	1,300	3
Chardonnay	gal.	2,050	3	1,600	4
Chambourcin	gal.	2,500	2	2,000	2
Blackberries	lbs. gal.	15,000 4,350	5	42,000 1,900	3
Vignoles	gal.	550	1	1,100	1
Strawberry	lbs. gal.	7,000 600	3	14,000	2
Raspberry	lbs.	15,400	2	10,000	1
Leon Millot	gal.	1,000	1	1,000	1
Gewurztraminer	gal.	600	1	300	1

Chancellor	lbs.	3,200	1	3,764	1
Baco	gal.	240	1	na	na
Rougeaon	gal.	300	1	na	na
DeChaunac	lbs.	4,000	1	550	1
Catawba	lbs.	na	na	23,500	1
Venus	lbs.	na	na	5,000	1
Cynthiana	gal.	na	na	550	1
Zinfandel	gal.	na	na	550	1
Cherries	lbs.	na	na	6,000	1

In 2002, 12 wineries requested waivers for 64 out-of-state purchases of 22 different varieties. Requests per winery ranged from 1 to 9 with an average of 5.3 requests. A total of 450,100 pounds and 71,090 gallons of fruit and/or juice were requested. Muscadine (292,000 pounds) was by far the most requested variety for out-of-state purchase followed by Riesling (51,000 pounds), Concord (43,850 gallons), Cabernet (37,000 pounds) and Merlot (25,000 pounds). Seven species/varieties were requested by five or more wineries: Blackberries, Niagara, Merlot, Concord, Riesling, Cabernet Sauvignon and/or Franc and Muscadine. A total of 450,100 pounds and 71,090 gallons of fruit were requested in 2002. Assuming that one gallon of juice weighs 9.10 pounds and one acre can yield approximately 10,000 pounds of fruit, the 2002 out-of-state waivers would have represented approximately 109 total acres of production.

In 2001, 11 wineries requested waivers for 60 out-of-state purchases of 24 different varieties. Requests per winery ranged from 1 to 12 with an average of 5.45 requests. The most requested fruits were similar in 2001 and 2002 with slightly more blackberries requested in 2001 than 2002. Four varieties were requested by five or more wineries: Concord, Cabernet Sauvignon and/or Franc, Muscadine and Niagara. A total of 488,364 pounds and 54,812 gallons of fruit were requested in 2001. Assuming that one gallon of juice weighs 9.10 pounds and one acre can yield approximately 10,000 pounds of fruit, the 2001 out-of-state waivers would have represented approximately 99 total acres of production.

It is expected that some of the variations shown in Table 3 in the amount of fruit/juice requested from year to year reflects the likelihood of adverse growing conditions in certain years (Catawba, Cynthiana, Venus, Baco, Rougeaon, Seyval, blackberries, strawberries). This is one reason wineries are allowed to request waivers to purchase inputs from out-of-state sources. Comparison of the year-to-year requests for waivers also seems to show the need for varieties/species that are bountiful enough in the state to satisfy the demand by wineries (Concord, Niagara, Cayuga, Chambourcin, Foch, Vignoles, Leon Millot, Chancellor, DeChaunac and raspberries) and the need for varieties/species that are difficult or impossible to grow in the

state (Muscadine, Cabernet Sauvignon and/or Franc, Rhubarb, Chardonnay, Riesling, Merlot, Gewurztraminer, Zinfandel and Cherries).

In order to further assess the potential of Tennessee-grown fruits as the source to fill historical requests for out-of-state fruit, an evaluation of the growing potential of each variety is needed. As part of this study, David Lockwood, The University of Tennessee Extension fruit and nut specialist, was asked to evaluate the growing potential of each variety that was requested for out-of-state purchase in 2001 and 2002. He was also asked to broadly assess a specific variety's growing potential in Tennessee by rating it on a one-to-ten scale where a score of one indicates no potential and a ten indicates perfectly suited for commercial production in Tennessee. A majority of the varieties (66 percent) received a rating of seven or better. Interestingly, some of the varieties with the largest volume of requests for out-of-state purchase were also some of those with the lowest rating for in state growing potential. For example, Cabernet Sauvignon and/or Franc, Riesling and Merlot all had annual requests for more than 25,000 pounds and a production possibilities rating of three or less. Muscadine requests totaled 260,000 pounds. They had a production possibility rating of five. Table 4 provides a listing of the varieties requested for purchase from out of state and a quantified assessment of their production possibilities in Tennessee.

