

**Grape Expectations:  
A food system perspective on redeveloping the Iowa grape industry**

by

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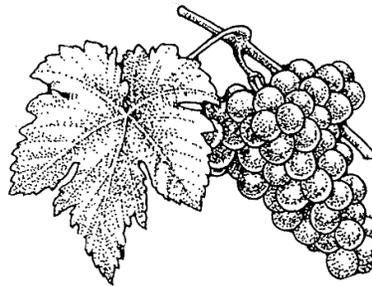
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Dear Reader:

The following paper, “Grape Expectations: A food system perspective on redeveloping the Iowa grape industry,” was researched and written to bridge some information gaps on the grape industry for interested Iowa producers, entrepreneurs, educators, researchers, and policy makers. The paper reviews the historical and present-day production of Iowa grapes; examines sources of table grapes, wines, grape juices, and raisins for sale in Iowa food stores; and provides some suggestions for redevelopment of Iowa’s grape industry. Details on the mechanics of grape, wine, and juice production are not included in the paper, although resources on these topics can be found in Appendix A.

Growing interest in diversifying Iowa agriculture and in local food systems (where local farmers sell their products to nearby consumers) are giving Iowans reasons to think about redeveloping the grape industry. Please keep in mind, however, that we will need a balance of knowledge in production, marketing and distribution, food policy, consumer education, conservation, and community development to develop a successful wine and grape program that will serve Iowa’s socioeconomic needs. For example, there may be potential to develop a specialty market for Iowa-grown table grapes. We know how to grow table grapes in Iowa, but the table grape cultivars we can grow do not taste like the Californian and Chilean table grapes that Iowans are used to buying in the grocery store. Our thinking to redevelop Iowa’s grape industry must go beyond production and take place at many levels.

I hope that you will find the information in this paper useful. Feel free to contact the Leopold Center if you have any questions.

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## **Executive Summary**

Few Iowans realize that the state ranked eleventh in grape production in the United States in 1899, and sixth in 1919. During that period, Iowa grape producers formed associations and shipped a portion of their produce to other states. As Iowa shifted its major crop focus to the production of corn and soybeans in the 1930s and 1940s, grape production in the state decreased. By the late 1940s, drift of the corn herbicide 2,4-D caused considerable damage to remaining vineyards and was a key factor in the decline of the grape industry in Iowa and other midwestern states.

Iowa has an estimated 30 acres of grapes in production in 2000. Most table grapes, wine, and raisins produced in the United States are from California. Chile supplies the majority of Iowa's table grapes during the winter, and also has become a leading exporter of wines and grape juices.

Consumption of table grapes has more than doubled in the United States and Iowa since the 1970s, with significant increases in wine and grape juice consumption during this period. Many of Iowa's neighboring states have developed grape and wine research and promotion programs to redevelop their grape industries. For example, the program in Missouri has helped increase the market share of Missouri wines (as a percentage of all wines sold in the state) from 3.62 percent in 1993 to 5.18 percent in 1998. Missouri also has seen increases in consumption of Missouri table grapes and grape juices during this period.

Iowa's two major wineries would like to use more locally grown grapes to supplement the fruit from their own vineyards. Interest from these two wineries and other individuals and groups in redeveloping Iowa's wine and grape industry has led Iowa Secretary of Agriculture Patty Judge to form an Iowa Wine and Grape Advisory Council in January 2000. It is estimated that Iowa needs more than 330 acres of grapes to supply five percent of the wine and table grapes, and one percent of the grape juice consumed in the state.

Many Iowa farmers want to diversify their operations and add more value to what they produce in order to receive a higher share of the consumer food dollar. At the same time, Iowa consumers are becoming more interested in local food systems, in which local farmers sell their products to nearby consumers. Growing grapes as an agricultural enterprise presents both value-added and agri-tourism opportunities. This paper offers the following suggestions to revitalize Iowa's grape industry:

- Build a strong in-state retail sale market for Iowa grapes, wines, and juice.
- Emphasize production, business planning, and marketing in wine and grape education programs.
- Initiate long-term planning to increase Iowa grape production for Iowa consumption that would decrease reliance on the current dominant food system that supplies grapes, wine, and juices.
- Conduct feasibility studies for a specialty line of grape juices.
- Develop specialty markets for Iowa-grown table grapes.
- Encourage producers to diversify grape products and markets.
- Support research for organic and pesticide-free grape products and markets.
- Develop cooperative structures and partnerships for grape growers.

The food system framework for this paper can be applied to investigations of other crops and livestock that can be raised in the state. Local food systems offer Iowa farmers opportunities to increase their income and support local communities.

## **Introduction and purpose**

A food system includes the production, processing, distribution, sales, purchasing, consumption, and waste disposal pathways of food. In Iowa and across the nation, the level of interest in local food systems – where local farmers sell their products to nearby consumers – is growing. One example of a local food system is community supported agriculture, which establishes a partnership between farmers and consumers. In a typical Iowa community supported agriculture (CSA) enterprise, consumers pay a given amount to a farmer or group of farmers before the start of the growing season, sharing in some of the risk of producing the food. The food is then delivered directly to the consumer or is picked up at a designated location. Other examples of local food systems include farmers markets, roadside stands, on-farm sales, pick-your-own operations, and sales to hotels, restaurants, bed and breakfast inns, and institutions.

Many consumers do not understand the current national and global food production system, where much of the food production and processing takes place far away from where they live and buy their groceries. Several recent market studies, however, have described a market segment of 25 percent of the U.S. population whose purchasing decisions are increasingly guided by their social and environmental values.<sup>1</sup> Consumers within this segment want to know more about where and how their food is produced and processed. Many farmers want to better understand the current food system and participate in it more directly so they can receive more of the consumer dollar for the food they produce. Local food systems provide an opportunity for farmers and consumers to build mutually beneficial relationships around food. This paper will discuss several food systems involving grapes, and offers suggestions from a local food system perspective for redevelopment of Iowa's grape industry.

Americans consume fresh table grapes, raisins, grape juice, wine, grape jams, jellies, and many other products made from grapes. Per capita consumption of fresh grapes in the United States has increased from 2.9 pounds in 1970 to nearly 8.0 pounds in 1997.<sup>2</sup> Consumption of grape juice, wine, and raisins also showed significant increases during this period.

## **Objectives**

1. Provide an historical and current view of Iowa grape production and marketing,
2. Trace and discuss the path – from farm to Iowa consumer – for fresh table grapes within the context of the food systems that supply these grapes. Discuss the sources of grape juice, wines, and raisins available at Iowa grocery stores, and
3. Use grapes as an example to explore the potential for local systems supplying more of the food that Iowans consume.

This paper will provide background to those interested in the production and sale of Iowa grapes, wines, and grape juices. The purpose is to provide information, not promote specific enterprises or an increase in consumption of wine or other alcoholic beverages.

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<sup>1</sup> The Harwood Group. July 1995. "Yearning for Balance: Views of Americans on Consumption, Materialism, and the Environment." Bethesda, Maryland. (The report covers several market studies.)

<sup>2</sup> USDA/Economic Research Service. 1998.

## Historical and current views of Iowa grape production

Cultivation of the grapevine probably began about 6000 BC along the eastern shore of the Black Sea. Archaeological finds of seeds indicate that grapes were distributed throughout much of Europe between 2500 and 7500 years ago.<sup>3</sup> Native grapes were growing wild when the first European visitors arrived in North America. A millennium ago, Norse explorers named the eastern North American shores they visited “Wineland the Good.”<sup>4</sup> Sir Walter Raleigh, upon landing in 1584 on the coast of (what is now) North Carolina, described the vines that grew near the shore, and on in-land hills and plains.<sup>5</sup> The first historically documented vineyard planting of native grapes was by Lord Delaware in Maryland in 1610.<sup>6</sup>

Many European homesteaders in Iowa established small vineyards on their farms to supply fresh grapes and to make juice, wine, and jams for their families. Grapes were grown in the Council Bluffs area as early as 1857, when A.S. Bonham planted a vineyard on a hill overlooking the city.<sup>7</sup> According to the 1860 U.S. Agricultural Census, Des Moines, Iowa, Mills, Muscatine, and Van Buren counties led Iowa in production of farm-processed wine. Grape production in Iowa grew steadily as the state was settled. Nationally, Iowa ranked ninth in grape production in 1869 with nearly half a million pounds.<sup>8</sup>

The 1900 U.S. Agricultural Census showed that Iowa produced 7,403,900 pounds of grapes and 76,301 gallons of farm-processed wine. In Iowa County, grapes could be found growing along the sides of houses and in communal gardens in the Amana Colonies. Amana wines were made on a communal basis, and each family maintained designated rows of grapes. Amana wine was made and distributed by “punchable” tickets – 20 gallons a year for men, 12 for women.<sup>9</sup>

‘Concord’ grapes were the main cultivar grown in the state. Although producers in most counties grew grapes for home and community use during this period, several sold and distributed grapes in Iowa and other states. Iowa was sixth in grape production in 1919 with more than 12 million pounds.<sup>10</sup> Linn, Pottawattamie, and Polk counties produced approximately one-third of Iowa’s grapes in 1919, with Pottawattamie and Polk producing 1,863,000 and 1,374,000 pounds, respectively.<sup>11</sup> Most of the grapes grown in these three counties were produced near the cities of Cedar Rapids, Council Bluffs, and Des Moines.

The Council Bluffs Grape Growers Association was organized in 1893 by 21 of the higher-volume growers in the area.<sup>12</sup> In 1926 the association handled 1,400 tons of grapes produced

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<sup>3</sup> Mullins, Michael G., Alain Bouquet, and Larry Williams. 1992. *Biology of the Grapevine*. New York: Cambridge University Press.

<sup>4</sup> Morton, Lucie T. 1985. *Winegrowing in Eastern America*. Cornell University Press.

<sup>5</sup> “America’s First Grape: The Muscadine” U.S. Department of Agriculture website, January 2000. ([www.ars.usda.gov/is/AR/archive/nov97/musc1197.htm](http://www.ars.usda.gov/is/AR/archive/nov97/musc1197.htm)).

<sup>6</sup> U.S. Agricultural Census 1900. Volume VI, Part II.

