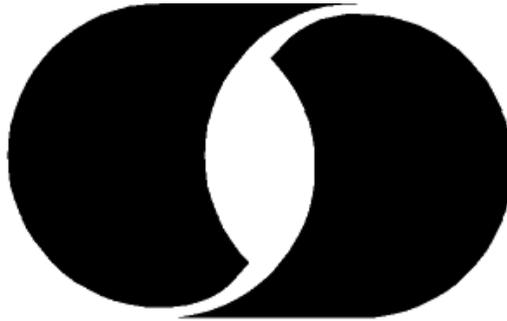


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**Comparing apples to apples:
An Iowa perspective on apples and local food systems**

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Acknowledgements

The authors wish to thank the following for their helpful suggestions, comments, and edits made in reviewing this paper:

Mike Bevins, state horticulturist, Iowa Department of Agriculture and Land Stewardship

Stephen Gasteyer, research assistant, North Central Regional Center for Rural Development

Gary Huber, co-director, Field to Family Project of the Practical Farmers of Iowa

Dr. Patrick O'Malley, horticultural field specialist, Iowa State University Extension

Maury Wills, apple grower

Leopold Center for Sustainable Agriculture staff

Special thanks to Steve Pedersen, assistant horticulturist, Iowa Department of Agriculture and Land Stewardship, and the U.S. Apple Association for the background information on apples. Thanks to the Iowa apple growers, and the Washington apple Commission, who provided assistance in tracing the paths of the Iowa and Washington-grown Red Delicious apples. And last but not least, special thanks to Mary Adams, editor for the Leopold Center for Sustainable Agriculture, for her edits, suggestions, and support throughout the process.

Comparing apples to apples: An Iowa perspective on apples and local food systems

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) project, 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 some given location. Other examples of local food systems include farmers markets, roadside stands, on-farm sales, pick-your-own operations, and sales to hotels, restaurants, 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 consumers 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.¹ Many farmers want to better understand the current food system and modify it 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 contrast and discuss two representative apple food systems and examine their implications for other local food systems. Apples play an important part in American culture and folklore, including the “as American as apple pie” metaphor, bringing an apple to school for one’s teacher, and the story of legendary pioneer Johnny Appleseed. Apples are one of American’s favorite fruits. In 1998, the average U.S. consumer ate 18.4 pounds of fresh apples and 28.7 pounds of processed apples for a total of 47.1 pounds, more than any other fruit.²

Objectives

- 1, Provide historical and present-day perspectives of Iowa apple production,
2. Trace and discuss the path – from farm to Iowa consumer – for an apple variety grown in Iowa and that same variety grown in the state of Washington,
3. Discuss China’s rise as the world’s leading apple producer and the impact on U.S. growers, and
4. Explore the potential for and obstacles to local food systems supplying more of the food that Iowans consume, using apples as an example.

Historical and present perspectives of Iowa apple production

The apple likely originated in central and southwestern Asia. Travelers from the Roman Empire introduced it to England during the first century B.C. Upon settling in the “New World”, the Pilgrims planted apple trees at Massachusetts Bay. The first North American apple orchard was planted in the Boston area in the 1630s.

Most homesteaders in Iowa and other Midwestern states and territories planted a variety of fruit trees, including apples. The first recorded apple planting in what is now Iowa was by Louis H. Tesson near Montrose in 1799.³ With the formation of the Iowa Agricultural Experiment Station under the Federal Hatch Act in 1888, Iowa began an extensive fruit variety-testing program. By the late 1800s, southwest Iowa became an important center of apple production for in-state consumption and export, with seven southwest counties shipping 0.5 million bushels in 1889.⁴ (The standard conversion unit adopted in 1964 for apples was 42 pounds per bushel.) Cooperative packing plants were established to handle these large crops.

The 1909 Iowa apple crop had grown to 6.7 million bushels, sixth in U.S. apple production.⁵ Iowa apple production reached an historical peak at 9.5 million bushels in 1911.⁶ Iowa remained a top apple-producing state in the early 1920s, but production dropped off steadily from the mid-1920s through the 1930s. The decrease was due to increased Iowa row crop production and greater apple production from competing states such as Washington, Michigan, and New York. The Iowa apple industry was dealt a devastating blow by a severe freeze on November 11 (Armistice Day) in 1940, which killed or severely injured many of the trees. Apple production in 1941 was 15 percent of the 1940 crop.⁷ Many apple growers decided not to replant their orchards, and the apple industry dwindled in its economic importance to Iowa.