<b>Table 4: Varieties Requested for Purchase Out of State and a Quantified Assessment of Their Production Possibilities in Tennessee</b>	
<b>Variety</b>	<b>Production Possibilities Rating on a 1 to 10 Scale</b>
Concord	10
Niagara	10
Blackberries	10
Catawba	10
Strawberry	10
Cynthiana	9
Seyval	9
Cayuga	9
Chambourcin	9
Foch	8
Vignoles	8
Leon Millot	8

Chancellor	8
Venus	8
Baco	8
Rougeaon	8
DeChaunac	8
Raspberry	7
Muscadine	5
Rhubarb	5
Cabernet	3
Riesling	3
Chardonnay	3
Merlot	2
Gewurztraminer	2
Zinfandel	2
Cherries	1

Table 5 shows the average annual volume of out-of-state requests for each variety and its corresponding production possibility rating. Eighteen of the 27 varieties requested in 2001 and 2002 have a production possibility rating of seven or better. These 18 varieties account for 56,475 pounds and 63,608 gallons of annual out-of-state purchases.

<b>Table 5: Average Annual Volume Requested from Out of State by Rating of Production Possibilities</b>			
<b>Variety</b>	<b>Production Possibilities Rating on a 1 to 10 Scale</b>	<b>Average Annual Volume</b>	<b>Unit</b>
Concord	10	36,045	gal.
Niagara	10	12,136	gal.
Blackberries	10	28,500 3,125	lbs. gal.
Catawba	10	11,750	lbs.

Strawberry	10	10,500 300	lbs. gal.
Cynthiana	9	275	gal.
Seyval	9	1,700	gal.
Cayuga	9	1,650	gal.
Chambourcin	9	2,250	gal.
Foch	8	550	gal.
Vignoles	8	825	gal.
Leon Millot	8	1,000	gal.
Chancellor	8	3,482	gal.
Venus	8	2,500	lbs.
Baco	8	120	gal.
Rougeaon	8	150	gal.
DeChaunac	8	2,275	lbs.
Raspberry	7	12,700	lbs.
Muscadine	5	278,300	lbs.
Rhubarb	5	500	lbs.
Cabernet	3	40,500	lbs.
Riesling	3	50,250	lbs.
Chardonnay	3	1,825	gal.
Merlot	2	25,500	lbs.
Gewurztraminer	2	450	gal.
Zinfandel	2	275	gal.
Cherries	1	3,000	lbs.

Table 6 estimates the potential acres of Tennessee production needed to fulfill the average annual out-of-state purchases for the 18 varieties that have a production possibility rating of seven or greater. The greatest Tennessee production potential is for 34 acres of the Concord variety followed by 16 acres of Niagara and 11 acres of Catawba. The 18 varieties with a greater than

five production possibility rating represent a market for approximately 90 acres of Tennessee production.

<b>Table 6: Average Annual Volume Requested from Out of State by Rating of Potential Production Acreage</b>	
<b>Variety</b>	<b>Potential Production Acres to Replace Requests for Average Annual Out-of-State Purchases</b>
Concord	34.32
Niagara	16.18
Blackberries	5.26
Catawba	11.19
Blackberries	5.26
Strawberry	0.80
Cynthiana	0.37
Seyval	2.27
Cayuga	1.57
Chambourcin	3.00
Foch	0.733
Vignoles	1.10
Leon Millot	1.33
Chancellor	4.64
Venus	3.33
Baco	0.16
Rougeaon	0.20
DeChaunac	3.03
Raspberry	2.12
Total	91.6

Table 7 estimates the per-unit market value for each of the 27 varieties that were requested for out-of-state purchase in 2001 and 2002 and the corresponding estimated annual value of out-of-state purchases. Per-unit values range from \$0.35 to \$1.25 and the total estimated annual value of out-of-state purchases is \$316,187.