<sup>7</sup> Maney, T. J. 1921. “Grape Production and Distribution in Western Iowa.” Iowa Agricultural Experiment Station Bulletin No. 199.

<sup>8</sup> *Agriculture Yearbook:1925*. United States Department of Agriculture, pp. 277-281

<sup>9</sup> *The Amanas Yesterday*. 1975. The Amana Society, Amana, Iowa.

<sup>10</sup> U.S. Agricultural Census 1920. Vol. VI, Part I, Table IV.

<sup>11</sup> U.S. Agricultural Census 1920. Vol VI, Part I, Table IV.

<sup>12</sup> Maney, T. J. 1921. “Grape Production and Distribution in Western Iowa.” Iowa Agricultural Experiment Station Bulletin No. 199.

from 400 acres, much of which were shipped to Colorado, Nebraska, and South Dakota.<sup>13</sup> Most of the growers within the association operated vineyards of ten acres or less in size. Growers in the Council Bluffs area operated a winery and juice processing facility.

Iowa's main grape-growing competitors in the 1920s were located in northeast Kansas along the Missouri River; near Nauvoo, Illinois along the Mississippi River; near Omaha and Florence, Nebraska; and the Ozark Mountain region of Arkansas.<sup>14</sup> Because of a reputation for better quality fruit than that grown elsewhere, grapes marketed by the Council Bluffs Grape Growers Association brought its members a \$56.00 per ton average for the 1926 season, \$16.00 per ton higher than the U.S. average price.<sup>15</sup>

Figure 1 shows Iowa grape production by county for 1919 (1920 Agricultural Census). Iowa production of grapes peaked in 1929 with a yield of 15.8 million pounds. Production and acreage of grapes decreased throughout the 1930s and 40s, averaging 5 million pounds per year during 1948-1950.<sup>16</sup> Iowa State University (then Iowa State College) began conducting cultivar trials and other experiments on grapes and other fruits at the Bluffs Experimental Fruit Farm near Council Bluffs in 1947. Eighty-four cultivars of grapes were planted from 1947 through 1965, with 52 under evaluation before the experimental site closed in 1965.

The use of the herbicide 2,4-D on corn and its drift to and damage of vineyards was deemed one of the most important reasons for the drop in Iowa's grape production.<sup>17</sup> After World War II, most of Iowa's commercial vineyards were located in southwest Iowa in Harrison, Mills, and Pottawattamie counties. In 1948 Pottawattamie County produced 2 million pounds of grapes on 3,200 acres. Commercial sales and distribution of 2,4-D began in 1945; the herbicide was first widely used on corn in 1949. Damage was widespread enough that by 1954 no vineyards in Pottawattamie County or the rest of the state were free of 2,4-D injury during the period when farmers could apply the herbicide to corn.<sup>18</sup> In 1964 a regional ban was imposed on volatile, drift-prone 2,4-D formulations in the five counties where most of Iowa's grapes were being grown (Muscatine, Lee, Harrison, Mills, and Pottawattamie). Researchers conducted studies to evaluate ferrous salts and iron chelate sprays to protect grapes from herbicide drift,<sup>19</sup> but the efforts were too little and too late. With the state's heavy focus on agronomic crops (in particular corn), it was difficult for Iowa grape-growers to protect their interests. By 1966 the Pottawattamie County grape harvest was down to 129,000 pounds on less than 700 acres,<sup>20</sup> and total grape production for Iowa decreased to 480,000 pounds.<sup>21</sup>

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<sup>13</sup>Clowes, Harry. 1927. "Fruit and Vegetable Production in Iowa." M.S. Thesis, Iowa State College.

<sup>14</sup> *ibid.*

<sup>15</sup> *ibid.*

<sup>16</sup> Iowa Agricultural Statistics – grape production records.

<sup>17</sup> Haag, Merlyn 1969. "Response of Concord Grape to Iron Additives with 2,4-D Herbicides.", M.S. Thesis, Iowa State University.

<sup>18</sup> Scholz, Earl, 1955. "Effects of 2,4-D on Concord Grape". M.S. Thesis, Iowa State College.

<sup>19</sup> Haag, Merlyn. 1969. "Response of Concord Grape to Iron Additives with 2,4-D Herbicides" M.S. Thesis, Iowa State University

<sup>20</sup> *ibid.*

<sup>21</sup> Iowa Agricultural Statistics. Note: Includes grape production for household and commercial use.

Iowa grape production for the period 1909–1966 is shown in Figure 2. Based on a review of the literature<sup>22 23</sup> and discussions with horticulturists, the decrease in Iowa grape production can be attributed to several factors:

- damage from drift of the herbicide 2, 4-D;
- increased competition and marketing of grapes, wine, and juice from California and other states and countries;
- problems with insect and disease management and weather;
- increased interest and expansion of row crop and livestock production, which decreased producers' time for management of the vineyard, thereby decreasing grape yield and quality and;
- passing of a national prohibition amendment in 1919.

In 1980, eight acres of cold-hardy hybrid grapevines were planted near Oxford as part of private initiatives to reestablish the grape industry in Iowa.<sup>24</sup> The 1997 Census of Agriculture showed a Iowa grape harvest of 56,536 pounds on more than 43 acres. The 1999 Iowa Fruit and Vegetable Growers directory listed 17 grape producers in 14 Iowa counties.<sup>25</sup> Many of these growers sell table grapes (along with other fruits and farm products) at a roadside stand or on-farm store, or they sell grapes at farmers markets. It is estimated that Iowa currently has 30 acres of grapes in production, with two vineyards and nine bonded wineries.<sup>26</sup> Although grapevines can still be found in the Amana Colonies, almost all of the wine made and sold at these wineries is prepared from grapes and juice produced and processed outside of Iowa.

## **Pathways grapes take to reach the Iowa consumer**

This section will trace the pathway of table grapes from harvest to Iowa consumer, and discuss the sources of grape juice, wine, and raisins available in Iowa grocery stores. Resources describing grape production, juice making, and winemaking are noted in Appendix A.

### **The California grape industry**

Prior to the Civil War, Ohio was the nation's leading grape-producing state. In California, the boom in table grape growing began in the 1830s when William Wolfskill planted his first vineyard on land near what is now Los Angeles.<sup>27</sup> The first winery was established in the 1850s during the Gold Rush.<sup>28</sup> R.B. Blowers, one of California's pioneers in produce distribution, began shipping table grapes to eastern markets in 1869, the first load shipped by ordinary freight

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<sup>22</sup> "The future of small fruit production in the North Central Region." 1966. NCR-22 Small Fruits subcommittee, Purdue University.

<sup>23</sup> Hall, Charles T. 1985. "Iowa fruit and vegetable marketing study." Iowa State University.

<sup>24</sup> Schmitt, Edward. "Private Efforts to Re-establish a grape industry in Iowa." A report submitted in support of the Iowa Task Force on Agricultural Diversification. (actual report date unknown; this report was likely submitted in 1982 or 1983.)

<sup>25</sup> The directory states that producers are believed to be selling fruits and vegetables directly to consumers from a permanent site, excluding farmers markets.

<sup>26</sup> News Release, "Patty Judge announces Viticulture Advisory Council," January 21, 2000.

<sup>27</sup> California Table Grape Commission website January 2000 ([www.tablegrape.com](http://www.tablegrape.com)).

<sup>28</sup> California Association of Winegrape Growers. Website March 2000 ([www.cawg.org/guides/overview.htm](http://www.cawg.org/guides/overview.htm)).

to Chicago, Illinois.<sup>29</sup> By the mid-1860s California had become the nation's leading grape-producing state and has held that status ever since.

California wine, table grapes, and raisins are important agricultural commodities today, with approximately 700,000 acres of vineyards.<sup>30</sup> California is responsible for nearly 90 percent of the U.S. grape crop and more than 90 percent of total U.S. wine production.<sup>31</sup> In 1999, California's grape crop consisted of 13 percent table, 49 percent wine, and 38 percent raisin grape varieties. Nearly 97 percent of the table grapes grown in the United States are produced in California.<sup>32</sup> A 1994 study found that 47 percent of consumers mentioned California when asked where grapes come from.<sup>33</sup>

### **How do California table grapes get to Iowa?**

There are about 600 producers who grow table grapes in California.<sup>34</sup> Harvest is from May through mid-November (provided there are no hard freezes that cause the season to end earlier). It starts in the Coachella Region (east of Palm Springs in the southern California desert) and spreads northward so that by mid-July most of the state's grape-growing regions are harvesting. Harvest is done by hand using migrant labor.<sup>35</sup> Grape bunches are sorted (bad berries clipped off) and packed in boxes, loaded onto pallets, and taken directly to a precooler, usually on the farm or within ten miles of the farm. In the precooling process small batches of fruit (2,000 to 3,000 of the ten-kilogram boxes) are placed in a specialized forced air cooler. The fruit goes from field temperature to 36 to 38°F in a few hours. The fruit also receives an initial gassing of sulfur dioxide to kill fungi that may attack the grapes during storage. Rooms are then flushed with clean air to remove the sulfur dioxide residue left on the fruit.

Then fruit is transferred to large cold storage areas that hold 100,000 boxes or more. Grapes are maintained at a temperature of 31 to 32°F and relative humidity of about 98 percent. California has more than 250 precooling and cold storage centers where grapes await orders for shipment to Iowa via truck. Growers own some of the precooling and cold storage facilities; others belong to distributors, brokers, or cooperatives. Lower-volume growers may contract with a major grower for precooling and cold storage service.

In most instances, grapes are stored at a refrigerated distribution warehouse in Iowa or in an adjoining state before being transported by truck to an Iowa grocery store. The store produce manager usually places an order for grapes with the distribution center or warehouse, and the order arrives within one or two days. During peak harvest season from May through September, the grapes reach an Iowa warehouse or grocery store five to seven days after harvest (or longer if

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<sup>29</sup> California Table Grape Commission website January 2000 ([www.tablegrape.com](http://www.tablegrape.com)).

<sup>30</sup> California Table Grape Commission website February 2000 ([www.tablegrape.com](http://www.tablegrape.com)).

<sup>31</sup> Wine Institute website January 2000 ([www.wineinstitute.org](http://www.wineinstitute.org)).

<sup>32</sup> California Table Grape Commission website January 2000 ([www.tablegrape.com](http://www.tablegrape.com)).