Based on a review of the literature and conversations with present-day growers and horticulturists, the decline in Iowa apple production can be attributed to several factors:⁸

- Washington, Michigan, New York, and other states increased production and developed the appropriate
- storage facilities, marketing capabilities, and distribution and sales infrastructure to successfully export apples to Iowa and other states;
 - greater labor requirements of apple production compared to increasingly mechanized corn and soybean farming;
relative ease for Iowa farmers to get loans on corn and hogs rather than on apple orchards, particularly after the 1940 freeze;
 - pest and other orchard management problems; and
 - soil and environmental considerations.

U.S. agriculture after World War II became increasingly mechanized, and food production more specialized, with certain regions of the country producing a few crops in huge volumes with a distribution and marketing infrastructure that would be competitive in national and global markets. Iowa became a leading corn and soybean producer. Washington, New York, and Michigan became leading fruit producers, with apples as one of their main crops. Washington is now the largest apple-producing state, growing more than half of the nation’s fresh apples.⁹ Washington’s current 172,000 acres of apple orchards cover an area 78 times larger than Iowa’s orchards. New York, Michigan, California and Pennsylvania round out the top five apple-producing states in 1998.¹⁰

In the late 1970s and early 1980s, Iowa's apple crop averaged 262,000 bushels.¹¹ There were various attempts by growers and state government to stimulate apple production in the 1980s. Growers formed an apple cooperative in western Iowa in the late 1980s in response to potential markets, but it folded due to a number of financial, infrastructure, and management problems. In 1997 Iowa apple orchards covered more than 2,200 acres and produced 307,000 bushels.¹² Based on 1998 crop production reports, Iowa ranks 31st among 36 states that grow apples commercially.¹³ If Iowa's peak 1911 apple production occurred in 1998, the state would have been ranked sixth in U.S. apple production. The 1999 Iowa Fruit and Vegetable Growers Directory lists 107 apple producers in 52 Iowa counties.¹⁴

Apples and food safety

Food safety concerns about apples will not be included in the paths of the Iowa and Washington apples traced in the next section. They are mentioned here because food safety issues have had a recent impact on the marketing options and profitability of Iowa apple growers.

Recent national concern about the safety of apple cider has followed several outbreaks of illness that were traced back to contamination of fresh apple cider by the microorganism *E. coli* O157:H7. (None of the outbreaks were in Iowa.) As of September 8, 1999, the Food and Drug Administration required that a warning must be placed on the label of unpasteurized fruit and vegetable juice products sold in packaged form from retail establishments.¹⁵ Iowa grocery stores are requiring that all unpasteurized cider displayed in stores carry such a warning label. Many supermarkets now carry only pasteurized cider. Nearly 100 Iowa apple growers market juice and/or cider as a viable income source for about 20 percent of the crop.¹⁶ Several larger orchards have pasteurization equipment and are selling pasteurized cider, or have ordered the equipment.¹⁷ Lacking other market outlets for the lower quality apples used for cider, smaller apple producers who cannot afford to purchase the pasteurization equipment may suffer significant income losses if they are forced to eliminate cider production.

Paths of Iowa-grown versus Washington-grown apples

Red Delicious apples were chosen as the apple to explore for both pathways. Red Delicious is America's favorite apple, despite declining popularity in recent years. A 1998 study of 2,000 U.S. households sponsored by the Washington Apple Commission found that 38 percent of those surveyed favored Red Delicious as their top choice, with Golden Delicious a distant second at 16 percent. The Red Delicious apple also was chosen because of its Iowa origins. Madison County farmer Jesse Hiatt discovered the Delicious variety in the 1870s, and the propagating rights were bought by Missouri-based Stark Brothers nursery in 1894.¹⁸ The same 1940 Armistice Day freeze that wiped out many of Iowa's apple orchards also killed Hiatt's original Delicious apple tree. Given its position as the nation's leading apple producer and a major supplier of global markets, Washington was chosen as the state from which to trace the imported Red Delicious apples' trip to Iowa.

Apple storage

Before discussing apple food system paths in the next paragraph, it is helpful to explain controlled atmosphere (CA) storage and cold storage. CA storage makes year-round availability of apples possible. The CA process, developed in England before World War II, involves the careful control of temperature, oxygen, and humidity. Apples take in oxygen and give off carbon dioxide as the starches in the apple flesh convert to sugar. CA storage reduces oxygen levels in sealed rooms, which slows the apple ripening process. With proper growing, harvesting, and CA storage techniques, many varieties of apples can be stored for 12 months or longer. Cold storage simply means the apples are placed in a refrigerated or cool environment to slow the ripening process. Apples can remain in cold storage for one to two months and still maintain quality and crispness.

