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The U.S. Organic Market: Size, Trends, and Implications for Central American Agricultural Exports

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Abstract

This paper reviews and analyzes what is known about the U.S. organic market and expectations for its growth and development. Sales of certified organic products in the U.S. approached \$5 billion in 1997 and have probably topped \$7 billion since then, giving organic products a 1-2% share of the overall U.S. food and beverage market. Estimates in the literature imply that organic products could constitute 5–6% of the U.S. market by 2007 and as much as 18% in 2015. It is likely that retail level organic price premiums will persist over the next several years as growth of organic demand keeps pace with growth of organic supply, but organic farming in general is not likely to be more profitable than conventional farming unless production costs for organic farms are lower. Organic production is a high-technology process that requires sophisticated methods of soil fertility management and pest management. Central America has a comparative advantage relative to the U.S. in labor costs. Central America does not have a comparative advantage in soil fertility, however. Maintaining and enhancing soil fertility will be a major challenge for Central American organic farmers, who must compete with farmers in tropical countries with better soils. Competition from organic producers in other countries is already strong for most commodities of current export. For most U.S. organic farmers, organic farming is not the only source of household income. Before starting the transition to organic methods, Central American farmers will need to consider carefully how organic farming will support the overall income needs and goals of larger and smaller farms.

Keywords: organic agriculture, market size, price premiums, coffee

JEL codes: Q13, Q17, Q18, L11

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I. INTRODUCTION

A. Background

Organic agriculture as a modern production system and marketing label began to appear in the United States in the 1940s. Organic farming gained momentum with the publication in 1962 of Rachel Carson's masterpiece *Silent Spring*, which explained in common language the risks to ecosystems and human health from widely-used agricultural pesticides. After remaining on the periphery of mainstream agriculture through the late 1970s, organic production methods and marketing systems began to evolve rapidly during the 1980s, with input from growers, specialty store outlets, non-governmental organizations, and state-level regulations. With the passage of the Organic Foods Production Act of 1990, the federal government acquired a role in the regulation of organic markets, which had hitherto been the responsibility of state and private organic certifiers. When a federal organic standard is finally adopted—probably in the next year or two—the organic products industry in the U.S. will have made the transition from an informal movement of farmers and consumers to a recognized, discrete sector of the consumer products market.

In the U.S., Europe, and Japan, markets for organic products have experienced double-digit growth for most of the past decade. This growth is expected to continue as the EU and the U.S. formalize market structures and consumers continue to adjust their purchasing preferences in response to new information, additional education, and rising incomes. While small in relative terms, accounting for just 1 percent of retail market purchases in most countries, organic sales already represent billions of U.S. dollars annually. For small countries like those in Central America, even 1 percent of total U.S. and EU markets represents an important export opportunity. Because of the size of the U.S. market, even a U.S. "niche" market could be several times larger than export capacity for Central America.

From the perspective of a producing and exporting country or region, the importance of organic agriculture to sustainable agricultural growth objectives will depend on answers to four questions:

- **The production-cost side: how do organic production costs compare to conventional production costs?**

- **The adoption-cost side: how large are the costs of certification and the costs of converting from conventional to organic practices when organic methods must be used but crops are not sold as organic?**
- **The marketing side: is market demand structured in a way that allows adequate sales opportunities for organic products, and does this demand allow higher prices compared to conventional products?**
- **The environmental side: does organic production provide important domestic, regional, and/or international benefits that are not fully reflected in market prices?**

Given the importance of agricultural production and exports for the economies of Central America and of the U.S. as an export market, it is safe to say that the future structure and growth of the U.S. organic market will have significant ramifications for organic exports from Central America and, as a result, for the diffusion and profitability of organic farming throughout the region.

B. Purpose and Structure of this Paper

Despite the importance of the U.S. organic market, information available to farmers, distributors, and policy makers about the realities of organic production and markets is poor. What is available tends to understate the high-tech, information-intensive nature of modern organic production methods and to draw an incomplete portrait of organic markets. Having such poor information creates biases both in favor of organic production ("lower costs and higher prices") and against organic production ("yields and quality fall").

As a starting point for Central American countries to evaluate market opportunities for organic products, this paper reviews and analyzes what is known about the U.S. organic market and expectations for its growth and development. Based on this review, it is possible to assess what the structure of the U.S. market means for organic exports from Central America over the next couple of decades. The paper thus aims to help Central American countries answer questions related to the international marketing side of organic agriculture (question number 3 above). As relevant, it also covers some of the cost issues that fall under questions 1 and 2. Whenever possible, it focuses on products that are especially relevant for Central America.¹

¹Note that within the Central America Project, related studies on agricultural externalities at the intensive and extensive margin provide useful information for discussing item 4 above.

The paper is organized as follows. This section concludes with some definitions of terms used in the paper. Section 2 provides an overview of the size and growth of the U.S. organic market. Section 3 looks briefly at the role of imports in U.S. food markets, while Section 4 surveys U.S. organic production and discusses the draft U.S. national organic standard. Section 5 considers constraints to expanding organic production in the U.S. and in Central America. Section 6 looks at the often misunderstood topic of organic price “premiums” and summarizes what is known about organic versus conventional prices. In view of the importance of coffee as a Central American export, Section 7 focuses on organic coffee markets. The paper concludes in Section 8 with a summary of key issues and recommendations for understanding and evaluating the likely future role of organic production within Central American national and regional goals for sustainable agricultural growth.

C. Useful Definitions

Before proceeding to our review of U.S. organic market growth, it is important to clarify the precise meaning of various terms related to organic products. Although definitions vary, those provided below are commonly used in the literature, and they are the ones we will use throughout this paper.²

Organic farming An approach to farming that prohibits the use of certain chemical inputs (fertilizers, pesticides, and pharmaceuticals) and emphasizes the development and maintenance of soil fertility to enhance and sustain yields. (Note that some organizations include other social, economic, and/or environmental criteria in their definitions of “organic agriculture,” but the two listed above—absence of chemical inputs and enhancement of soil fertility—are the key distinguishing criteria.)

Organic product Foods, beverages, and other consumer products that were produced using organic farming methods or contain some minimum amount of ingredients produced using organic farming methods.

Conventional farming All farming that uses chemical inputs to enhance yields is considered to be conventional, and agricultural products raised with chemical inputs are conventional products.

²Note that these are not “official” definitions. Individual government agencies and private organizations typically provide their own definitions of these terms.

<i>Certified organic</i>	"Certified organic" refers to products from farms that have been inspected by a private, state, or national certifying agency and found to conform to that agency's requirements for organic agriculture. Most organic products sold in the U.S. are "certified organic" and bear the certifier's label.
<i>Organic but not certified</i>	Many farmers use organic production methods by default (i.e. they do not have access to chemical inputs) but do not market their products as organic. Others use organic production methods deliberately but choose not to become certified, perhaps due to the cost of certification. These farmers might market their products as organic in any case (but not "certified organic"), or they might market them as conventional.
<i>Registered</i>	Under California state law, all farmers who wish to label their products "organic" must be registered with the state registry. This is not the same as certification, which many farmers choose to obtain in addition to being registered.
<i>Accredited</i>	Several organizations and governments "accredit" organic certifiers, thereby authorizing them to inspect and certify organic farms. In the U.S., the USDA will perform accreditation once a national standard is passed. There is currently no accrediting body in the U.S. government. Internationally, the International Federation of Organic Agriculture Movements (IFOAM) accredits certifiers in many different countries.

II. THE U.S. ORGANIC MARKET: SIZE AND GROWTH

It is widely known that the U.S. market for organic products, both fresh and processed, has been growing rapidly in percentage terms since the 1970s. Less evident is that despite this rapid expansion, organic products remain a tiny fraction of the total U.S. market for agricultural products and an even smaller share of all commodity categories. This section reviews the growth of the market for organic products in the U.S. and considers the role of imports in the overall U.S. agricultural products markets.

A. The Market Overall

Data on current organic market size, prices, and production costs are hard to come by and poorly developed. One result of this lack of good data is that people hold many misimpressions about organic agriculture. Another is that projecting future market conditions for organic products is exceedingly difficult. In this section we review what is known, and what is speculated, about the size and growth of the U.S. organic products market.

There is currently only one source of annual data on the overall size and growth rate of the U.S. market for organic products. A private company, New Hope Media, collects annual sales figures from natural products distributors (wholesalers) and publishes its aggregate findings in its trade magazine, *Natural Foods Merchandiser* (NFM). It is important to note, however, that the NFM data do not include sales of organic products in mainstream supermarkets, whose organic products are generally handled by conventional distributors. This is a potentially important omission, as much of the growth in organic products sales is expected to come from mainstream supermarkets, many of which are adding organic sections to their produce departments. The NFM figures presumably also exclude sales at farmers' markets and other sales that do not involve commercial distributors (NFM June 1997).

As indicated in Table 1 and Figures 1 and 2, the U.S. market for certified organic products grew from about \$1 billion in 1990 to about \$4-4.5 billion in 1997, an average rate of 24 percent per year since 1991. These numbers are probably an underestimate of total market size because they exclude sales through mainstream supermarkets and farmer's markets. Including sales through conventional outlets and well as direct sales to consumers, a reasonable upper-range estimate of overall U.S. organic production (certified and not certified) might be in the neighborhood of \$10 billion in 1999. Table 1 also reports one projection that total organic sales will grow to \$47 billion by 2007, which implies a continued annual growth rate of about 25 percent. These numbers should be regarded only as suggestive of the size and growth rate of the U.S. organic products market. What is clear from Table 1 and Figure 2 is that the growth in the organic products market has exceeded growth in the overall U.S. food market by a substantial margin.

Despite the rapid growth described above, the share of the overall U.S. food market occupied by organic products remains quite small. In 1997, U.S. consumers spent \$387.2 billion on food purchased for off-site consumption (from stores) and \$320.3 billion on food purchased for on-site consumption (from restaurants), including taxes and tips (USDA 1999). If we assume (as a rough guess) that there were no taxes on food purchased for off-site consumption and that taxes and tips for

on-site consumption averaged 20 percent, then total pre-tax retail sales were in the neighborhood of \$654 billion.³ Organic products, with \$4.2 billion in sales in 1997, constituted less than 1 percent of this total. On the other hand, because of the much lower growth rates in the conventional market, organic market growth projections imply that organic products could constitute 5-6 percent of the U.S. market in 2007 and as much as 18 percent in 2015. These estimates, which are based on very little data, make it easy to understand the strong interest in the future of organic agriculture in the U.S.