<sup>33</sup> 1994 "Fresh Trends" study conducted by *The Packer* (a produce industry weekly).

<sup>34</sup> California Table Grapes Economic Impact Report. 1998. California Table Grape Commission.

<sup>35</sup> Pirog, Richard ([rspirog@iastate.edu](mailto:rspirog@iastate.edu)). "Socioeconomic information on the California grape industry." E-mail to Bill Friedland ([fredla@cats.UCSC.EDU](mailto:fredla@cats.UCSC.EDU)). 13 February 2000. *Note:* Although these workers may be defined as "migrant" workers by USDA because they move and work following the harvest season, many of these harvester/packers are permanent residents of California.

they are in refrigerated storage awaiting shipment). Figure 3 shows the typical distribution pathway of California table grapes to an Iowa grocery store.

Toward the end of the California grape harvest season, grapes may be stored one or two weeks before shipment to Iowa. Grapes held in storage are gassed weekly with sulfur dioxide to prevent fungi problems. With proper storage conditions, grapes can maintain freshness 40 days or longer after harvest. During the 1998-99 season (May 1998 through January 1999), 12.7 million pounds of major grape cultivars (over two-thirds 'Thompson Seedless' and 'Flame Seedless') and 1.5 million pounds of minor cultivars were shipped to Iowa.<sup>36</sup>

### **The Chilean grape industry**

Throughout the 1960s, Chile's traditional farm exports of dry beans, lentils, and wool provided income for Chilean farmers, but the market value of these crops fluctuated widely from one year to another. The Chilean government and farmers saw that the export market for their apples and grapes had relatively steady prices. Enforcement of property rights that came with increased political stability after 1974 encouraged Chile's landowners to make long-term investments, and diversify away from the three traditional crops to grow fruits.<sup>37</sup> A liberalization of the economy and loosening of export controls offered Chilean producers access to better technology and international markets. Chilean growers saw the potential to develop a table grape industry to complement California production because Chile's location in the Southern Hemisphere provided a natural and distinct marketing window.

In 1973, Chile had 5,200 hectares of table grapes that yielded approximately 5.4 million boxes of the fruit.<sup>38</sup> Chile's table grape production had grown to 67 million boxes in the 1997-98 season. The United States received 37.2 million boxes, or more than 55 percent of the 1997-98 total. This is seven times the amount of grapes that Chile produced in 1973. For the May 1998 to April 1999 season, 223.5 million pounds of Chilean grapes were imported into the United States.<sup>39</sup> Today Chilean table grape production covers 44.2 thousand hectares, or 21 percent of Chile's land under cultivation.<sup>40</sup> In addition to table grapes, Chile has developed a strong wine, juice, and juice concentrate industry.

### **How do Chilean grapes get to Iowa?**

From December through April, most of Iowa's table grapes come from Chile. Chile is the primary wintertime source of table grapes for the United States and Canada, supplying more than 95 percent of the fruit during this period.<sup>41</sup> Harvest starts in the northern grape-growing regions of Chile and progresses south (the opposite direction of the California harvest). Grapes are picked by hand in the fields, loaded into boxes, and packed with sulfur dioxide pads, which slowly release sulfur dioxide gas to reduce fungi on the grapes. (These pads remain in the boxes

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<sup>36</sup> 1998-99 Distribution Report for California Table Grapes. *Note:* Shipping estimates are based on fruit distributed to major cities. Davenport, Iowa and Eldridge, Iowa are listed as part of the shipping destinations for the Quad Cities and are listed under Illinois, not Iowa, in the report.

<sup>37</sup> Sparks, Amy, L. and Carlos Arnade. 1995. "Chile's Agricultural Diversification." (ERS-AGES-9528), U.S. Economic Research Service.

<sup>38</sup> Chilean Ministry of Agriculture.

<sup>39</sup> Bureau of the Census, U.S. Department of Commerce.

<sup>40</sup> Chilean Fresh Fruit Association, personal communication, February 7, 2000.

<sup>41</sup> Chilean Fresh Fruit Association. Informational packet (contact [www.cffa.org](http://www.cffa.org) or call 916-927-1217).

until the grapes reach an Iowa grocery store.) Boxes are stacked onto pallets and quickly transported to a nearby precooling facility to quickly reduce the temperature of the grapes to approximately 36°F. Chile has facilities to keep 60 million boxes of grapes in more than 360 precooling and cold storage centers. Nearly 100 percent of the grapes are then loaded onto refrigerated trucks and transported to one of four Chilean seaports (less than one percent are air-freighted out of Chile's Santiago airport). The time from field harvest until the grapes are loaded in a sea transport (ship) is two-and-a-half to three days.

Sea transports bound for the United States head north to Los Angeles ports or east through the Panama Canal and up to the port of Philadelphia. A few sea transports unload at Wilmington, North Carolina. Most grapes bound for Iowa probably come from the Philadelphia port, although grapes from the Los Angeles ports may come to Iowa if it is economical for the distributor, broker, or grocer. It usually takes about 12 days for grapes leaving Chilean ports to arrive at the port in Philadelphia. The grapes are then loaded onto refrigerated trucks and transported to distribution centers and warehouses in Iowa and neighboring states in one to three days. The produce manager usually places an order for grapes with the distribution center or warehouse, and the order arrives at the store in one to two days. The amount of time from harvest to sale at a typical Iowa grocery store ranges from 15 to 20 days, and longer if the grapes have extended storage in Chile. Figure 4 shows the distribution pathway of Chilean table grapes to an Iowa grocery store.

### **South African and Mexican table grapes**

The Republic of South Africa competes directly with Chile for the U.S. table grape market during late winter and early spring. Grapes transported to Iowa in March and April may include some loads from the Republic of South Africa, particularly toward the end of the Chilean grape season. For the May 1998 to April 1999 reporting period, 30.0 million tons of fresh grapes were imported to the United States from the Republic of South Africa.<sup>42</sup> Mexico is a direct competitor with California for early season table grapes. Mexican grapes are usually available in Iowa grocery stores from late April to early June. For the May 1998 to April 1999 season, 223.5 million pounds of Mexican grapes were imported to the United States, a 34 percent increase from the previous year and more than twice what was imported in the 1994-1995 season.<sup>43</sup> Figure 5 shows the sources of table grapes available at Iowa grocery stores over 12 calendar months.

### **Grape juice and grape juice concentrate**

In addition to producing the most U.S. table grapes and wines, California produces more than 52 percent of the grape juice concentrate in the United States, most of which is white grape juice concentrate.<sup>44</sup> New York, Washington, Pennsylvania, and Michigan are the other four top grape-producing states, with most of the grapes being 'Concord'. Nearly 60 percent (approximately 100,000 tons) of New York grapes are used to make juice or grape juice concentrate, with most of the remainder going to wine production.<sup>45</sup> Washington has more than 26,000 acres of 'Concord' grapes and 2,000 acres of 'Niagara' grapes, of which close to 60 percent is used for

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<sup>42</sup> Bureau of the Census. 1999. U.S. Department of Commerce.

<sup>43</sup> Bureau of the Census. 1999. U.S. Department of Commerce.

<sup>44</sup> California Association of Winegrape Growers, website March 2000 ([www.cawg.org/guides/concent.htm](http://www.cawg.org/guides/concent.htm)).

<sup>45</sup> Cornell Cooperative Extension Service website February 2000. ([www.nysaes.cornell.edu/pubs/press/cce\\_grapes.html](http://www.nysaes.cornell.edu/pubs/press/cce_grapes.html)).

domestic production of grape juice and grape concentrate. ‘Thompson Seedless’, a common California table grape cultivar, and ‘Concord’ and ‘Niagara’ grapes are most often used for processing into juice or grape juice concentrate.

Harvest for juice grapes from the top five states (except California) usually takes place in September and/or October. Almost all grapes for juice are harvested mechanically. Grapes are transferred to a processing plant where they are de-stemmed, heated, agitated, and undergo a de-juicing process where the “free juice” is pasteurized. The de-juiced grapes are sent through a series of presses where all remaining juice is removed and put through a similar pasteurization process. The leftover pulp, skins, and seeds are returned to the growers for use as mulch in their fields. These processing plants make both grape juice and grape juice concentrate. Heating grape juice under a vacuum to remove some of the water produces the concentrate. (Refer to Appendix A for more resources on the grape juice and grape juice concentrate processes.)

A typical purple or a white grape juice that is sold in Iowa under a variety of brand names as a “100 percent grape juice product” is usually a mixture of grape juice and grape juice concentrate, with grape juice concentrate often the major ingredient. Grape juice sold in plastic and glass bottles and metal cans in Iowa may be a mixture of domestic and imported grape juice concentrate and grape juice. For example, some grape juice may include concentrate from California and countries such as Chile and Argentina. The United States is a net importer of grape juice and grape juice concentrate, with most coming from Argentina, Brazil, Chile, Mexico, and Spain.<sup>46</sup> The concentrate can be used in other juice and fruit-flavored soft drinks, cereals and bakery items, yogurts, and frozen fruit desserts. The decision to use grape juice concentrate in these products rather than apple or pear concentrate is usually based on price.

Currently, Mrs. Clark’s Foods in Ankeny is the only grape juice processor in Iowa. All of their grape juices are made from grape juice concentrate. They purchase approximately 120,000 gallons of concentrate per year, with more than 80 percent from white grapes and less than 20 percent from ‘Concord’ grapes. One-third of the white grape concentrate used by Mrs. Clark’s comes from California, whereas two-thirds comes from Argentina. About 20 percent of their ‘Concord’ grape concentrate comes from the northeast states (most likely New York, Michigan, and Pennsylvania), and about 80 percent from the northwest (most likely Washington).<sup>47</sup> A large percentage of the grape juice processed by Mrs. Clark’s Foods is distributed and sold outside Iowa.

## **Wine**

During the year July 1, 1998 through June 30, 1999, Iowans purchased 2,221,906 gallons of wine.<sup>48</sup> Iowa is currently ranked 40<sup>th</sup> in per capita wine consumption.<sup>49</sup> It is estimated that less than one percent of the wines purchased and consumed within Iowa come from Iowa wineries and vineyards. Iowa currently has nine bonded wineries. Several Iowa wineries do their own wholesaling. Iowa wineries can sell direct from the winery or from shops that do not have liquor permits if the winery gets a permit for the shop (an extension of the winery’s own permit).