Path of Iowa-grown Red Delicious apples

Comparing the paths of Iowa and state of Washington apples is interesting because of the differences in production scale as well as the overall processes involved. The majority of Iowa apple producers sell apples retail from an orchard store and/or farmers markets, and the majority of Washington producers sell to the largely wholesale statewide, national, and international markets.

Figure 1 outlines the path that a typical Iowa Red Delicious apple takes from the time it is picked to the time it reaches a consumer, and denotes the typical time frame involved with each step. It is important to note that not all producers are the same in terms of orchard size, labor needs, management styles, and total production. Because not every growing season is the same length, ranges of time are used and only the most typical steps are listed.

Harvest of Red Delicious apples takes place - depending on orchard location within the state and growing conditions - from mid-September to mid-October. The time it takes to pick the on-tree inventory at an orchard ranges from one day to about two weeks. Harvested apples are then taken by truck to an on-site barn or shed for sorting, simple grading, and cleaning. Parts of this process are mechanized but much of it is done by hand and usually completed in one to four days. Some orchards, particularly the larger ones, use migrant labor. Once sorted, cleaned, and graded, some apples go straight to the on-farm orchard store where the apples (and some other products) are sold. Most of the remainder goes into cold storage, awaiting retail sale at a later date. Very few Iowa apple producers have CA storage.

Depending on advertising and/or “word-of-mouth,” typical Iowa orchard inventories are sold out in as little as one to two weeks, some larger orchards may sell out after about two months, and far fewer still may be still selling Red Delicious as late as eight months after harvest. The typical time window from harvest to retail sale for Iowa’s Red Delicious apples is one day to about two months.

Path of Washington-grown Red Delicious apples

The Washington-grown Red Delicious apple pathway outlined in Figure 2 is much more complex than the Iowa pathway. Again, due to differences in orchards, growing season lengths, and distribution channels,¹⁹ only the most typical pathways and time frames are discussed. The Red Delicious harvest season in Washington depends on growing conditions and orchard location, but generally runs from late September to mid-October. Despite their comparatively large size, harvest at a Washington orchard can take only one to two days with concerted labor efforts. An estimated 35,000 to 45,000 pickers, many of whom are migrant workers, are employed in the state during peak apple harvest (for all varieties, including Red Delicious).²⁰ The activities include picking from the trees, piling into field bins, then loading onto flatbed trucks for transport to a sorting and storage facility. In this facility, apples are pre-sorted by size and color. Then they are cold-stored for a few days up to two weeks until washing and official grading takes place.

The washing, waxing, and grading phase combines human and machine labor. Washing removes about half the natural apple wax, so natural wax products (either carnauba or shellac) are applied to prevent moisture loss and enhance firmness. Grading is based on appearance and internal quality and must meet U.S. Department of Agriculture standards. A small sticker with the “Washington Apple” logo is applied to the apples that are sold bulk by weight. (Stickers are sometimes applied to apples that are prepackaged for sale) Apples are then packed in bags or boxes and loaded on pallets for easy shipping. The washing, waxing, grading, applying of stickers, and packing process can take from a few days to about a week. Once apples are prepared for shipping, they are stored until moved. Typical storage environments

would be cold storage for those entering the market right away and CA storage for apples used to maintain “out-of-season” inventories for sale at a later date. Storage time can range from a few days to eight months or possibly longer, depending upon overall domestic and international demand.

Some apples are shipped directly to retail outlets such as grocery stores and supermarkets, but most are shipped to distribution centers and then relayed to retail outlets. Shipping generally is done in cold storage trucks. It usually takes one to two days for the Washington apples to reach an Iowa destination. If first shipped to a distribution center, the apples can take another few days to about a week to reach an Iowa retail outlet. Once the apples are in Iowa, the dispersal time from retail store to consumer depends upon time of year and local marketing and sales, but it can take from one day up to two weeks to clear in-store inventories. The typical time window from harvest to retail sale in Iowa for Washington-grown Red Delicious apples range from a few weeks to eight months or longer in some instances.

Comparing the pathways

Table 1 compares key activities in the pathways of the Iowa and Washington Red Delicious apples as they make their way from the orchard to the Iowa consumer. Most of the Iowa Red Delicious apples are sold from the orchard store and farmers markets and are consumed in Iowa. The majority of Washington Red Delicious apples are shipped out-of-state for export sales and consumption. Most Iowa Red Delicious apples not for immediate sale are put in cold storage for up to two months; a significant percentage of Washington’s crop is put in CA storage for distribution, sales, and consumption for up to eight months after harvest. Washington grades its apples to meet USDA standards, whereas Iowa uses a simple grading process based on appearance and does not follow USDA standards. Although the comparison focused on Red Delicious apples, the paths of other varieties grown in both states, such as Golden Delicious, would likely follow similar steps.