B. Organic Fresh Produce

As might be expected from the lack of aggregate market data, few consistent time-series data on the level or growth of sales by commodity or commodity category are available. The data that do exist cannot be compared to the aggregate market size figures in Table 1, as both definitions and extent of market coverage vary. Not surprisingly, data on sales of organic fresh produce, the category of organic products that is currently of greatest interest to Central American farmers, are incomplete and somewhat contradictory.

Per capita consumption of all fresh produce (conventional and organic) in the U.S. has been increasing steadily in the last decade—20 percent by weight in the decade between 1985 and 1995 (McLaughlin et al. 1998). According to the Produce Marketing Association (PMA), sales of organic produce have also risen since the early 1990s, as indicated in Table 2 and Figure 3 (PMA 1998).

For 1996 and 1997, the PMA reports that organic produce sales totaled \$810 million and \$1,069 million, respectively (an annual growth rate of 32 percent). The Natural Foods Merchandiser, in contrast, reported that organic produce sales in 1996 and 1997 remained constant at about \$680 million, a figure which reportedly represents sales from all retail outlets (i.e. mainstream supermarkets as well as natural foods retailers) (NFM June 1998). It is likely that the discrepancy between the two sources results either from differences in consumer outlets included in the data, analysis of different stages in the marketing chain, and/or different definitions of the term "organic." Without better data, however, there is no way to determine which of the estimates is more accurate.

Organic fresh produce was estimated to represent 1.7 percent of total U.S. fresh produce sales in both 1997 and 1998 (McLaughlin et al., 1998). The sales figures in Tables 1 and 2 indicate that organic fresh produce comprised 23 percent of the total U.S. organic products market in 1996, with

³ Many U.S. states do not levy sales taxes on off-site food purchases.

this share projected to rise to 32 percent by 2000. In contrast, conventional fresh produce sales were only 9.5 percent of total food store sales in 1998 (McLaughlin et al. 1998). The dominance of fresh produce in the overall organic products market is probably explained by the stage of development of organic markets, which evolved largely in response to demands for organic fresh produce. Organic processed products are now appearing in a second stage of market development, as the next section describes.

C. Organic Processed Foods

In terms of retail value, processed food products are the fastest growing segment of the U.S. organic market (Dunn 1995). Data on the size and growth of the market for processed organic foods (i.e. everything except fresh fruits and vegetables) are even harder to come by than those for fresh produce. We are aware of only one data set on this topic, compiled by the Organic Trade Association (OTA) from a 1997 survey of OTA-member processors of organic products. The fifty-six respondents to the survey (processors of organic products) provided the data and projections of sales growth rates for various categories of organic processed foods summarized in Table 3.

Most of the categories in which the greatest growth is expected in the next five years are those that are *not* currently significant in Central America: cereals, grain snacks and candy, and dairy. Frozen foods, which presumably include frozen fruits and vegetables as well as other items such as prepared meals, are of more relevance for Central American exporters. Respectable, if not spectacular, growth is also expected in other categories, such as beverages.

The USDA (Harris 1997) recently looked at organic baby food sales, another rapidly expanding organic market in the U.S. The organic baby food market grew by an average of \$4 million/year between 1989 and 1995, equivalent to an annual growth rate of about 21 percent in 1993-95. The organic market share of baby foods is relatively large: 2.3 percent in 1995, the last year for which data is available, up from 0.1 percent in 1989. Fruits and juices account for 40 percent of total baby food sales (conventional and organic) (Harris 1997).

Finally, the USDA used supermarket scanner data to assess market size and growth for frozen organic vegetables, as indicated in Table 4 (Glaser et al. 1998). In contrast to the high growth rates for organic frozen vegetables presented in Table 4, conventional frozen vegetable sales changed little in the period 1991-1996, and in some cases even declined (sales of conventional corn increased by 1.3 percent and of French fries by 9.4 percent, while sales of the other items decreased by an average of 1 percent). Despite the organic products' high growth rates, overall market share for

organic frozen vegetables remained quite modest in 1996, as the last column of Table 4 indicates (Glaser et al. 1998).

D. The Organic Market in Europe and Asia

In 1997, U.S. retail sales of organic products comprised about 42 percent of a global market of more than \$10 billion. The EU, at \$4.5 billion in annual sales, and Japan, at \$1 billion, accounted for most of the rest (USDA 1998).⁴ In this section, we will look very briefly at non-U.S. markets for organic products.

Lohr (1998) compiled data on organic market size for a number of European and Asian countries. Table 5 presents these data for the largest non-U.S. organic markets, ranked by size. What is important to note about Table 5, in addition to overall market size outside the U.S., is the share of imported goods in total organic product sales. Two of the largest markets, Japan and China, import few or none of the organic products they consume. Unfortunately, no data exist on the share of imports in U.S. organic sales. They are likely to be quite low, with the important exception of tropical products like bananas and coffee.

As in the U.S., organic markets in Europe are expanding rapidly, possibly in the range of 25-30 percent annually.⁵ One projection puts the organic market in the EU at \$58 billion by 2006 (larger than projections for the U.S. market in that year) and that of Japan at \$2.6 billion in 2000 (Lohr 1998). There is little indication that the Japanese and EU organic markets are evolving differently from the U.S. market (in terms of growth, demand for different products, price premiums, etc.); on the other hand, data on the structure of these markets are scarce.

III. IMPORTS IN THE U.S. FOOD MARKET

For Central American food producers and exporters, it is important to know whether the U.S. market for imported foods is different from the U.S. food market overall. In this section we will review trends in food imports into the U.S. and summarize U.S. consumer attitudes toward food imports. The focus in this section is on imports of fresh produce.

⁴ Lohr (1998) cites an estimate for the Japanese market in 1997 of \$1.7 billion.

⁵ Another source indicates that two of the largest European markets, Germany and Austria, increased by 10 percent and 8.7 percent, respectively, in 1998, making it unclear where the 25-30 percent Europe-wide growth rates are coming from (Food Engineering 1999).

A. Import Market Share for Fresh Produce

In 1996, the United States imported 16.4 percent by weight of all the fruits and vegetables it consumed. This represents a noticeable decrease from the 1990 figure of 17.7 percent, but the change over this period was not consistent across categories. Decreases in import market share for various kinds of processed fruits and vegetables hide a substantial increase in the market share of imported fresh produce: from 17.4 percent in 1990 to 20.9 percent in 1996 (including fruits and vegetables).

The market share for imported fresh fruit in 1996 was an impressive 38.3 percent. This figure is somewhat misleading, however, because of the dominance of bananas in fruit imports and in U.S. consumption of fresh fruit. Bananas comprised 28 percent of all U.S. fresh fruit consumption in 1996 (by weight) and 72 percent of fresh fruit imports. Without bananas, the import market share for fresh fruit in the same year was a more modest 14.9 percent (Lucier et al. 1997), and Chile held the lion's share. Much of the recent years' growth in fresh fruit imports, excluding bananas, is attributable to Chile's entry into the market. In the 1990s, Chile accounted for more than 25 percent of U.S. fresh fruit imports (Perez 1998).

Bananas are just one of the agricultural products currently produced in Central America—coffee and pineapples are two other important examples—that cannot be grown in the continental United States.⁶ (Imports comprised some 69 percent of fresh pineapple consumption in the U.S. in 1997, while 99.9 percent of coffee was imported (USDA 1998f).) The six Central American countries, taken together, are major suppliers of bananas, pineapples, and coffee to the U.S. market. The region is by far the most important supplier of bananas to the U.S., accounting for 61 percent of imports by value in 1996 and 54 percent in 1997. For pineapples, Costa Rica alone accounted for 52 percent of U.S. consumption in 1997. Central America does not dominate coffee imports to the extent it does imports of bananas and pineapples, but the region still accounted for 22 percent of U.S. coffee consumption by value in 1997, making it the second most important regional supplier (after South America).⁷

For all of these "non-competing" products, consumers have no or few domestic options and are presumably fully accustomed to purchasing imports. (And for coffee, featuring the country of

⁶ The only U.S. domestic production of these items is in Hawaii.

⁷ Fifty-five percent of Central American coffee exports to the U.S. originated in Guatemala, with the remainder divided in varying amounts among the other coffee producers (USDA 1998d).

origin is a standard marketing technique.) For most products, however, imports do compete with U.S. domestic production, at least during the U.S. growing season. To protect U.S. growers, import tariffs and quotas are adjusted seasonally. As a result, fresh vegetable imports in February typically exceed imports in August by nearly three times (Kantor and Malanoski 1997). Chile's dominance of fresh fruit imports reflects, in part, the advantage of having a growing season that is the reverse of North America's.

B. Consumer Attitudes Toward Food Imports

In June 1998, The Packer carried out its annual "Fresh Trends" survey of U.S. fresh produce consumers. The survey questioned 1,341 individuals and 1,000 households about their purchasing habits and attitudes. The results provide the only information we have found on U.S. consumer views on purchasing food imports.

The Fresh Trends survey found that only 39 percent of consumers believe that they benefit from having access to imported fresh produce, despite the fact that a greater percentage than this report purchasing bananas (all of which are imported). The survey concluded that many consumers do not know the origin of the fresh produce they purchase, since most U.S. states do not require labeling with country of origin.

When asked to compare the quality of imported produce with that of domestic produce, consumers responded as indicated in Table 6. More than two thirds of consumers (70 percent) regarded U.S.-grown fruit and vegetables as safer than imported products. This proportion fell to 58 percent when only younger consumers were included, but rose to 73 percent for households with children.