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<sup>46</sup> Fruit and Tree Nuts Situation and Outlook. 1999. USDA Economic Research Service, September.

<sup>47</sup> Personal communication with Mrs. Clark’s food scientist, January 27, 2000.

<sup>48</sup> Iowa Alcoholic Beverage Division, 1999.

<sup>49</sup> Iowa Alcoholic Beverage Division, trade groups, 2000.

These wineries can also sell and ship wine to a number of states that have reciprocal agreements with Iowa. These agreements allow residents of these states to purchase Iowa wines, and Iowa residents to purchase their wines.

Summerset Winery in Indianola and Tabor Winery in Baldwin, Iowa press their own grapes to make wines but need to purchase additional fresh pressed grape juice from California, Pennsylvania, Michigan, Oregon, and other states. Iowa grocery and liquor stores purchase wine from distributors who often work directly with wineries. Some distributors sell wine and other alcoholic beverages, others may sell only premium or specialty wines. An informal survey of six grocery and liquor stores in Ames, Ankeny, and Des Moines in March 2000 found wines from California, Oregon, Washington, Wisconsin, Australia, Chile, France, Germany, Italy, and Spain.

The top five winegrape cultivars grown in California are ‘Chardonnay’, ‘French Columbard’, ‘Zinfandel’, ‘Cabernet Sauvignon’, and ‘Merlot’. Nearly half of California wine grapes are mechanically harvested.<sup>50</sup> Low-value grapes tend to be machine-harvested, whereas high-value grapes are harvested by hand. When machine harvesting is used, the vineyards need to be close to the winery. Grapes transported long distances to a winery need to be chilled before transportation. A few Iowa wineries buy wine grapes to supplement their own grapes and have the equipment to extract juice; some do not have juice extraction equipment and buy only fresh-squeezed juice. Grape juice concentrate is sometimes used to fortify wines. Winemaking involves the process of fermentation (converting sugars of grapes into alcohol and carbon dioxide). Refer to Appendix A for resources on the winemaking process.

### **Raisins**

Most of the raisins consumed in Iowa come from California. Approximately 95 percent of the raisins produced in California are made from ‘Thompson Seedless’ grapes grown in the San Joaquin Valley. ‘Thompson Seedless’ grapes bred especially for raisins (smaller than the ‘Thompson Seedless’ table grapes) are picked from vineyards and laid on paper trays between vine rows to dry. Under normal conditions, grapes need three weeks of in-field drying time to become raisins. The dried fruit is taken to a processor where it is de-stemmed, cleaned, sorted by size, and packed in various containers for shipping. No preservatives are added. The time from when the raisins are packed in containers until they are sold in a grocery store varies. Although raisins have a definite shelf life, they do not need refrigeration and are not a perishable product like fresh table grapes.

## **A local food system perspective on redeveloping Iowa’s grape industry**

### **Changes in U.S. and Iowa grape consumption**

Table 1 shows the per capita consumption of grapes in the United States from 1970 to 1998. Consumption of fresh grapes more than doubled during this period. Figure 6 shows the quantity of major varieties of California table grapes shipped to Iowa for select years in the period 1980–1999. The amount of grapes shipped more than doubled during this period; however, not all grapes shipped to Iowa are consumed within the state. A small but significant percentage is

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<sup>50</sup> Luvisi, D. 1993. “Mechanization of the California wine industry.” Proc 2<sup>nd</sup> N.J. Shaulis Grape Symposium, Fredonia, NY. pp. 54-57.

transported to neighboring states for sale. Even with this caveat, the increase parallels the national data and implies that Iowans have significantly increased their consumption of table grapes in the past 20 years.

Reasons for increased consumption of grapes include the availability of grapes year-round, due in large part to stepped-up Chilean grape production and export during the Iowa winter months. The increase in availability of seedless grapes may have increased consumption. Heightened interest in fresh fruits and vegetables in the United States because of their value in a healthful diet may have helped grape sales.<sup>51</sup> Another possible reason is that because grapes are available throughout the year in a grocery store, grape growers and distributors have been able to maintain their existing space in the produce section, and consumers become accustomed to finding the fruit in the same location.<sup>52</sup>

### **Wine and grape programs in other midwestern states**

Iowa has a \$1.75 per gallon tax with no funds going to industry development. Meanwhile, Missouri currently has 37 wineries that sell more than 75 percent of their wine directly to the consumer and a 36 cents-per-gallon tax on wine with six cents going to industry development. This six cents per gallon tax in Missouri, initiated in 1984, paved the way for the hiring of a viticulturist (specialist in growing grapes) and an enologist (specialist in wine-making) to develop a grape and wine industry suitable to Missouri's climate and socioeconomic needs. Missouri has also instituted a wine and grape production tax credit program that allows a 25 percent state income tax credit on the purchase price of new equipment and materials used in the production of grapes or wine. In 1999 Missouri established a \$15,000 grape-planting incentive program to pay new growers \$500 per acre of grapes on a first-come, first-served application basis.

During the period from 1993 to 1998, sales of Missouri wine increased from 232,940 to 388,093 gallons. The market share of Missouri wines (as a percentage of all wines sold in the state) rose from 3.62 percent to 5.18 percent during the same period.<sup>53</sup> Missouri's Grape and Wine Program, coordinated by the Market Development Division of the Missouri Department of Agriculture, hosts a variety of wine-tasting events and works with restaurants and retail outlets to stock Missouri wines. Missouri wine production generates an estimated \$26 million in sales, creates about 256 jobs, and provides more than \$6 million in income and nearly \$2 million in tax revenue for the state.<sup>54</sup> Missouri's wine and grape industry is considered as much a part of its tourism industry as part of the agricultural sector because of the additional revenue generated for other industries by tourists who like to visit towns with wineries.

Illinois residents consumed 25 million gallons of wine in 1996 for a total of \$705 million in sales, with less than one percent of these sales from wine produced within the state. Recognizing the benefits a grape and wine industry could add to the state's economy, Illinois in 1997 established legislation creating the Illinois Grape and Wine Resources Council, which is housed

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<sup>51</sup> Sparks, Amy, L. and Carlos Arnade. 1995. "Chile's Agricultural Diversification." (ERS-AGES-9528) U.S. Economic Research Service.

<sup>52</sup> Personal communication with communications director of California Table Grape Association, February, 2000.

<sup>53</sup> Missouri Department of Agriculture Grape and Wine Program, 2000. (Contact 573-751-3374.)

<sup>54</sup> *ibid.*

at Southern Illinois University's College of Agriculture.<sup>55</sup> Survey data gathered by this group, including cultivar trials, have been useful in encouraging development of the wine and grape industry in Illinois. In the past several months, with a direct appropriation from the Illinois Legislature, the state has hired an enologist to help develop Illinois wines. The current appropriation for the Illinois Grape and Wine Resources Council is \$500,000 each year for five years.

The Indiana General Assembly established the Indiana Wine Grape Council in 1989. The Council is funded through an excise tax added to wine purchases in the state. The program has funded extension specialists in enology, viticulture, and marketing to assist grape growers and winemakers in the state. Since 1991, Indiana has seen a 300 percent increase in wine grape acreage.<sup>56</sup> In Ohio a vine grant program has been established through the Ohio Grape Industries Committee in cooperation with the Ohio State University Extension viticulturist to help new wine grape vineyards in Ohio.<sup>57</sup> The Ohio Grape Industries program also assists with the promotion and marketing of Ohio grapes and wines. In 1984 the Minnesota legislature provided approximately \$125,000 for the University of Minnesota to set up a grape-breeding program to develop cold hardy grapes with resistance to various pests. In 1997 the legislature provided \$200,000 through the Minnesota Agricultural Experiment Station to construct and staff a research winery.<sup>58</sup> The Nebraska legislature recently passed a bill authorizing an advisory council for developing a wine and grape industry. The Nebraska Winery and Grape Growers Association plans to request funding from the legislature in support of this industry.<sup>59</sup>

### **Iowa's potential grape and wine industry**

Summerset Winery in Indianola and Tabor Winery in Baldwin, Iowa have increased dollar sales in recent years. Operators of both wineries feel that quality grapes can be grown locally and have encouraged local producers to grow grapes for their wines to supplement the grapes they already produce. Tabor Winery has worked with local growers who have planted about 20 acres of wine grapes to supply the enterprise; some growers are expecting their first harvest in 2000.

There has been great interest in reestablishing vineyards in the Loess Hills area of southwestern Iowa. The Golden Hills Resource Conservation and Development group, with support from the Iowa Natural Resources Conservation Service, has sponsored a project to provide growers with production and marketing information. They hope to encourage at least 35 acres of grape-growing in southwestern and western Iowa, primarily for the purpose of wine production. These grape production systems would use soil conservation methods to protect the fragile Loess Hills soils. Several growers in southwest Iowa and other parts of the state have planted vines in 1999 or have intentions to do so in 2000.

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<sup>55</sup> Illinois Grape and Wine Resources Council website March 2000.  
([www.siu.edu/departments/coagr/background.html](http://www.siu.edu/departments/coagr/background.html))

<sup>56</sup> Indiana Wine Grape Council website March, 2000 ([www.indianawines.org](http://www.indianawines.org)).

<sup>57</sup> Brown, Maurus. 2000. "Grant Program to Increase Wine Grape Production in Ohio." *Journal of Extension*, 38:1.  
([www.joe.org/2000february/iw3.html](http://www.joe.org/2000february/iw3.html)).

<sup>58</sup> Pirog, Rich ([rspirog@iastate.edu](mailto:rspirog@iastate.edu)). "Information on Minnesota's grape and wine program efforts." E-mail to Dr. James Luby ([lubyx001@tc.umn.edu](mailto:lubyx001@tc.umn.edu)). 22 March 2000.

<sup>59</sup> Pirog, Rich ([rspirog@iastate.edu](mailto:rspirog@iastate.edu)) "Information on Nebraska's wine and grape efforts." E-mail to Dr. Paul Read ([pread@unlnotes.unl.edu](mailto:pread@unlnotes.unl.edu)). 24 March 2000.