The 1990s – China surpasses the United States in apple production

The 1990s have been a decade of great change in the apple industry globally. China overtook the United States as the world leader in apple production in the early 1990s. Spurred by agrarian and land use reforms, and financed in part by the Chinese central government and Japan, Chinese growers initiated a massive apple tree-planting program in the late 1970s that continues today. By 1997, China produced more than four times as many apples as the United States.²¹ See Table 2 for a list of the top apple-producing countries. Current industry predictions see China doubling its 1997 production by 2005.

There are several factors fueling the Chinese apple industry’s growth. China enjoys geographic proximity to Asian and Pacific Rim markets once supplied by the United States. China’s inexpensive apples are more attractive to Asian countries with fragile economies and low per capita income. As an example, exports of Washington apples to Indonesia have declined about 80 percent in recent years.²²

When millions of Chinese apple trees began to bear fruit in the early 1980s, the Chinese government invested in equipment and an infrastructure to produce huge volumes of apple juice concentrate. Leading apple-producing states such as Washington have felt the economic pressure as low-cost Chinese apple concentrate has flooded the global market in recent years, cutting their market share. As of September 1999, 21 U.S. Senators have called upon Secretary of Commerce William Daley to respond to the apple industry’s complaints and impose stiff anti-dumping tariffs on Chinese apple concentrate entering the United States.²³

Implications for local food systems in Iowa

Most of the apples grown in Iowa are purchased and consumed within the state. Most of the apples grown in Washington are exported for sale and consumption. The Washington apple industry has an infrastructure, along with name recognition among consumers, which allows it to dominate the markets of Iowa and other apple-producing states and compete in world markets. However, apple industries in Washington and other apple-exporting states are affected by the current market dominance of Chinese apples (and apple concentrate) to a far greater extent than is Iowa's. Iowa apple growers have few, if any, export markets to be lost to Chinese competitors.

Apple consumption in Iowa

Do Iowa consumers eat more Iowa-grown apples than apples produced outside the state? To answer this question it is necessary to first make a few assumptions:

- Use a five-year Iowa apple production average (1994-1998) of 261,000 bushels.²⁴
- Apply a five-year average (that ends with the 1997-1998 seasons) for U.S. per capita consumption of 19.0 pounds of fresh apples and 28.4 pounds of processed apples (total of 47.4 pounds yearly) to Iowa consumers.²⁵
- Based on conversations with growers and horticulturists, estimate 95 percent of Iowa production is consumed in Iowa.
- Based on conversations with growers and horticulturists, estimate 15 percent of the Iowa apples produced are put in CA storage.
- Estimate 20 percent of total production is used for apple cider²⁶

Using 1998 Iowa population figures (2.862 million people), and the assumptions made above, Iowans eat more than 3.2 million bushels of fresh and processed apples per year, but Iowa grows less than eight percent of this total. Looking at fresh apple per capita consumption, Iowans eat almost 1.3 million bushels of fresh apples per year, but Iowa grows only about 15 percent of the fresh apples it consumes.

The 15 percent fresh apple consumption does not tell the whole story, however. The majority of Iowa's fresh apples are not available to Iowa consumers year-round, as are apples from states and countries that have adequate CA storage. Fresh apple consumption for the four-month period (mid-August to mid-December) when most of the Iowa-grown fresh apples are available for sale is estimated at one-third of the 1.3 million bushels per capita fresh apple consumption, or 433,000 bushels.²⁷ Using this per capita consumption estimate and the assumptions above, Iowa supplies about 36 percent of the fresh apples consumed in the state during the four-month peak sale season.

Potential for new retail and wholesale local markets

Iowa apple growers hold a large share of the fall fresh apple market due to strong on-farm and farmers market retail sales, and they count on these retail sales to make a profit. Iowa apple growers have a small share of the yearly apple market, in part because they do not have enough CA storage and production volume to store, distribute, and market apples year-round. Given these and other constraints, it does not seem realistic for Iowa growers to compete with major apple-growing states and countries for fall export markets, or for a larger share of the Iowa market during the winter, spring, and summer seasons.

Iowa apple growers could look at increasing their share of the Iowa fall retail and wholesale apple market. There are existing markets where sales could increase, and potential local markets that remain untapped. Apples from Washington and other states and countries compete strongly with Iowa apples for

grocery shelf space during the fall. Produce department shelf space for apples was surveyed at eight supermarkets representing four different grocery chains in six Iowa cities (Ames, Ankeny, Cedar Rapids, Davenport, Des Moines, and Iowa City) from September 20 through October 3, 1999. The survey found that apples from Arizona, Illinois, Iowa, Michigan, Minnesota, Missouri, New Zealand, South Africa, Utah, and Washington were for sale. Iowa apples averaged less than 10 percent of the total apple shelf space across these stores.