Along similar lines, most of the consumers who reported having concerns about imported fresh produce—48% of all those surveyed—cited health issues as the reason for their concern. Consumer concerns about imports broke down as follows:

- **health or safety standards in country of origin (leading to risk of foodborne illness)—48%**
- **use of chemical fertilizers and pesticides (leading to risk of ingestion of toxins)—47 %**
- **cleanliness of product—33%**
- **freshness of product—12 %**
- **other—8%.**

In principle, the certified organic label on organic fresh produce should reduce consumer fears about at least the second of these issues, and perhaps about the first and the third. If this is the case, then organic labeling should confer a clear marketing advantage for organic imports over conventional imports. What is not clear is whether the consumers who express the concerns about imports listed above recognize that certified organic products, almost by definition, should not raise health or safety questions associated with chemical use. The same consumers who are already most likely to buy organic—those with more education and/or higher incomes—are the least likely to have concerns about imported fresh produce.

In February 1999, Consumers Union, the publisher of *Consumer Reports*, released a report on pesticide residues on foods in the U.S. It concluded that residues on several kinds of fresh and frozen fruits and vegetables are high enough to warrant changes in U.S. policy and/or consumer behavior. What is of importance for Central America is that imported fruit and vegetables were found to have generally *lower* pesticide residues than U.S. domestic production. In 67 percent of items for which foreign samples were tested, U.S. samples had higher residues than the foreign samples. None of the foreign samples tested were from Central America, but samples of Chilean peaches, Argentine pears, Mexican winter squash, and Mexican grapes all showed lower pesticide residues than their U.S. counterparts, while Mexican tomatoes and broccoli and Chilean grapes showed higher pesticide residues. This report, and the follow-on research and reporting that will probably occur might improve U.S. consumers' attitudes toward fruit and vegetable imports (Groth et al. 1999). On the other hand, bacteria on imported foods, rather than pesticides, have been associated with food-related illnesses in the U.S. We found no evidence indicating whether imported organic products show lower levels of non-pesticide contaminants than imported conventional products.

C. Organic Imports into the U.S.

There are no data on the share of imports in U.S. organic products sales. With the exception of products like bananas and coffee, it is likely to be quite small. Although we found no research on this topic, we suspect that there is some bias against imports among retailers and consumers of organic products. We have two reasons for this belief: 1) because organic fresh produce is believed to have a shorter shelf life than conventional fresh produce, retailers might prefer to carry locally grown products; and 2) for some U.S. consumers, one of the incentives for choosing organic products is the belief that buying organic supports family farms and environmental sustainability in their own community. Neither of these considerations should logically create a preference in New England, for

example, for oranges grown in California over those grown in Honduras, but they might well influence purchasing decisions for a number of non-tropical fresh fruits and vegetables. On the other hand, as noted above, certified organic produce from other countries should not fall victim to consumer fears about the safety of imports in general.

IV. ORGANIC PRODUCTION IN THE U.S. AND A FUTURE U.S. NATIONAL ORGANIC STANDARD

Most of the U.S. market for organic products is comprised of foods and beverages that are produced in the U.S. (The major exception to this is, of course, tropical products like bananas, pineapples, and coffee, which are grown only in Hawaii.) This section reviews trends in organic production in the U.S., including the introduction of a U.S. national organic standard, and constraints on expanding production.

A. Farms and Area

Like organic sales, organic farming has been expanding rapidly in the past two decades, in terms of both the number of organic farms and organic acreage. Because there is a relatively small number of organic certifiers in the U.S. (forty-three in all), data on certified organic farmland are more readily available than are data on organic sales. Table 7 provides summary statistics on U.S. certified organic cropland.

As Table 7 indicates, the share of organic cropland devoted to fruit and vegetables (8 percent in 1994) is far higher than the comparable proportion for conventional fruit and vegetables (just 0.9 percent the same year) (Dunn 1995b). Organic fruit and vegetable production is not expanding as rapidly as organic production overall, however. Production increases have instead been concentrated in organic grains, seeds, and dry beans. Moreover, despite large increases in organic acreage, organic farms cover just a tiny fraction of total U.S. farmland. (Note that Table 7 represents cropland only. There is also certified organic farmland devoted to pasture and rangeland.)

The number of certified organic farms in the U.S. increased by 76 percent between 1991 and 1995, while the number of conventional farms fell by 2.5 percent. Despite these trends, by 1995 there were still only 4,856 certified organic farms in the U.S., comprising just 0.2 percent of all U.S. farms. The average size of an organic farm was also considerably smaller than its conventional

counterpart: 188 acres for organic farms, compared to an average conventional farm size of 469 acres. This difference in farm size is probably explained by at least three factors: i) the higher share of fruits and vegetables among organic farm products, in lieu of the grains, forage, and soybeans that dominate conventional farming (Klonsky and Tourte 1998); ii) the fact that most organic farms in the U.S. are part time operations that are expected to generate only a fraction of the farmer's income; and iii) the labor-intensive nature of organic production methods.

In the U.S., the best data on organic production patterns come from California. California set the stage for future organic market development in the state with the California Organic Foods Act (COFA) of 1990 (Tourte and Klonsky, 1998). Under COFA, farms selling "organic" products in California must be registered with the state. As a result, California data on production patterns are more detailed than elsewhere in the U.S. and provide useful information for understanding the likely role and dynamics over time of future organic production in Central America.

In California, registration under COFA is mandatory and simply a form of "self-declaration," while organic certification is voluntary and is handled through private and state organizations. Registration costs little, but certification is substantially more expensive. Because of this, the majority of small organic farms are registered but not certified, while most large farms are both registered and certified. Only 38 percent of registered farms were certified in 1994, but the certified farms accounted for 82 percent of the registered acreage and 90 percent of sales value (Tourte and Klonsky 1998). If these ratios hold nationwide, then certified acreage should provide a reasonable picture of all organic acreage in the U.S.

As with the rest of U.S. agriculture, organic production in California is highly skewed: at one end are a large number of small, uncertified farms, under 5 acres, selling small amounts of vegetables, fruits, and nuts (under \$6,000 total annual sales). At the other end are a few large, certified organic farms selling field crops as well as other products. Organic farms growing field crops averaged about 107 acres with \$52,000 in annual sales. Some 2 percent of organic farms with annual sales of about \$0.5 million accounted for about 60 percent of total organic sales in California in 1994-1995 (Tourte and Klonsky 1998).

Data from the U.S. suggest that there are increasing returns to scale in organic agriculture, as there are in conventional agricultural. Nationwide, a large number of small organic farms continue to operate even through they generate only a fraction of total household income for the farmers. A national survey of organic farmers conducted in 1999 (Walz 1999) found that income from organic farming represents less than half of net family income for about 68 percent of organic farmers. Gross

income from organic farming was about \$15,000 or less for 48 percent of the sample. Thus, when thinking about organic “farming,” one should not forget that the vast majority of organic farms are part-time operations and are *not* the primary source of income for the family or corporation.

B. Certification of Organic Farms

There are currently forty-three entities providing organic certification services in the U.S. Thirty of these are private organizations and thirteen are state agencies. Because there is not yet a U.S. national standard, each U.S. certifier develops its own criteria for granting certification to organic farms. Most of the private organizations are not accredited by any government or other authority (though a few are members of IFOAM); their credibility as certifiers rests instead on their reputations and records. Examples of certification criteria can be found on the websites of two of the largest U.S. certifiers, the Organic Crop Improvement Association (OCIA) (www.ocia.org) and California Certified Organic Farmers (CCOF) (www.ccof.org).

Most certifying organizations are funded through the fees they charge farmers for their services. The USDA recently surveyed a number of organic certifiers regarding the costs of certification in the U.S. as part of its analysis of the proposed U.S. national standard. It found that the average fee farmers pay for initial organic certification is \$413. Actual fees vary widely with the type of certifier and the size of the farm, however. Some state agencies subsidize certification, while private organizations must pass on the full cost to the farmer.⁸ Many private certifiers, including OCIA and CCOF, are nonprofit membership organizations, which charge an annual membership fee along with variable certification costs. Farm size and output are also important: certifiers typically charge on a sliding scale based on the farm’s gross sales (USDA 1998b). CCOF, for example, charges 0.5 percent of gross organic sales, along with a membership fee and, importantly, an hourly charge for the inspector’s time. (These fees exclude, of course, the cost of the farmer’s time both in preparing for the certification inspection and in doing the paperwork and record keeping that go along with certification.)

C. Development of a U.S. National Standard

The development of a national standard, which will systematize certification criteria and other aspects of organic agriculture, has long been awaited in the U.S. Organic farming evolved into

a U.S. national agricultural policy issue in 1990, when Congress passed the Organic Foods Production Act of 1990. This Act requires the U.S. government to develop a national organic standard that will provide a market-making definition of organic products. As part of this standard, certifiable requirements for all stages in the marketing chain, from the farmers to the consumers and all steps in between, are to be developed, implemented, and enforced by the U.S. government (specifically, by the Agricultural Marketing Service of the U.S. Department of Agriculture). Proponents of the legislation anticipated that a U.S. federal standard, by clarifying responsibilities and informing consumers, would provide a significant boost to the U.S. organic market.

Now, in April 1999, almost ten years after the passage of the Organic Foods Production Act of 1990, the national organic standard it calls for does not yet exist. While long delays in developing new regulations can sometimes be attributed to lack of interest, in this case the cause of the delay is just the opposite: the level of public interest in the organic standard is leading to a cautious approach to developing it. The National Organic Program of the USDA proposed its first draft of the standard (or rule) on December 16, 1997, with a public comment period stretching through April 30, 1998.⁹ The USDA received about 200,000 responses during the public comment period on the original draft of the rule, the largest number of comments that the agency has ever received for any proposed legislation. The initial public comment period was extended through the end of 1998 to allow more input, and the USDA indicated that it would reconsider some of the most controversial provisions.

Until a national organic standard is adopted, the term “organic” in the U.S. can still include products from farms that are not certified, and some foods are available on the market that are labeled “organic” but not “certified organic.” This situation further complicates our understanding of market size and production volumes. It is likely (but not certain) that the sales data presented earlier in Section 2 include only certified organic products.

At the same time, Tourte and Klonsky (1998) note that some industry experts believe that only about 30-40 percent of organic production is actually sold as “organic,” with the rest distributed through conventional channels and not labeled as organic. If this is truly the case, it implies that organic products are able to compete with conventional products on the production cost side alone, without requiring a market price premium to make them profitable to farmers.

⁸ It is likely that the USDA average fee cited above is on the low end, as it was pulled down by the inclusion of state agencies in the sample.