To encourage establishment of vineyards to meet current and future demands of Iowa's wine/grape industry, Iowa Secretary of Agriculture Patty Judge announced the formation of an Iowa Wine and Grape Advisory Council in January 2000.<sup>60</sup> The council hopes to learn from existing programs in Missouri and other states how to develop a wine and grape industry in Iowa. This would benefit small farms and provide revenue to communities through local and regional tourism.

Iowa's Wine and Grape Advisory Council could follow the lead of other midwestern states by working to see that legislation is passed to use a portion of funds from the wine gallonage tax to develop a grape and wine industry. Funds from this tax could help support the necessary technical and promotional efforts to develop and promote Iowa's vineyards. Members of the Iowa Wine and Grape Advisory Council and other individuals and groups plan to conduct this work, which will include assessment of production information needs, and various feasibility and marketing studies.

### **Potential for Iowa grape consumption (wine, juice, table grapes)**

Current estimates (based on per capita consumption and Iowa production figures) are that Iowa grapes account for far less than one percent of the table grapes, wine, and juice that Iowans consume. If five percent of the wine, five percent of the table grapes, and one percent of the grape juice consumed within the state were supplied by grapes grown in Iowa vineyards, how many acres of grapes would be needed? To answer this question we need to make a few assumptions:

- A five-year national average (1994-1998 crop years) per capita consumption of fresh grapes of 7.42 pounds<sup>61</sup>
- A 2.5 ton-per-acre yield for Iowa wine grapes and 3.5 ton-per-acre yield of Iowa table and juice grapes<sup>62</sup>
- Iowa table grapes would be available to consumers for three months of the year
- A five-year average (1995-1999 state fiscal years) of 2,092,366 gallons of wine (from all sources) sold per year in Iowa<sup>63</sup>
- About 150 gallons of wine can be made per ton of grapes<sup>64</sup>
- A five-year national average (1994-1998 crop year) per-capita consumption of grape juice of 0.36 gallons, or fresh-weight equivalent of 3.98 pounds<sup>65</sup>

Using 1998 Iowa population figures (2.862 million people) and these assumptions, Iowa would need an estimated 279 acres of wine grapes and 54 acres of table and juice grapes to supply five percent of Iowa's wine and table grape consumption, and one percent of Iowa's grape juice

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<sup>60</sup> News Release – Iowa Department of Agriculture and Land Stewardship, January 21, 2000. Note: The name of the group was changed from Iowa Viticulture Advisory Council to the Iowa Wine and Grape Advisory Council at the first meeting.

<sup>61</sup> USDA/Economic Research Service, 1998.

<sup>62</sup> Estimate assumes efficient management and production practices and is based on conversation with Iowa grape growers and horticulturists, and estimates from neighboring states.

<sup>63</sup> Source: Iowa Alcoholic Beverage Division.

<sup>64</sup> Personal communication with Paul Tabor of Tabor Vineyards, Baldwin, Iowa, and represents estimates for interspecific hybrid grapes.

<sup>65</sup> USDA Economic Research Service. 1998. Gallons per capita are on a product weight basis.

consumption. These acreage estimates do not include the potential for wine, juice, and grape purchases by out-of-state tourists or wine shipped to states that have reciprocal agreements with Iowa.

### **Pilot local food system projects show potential for local foods**

The move toward growing more Iowa grapes is fueled in part by a need to diversify Iowa agriculture and by an increased interest in locally grown foods shown by Iowa consumers. The number of community supported agriculture enterprises in the state has increased from three in 1995 to an estimated 45 in 2000.<sup>66</sup> Pilot local food system projects initiated recently in several Iowa counties have reported success in increasing sales of locally grown produce, meats, and processed foods to hotels, restaurants, and institutions such as hospitals, universities, workplace cafeterias, and conference centers. For example, a Leopold Center-funded project at Allen Hospital in Waterloo reported that 30 percent of the produce purchased during the 1999 growing season came from local growers. The hospital had purchased little local produce prior to 1998. Rudy's Tacos, a locally owned Waterloo restaurant, has increased its purchases of Iowa-grown and processed food and beverages to more than 60 percent of its total buying.

The Field to Family project associated with the Practical Farmers of Iowa has been linking growers with the food service staff at ISU's Scheman Building, resulting in Scheman offering an Iowa-grown menu for its conference service clients as of July 1999. The Farm Bureau cafeteria in Des Moines, operated by Sodexo-Marriott Services, began serving Iowa-grown foods as part of its 1999 summer menu. The Field to Family Project and ISU's Department of Hotel, Restaurant, and Institutional Management have begun a project in Story County to explore the possibility of locally-grown food being served at elementary and secondary schools. Other pilot projects in Adams, Audubon, and Johnson Counties have raised awareness of and interest in local and Iowa-grown foods. Projects in Plymouth and Worth counties are underway in 2000.

Interest in eating Iowa-grown and processed foods has increased due to these projects and a promotional campaign, "A Taste of Iowa", sponsored by the Iowa Department of Economic Development and Iowa Department of Agriculture and Land Stewardship. Another incentive was Iowa Secretary of Agriculture Patty Judge's appointment of a Local Food Task Force in the spring of 1999. Its main purpose was to find ways to expand local markets for Iowa farmers. A copy of the task force's recommendations, released in September 1999, can be found in Appendix B. Iowa Governor Tom Vilsack has recently announced the creation of an Iowa Food Policy Council, which will address a number of food issues including local food systems.

### **Suggestions for redeveloping Iowa's grape industry**

The Iowa Wine and Grape Advisory Council realizes the opportunity exists for rejuvenating Iowa's grape industry. Although 2,4-D is still applied as a herbicide in corn and other crops, its use has decreased significantly, and the formulations currently available lack the drift potential of the products used in the 1950s and 1960s. With proper precautions and communications with neighbors, it is possible once again to grow grapes in Iowa with a minimal risk of herbicide injury. Iowa producers could increase the acreage of existing vineyards to meet the demands of Iowa's wineries. Based on the economic success of Missouri's grape and wine industry, the potential for tourism adding dollars to Iowa communities through the promotion and attraction of

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<sup>66</sup> Personal communication with Shelly Gradwell, ISU Extension Sustainable Agriculture Program, March 23, 2000.

existing and new wineries is high. A vibrant and growing Iowa grape industry offers a strong tourism element not present in many other agricultural enterprises.

Pilot projects have demonstrated that there are Iowa consumers, chefs, distributors, and food service managers who are interested in purchasing more locally grown products, particularly if these products meet their standards for quality, convenience, and price. Although price is very important, these projects have shown that chefs and food service managers may purchase a local food item over a lower-priced imported food because of quality, taste, and local community considerations.

The opportunity to revitalize Iowa's grape and wine industry comes at a time of increased awareness that Iowa's farmers need to explore alternative or value-added agricultural enterprises to remain profitable. It also is a time of rising public and institutional interest in Iowa-grown and local foods. Given these considerations, Iowa grape growers, winemakers, the Iowa Wine and Grape Advisory Council, and other stakeholders in Iowa's reemerging grape industry may want to consider the following:

- **Build a strong in-state retail sale market for Iowa grapes, wines, and juice.** Iowa's neighboring states have or are in the process of developing viticulture programs to increase grape acreage for in-state production and consumption of wine and juice, and to a lesser extent table grapes. Missouri's program, one of the oldest and most successful in the Midwest, has helped to increase in-state retail sales. Iowa's wine and grape program should follow suit and build a strong Iowa retail sale market. Consumers interested in eating and drinking Iowa-grown products can raise interest and support for Iowa-grown grapes, wines, juices, and other value-added products by asking for these products at supermarkets, restaurants, workplace cafeterias, and convenience stores. Iowa grape growers and wineries could collaborate with informed consumers to promote Iowa grape cultivars, juices, and wines by holding "A Taste of Iowa" tasting events at county fairs, city-sponsored celebrations, and other local gatherings. Early-season table grapes could be available in time for tasting events at the Iowa State Fair. Iowa ranks near the bottom of U.S. states and territories in eating five or more daily servings of fruits and vegetables.<sup>67</sup> Nutritionists and dietitians should work with Iowa fruit and vegetable growers and community supported agricultural enterprises to increase the sale and consumption of Iowa-grown produce, including grapes.
- **Emphasize production, business planning, and marketing.** Programs offered by agencies and non-profit organizations should emphasize production, business planning, and marketing. There are not enough people with sufficient expertise in wine and grape production to help prospective grape growers and winemakers. It is also important that Iowa producers not only learn how to grow grapes, but also how to develop a profitable business based on sound financial and marketing plans. Several new agricultural business and entrepreneurial planning tools are available that focus on business, marketing, and promotional skills.<sup>68 69</sup>

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<sup>67</sup> Behavioral Risk Factor Surveillance Survey. ([http://www2.cdc.gov/nccdphp/brfss/.](http://www2.cdc.gov/nccdphp/brfss/))

<sup>68</sup> "nXLevel" Training information can be found at [www.nxlevel.org](http://www.nxlevel.org). "Growing your small market farm" weekend workshops planned for January-April 2001. Drake University ([www.disc.drake.edu/pappajohn.htm](http://www.disc.drake.edu/pappajohn.htm)).

<sup>69</sup> Hamilton, Neil. 1999. "The Legal Guide for Direct Farm Marketing". Drake University Agricultural Law Center.