College and university residence halls could be a potential wholesale market for Iowa apple growers. For example, Iowa State University residence halls purchased 732 bushels of apples grown in other states from September through December, 1998.²⁸ Conversations with growers and horticulturists indicate that few Iowa apple growers sell to elementary and secondary schools, suggesting schools may be a potential fall wholesale market. Other Iowa institutions, including restaurants, hotels, conference centers, workplace cafeterias, and convenience stores offer potential for fall sales.

Iowa apple growers would welcome more people coming to their orchard stores and to farmers markets to buy their apples. Many Iowa apple growers would not consider hotels, restaurants, convenience stores, supermarkets, schools, and other institutions as viable wholesale markets because it would usually not be cost-effective to compete with low-priced apples from Washington and other states and countries. Iowa growers may also not have access to the labor needed to box or bag the apples to meet the buyers' needs. However, increasing interest in developing Iowa's local food systems is an important reason to reexamine these wholesale markets as potential value-added opportunities.

Pilot local food system projects

Pilot local food system projects in several Iowa counties have reported success in increasing sales of locally grown produce and meats 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 22 percent of the produce purchased during the 1998 growing season and an estimated 40 percent for the 1999 season came from local growers. Allen Hospital had purchased little to no local produce in previous years. The Field to Family Project associated with 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 food menu for its conference service clients as of July, 1999. The Farm Bureau cafeteria in Des Moines, operated by Sodexho-Marriott Services, began serving Iowa-grown foods as part of its 1999 summer menu. (Sodexho-Marriott Services is one of the largest food and facilities management service companies in North America.) Other pilot projects in Adams, Audubon, and Johnson counties have raised awareness of and interest in local food systems.

Interest in eating Iowa-grown and processed foods has increased due to these projects and an Iowa Department of Economic Development and Iowa Department of Agriculture and Land Stewardship-sponsored promotional campaign, "A Taste of Iowa." Another promising development was Agriculture Secretary Patty Judge's appointment of a Local Food Task Force in the spring of 1999. Its main purpose was to expand local markets for Iowa farmers. A copy of the task force's recommendations, which were released in September, 1999, can be found in Appendix A.

Washington apple growers reexamining local markets

Washington has developed an apple industry that paralleled Iowa's own corn and soybean industries in terms of financial support, marketing and promotion, and university research. Today Washington's apple industry is facing economic hardship just like Iowa's corn and soybean industries, in part because

of intense price competition from other countries. An increasing number of Washington apple growers tired of low wholesale apples prices are looking at direct consumer sales to obtain a higher price for the apples they grow.²⁹ They are starting with local markets, building new or reestablishing on-farm stands that were abandoned years ago, and using different venues such as the internet to reach new customers directly. Washington apple growers are becoming interested in local food systems as a way to get more of the consumer dollar for the apples they grow.

Suggestions for increasing local sales and consumption of Iowa apples

Pilot projects have demonstrated that there are Iowa consumers, chefs, distributors, and food service managers who are very interested in purchasing more locally grown products, particularly if these products meet their standards for quality, convenience, and price. Although price is important, the pilot 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. Given the potential for increased local markets for Iowa producers and the interest in local food systems, Iowa apple growers and other stakeholders in Iowa's apple food system may want to consider the following:

- The authors do not suggest that apple growers initially consider increasing acreage and/or the number of apple trees to meet a potential increase in demand for Iowa-grown apples. Rather, growers could examine the economic advantages of improving orchard management as a flexible means to meet any increased demands for Iowa-grown apples. Economic and social questions regarding an available labor force to help growers handle increased demand remain unanswered and need serious consideration.
- Apple growers and supporters of local food systems could survey Iowa consumers to get a better handle on the percentage of Iowans who would favor Iowa-grown apples over those produced elsewhere, even if Iowa apples were priced higher. There is inadequate information on why consumers who currently eat Iowa apples prefer them to apples produced elsewhere, nor is there information on how much more consumers would be willing to pay for Iowa apples than for imported apples.
- Apple growers and local farmers market organizers may want to document why Iowa consumers and food buyers who purchase mostly Washington and other imported apples prefer them to Iowa-grown apples. Growers, farmers market organizers, and others interested in local food systems could determine what changes are needed in the apple food production system to interest these parties in Iowa-grown apples. Are there issues of taste, appearance, convenience, storage, or price that need to be addressed?
- Researchers and educators could survey Iowa apple growers, farmers markets, community supported agriculture projects, chefs, produce distributors, food service managers, and food brokers to understand what sort of infrastructure is needed to efficiently grow, process, and distribute Iowa apples to Iowa consumers through established and new retail and wholesale markets. All obstacles to developing an appropriate infrastructure should be identified. Researchers could collaborate further with small growers to address the food safety issues for apple cider that threaten profitability.
- Apple growers and distributors could reexamine past attempts to develop apple cooperatives and central packing facilities, evaluating what worked and what didn't as an instructional guide to discussing potential for a cooperative and central packing facility focused on the Iowa market.