⁹ The full text of the draft rule can be found on the web at <<http://www.ams.usda.gov/nop/rule.htm>>.

V. CONSTRAINTS TO EXPANDING ORGANIC PRODUCTION IN THE U.S. AND CENTRAL AMERICA

In addition to the limits imposed by market prices and export opportunities, there are two major constraints to expanding organic agriculture, in the U.S. as well as in Central America. Since both of these constraints involve costs, it is likely that they will create more serious obstacles for Central American farmers than they do for North American farmers. In this section, we discuss each of them in some detail.

A. Organic Certification

One of the first obstacles that Central American countries wishing to expand organic exports will have to overcome is that of certification. Once a U.S. national standard is in place, imports into the U.S. market will have to demonstrate that they meet the U.S. standard if they are to be labeled “organic,” either through certification by an accredited U.S. certifier or through a reciprocity agreement between Central American governments and the U.S. government. The same is true of EU organic standards. Central American farmers should expect that products grown using organic methods but not certified by an accredited certifier will not be treated as “organic” in the U.S. or the EU. Developing the capacity for Central American organic farms to be certified at a reasonable cost will thus be critical to the expansion of organic exports.

There are two major practical considerations in developing organic certification capacity. First and foremost is the cost. *Certification of organic farms can be an expensive process.* It requires both an annual visit to each farm by inspectors from an accredited certifier. Also, during the shift to organic from conventional agriculture, a transition period—usually three years—when crops are raised without chemical inputs but cannot be labeled “certified organic,” products not eligible for the potentially higher prices commanded by certified products.

Farm size thresholds for certification are one of the key issues under debate at the federal level in the U.S. The draft U.S. national organic standard excludes only farms with sales of less than \$5,000 annually from certification requirements. All farms with sales of more than \$5,000 will have to be certified, should this standard be implemented. Evidence from California, where only about 20 percent of farms with sales between \$5,000 and \$10,000 and only about 50 percent of farms with sales under \$25,000 are certified, suggests that the certification requirement in the proposed national rule might be too expensive for small farms in the U.S.—let alone in Central America.

The cost of certification, either to U.S. or EU standards, can be reduced substantially if the certifying organization or agency is located nearby. Certification of organic cocoa in Bolivia in the late 1980s, for example, originally cost about \$4,000 per farm when using international inspectors. This cost fell to about \$2,000 per farm following the establishment of a local certification organization and local inspectors.

Even a \$2,000 initial certification cost is still enormous relative to \$5,000 annual sales, of course, especially if land markets and financial institutions do not allow access to credit at reasonable rates. We cannot overemphasize the importance of considering the costs of certification in thinking about the expansion of organic agriculture in Central America. The appropriate level of certification requirements and the threshold for certification (i.e. at what level small producers can supply organic products to the market but not be formally certified) will be a key policy issue within the development of a certification program.

The second major practical consideration related to certification is export-market reciprocity. Not only do Central American organic products need to be certified, but the certifier must also be approved or accredited within the target export market. Until a U.S. national standard is enacted, private U.S. certifiers can operate in Central America just as they do in the U.S., and it is wholesalers and retailers in the U.S. who decide whether to accept these certifiers' organic labels.

The current draft rule, as explained earlier in this paper, makes the U.S. government the accreditor of organic certifiers (or "certifying agents," in the language of the draft rule). Central American certifiers that are not simply branch offices of U.S. certifiers will have to apply to the USDA to obtain a "determination of equivalency" under the U.S. National Organic Program (USDA 1997).

The EU does allow countries with certification systems deemed equivalent for EU purposes (i.e. equivalent to the EU standard outlined in CR 2092/91) to market their products as organic within EU countries. The "provisional" list of such countries can be used to provide much of the information needed to develop low-cost certification capacity in Central America. As of March 1997, five countries have received such status (the Instituto Argentino de Sanidad y Calidad Vegetal in Argentina is one example) (Vaupel and Comins 1997). Central America should be able to benefit from the experiences of these "provisional-list countries" in their efforts to obtain equivalency accreditation.

Because of the potentially important environmental benefits associated with organic production, even if the products are not marketed as "certified organic," there is a clear role for the

governments of Central America to facilitate the development of national organic standards and certification strategies. Such programs need to emphasize low costs to farmers and reciprocity with certification programs in export markets.

B. Information Requirements of Organic Agriculture

Experience in the U.S. and elsewhere consistently indicates that *organic farming is a high-technology form of agriculture*. It depends on crop diversification and rotations, ongoing soil fertility management, short-term pest management strategies during the transition from conventional to organic and long-term pest management strategies. As the dominant certification organization in California notes, organic production is not simply the elimination of synthetic materials and “management by neglect.” This is a recipe for soil degradation and poor quality crops (Klonsky and Tourte 1998). Organic production is, instead, a labor- and information-intensive system that requires *more* management inputs than conventional production. Perhaps because of this, organic farmers in the U.S. tend to be highly educated—56 percent have university degrees—and a majority (58 percent) start as organic farmers, while just 40 percent or so make the transition from conventional to organic agriculture (Walz 1999).

A recent national survey of organic farmers (Walz 1999) confirms that crop rotations and a wide variety of other sophisticated management practices are used regularly in U.S. organic agriculture. Not surprisingly, organic farmers regard the management of soil fertility and the control of pests (weeds, insects, animals, and diseases) as serious concerns. For soil fertility management, maintaining organic matter in the soil is the top priority. More than 70 percent of organic farmers use cover crop rotations, more than 50 percent use compost applications, and more than 30 percent apply gypsum or lime. Applications of compost, gypsum, and lime are often purchased commercially and applied by specialized applicator services.

To control weeds, crop rotations, mechanical tillage, and hand weeding are each used by about 75 percent of farmers in the survey. Organic farming is thus labor-intensive, as well as requiring a large amount of current, site-relevant information. To combat a variety of insects, nematodes, and pathogens, crop rotations are again widely used (75 percent or more). Roughly 38 percent of farmers also create beneficial insect habitat as part of their overall pest management strategy, while 45 percent use commercial applications of BT at least occasionally. The survey also reported that the cost of organically allowable inputs—like gypsum or lime—is a serious constraint

to organic production, while weed management is a major barrier in making the transition from conventional to organic production.

Central American farmers have an advantage over North American farmers in terms of labor costs, but access to information and to appropriate non-chemical inputs is likely to be a major barrier to the expansion of organic production in Central America. Without adequate management of soil fertility and pests, organic agriculture is unlikely to reap the environmental benefits desired by Central American governments. Equally important, the products raised on organic farms will not be of high enough quality to compete in the U.S. and EU organic markets, where high quality is one reason for consumers' willingness to pay the higher prices of organic products.

VI. ORGANIC VERSUS CONVENTIONAL PRICES: WHAT PRICE PREMIUMS?

A. The Basis for Organic Price Premiums

Retail prices for organic products are generally higher than prices for comparable conventional products. The difference between organic and comparable conventional prices, taken as a percentage of the conventional price, is often called the organic price "premium."¹⁰ The current and projected future levels of organic price premiums remain the central issue in many debates about the long-term desirability and profitability of organic agriculture.

Since organic products of comparable quality can almost always be sold as conventional, conventional prices can be regarded as floor prices for organic products at the retail level. Any *difference* in prices between organic and conventional products at the retail, wholesale, or farm gate level must result from a specific combination of demand and supply factors. Changes in these factors will shift the balance of demand and supply, alter conventional and/or organic prices, and thus affect the organic price premium.

On the demand side, consumers *currently* buying organic products are willing to pay higher retail prices for organic products. The reasons for this probably include perceptions that organic foods and beverages are safer than conventional products; perceptions that organic foods and beverages are of better quality than conventional products; and/or perceptions that organic farming provides environmental or social benefits beyond those of conventional farming. The relatively

¹⁰For example, if the organic price per unit is \$1.20 and the conventional price is \$1.00, then the organic premium is considered to be 20 percent.

small volume of organic sales relative to conventional sales, however, indicates that the number of people actually willing to pay the higher organic prices is a small proportion of total consumers.

On the supply side, production costs and market power determine if the higher willingness to pay on the consumer side is actually translated into higher market prices for organic products. If organic prices are *higher* than conventional prices, it must also be the case that either:

- In competitive markets, production and marketing costs are higher for organic than conventional products, so that supply equals demand at lower quantities and higher prices than in the conventional market (Case 1); or
- In non-competitive markets, there is some form of market power or non-competitive pricing that allows retailers prices to be set in a non-competitive way (i.e. monopoly power) (Case 2).

These two basic explanations for price premiums at the retail level follow from simple economic principles of the functioning of markets and prices, but they seem to be forgotten in many discussions of organic agriculture and especially of the long-term prospects for producer profitability.

In Case 1 above (the competitive market case), organic premiums over conventional prices do exist, but there is little reason to believe that organic profit margins are higher. The higher retail prices for organic products might simply cover the greater production and marketing costs. Even in this situation, of course, organic agriculture might still generate large benefits to the economy if the external costs of organic agriculture (environmental or social) are smaller than those of conventional agriculture. These benefits do not accrue to the individual farmer or marketer, however.

In Case 1, organic premiums will persist over time only if organic demand grows fast enough, relative to organic supply, that organic markets clear (demand equals supply) at higher prices than conventional markets. Since changes in overall food consumption are driven mainly by population and income growth, much of the growth in organic demand over the last two decades has come from consumers' shifting from conventional to organic products. Thus, it is possible to envisage that over the next several years premiums will persist because demand growth keeps up with organic supply growth, but without greater private profit margins for organic farmers, wholesalers, and retailers, relative to their conventional counterparts.

In Case 2 above (the non-competitive market case), organic price premiums probably do reflect higher per unit profitability at the retail level. In this case, it is necessary to determine where in the marketing chain the non-competitive power rests—at the production, distribution, or retail

level. It is very unlikely that Central American producers, or any other producers, will be able to use market power to maintain price premiums over time for any substantial level of supply (although retailers might be able to). The main reason is that there is competition from other parts of the world (e.g. Mexico, the Caribbean, South America, etc.) for almost every organic product exported by Central America. If organic prices remain high, producers in other countries will be tempted to enter the market, and regional monopoly power—to the extent that it exists—will be diminished.