- Plan for the long term to increase Iowa grape production to decrease dependence on the dominant food systems supplying grapes to Iowa.** Although the California and Chilean grape food systems are large and have the infrastructure and financial capital to dominate the global food markets for years to come, they are fragile with respect to climate and transportation/energy considerations. In both locations a significant portion of their grapes are grown under irrigated desert or semi-arid conditions. California has a complex legal system with respect to water that may be under pressure to change in the future, and agriculture within the primary fruit-growing areas in the state is threatened by urban sprawl.<sup>70</sup> European research is showing that many of our current global food systems are energy-inefficient and may unduly increase greenhouse gas emissions.<sup>71 72</sup> It is realistic to assume that these food systems cannot indefinitely maintain current levels of production and low consumer cost. A long-term vision for Iowa may include the state producing more than five percent of the grapes, as well as other fruits and vegetables consumed within the state.
- Conduct feasibility studies to develop a specialty line of grape juices.** Bottled or canned grape juice sold in supermarkets nationwide was one of the biggest gainers in grocery category product sales in 1997, and maintained this sales level in 1998.<sup>73 74</sup> Research suggests that consumption of fresh grapes and juice, like wine, may provide important sources of antioxidants to reduce the potential for coronary heart disease.<sup>75</sup> There may also be opportunities for grape and apple growers to work together to investigate the potential for a line of specialty apple and /or grape juices for Iowa markets, spreading investment risk among a larger pool of Iowa growers and investors.
- Develop specialty markets for Iowa-grown table grapes.** Although potential income for table grapes seems to be much lower compared to making wine, producers should also evaluate specialty markets for Iowa-grown seeded and seedless table grapes. Most of the table grape cultivars suited for Iowa are seeded grapes. More research is needed on seedless cultivars that will grow well in Iowa and satisfy consumer expectation for a seedless grape. Few Iowa farmers markets currently offer table grapes for sale, and fewer still offer grapes on a pick-your-own basis. Only one of the current community supported agriculture projects is planning to offer table grapes as a regular or special produce option. Although Iowa grape growers can't compete with the current low prices at which California and Chilean grapes are sold, they may be able to justify and receive higher prices on the basis of taste, quality, and local community considerations. Given appropriate cultivar selection and an effective marketing campaign, Iowa table grapes may have the same competitive advantage in taste as Iowa sweet corn.

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<sup>70</sup> Ritter, John. "Valley of plenty fights to survive." *USA Today*, 1 March. 2000.

<sup>71</sup> Carlsson.-Kanyama, Annika. "Food Consumption Patterns and their influence on Climate Change." *Ambio* 27:7.pp.528-34.

<sup>72</sup> Jones, J.A. 1999. "The environmental impacts of distributing consumer goods: a case study on desert apples." Ph.D. Thesis. Centre for Environmental Strategy, University of Surrey, Guildford, Surrey, UK.

<sup>73</sup> "1998 Sales Manual." *Progressive Grocer*, July 1998. (Note: frozen grape juice was not included in this category.)

<sup>74</sup> "1999 Sales Manual." *Progressive Grocer* July, 1999.

<sup>75</sup> Frankel, Edwin, and Meyer, Ann S. *Pharmaceutical Biology*. 1998. Vol. 36, supplement, pp.14-20.

- **Encourage producers to diversify grape products and markets.** Diversification among grape products may help spread investment risk for some growers. This has been the case for Baxter’s Vineyards in Nauvoo, Illinois, one of the oldest operating wineries in the upper Midwest. This vineyard chose to diversify to juice and pick-your-own table grapes in addition to wines because low population within its market area dictated the need to spread the economic risk to several grape products.<sup>76</sup> Home wine-makers and local wine clubs may be interested in pick-your-own wine grapes. Grape jams, jellies, and preserves can be produced and sold directly to consumers at farmers markets.
- **Support research for organic and pesticide-free grape markets.** Grape growers, food distributors, university researchers, state agencies, and food retailers could conduct feasibility studies on the potential for niche markets for organic or pesticide-free grapes, juices, and wines. A major limiting factor to organic grape production is pest-resistant cultivars, but progress is being made in other states. A recent market study focusing on specialty market labels in the upper Midwest found that earth stewardship and reduction of pesticides are sufficient incentives to motivate people to make purchases of sustainably raised food products.<sup>77</sup> Iowa State University has a full-time organic specialist and a horticulturist with experience in both grape production and sustainable agriculture. Organizations such as Practical Farmers of Iowa (PFI) and the Iowa Network for Community Agriculture (INCA) already support farmers in developing alternative, sustainable agricultural enterprises, many of which feature organic or pesticide-free crops. These resources give Iowa advantages over neighboring states to conduct feasibility studies and research on organic and pesticide-free grape production.
- **Develop cooperative structures and new partnerships.** With the interest in new generation cooperatives for many value-added agricultural enterprises in the state, growers and wine-makers should consider forming wine and grape cooperatives. Iowa grape growers and wineries could enlist the help of Iowa’s visual artists to create images of an emerging Iowa grape industry that could be used in promotion to Iowa natives and tourists alike. Such images may go a long way in influencing perceptions and making connections with urban consumers.

### **Application to and implications for other local food systems in Iowa**

Iowa has the potential to redevelop a grape industry in the state with a strong in-state retail sales market. In particular, a locally-based food system for table grapes in Iowa makes sense, given the growing interest in locally-grown foods and the lack of Iowa grapes available in these markets.

Potential local markets for grapes may add sales options for those farmers interested in getting more of the consumer’s dollar for what they produce, and provide a unique opportunity for capturing tourism dollars that come to the state. These opportunities may not significantly divert Iowa’s acreage from corn and soybean commodity production, nor will they alone solve the

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<sup>76</sup> The Baxter winery is unique because they use ‘Concord’ and ‘Niagara’ grapes to make their wines. Many Midwestern wineries rely on French hybrid grapes for their wines.

<sup>77</sup> Nadeau, E.G., A. Woods, and G. Boody. February 1999. *Food Choices: Moving toward a sustainable food system in the upper Midwest*. Food Choices Project, prepared by Cooperative Development Services, Madison, WI.

current economic crisis facing Iowa farmers. What they may do is provide a sufficient revenue stream to help some producers remain on the farm.

Currently Iowa exports most of the crops it produces and imports most of the food it consumes. Many Iowa farmers raising corn, soybeans, and other commodities face economic hardship in part because of intense market competition and low prices in a global agricultural economy. Iowa has a unique opportunity to redevelop the Iowa grape industry with a strong local food systems element. The potential for locally produced grapes, wines, and juices parallels the potential for other foods that can be produced and processed in Iowa to benefit Iowa's economy and rural communities.

**Table 1. Grapes (fresh-weight equivalent): Per capita consumption, 1970-98**

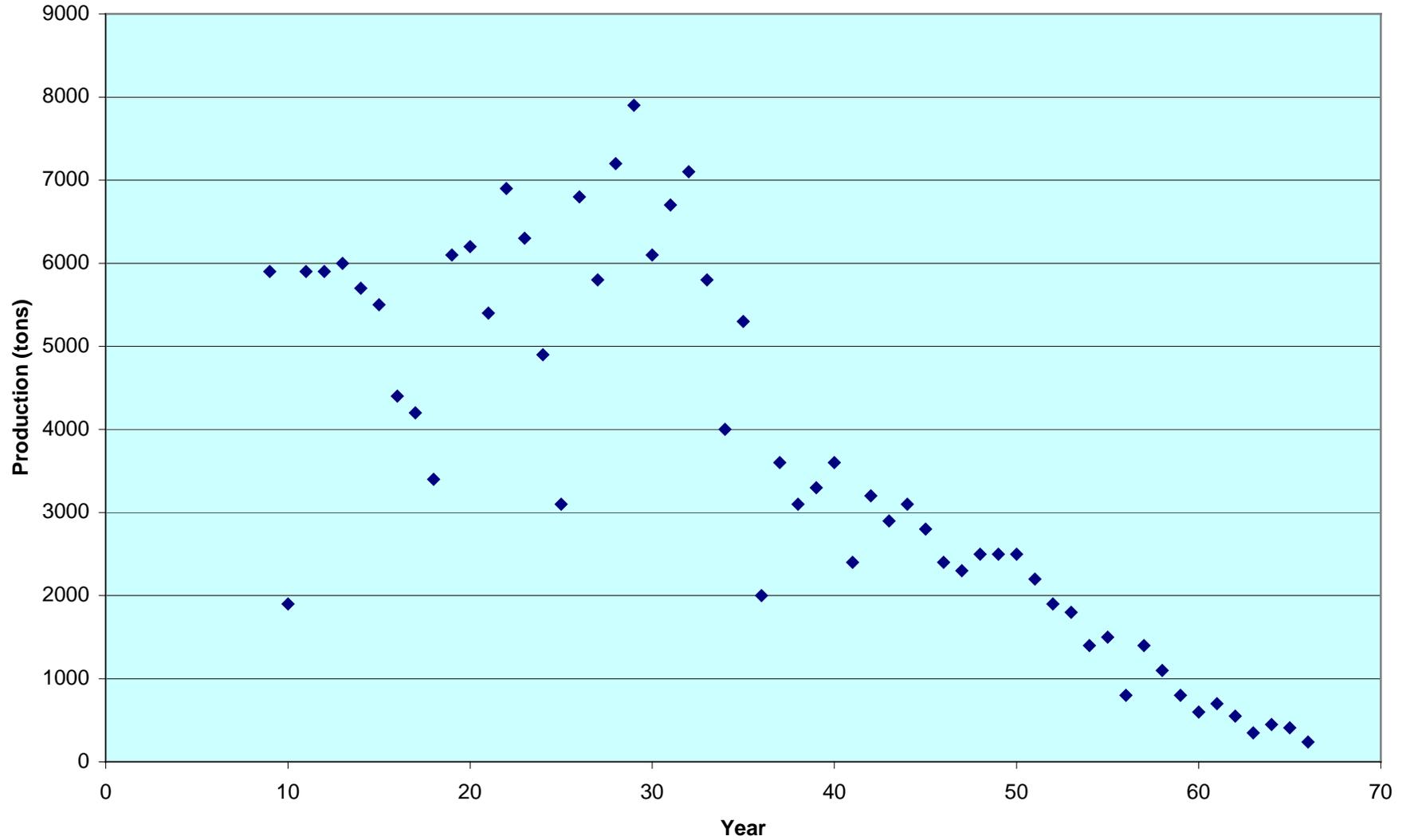
Crop Year <sup>1</sup>	U.S. total population January 1 of following year (Millions)	Fresh Lbs.	Canned Lbs.	Juice Lbs.	Wine Lbs. <sup>2</sup>	Dried Lbs.	Total Lbs. <sup>3</sup>
1970	206.466	2.87	0.52	2.37	17.13	5.73	28.62
1971	208.917	2.52	0.56	3.27	24.25	6.61	37.21
1972	210.985	2.49	0.48	2.07	17.17	4.22	26.43
1973	212.932	2.86	0.55	2.61	27.32	6.30	39.65
1974	214.931	3.14	0.57	2.78	25.40	6.36	38.25
1975	217.095	3.61	0.49	2.51	23.73	6.32	36.66
1976	219.179	3.54	0.44	2.43	24.47	9.62	40.49
1977	221.477	3.54	0.49	1.91	25.57	6.23	37.74
1978	223.865	3.08	0.49	3.34	28.98	5.25	41.15
1979	226.451	3.45	0.53	2.53	28.76	6.69	41.96
1980	228.937	3.97	0.55	2.72	31.34	8.45	47.04
1981	231.157	4.05	0.36	2.60	27.45	6.54	41.00
1982	233.322	5.72	0.30	2.61	33.72	8.73	51.07
1983	235.385	5.59	0.30	3.65	27.14	7.80	44.47
1984	237.468	6.09	0.25	3.14	29.86	8.68	48.02
1985	239.638	6.84	0.38	2.54	31.16	9.37	50.29
1986	241.784	7.10	0.33	2.42	29.30	8.32	47.46
1987	243.981	7.05	0.33	3.30	26.02	8.02	44.72
1988	246.224	7.70	0.32	2.93	27.48	10.85	49.28
1989	248.659	7.94	0.32	3.34	25.64	8.82	46.06
1990	251.373	7.92	0.32	3.09	23.50	8.36	43.19
1991	254.025	7.26	0.32	3.88	22.89	8.52	42.88
1992	256.830	7.19	0.36	4.18	26.86	6.89	45.49
1993	259.413	7.05	0.35	3.84	24.80	8.55	44.59
1994	261.868	7.33	0.30	3.18	22.42	8.24	41.46
1995	264.91	7.52	0.27	5.01	24.35	8.97	46.11
1996	266.768	6.93	0.27	4.20	25.17	7.13	43.71
1997	269.328	8.04	0.33	4.49	32.97	7.06	52.90
1998	271.883	7.29	0.27	3.05	26.31	8.84	45.75