- Apple growers and the Iowa Department of Agriculture and Land Stewardship could study the success of other state-based marketing programs, such as New Jersey’s “Jersey Fresh” program, to determine what could be learned and applied to the “A Taste of Iowa” program that could ultimately benefit growers. Economic analysis of the “Jersey Fresh” program indicated that for every dollar invested in the program, approximately \$46.90 was returned to the local agricultural economy, and \$15.20 in net farm income was generated for local growers.³⁰ The 1997 annual budget for the “Jersey Fresh” program was \$1.2 million.
- Apple growers, distributors, university researchers, food service managers, and food retailers could conduct feasibility studies on the potential for niche apple markets for Iowa consumers, including organic apples and reduced pesticide-use apples. Although many Iowa apple growers use integrated pest management practices, apple trees may be sprayed for insects and diseases 10 to 12 times per year.³¹
- Consumers interested in eating Iowa-grown products can raise interest and provide support by asking for Iowa-grown apples at supermarkets, restaurants, workplace cafeterias, schools, and convenience stores. The taste and variety of Iowa apples are key selling points. Iowa apple growers could collaborate with informed consumers to promote their apple varieties by helping to sponsor apple-tasting events at county fairs, city-sponsored celebrations, and other local gatherings.

Application to and implications for other local food systems in Iowa

The specific activities suggested above make a case for increasing the focus on local food systems for apples. These activities fit well with the recommendations developed by the Iowa Local Food Task Force and are applicable to those involved in production, processing, and distribution of other Iowa-grown fruits, vegetables, and meats. The foods may be different, but many of the steps needed to develop local food systems are the same. Another reason for Iowa to consider local food systems is the state’s strong agricultural heritage. Unlike states with higher percentages of urban residents, many native urban Iowans are only one or two generations removed from the farm. It may be easier to explain the benefits of local food systems to urban Iowans than to urban residents in other states.

Iowans purchase \$8 billion worth of food per year, and about \$2.5 billion of this amount is spent in eating and drinking establishments.³² Could Iowa farmers, along with help from state and local agencies, restaurants, and other institutions, grow a higher percentage of the food that Iowans consume? Results from local food system projects in Iowa have been encouraging. More research is needed on how best to establish local food system infrastructures in Iowa that would attract and satisfy consumers, producers, retailers, wholesalers, distributors, food service managers, and chefs.

These potential local markets and revenue streams may add more diverse options for those farmers interested in getting more of the consumer’s dollar for what they produce. These opportunities may not significantly divert Iowa’s acreage from corn and soybean commodity production, nor will they alone solve the current economic crisis facing Iowa agriculture. But they may provide opportunities for a number of Iowa producers to add sufficient income to remain on the farm.

Currently, Iowa exports most of the crops it produces and imports most of the food it consumes. The Iowa apple food system described in this paper is a good example of a local food system. The authors hope that the reader will draw parallels from apples to other foods to further explore the potential for local food systems.

Table 1. Comparison of Iowa-grown and Washington-grown Red Delicious apples (for sale and consumption in Iowa)

Iowa-grown

Washington-grown

Most sold retail at apple orchards and farmers markets and consumed in Iowa. May reach an Iowa consumer in as little as one or two days after harvest.	Most shipped wholesale for export to Iowa and other states and countries. May reach an Iowa consumer in as little as one to three weeks after harvest.
Cold storage used to keep most apples fresh for up to two months. Some CA storage used.	Cold storage and CA storage used to keep apples fresh. Apples for “out of season” sales kept in CA storage for eight months or longer
Wax not usually applied	Wax applied to preserve freshness
Simple grading, not USDA standards	Grading meets USDA standards
Migrant labor used	Migrant labor used
No stickers used	Stickers used for apples sold bulk by weight
Most apples purchased within two months of harvest	Apples purchased within a few weeks to eight months or longer after harvest