Organic premiums are often presented as windfall profits or economic rents (defined as profits beyond normal profits). It is plausible that at the retail level a windfall might have existed at the early stages of market development, when quantities supplied were small, information was not complete, and only a handful of consumers were involved in the market. There is no reason to believe, however, that any such windfall exists now or will arise in the future. As the organic market matures, supplies will expand, products and brands will multiply, markets will become more competitive, and consumers will have better information about organic markets and more experience purchasing organic products. In such circumstances, the odds of maintaining organic price premiums will plummet.¹¹

Common sense, and the preceding analysis, suggest that to compete in organic markets, Central America must be competitive on the cost side.¹² Production costs, rather than hoped-for price premiums, will be the most important factor influencing the adoption and diffusion of organic production methods (with their associated environmental benefits). While today there clearly are price differences between some organic and conventional products, these differences reflect, at least in part, cost differences in production, processing, and distribution. Any real “premiums” (extra profits) currently available in organic markets are likely to diminish drastically as quantities supplied on the market expand. While high prices for certain organic products could induce adoption of organic production practices in the short run, the long run sustainability of organic production will depend fundamentally on efficient production and low production costs.

¹¹ It should be noted that information on consumer demand for organic products, and especially price response, remains scarce, even though this is exactly the information that will be needed to determine if expanding organic supplies is likely to cause prices to fall quickly and converge to conventional prices. Thompson (1998) reports that no studies have estimated own- and cross-price elasticity of organic demand with respect to organic prices and with respect to conventional prices. It is also important to bear in mind that organic products—particularly fresh produce are high quality products, and to some extent what is labeled the “organic premium” can be thought of as a “quality premium.”

¹² The “fair trade” movement calls essentially for moving from some form of competitive (and perhaps exploitative) market situation to some other form of non-competitive market transactions that also depend on finding a willing buyer to pay a high price. Such transactions are likely to remain relatively small compared to the overall market, while providing important benefits to smaller and perhaps poorer agricultural producers.

Competition from organic producers in other countries is already strong for most commodities of current export relevance to Central America. Organic citrus products (oranges, lemons, and grapefruit) are found in most EU markets with an average price differential between high quality organic and conventional products of about 25 percent. There are, however, perhaps seventeen countries from South America, Central America, North America, North Africa, the EU, and Asia supplying organic citrus products to EU markets (UNCTAD, 1996). Competition is substantial. Major export commodities from Central America, including coffee, exhibit similar competitive pressures (coffee will be discussed in more detail in the following section). As a result, price premiums for organic goods are already coming down. The marketing director of one large U.S. organic farm, for example, commented in the spring of 1998, “Prices have come down. The premium for organic food is as low as it’s ever been, and it’s continuing to decrease year by year (*Progressive Grocer* 1998).” It is useful to bear this trend in mind as we move on to a review of current organic price premiums.

B. Retail and Wholesale Premiums for Fresh Produce

Despite the widespread belief that organic prices are substantially higher than conventional prices, good quantitative data sets on organic price premiums are nonexistent. To the extent that data have been collected at all, they are contained in research papers on particular items in single years. In some cases, it is impossible to determine the source of the data; in others, we know that sample sizes are small and occasionally biased. A fairly large dose of skepticism is thus warranted in considering all of the price premium figures presented below, simply because of the poor quality of the data. Producers and policy makers who believe that price premiums—or their absence—justify specific courses of action should be particularly cautious about taking these figures at face value.

With these provisos in mind, Table 8 brings together data on fresh produce price premiums at the retail and wholesale levels. The data in Table 8 can be taken as indicative of the levels and, in particular, the range of price premiums, but it should be kept in mind that most of the data are at least five years old, and in some cases are a decade out of date. Sample sizes were small, moreover, and in many cases samples were drawn from only one city or region and one season. There is wide seasonal variation in organic prices, depending on seasonal trends in both supply (growing seasons) and demand (seasonal consumption preferences, such as the popularity of watermelon in the summer). For organic carrots, for example, monthly premiums in 1996 ranged from 52 percent in August to 157 percent in December (Greene and Calvin 1997).

C. Farmgate Price Premiums for Fresh Produce

For Central American producers aiming to export to the U.S. market, it is price premiums at the farmgate level that are of most immediate relevance. The sole source of farmgate prices in the U.S. is Hotline Publishing's *Organic Food Business News*, a newsletter that publishes weekly data on organic prices. In Table 9, these average annual organic prices are compared to average annual conventional prices as reported by the U.S. Department of Agriculture and the FAO. While we cannot assess the representativeness of the Hotline data, analysts at the USDA's Economic Research Service confirmed that this is the only data set available on farmgate organic prices in the U.S. In Table 9, information is provided for several fruits that are currently important exports of Central American countries, such as bananas and pineapples (coffee is discussed separately in Section 5).

There are of course significant seasonal price fluctuations at the farmgate level for some crops. Bananas show relatively little variation. For example, in 1996, the year for which we have the most data, the highest farmgate price for organic bananas—\$0.59/lb. in March—was only 28 percent greater than the lowest price of \$0.46/lb. in September. For Valencia oranges in the same year, however, the highest price of \$0.66/lb. in January was 94 percent higher than the lowest price of \$0.34/lb. in May.

D. Producers' Share of Retail Organic Prices

To consider the potential profitability of organic production, Central American growers need realistic information on current farmgate prices for major relevant commodities (conventional and organic) and reliable forecasts of future prices. Because organic market development is still at an early stage, information on farmgate organic prices and premiums over conventional prices are lacking. Instead, retail organic prices and premiums are often taken as indicators of price premiums at the farm gate.

This is a risky approach. The difference between farmgate and retail prices (the marketing margin) is usually a sobering bit of information for farmers and agricultural ministries around the world. The farmgate-to-retail spread in the U.S. for all food products (i.e. conventional as well as organic) is typical of developed country agricultural markets. In the U.S., growers received, on average, 23 percent of retail sales value in 1996. In other words, retail prices are about 400 percent higher than at the farm gate, with marketing—including shipping, processing, wholesaling, and retailing—accounted for the other 77 percent of the retail price (Elitzak 1997). For oranges from

California, for example, prices receive by farmers averaged 22 percent of retail prices between 1990 and 1997, with a high of 38 percent in 1991 and a low of 18 percent in 1992 (USDA 1999).

Given the additional costs incurred in selling between countries—for example, sea transport costs and insurance—it is likely that the marketing margin between the C.I.F. import price and the U.S. domestic retail price is not less than the U.S. average of 77 percent. If this is the case, then the total markup from foreign producer farmgate to U.S. retailer is substantially higher for many imported commodities.

There is no particular reason to believe that organic marketing margins are the same size as conventional margins. The important point for Central American farmers is that retail price differentials between conventional and organic products in the U.S. (or the EU, Japan, or elsewhere) do not necessarily translate back into equal premiums at the farm gate in Central America.¹³

E. Retail Price Premiums for Organic Frozen Vegetables

The only data we have found on retail price premiums for organic processed foods are for frozen vegetables.¹⁴ In a recent report, Glazer et al. (1998) used supermarket scanner data to compare supermarket prices for several types of organic and conventional frozen vegetables for the period 1990-1996. Average price premiums over this period were substantial: broccoli 165 percent, corn 120 percent, green beans 168 percent, green peas 201 percent, French fries 226 percent (all for frozen products). The variation in premiums over the period was also substantial, however. Price premiums for organic broccoli ranged from a low of 99 percent in 1990 to a high of 208 percent in 1994, while premiums for organic French fries fell from 244 percent in 1995 to 192 percent in 1996. In general, premiums increased from 1990 to 1993 or 1994 and began to fall after that. The average premium for all products was 221 percent in 1994, but it was down to 171 percent by 1996.

Without better data, it is difficult to say whether the large premiums Glazer et al. (1998) found for frozen vegetables carry over to other organic processed foods. As Section 2 indicates, sales of organic processed foods are skyrocketing, as are sales of conventional prepared meals and pre-cut products. The economic principles discussed earlier in this section suggest that at this point

¹³ There is some anecdotal evidence that retailers earn a higher margin on organic products than on conventional ones. A representative of the California Certified Organic Farmers, one of the largest certifiers in the U.S., noted in *Supermarket News* (Oct. 14, 1994) that the premium for organic produce paid by retailers is typically 20 percent, but retailers then charge consumers a premium of 50-100 percent.

¹⁴ In addition, the USDA reported that organic baby foods carried an average price premium of \$0.21/jar in 1995 (Harris 1997). We do not know what percentage of conventional prices this represents or whether the premium varies by type of baby food (e.g. fruits, vegetables, etc.).

in time, demand for processed organic products is outstripping supply, leading to the high premiums cited above. To the extent that the entire U.S. market for food and beverages is shifting toward processed and prepared foods, price premiums for organic versions of these items might persist. In the long run, however, the same factors that are putting downward pressure on prices of organic fresh produce will affect processed food prices as well.

VII. THE U.S. MARKET FOR ORGANIC COFFEE

Organic coffee differs from other organic foods produced, or potentially produced, in Central America in four ways. First, coffee (conventional and organic) is the most important export crop of four of the six Central American countries, and it is also the single most valuable U.S. import from Central America, accounting for a third of total U.S. imports from the region in 1997 (USDA 1998d). (Organic coffee is also the most important organic export of developing countries as a whole, in terms of value of trade.) Second, organic coffee competes not with coffee as a whole, but with other “specialty” coffees which already carry a substantial price premium in U.S. markets. Third, two other environmentally-friendly/socially responsible products, shade coffee and “fair trade” coffee, are also available in the U.S. and make analyzing the market for organic coffee more complicated. And fourth, organic coffee sellers do not market their product as being healthier for consumers than conventional coffee, but instead only on the basis of the organic product’s environmental and taste attributes. For all these reasons, coffee merits special attention in this paper. In this section we will look at organic coffee sales and price premiums, in comparison to other specialty coffees in the U.S.