<sup>1</sup> Beginning July or August.<sup>2</sup> Since alcoholic beverages are not part of the official U.S. food supply, the quantity of grapes used for wine-making is subtracted from the total elsewhere.<sup>3</sup> Calculated from unrounded numbers.

Source: USDA/Economic Research Service, 1999.



Figure 2. Iowa Grape Production - 1909-1966



Source: Iowa Agricultural Statistics. Note: Some of the grapes produced were for household use; a portion were for commercial sale.

Figure 3. Pathway of California table grapes to Iowa

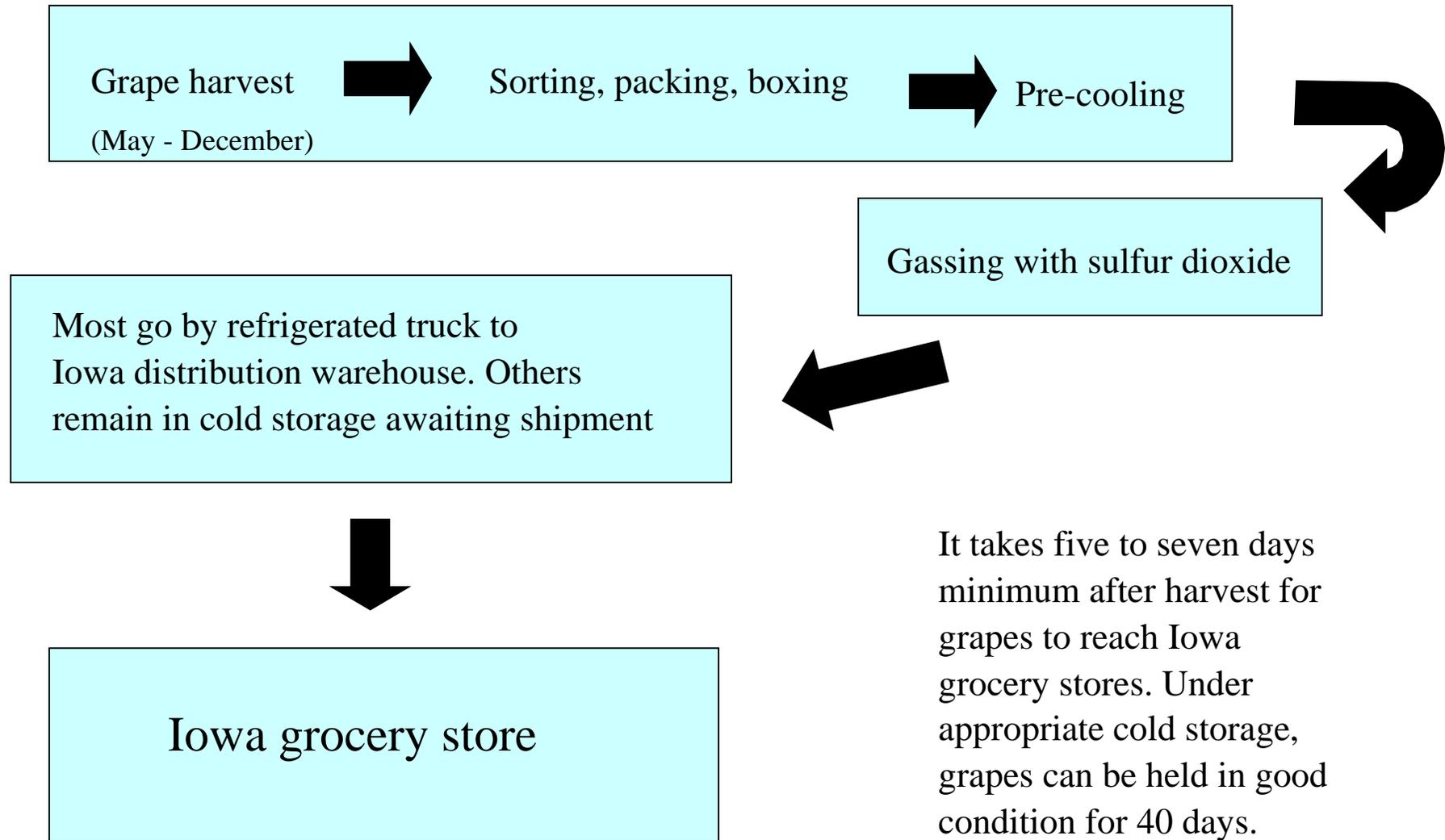
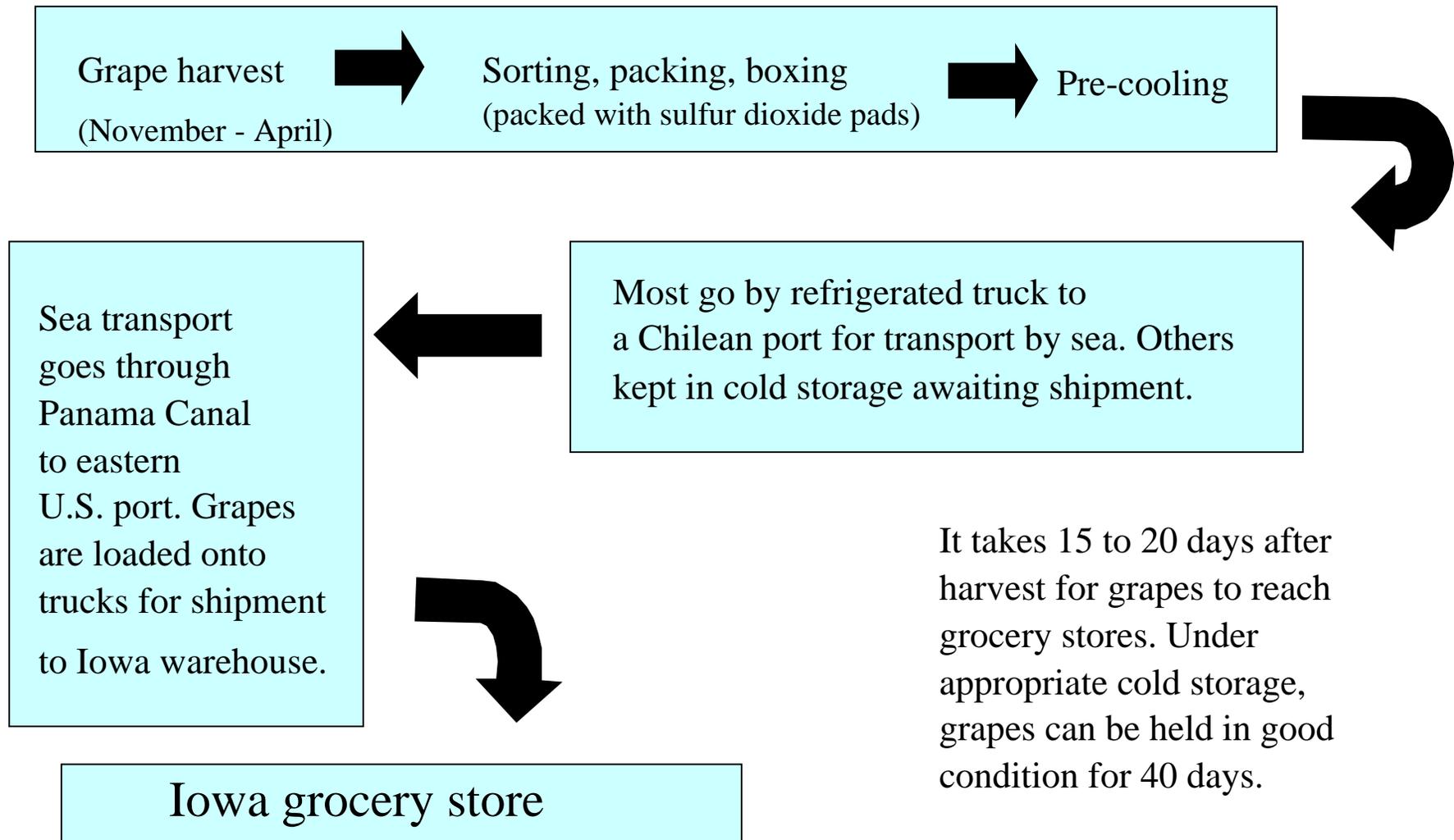