Table 2. Leading apple-producing countries, 1997

Country	Rank	Production (000 metric tons)
China	1	18,009
United States	2	4,639
Turkey	3	2,350
Iran	4	1,925
France	5	1,918
Poland	6	1,900
Russian Federation	7	1,550
Italy	8	1,452
Germany	9	1,400
Argentina and India	10	1,200

Source: *World Apple Review*, 1998
 (Note: One metric ton equals 2204.6 pounds or 52.5 bushels)

Figure 1. Pathway of Iowa Red Delicious Apples

Typical Time Range

1 day -
2 weeks

Apple harvest

Load pails/ field bins

Move by hand or pickup truck

1 to 4 days

Sorting/grading/cleaning -
Combination of human and machine labor

A few days
to about 2
months

Some go to the orchard store

Cold storage - Two types:

- Simple cold storage (temperature-based)
- Controlled Atmosphere (very limited use in Iowa)

Restock store

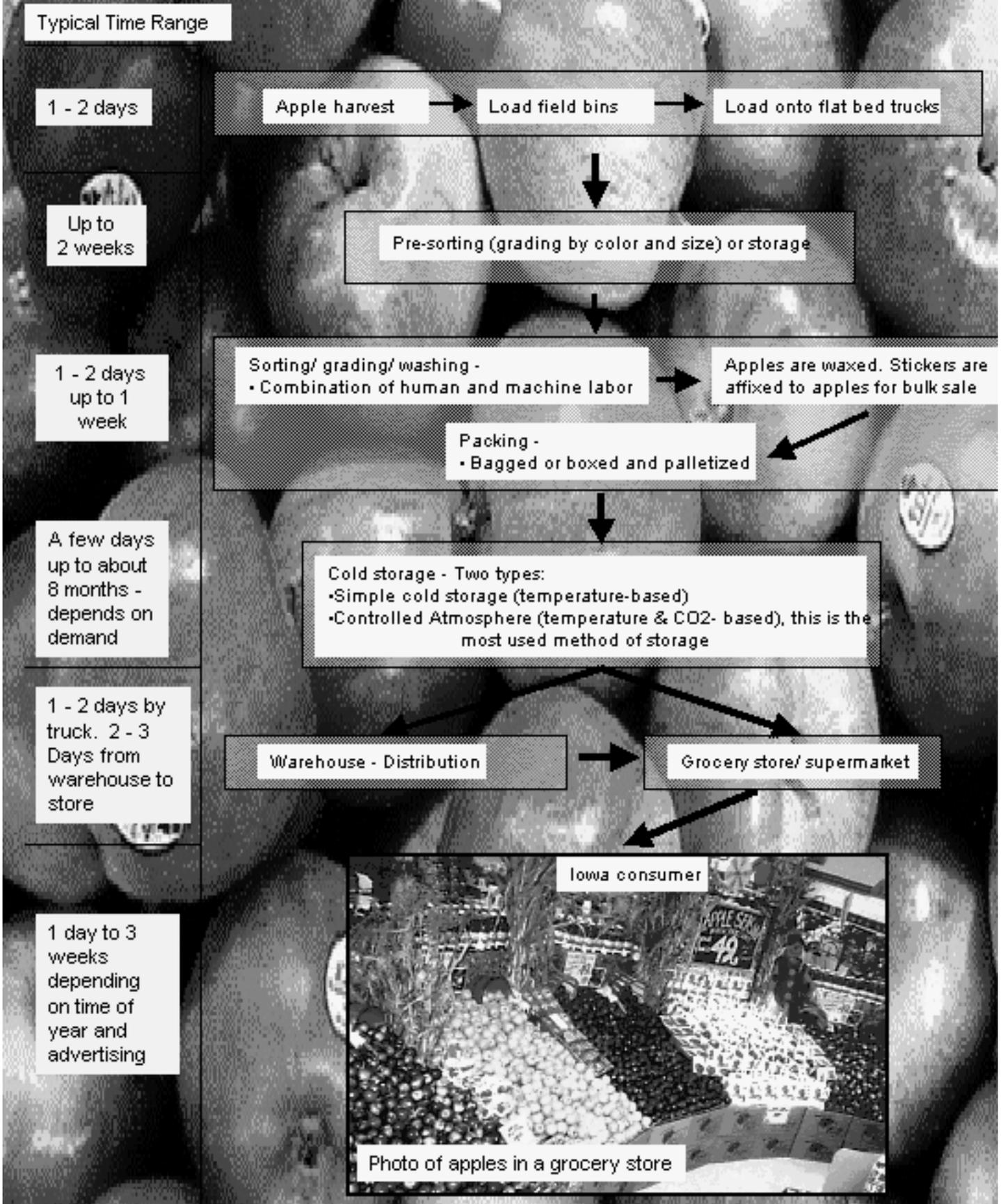
Iowa consumer

The entire
inventory is
sold in 1-2
weeks up to
about 2
months



Photo of apples in an orchard store

Figure 2. Pathway of State of Washington Red Delicious Apples



Appendix A

Recommendations of the THE LOCAL FOOD TASK FORCE Appointed by Iowa Secretary of Agriculture Patty Judge

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

Iowans spend nearly \$8 billion annually on food. Local counties like Black Hawk spend \$390 million annually while Des Moines spends \$839 million each year.¹ 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.