<b>Table 7: Estimated Per-Unit Value of Varieties Requested for Out-of-State Purchase and the Corresponding Estimated Annual Value of Out-of-State Purchases</b>			
<b>Variety</b>	<b>Unit</b>	<b>Estimated Value Per Unit</b>	<b>Estimated Annual Value of Out-of-State Purchases</b>
Merlot	lbs.	\$1.00	\$25,500
Cabernet	lbs.	\$1.00	\$40,500
Rhubarb	lbs.	\$1.25	\$625
Muscadine	lbs.	\$0.50	\$139,150
Riesling	lbs.	\$1.00	\$50,250
Concord	gal.	\$0.35	\$12,616
Niagara	gal.	\$0.375	\$4,490
Foch	gal.	\$0.375	\$204
Seyval	gal.	\$0.375	\$629
Cayuga	gal.	\$0.375	\$611
Chardonnay	gal.	\$1.00	\$1,825
Chambourcin	gal.	\$0.375	\$833
Blackberries	lbs.	\$0.75	\$7,875
Vignoles	gal.	\$0.375	\$305
Strawberry	lbs.	\$0.75	\$7,875
Raspberry	lbs.	\$1.00	\$12,700
Leon Millot	gal.	\$0.375	\$370
Gewurztraminer	gal.	\$1.00	\$450
Chancellor	lbs.	\$0.375	\$1,288
Baco	gal.	\$0.375	\$44

Rougeaon	gal.	\$0.375	\$55
DeChaunac	lbs.	\$0.375	\$842
Catawba	lbs.	\$0.375	\$4,348
Venus	lbs.	\$0.375	\$925
Cynthiana	gal.	\$0.375	\$102
Zinfandel	gal.	\$1.00	\$275
Cherries	lbs.	\$0.50	\$1,500
Total Estimated Annual Value of Out-of-State Purchases for All Varieties and Species			\$316,187

## Conclusions

This report provides a summary and evaluation of an analysis of requests for out-of-state fruit purchases by Tennessee wineries in 2001 and 2002. Because the methods and formats used to request out-of-state purchases varied significantly from one winery to another, interpretation of the requests was often difficult. A standardized format for waiver requests should be considered.<sup>1</sup>

As expected, requests for waivers seem to be influenced by changes in growing conditions from year to year, lack of in-state production of some varieties and lack of in-state supplies of hard-to-grow varieties. With limited data (2001 and 2002) it appears that Tennessee wineries represent a market for approximately 90 additional acres of annual fruit production in the state. It is estimated that the market value of this production is approximately \$316,000 annually.

While this study indicates a possible market potential for additional acres of specialty crops in Tennessee, additional investigations into specific market development strategies with wineries should be conducted. That is, it is unclear whether adequate supplies of the varieties requested for out-of-state purchase in 2001 and 2002 were actually not available in the state or whether the supplies were indeed available but simply not located nearby the wineries in need of them. In addition, continued, annual analysis and evaluation of the J-6 waivers is suggested.

<sup>1</sup>A standardized format could obtain information from the requesting winery, such as a detailed explanation and justification of the variety, type, amount and source of fruit that is obtained within the allowed maximum amount of out-of-state purchases and also for the amount requested that exceeds the allowed maximum.

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The *Center for Profitable Agriculture* is a partnership program of The University of Tennessee Institute of Agriculture and the Tennessee Farm Bureau Federation. The Center is located at the Middle Tennessee Experiment Station.

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150 copies 12/02 R12-4010-008-001-03

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