A. Conventional Coffee Imports and Prices

The U.S. imported more than \$3 billion in green coffee beans (conventional and organic) in 1998 (USDA, 1999). About \$693 million of this came from Central America—a 23 percent market share in green bean imports. At the same time, the U.S. imported only about \$175 million in roasted coffee, mainly from other OECD countries. This included less than \$2 million of roasted coffee from Costa Rica, El Salvador, Guatemala, and Nicaragua, with no imports from Honduras.

Wholesale coffee prices have fluctuated widely in the 1990s, mainly for supply-shock reasons. The composite indicator price of the International Coffee Organization for “other mild Arabicas” during the 1990s has ranged from a low of about \$0.64/lb. in 1992 to about \$1.85/lb. in

1998, with an average of about \$1.07 through February 1999. Actual average import prices ranged from about \$1.40/lb. for imports from Nicaragua to about \$1.51/lb. for imports from Costa Rica, with Guatemala and Honduras receiving about \$1.45/lb. (the average price for total world imports to the U.S. was \$1.20/lb.) (USDA, 1999).

The average retail price for roasted coffee in the U.S. was \$2.58/lb. in 1992 and \$3.76/lb. in 1998. Thus, retail (roasted) prices were about 300 percent higher than wholesale (green bean) prices in 1992 and 100 percent higher in 1998. This large swing in the wholesale-to-retail price spread stems from the fact that retail prices vary less over time than wholesale prices. In 1998, the average price of roasted coffee imported from Costa Rica to the U.S. was about \$2/lb., implying that the wholesale-to-retail spread in the U.S. for Costa Rican roasted coffee was a little less than 100 percent.

B. Organic Coffee Market Size and Development

In the vast world market for coffee, organic coffee comprises a minuscule share. As of 1996, organic coffee accounted for only 0.5 percent of world coffee exports. U.S. market share for organic coffee was even lower, at 0.2 percent (UNCTAD 1996). Within just the world market for “specialty” coffees, however, organic coffee is fast becoming an important player. Organic coffee is the fastest growing segment of the specialty coffee market in the U.S. and Europe (Thrupp 1995). The little information available on specialty and organic coffee market share is presented in Table 10.¹⁵

Although total U.S. coffee consumption is decreasing—by 15 percent over the past twenty years—consumers are also shifting to higher quality coffees, a trend that bodes well for organic coffee producers (USDA 1998e). The market share for organic coffee is still very modest—5 percent of total coffee sales is projected for 2000—but is still substantially larger than the market share for other organic products.

C. Organic Coffee Production

Of the roughly 25,000 tons of organic coffee produced worldwide in 1996, some 80 percent came from Latin America. Mexico and Peru are the largest Latin American producers. Both countries produced roughly the same amount of organic coffee in 1996, but using very different

¹⁵ It should be noted that market share is based on sales value, not coffee volumes. Since specialty coffees are considerably more expensive than plain coffees, and organic coffees are somewhat more expensive than other specialty coffees, market share by volume is probably much lower than these figures indicate.

amounts of certified area: just under 44,000 hectares in Peru compared to just under 26,000 hectares in Mexico. In 1996, certified organic coffee was grown on more than 7,000 hectares in Guatemala, 4,900 hectares in El Salvador, 1,400 hectares in Nicaragua, and 550 hectares in Costa Rica (NRDC 1996).

A number of other tropical countries are also developing organic coffee production capacity. There is no comprehensive source of data on organic coffee production, but we have found recent references in the literature to the expansion of organic coffee production in, among others, East Timor, Ethiopia, and Papua New Guinea.

D. Price Premiums for Organic Coffee

As noted above, organic coffee is a subset of a category of coffee products known as “specialty coffees” that already commands a substantial premium over regular prices. We could not find any published data on organic coffee premiums. Instead, in mid-December, 1998, we compared the prices of organic and conventional specialty coffees offered for sale over the Internet by four vendors. The results, which include three regular and two decaffeinated coffees, are summarized in Table 11.

The average price premium for the coffees in Table 11 is 22 percent. While our sample size is too small to be considered representative, it probably does indicate the usual range of price premiums for organic specialty coffees over their conventional counterparts.¹⁶ Perhaps because organic coffees must compete in the already-expensive specialty coffee market, organic premiums for coffee are lower than average premiums for other organic products. Whether the premiums are high enough to cover additional costs associated with organic production is not clear from the literature. Citing a representative of Allegro Coffee, a large organic coffee retailer, Davids (1998) notes, “...organic farming practices add about 40 percent to the cost of production in Central America, whereas growers currently receive a premium of only about 30 percent for their organics, a situation that also encourages farmers and mill-owners to compromise on quality.” On the other hand, NRDC (1996) suggests that returns to coffee growers are higher for organic than for conventional products, although no supporting data is provided.

¹⁶NRDC (1996) reports that retail premiums average 10-15 percent, while Davids (1998) says that farmers receive premiums of about 30 percent.

E. Other Coffee Labels

When coffee is labeled organic, it typically means that the coffee grower has been certified by a recognized organic certifying organization. There are, however, several other labels that are designed to inform consumers about the social or environmental attributes of coffee. The two most widely recognized are for shade-grown coffee and fair-trade coffee. “Shade-grown” (sometimes referred to as “bird friendly”) is an environmental label, premised on North American and European consumers’ concern for songbird habitat in Central and South America. The “fair-trade” label reflects a number of social and environmental concerns among consumers. Foremost among them seems to be that farmers receive an above-market price for their coffee, thereby sharing in the profits that typically accrue to wholesalers and retailers.

Each of these types of labels itself encompasses a number of different standards, such as different definitions of what constitutes “fair trade,” or even how much tree cover is needed to qualify as “shade.” Organic certification of coffee does require shade, but not necessarily the amount or type of tree cover needed to provide optimal bird habitat. Shade-grown certification does not necessarily require organic growing techniques. Since both organic and shade-grown criteria emphasize environmental aspects of coffee production, some attention has been given to distinguishing the two labels from one another, on one hand, and to combining them into one inclusive label, or “superseal,” on the other. Table 12 offers a sampling of the labels and labeling systems in use today.

F. The Future of Organic Coffee

As the market for specialty coffees expands, it seems likely (though by no means inevitable) that one or another of the coffee labels described above will come to dominate U.S. sales. Whether this label will be “shade,” “organic,” or some combination of both is impossible to predict at this stage in market development. The existence of a broader market for organic products and consumers who are familiar with organic labeling would seem to favor organic coffee, but the emotional appeal of a product that offers habitat for endangered songbirds will work in favor of shade coffee.

Price premiums for organic coffee, above the premiums already commanded by specialty coffees, are modest or negligible. Like other organic premiums, they will probably fall even lower as the specialty coffee market develops. The most reasonable conclusion that Central American coffee producers can draw from current information is that *organic coffee must be competitive on the cost side*. Growers cannot rely on organic premiums to achieve profitability. At the same time, it is

important for Central American governments to take into account the different environmental benefits generated by organic and shade coffees. Policy makers need to determine whether the additional external benefits of organic coffee, beyond those already provided by shade coffee, justify the additional costs of organic production methods and organic certification.

VIII. CONCLUSIONS AND RECOMMENDATIONS

As a subsector of the overall U.S. food and fiber system, organic agriculture is elusive and difficult to analyze. On the one hand, organic farming is already a multibillion dollar industry in terms of retail sales, and strong annual growth is expected to continue as consumer demand evolves, a U.S. national organic standard is implemented, and production knowledge and experience grows and diffuses more widely through national and international agriculture production and marketing systems. On the other hand, the basic data needed to make reliable projections about organic markets are lacking, especially in the area of organic prices and production costs. Because of this, all generalizations about organic agriculture and organic markets—and in particular projections of future conditions—should be treated with caution.¹⁷ In this section we offer some conclusions and recommendations for Central American farmers and exporters, based on the data presented earlier in the paper, our own understanding of economic principles, and a certain amount of common sense—but with the proviso that our generalizations, too, should be treated with caution.

We have two sets of comments to offer: one for Central American policy makers and farmers, and one for Central American researchers.

A. Recommendations for Central American Policy Makers and Farmers

It is hard to argue with the proposition that organic agricultural production in Central America could have important environmental benefits, including reduced pesticide contamination, better soil management and reduced soil erosion, and even biodiversity conservation. Given the high-tech, information-intensive nature of organic farming, however, it is very likely that organic production and marketing will be concentrated on higher quality lands and on more commercialized farms. If this is the case, then the primary environmental role of organic agriculture will be to reduce

¹⁷ It is likely that sales and cost information will soon become more accessible now that organic codes have been inserted into scanner data and product lookup codes at retail outlets and a (forthcoming) national standard provides comparable definitions of organic products.

environmental externalities of agricultural production at the intensive margin on higher-quality lands. It seems rather unlikely at the moment that poor households producing on lands recently converted to farming, such as in hillside areas and at tropical forest margins, will have the resources needed to adopt and maintain high quality organic production methods.

While many Central American farms may continue to be “organic-by-default,” they are unlikely to achieve greater profitability without substantial assistance from national governments, NGOs, and donor organizations. To justify this assistance, a better understanding of the environmental benefits generated by organic farming is critical. The nature and magnitude of these benefits, and some indication of to whom they accrue (distributional aspects), will largely determine whether Central American governments should invest in the development of organic agriculture.

If Central American governments decide that they should make that investment, then three key areas are likely to be priorities in developing organic agriculture: information provision, certification, and market infrastructure.

- Information provision. As explained above, access to site-specific and up-to-date information is critical to successful organic farming. U.S. organic farmers consistently cite access to information, both on production methods and market opportunities, as one of the most serious obstacles they face. If Central American farmers are to compete in the world of organic products, they will need better information than is now available to them.

- Certification. The cost of certification to individual farmers will have to be reduced if small, or even mid-size, organic farms are to be viable. The development of local or regional certification capacity is critical, as is the negotiation of reciprocity agreements with the U.S. and EU allowing products from farms certified by Central American certifiers to be exported to these markets.

- Market infrastructure. Besides production related issues, organic agriculture relies on distribution channels (storage, transport, etc.) that are also consistent with organic standards. Competitive market distribution channels will be required to allow potential financial benefits of organic production to be passed down to the farm level.