¹ “1998 Survey of Buying Power,” *Sales and Marketing Management*, 1998.

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.

Footnotes

- ¹ The Harwood Group, July, 1995. *Yearning for Balance: Views of Americans on Consumption, Materialism, and the Environment*. Bethesda, Maryland: The Harwood Group. (The report covers several market studies.)
- ² Economic Research Service, USDA, Specialty Crops Branch, 1999.
- ³ Iowa fruit and vegetable marketing study, Charles T. Hall, Iowa State University, 1985.
- ⁴ Iowa fruit and vegetable marketing study, Charles T. Hall, Iowa State University, 1985.
- ⁵ Iowa fruit and vegetable marketing study, Charles T. Hall, Iowa State University, 1985, and Iowa Agricultural Statistics Service.
- ⁶ Iowa Agricultural Statistics Service (Note: Early estimates of total apple production reflected home and commercial orchards. Iowa commercial apple production records began in 1934, and total crop production records were discontinued after 1938.)
- ⁷ Iowa Agricultural Statistics Service.
- ⁸ Iowa fruit and vegetable marketing study, Charles T. Hall, Iowa State University, 1985.
- ⁹ Washington Apple Commission web site visited September, 1999 (www.bestapples.com).
- ¹⁰ USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*.
- ¹¹ Iowa fruit and vegetable marketing study, Charles T. Hall, Iowa State University, 1985.
- ¹² 1997 U.S. Census of Agriculture, USDA National Agricultural Statistics Service.
- ¹³ USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*.
- ¹⁴ The directory states that producers listed are believed to be selling fruits and vegetables directly to consumers from a permanent site, excluding farmers markets.
- ¹⁵ Center for Food Safety and Applied Nutrition web site, FDA, visited October, 1999 (<http://vm.cfsan.fda.gov/~dms/juicguid.html>).
- ¹⁶ Iowa Fruit and Vegetable Association.
- ¹⁷ Steve Pedersen, assistant horticulturist, Iowa Department of Agriculture and Land Stewardship, October 8, 1999 (personal communication).
- ¹⁸ Pellett, Kent. (1941). "Pioneers in Iowa Horticulture", written for the Iowa State Horticultural Society in commemoration of the seventy-fifth anniversary of its founding.
- ¹⁹ Agricultural cooperatives, distribution firms, and/or shipping associations may play a role in transporting Washington Red Delicious apples to Iowa.

- ²⁰ Washington Apple Commission web site visited September, 1999 (www.bestapples.com).
- ²¹ “The Great Orchards”, *Fruit Grower*, September, 1998, p. 6-7.
- ²² “The Great Orchards”, *Fruit Grower*, September, 1998, p. 7.
- ²³ U.S. Apple Association news release, September 13, 1999.
- ²⁴ USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*.
- ²⁵ Economic Research Service, USDA, Specialty Crops Branch, 1999.
- ²⁶ Iowa Fruit and Vegetable Association.
- ²⁷ Several apple growers, horticulturists, and researchers interviewed stated they believed apple consumption to be higher in the fall than other seasons. The authors checked with USDA’s Economic Research Service and were told they do not have seasonal consumption data on apples.
- ²⁸ ISU Food Service purchase analysis data, 1998.
- ²⁹ “Farmers try direct approach to marketing,” Farmer Direct Marketing Newsletter, USDA web site visited October, 1999 (www.ams.usda.gov/directmarketing/news_08_99.htm).
- ³⁰ Adelaja, A.O., R.M. Nayga, Jr., and B. Schilling. (1994). “Returns to the Jersey Fresh promotional program – An econometric analysis of the effects of promotion expenditures on agricultural cash receipts in New Jersey,” Report submitted to the Division of Markets, New Jersey Department of Agriculture.
- ³¹ ISU Extension Horticulture web site, commercial horticulture, visited September, 1999 (www.hort.iastate.edu).
- ³² “1998 Survey of Buying Power,” *Sales and Marketing Management*, 1998.