Figure 4. Pathway of Chilean table grapes to Iowa

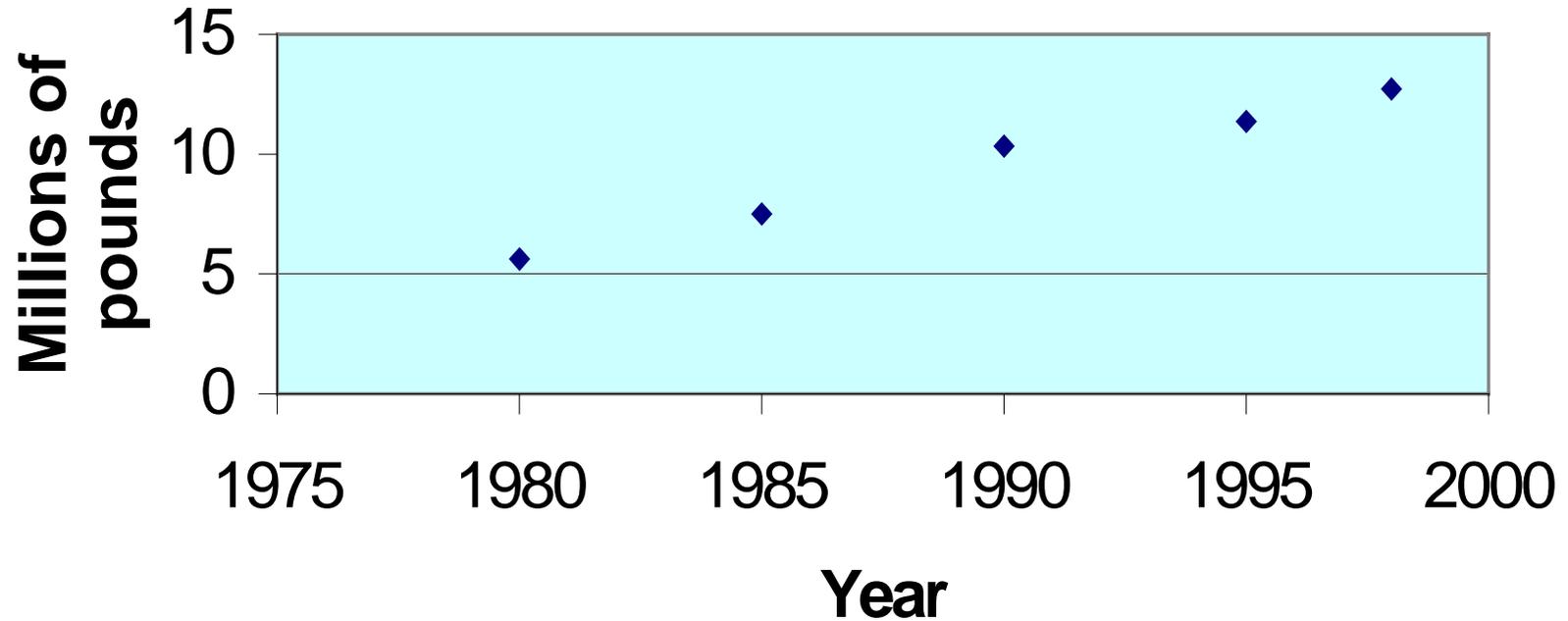


## Figure 5. A source calendar for table grapes sold in Iowa

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- **January** - Chile
- **February** - Chile
- **March** - Chile and South Africa
- **April** - Chile, South Africa, and Mexico
- **May** - Mexico and California
- **June** - California
- **July** - California
- **August** - California
- **September** - California
- **October** - California
- **November** - California and Chile
- **December** - Chile

**Figure 6 - Shipment of major cultivars of California table grapes to Iowa**



Source: Distribution report data – California Table Grape Commission. Note: The Quad Cities are considered part of Illinois distribution network.

# Appendix A

## Selected grape juice and wine production resources

Amerine, M. A., and C.S. Ough. 1988. *Methods of Analysis of Musts and Wines*. J. Wiley & Sons.

Amerine, M.A., H.W. Berg, R.E. Kunkee, C.S. Ough, V.L. Singleton and A.D. Webb. 1982. *Technology of winemaking*. AVI Pub Co. Inc., Westport, CT.

Boulton, R. B., V.L. Singleton, L.F. Bisson, and R.E. Kunkee. 1995. *The Principles and Practices of Winemaking*. Chapman and Hall, New York.

Cahoon, G., M. Ellis, R. Williams and L. Lockshin. 1991. "Grapes: Production, Management and Marketing." Bulletin 815, Agdex 231, Ohio Cooperative Extension Service, Ohio State University, Columbus, OH 43235.

Concord Grape Association website ([www.concordgrape.org](http://www.concordgrape.org)) – information about making grape juice.

Dillon, C.R., J. Morris, C. Price, and D. Metz. 1994. "The technological and economic framework of wine and juice production in Arkansas." Arkansas Agricultural Experiment Station. June, 1994. Bulletin 941.

Erb, Alan, Tisserat, Ned, and Warmann, Gerald. "Commercial Grape Growing in Kansas" Kansas State University Agricultural Experiment Station and Cooperative Extension Service. Revised December, 1998.

Golden Hills Resource and Conservation Development group. Information about grape and wine production (712 482-3029).

Jackisch, Phillip. 1985. *Modern wine making*. Cornell University Press, Ithaca, NY.

Jackson, R.S. 1994. *Wine Science: Principles and Applications*. Academic Press, Inc., 525 B Street, Suite 1900, San Diego, California.

Robinson, J.,ed. 1994. *The Oxford Companion to Wine*. Oxford University Press, Oxford, New York.

Winemaking website ([www.geocities.com/NapaValley/1172/basics.html](http://www.geocities.com/NapaValley/1172/basics.html))

Welch's Company website ([www.welchs.com](http://www.welchs.com)) – will provide information about making grape juice upon request.

Weaver, R.A. 1976. *Grape Growing*. John Wiley and Sons, New York, NY.

Wine Institute website ([www.wineinstitute.org](http://www.wineinstitute.org)).

# Appendix B

## Recommendations\* of the THE LOCAL FOOD TASK FORCE Appointed by Iowa Secretary of Agriculture Patty Judge – January 1999

**Purpose: To expand *local* markets for Iowa farmers.**

Iowans spend more than \$7 billion annually on food from stores and eating establishments.<sup>78</sup> Most of these food dollars leave our communities and state. Expanding local markets offers an opportunity to reverse this "value-subtracted" economy and to invest a significant portion of the food dollars in Iowa. Successful local food pilot projects in Adams, Audubon, Blackhawk, Johnson, Polk and Story counties suggest that local markets can be expanded to enhance the consumption of Iowa food products and the diversification of our agriculture.

A strong local foods system will:

- create opportunities for small and medium-sized farms;
- establish local marketing practices that promote understanding between farmers, consumers, distributors, and processors;
- improve working and living conditions for farmers, their employees, and related businesses; and
- encourage public policies that promote environmentally sound and economically viable farming practices.

### RECOMMENDATIONS

1. Appoint a full time statewide local food systems coordinator who works with the Local Food Task Force to implement the following recommendations.
2. Formalize the Local Food Task Force and expand it into an ongoing working group.
3. Research and collect information on how Iowa foods are produced, processed, distributed, and consumed, and the impact on Iowa's communities.
  - a.) Identify, collect, develop and update a list of buyers, processors, distributors, and producers.
  - b.) Compile baseline data on production, processing capacity, and consumption.
  - c.) Identify existing local food projects and assess the actual and potential impact.
  - d.) Conduct listening sessions throughout the state to ensure grassroots input.

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<sup>78</sup> "1999 Survey of Buying Power," *Sales and Marketing Management*, 1999. This data was adjusted to remove non-food grocery purchases using data from "How \$100 is spent", *Progressive Grocer*, July 1999.

- 4.) Build public awareness and understanding of local food systems and its implications on Iowa's economy, communities, and environment.
  - a.) Coordinate with existing statewide programs to celebrate Iowa foods.
  - b.) Develop additional Iowa food education programs such as speaker's bureau and promotions at the state fair.
  - c.) Begin statewide campaigns to encourage consumers to spend \$10 per week on local foods.
  
- 5.) Provide "hands on" training and technical assistance that strengthens local food production.
  - a.) Identify resources in the state and create forums that promote the sharing of information about local food production.
  - b.) Partner with other groups in developing and delivering short courses on food production, business skills, and marketing.
  - c.) Develop programs (internships, mentoring, and etc.) for producers.
  
- 6.) Allocate resources to improve the infrastructure for local food systems.
  - a.) Target a percentage of state and Federal agricultural assistance programs for local food producers and distributors.
  - b.) Develop licensed kitchens and facilities where producers add value to their products.
  
- 7.) Create incentives and opportunities for linkages among Iowa producers, processors, distributors, and consumers.
  - a.) Link government and private programs that support producers growing food for local markets.
  - b.) Provide programs (mentoring, internships, etc.) to assist institutions and businesses to increase their purchase of local food.
  - c.) Require state institutions to develop plans to increase their purchase of local food.
  
- 8.) Establish an Iowa Food Policy Council that includes representation from the Local Food Task Force.

\* Recommendations announced at Bistro 43 Restaurant in Des Moines on September 20, 1999.

## **Updated August 2002**

### **Epilogue\***

When this paper was completed in April 2000, Iowa had an estimated 30 acres of grapes in production, and nine bonded wineries were operating. Since that time, there has been a significant increase in grape acreage, number of wineries established, and state support for the grape industry.

In April 2001 Iowa State University Extension offered a viticulture homepage (<http://viticulture.hort.iastate.edu/home.html>) to provide technical information to Iowa grape growers. In May 2001 Governor Tom Vilsack signed a law enabling the legislature to provide up to \$75,000 for grape and wine promotion (no monies have been released as of this writing). In April 2002, the Iowa Grape Growers Association reached a membership of 200.

As of August 2002, there are an estimated 175 growers who have planted 400 acres to grapes in Iowa. There are 18 bonded Iowa wineries, of which five are Estate wineries, with a number of other wineries in the planning and production stage. The Iowa Department of Agriculture and Land Stewardship recently received a grant to track progress of Iowa's emerging grape industry.

\* Epilogue to the paper, "Grape Expectations: A food system perspective on redeveloping the Iowa grape industry," author Rich Pirog, Marketing and Food Systems Research Program Leader, Leopold Center for Sustainable Agriculture, first published April 2000.