For Central American farmers, the information presented in this paper on organic price premiums and organic agriculture technology needs should be sobering. On the other hand, organic farming methods might prove to be advantageous on the production cost side, particularly if the long-term benefits of soil fertility enhancement are taken into account and if the costs to farmers of organic certification can be managed adequately. While an assessment of the production costs of

organic farming in Central America was beyond the scope of this paper, the paper does make clear that before starting the transition to organic methods, Central American farmers should consider carefully how organic farming will support the overall income needs and goals of larger and smaller farms.

B. Recommendations for Central American Researchers

The scarcity of good data on organic production costs and organic markets is a refrain that runs throughout the preceding sections. Although Central American researchers are generally not in a position to address the problem on the U.S. market side, they can and should tackle some of the information gaps within the region. The priorities seem to be as follows:

- Valuation of environmental benefits. As explained above, the magnitude and types of environmental benefits generated by organic farming will help to determine how much government and donor support is justified for organic agriculture. Policy makers should look to local researchers to generate this information.
- Costs of organic production. Although the number of certified organic farms in Central America is small; farmers in the region have acquired enough experience to be able to provide useful data on the costs of organic production. Even a perfect data set on organic prices and price premiums in export markets would be of little value to Central American farmers without an understanding of the production cost side of the equation.
- Soil fertility enhancement. Successful organic farming depends on building up and then maintaining the natural fertility of the soil. Central American soils are relatively poor, and organic yields are likely to be poor, leading to high per unit costs, if this problem cannot be overcome. Site-specific research is needed to advise farmers on how to manage soil fertility.

The tone of some of the recommendations above is, we acknowledge, relatively discouraging. The point made early in this paper about market size and prospects, however, should not be forgotten. Capturing even a tiny additional share of the giant U.S. and EU markets for agricultural products would be a tremendous gain for Central American farmers. The short- and long-term environmental benefits of organic farming, moreover, might well justify a significant investment by Central American governments, NGOs, and donors. We hope that the information presented in this paper will serve as a spur to further research and analysis.

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APPENDIX

Figure 1: The U.S. organic products market, 1980-2000

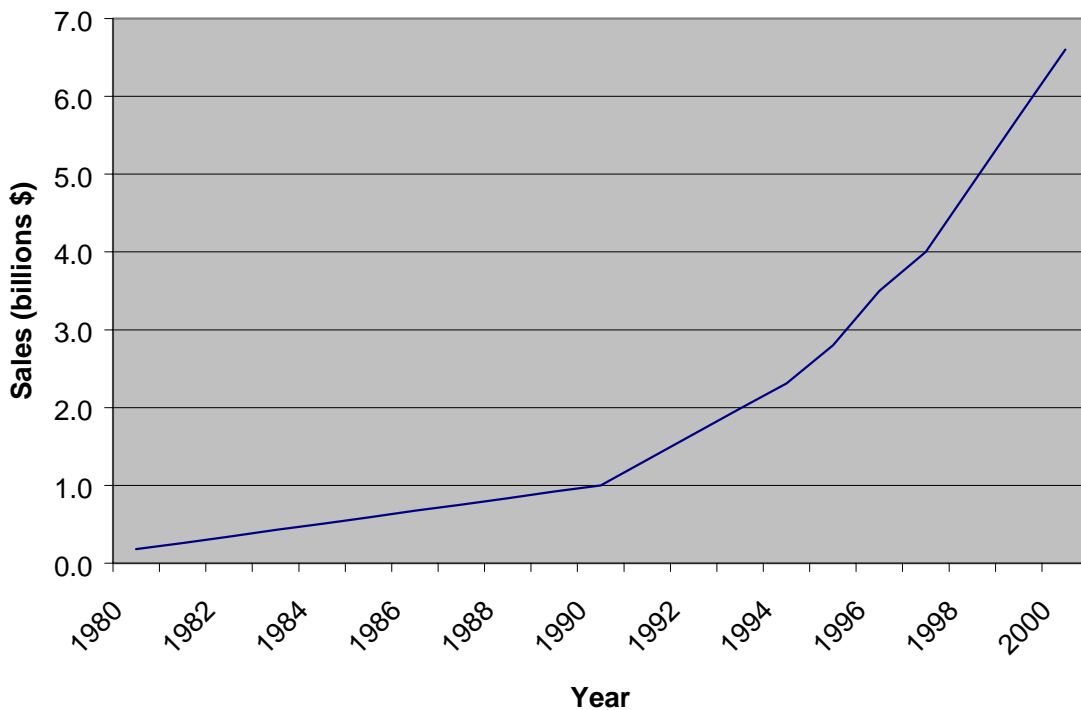


FIGURE 2: GROWTH IN U.S. SALES OF ORGANIC AND CONVENTIONAL FOODS, 1990-1997

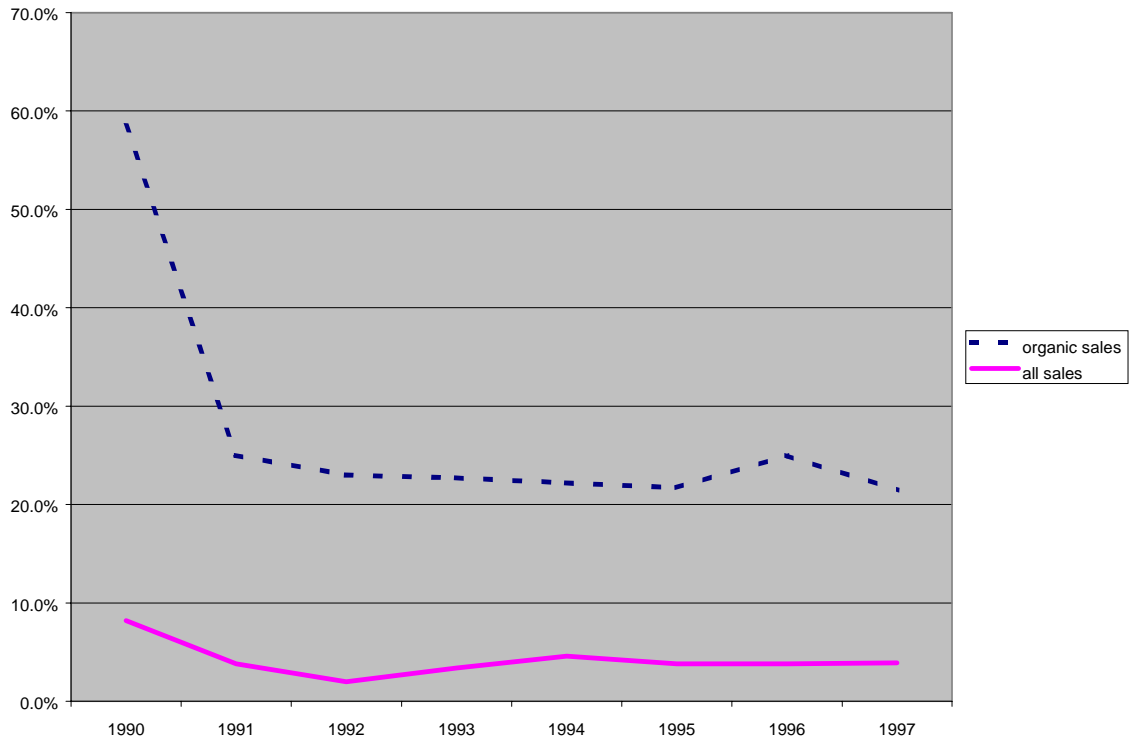


Figure 3: Growth of U.S. organic produce sales, 1993-2000

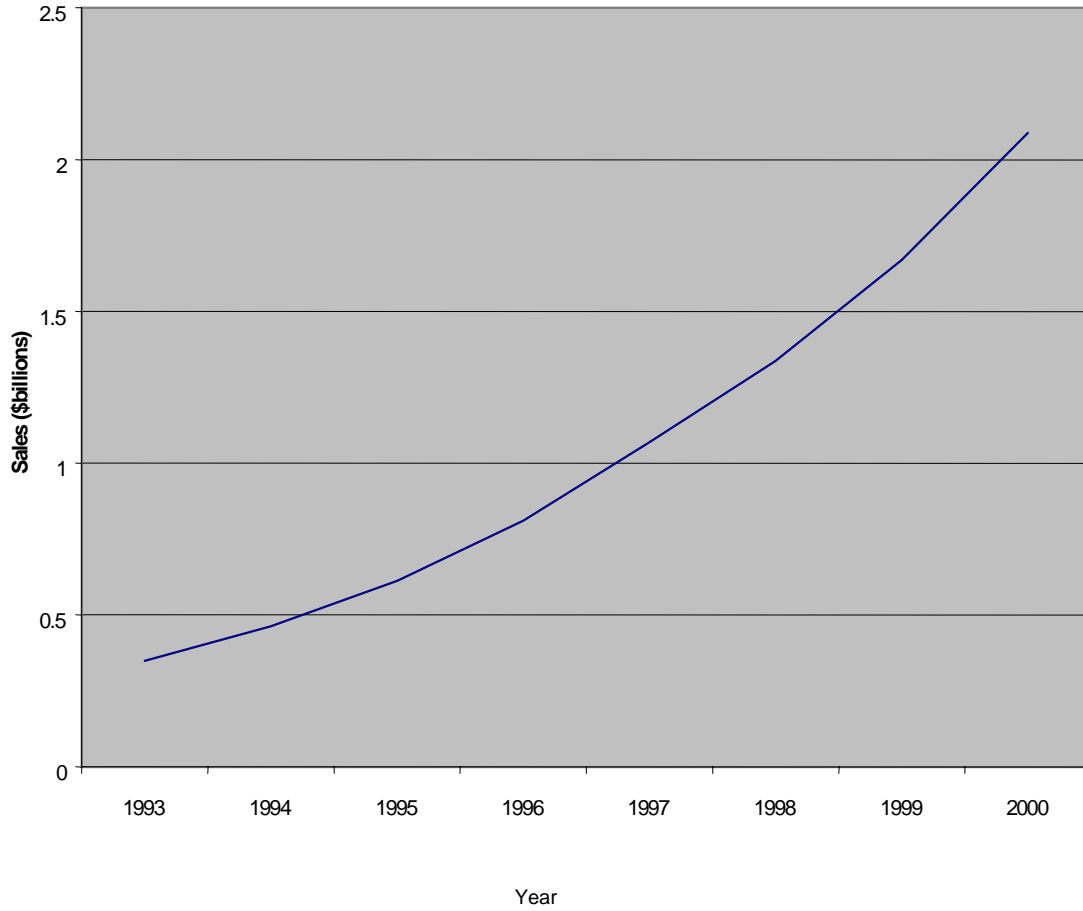


Table 1: U.S. organic products market

Year	Distributor sales of organic products (billion \$) ^(a)	Change from previous year	Growth of overall U.S. food market ^(b)	Source of organic data
1980	0.178	N/A.		NFM (June 1998)
1989	0.631	N/A.		Reg. Impact Assessment (ERS)
1990	1.00	58.5%	8.2%	NFM (June 1998)
1991	1.25	25.0%	3.8%	NFM (June 1998)
1992	1.54	23.0%	2.0%	NFM (June 1998)
1993	1.89	22.7%	3.4%	NFM (June 1998)
1994	2.31	22.2%	4.6%	NFM (June 1998)
1995	2.80	21.7%	3.8%	NFM (June 1998)
1996	3.50	25.0%	3.8%	NFM (June 1998)
1997 ^(c)	4.0-4.5	14.3% - 28.6%	3.9%	Organic Trade Association cited in NFM (June 1998); Lohr (1998)
2000 ^(c)	6.60	N/A.		Packaged Facts cited in USDA (1998a)
2006 ^(c)	47.0	N/A.		Lohr (1998)

Notes:

- (a) Sales are from natural foods distributors only, except 1997 and 2000 figures, which are assumed to be for total organic sales in the U.S.
- (b) Source: XXX
- (c) Projection.

Table 2: Sales of organic produce in the U.S.

Year	Sales (\$ billions)	Change from previous year
1993	0.349	
1994	0.463	33%
1995	0.612	32%
1996	0.810	32%
1997	1.069	32%
1998	1.336	25%
1999	1.670	25%
2000	2.088	25%

Source: PMA (1998)

Notes:

- (a) Source does not specify if sales figures include only certified organic produce.
- (b) Sales figures for 1998-2000 are projections.

Table 3: Sales growth rates for organic processed foods

Product category	1992-1997 annual average (actual)	1996-97 (actual)	1997-1998 (projection)	1997-2002 annual average (projection)
Baking mixes/sweeteners	5%	10%	7%	2%
Beverages	52%	22%	26%	22%
Cereals	40%	39%	24%	54%
Condiments/sauces/preserves	78%	21%	15%	25%
Dairy	17%	92%	53%	44%
Frozen foods	39%	40%	69%	40%
Grain products	17%	10%	16%	13%
Grain snacks and candy	4%	90%	89%	60%
Miscellaneous jarred/canned	67%	(10%)	1%	8%
Nuts/fruits/beans/ grains	41%	16%	11%	11%
Oils	22%	20%	20%	15%
Vegetarian	15%	14%	15%	15%
Overall	42%	36%	30%	30%

Source: Organic Trade Association (1998)

Table 4: Sales growth rates for organic frozen vegetables

Product ^(a)	1991-92	1992-93	1993-94	1994-95	1995-96	Organic market share 1996
Frozen broccoli	(9%)	402%	19%	77%	58%	0.22%
Frozen corn	(16%)	47%	181%	71%	42%	0.26%
Frozen green beans	(36%)	177%	77%	49%	46%	0.26%
Frozen green peas	(26%)	111%	118%	108%	51%	1.09%
Frozen french fries	N/A.	N/A.	N/A.	950%	275%	0.04%

Source: Glaser et al. (1998).

Notes:

(a) Data used to generate the rates in Table 4 comprised about 83 percent of the U.S. processed foods market.

Table 5: Organic markets in Europe and Asia

Country	Market size in 1997 (\$ billion)	Organic market share	Share of imports in organic sales	Average retail price premiums
Japan ^(a)	1.7		^(d)	20-30%
Germany	1.6	1.5%	60%	30%
China ^{(a)(b)}	1.2		0%	30%
France ^(c)	0.508	0.4%	10%	25-35%
U.K.	0.445	2.0%	30%	15-50%
Austria	0.207	2.5%	30%	20-30%
Netherlands	0.230	1.5%	60%	15-20%
Sweden	0.200	2.0%	30%	15-50%

Source: Lohr (1998)

Notes:

(a) Data include "low chemical" products.

(b) 1995 data.

(c) 1996 data.

(d) In 1994, imports comprised only about 1% of the Japanese organic products market. More recent data are not available (Saunders et al. 1997)

Table 6: Consumer views on imported v. domestically grown fresh produce

<i>In terms of:</i>	U.S. produce, in comparison to imported produce, is:		
	<i>Better</i>	<i>About the same</i>	<i>Worse</i>
Availability	53%	33%	5%
Price	41%	43%	6%
Safety	70%	20%	3%
Taste	46%	42%	2%

Source: *The Packer* (1999)

Table 7: Certified organic cropland in the U.S., 1992-1995

Year	Organic cropland (acres)	% change from previous year	Land planted in organic produce (fruits and vegetables)	% change from previous year	Organic cropland as % of total U.S. cropland
1992	403,400	N/A.	77,501	N/A.	0.12%
1993	464,800	15.2%	86,373	11.4%	0.14%
1994	556,750	19.8%	90,676	5.0%	0.16%
1995	638,500	14.7%	N/A.	N/A.	0.19%

Sources: Dunn (1995a); Agrisystems International (1997); Klonsky and Tourte (1998)

Table 8: Retail and wholesale price premiums for organic fresh produce

Item ^(a)	Year	Premium as % of conventional price	Source of data
Retail prices			
Apples	1987	37.7%	Jolly (1991)
	1988	81.7%	Jolly (1991)
	1991	18.4%	Conklin, Thompson, and Riggs (1992)
	1994	42.0%	Thompson and Kidwell (1998)
Broccoli	1987	38.7%	Jolly (1991)
	1994	84.0%	Thompson and Kidwell (1998)
Carrots	1987	61.3%	Jolly (1991)
	1991	86.0%	Conklin, Thompson, and Riggs (1992)
	1994	175.0%	Thompson and Kidwell (1998)
Grapes	1991	43.7%	Conklin, Thompson, and Riggs (1992)
Lettuce	1991	15.8%	Conklin, Thompson, and Riggs (1992)
	1991	61.3%	Conklin, Thompson, and Riggs (1992)
	1994	90.5%	Thompson and Kidwell (1998)
Peaches	1987	67.9%	Jolly (1991)
Peppers, green	1991	72.8%	Conklin, Thompson, and Riggs (1992)
Potatoes	1991	30.6%	Conklin, Thompson, and Riggs (1992)
Strawberries	1988	172.0%	Jolly (1991)
Tomatoes	1991	128.4%	Conklin, Thompson, and Riggs (1992)
	1994	44.9%	Thompson and Kidwell (1998)
Wholesale prices			
Broccoli	1992	77.0%	Glaser et al (1998)
	1995	145.0%	Glaser et al (1998)
Carrots	1990	122.0%	Morgan et al (1990) in Greene and Calvin (1997)
	1996	110.0%	Greene and Calvin (1997)
Green chard	1990	5.0%	Morgan et al (1990) in Greene and Calvin (1997)
Eggplant	1990	183.0%	Morgan et al (1990) in Greene and Calvin (1997)
Mesclun mix	1996	14.0%	Greene and Calvin (1997)

Notes:

- (a) Multiple entries under single items do not necessarily reflect the same variety of product or the same market location within the U.S.

Table 9: Farmgate prices and price premiums for organic fruit

Item	Year	Organic price/lb. (farmgate)	Conventional prices/lb. (farmgate)	Premium as % of conventional price
Bananas (organic prices are for Hawaii; conventional prices are as indicated)	1994	\$0.54	Hawaii \$0.37 Costa Rica \$0.05 Guatemala \$0.03	46% 980% 1,170%
	1995	\$0.43	Hawaii \$0.40 Costa Rica \$0.06 Guatemala \$0.04	7% 576% 974%
	1996	\$0.51	Hawaii \$0.40	28%
	1997	\$0.67	Hawaii \$0.38	76%
Pineapples (all prices are for Hawaii)	1995	\$0.91	\$0.13	619%
Navel oranges (organic prices are for U.S.; conventional prices are as indicated)	1994	\$0.30	Costa Rica \$0.03	1,011%
	1995	\$0.47	Costa Rica \$0.03 Florida \$0.14	1,467% 231%
	1996	\$0.42	Florida \$0.16	169%
	1997	\$0.40	Florida \$0.15	168%
Valencia oranges (organic prices are for U.S.; conventional prices are for Florida)	1995	\$0.40	\$0.15	174%
	1996	\$0.43	\$0.17	150%
	1997	\$0.34	\$0.15	124%
Cantaloupe (all prices are U.S.)	1995	\$0.54	\$0.17	228%

Sources: *Organic Food Business News* (1998) for organic prices; FAO (1999) and USDA (1998c) for conventional prices.

Table 10: Growth in U.S. specialty and organic coffee market share by sales value

Year	Specialty share of total coffee market	Organic share of specialty coffee market	Source of data or projection
1983	3.6%		NFM (1997)
1993		3%	NFM (1994)
1994	31%		NFM (1997)
1996		5-7%	Perkins (1996)
2000 (projection)	50%	10%	Perkins (1996); NFM (1997)

Table 11: Retail price premiums for organic coffee, mid-December, 1998

Vendor and website address	Conventional variety ^(a)	Conventional price/lb.	Organic variety ^(a)	Organic price/lb.	Organic premium (as % of conventional price)
Thanksgiving Coffee Co. <www.thanksgivingcoffee.com>	French Roast "Maximum"	\$8.75	Mexican Aztec Harvest Organic French Roast	\$10.45	19.4%
Caribou Coffee <www.caribou-coffee.com>	French Roast	\$9.95	Rainforest Blend	\$12.95	30.1%
Peets Coffee and Tea ^(b) <www.peets.com>	Garuda Blend	\$9.95	Gaia Organic Blend	\$11.95	20.1%
Earth Dream (Equal Exchange) <www.earthdream.com>	Columbian CO ₂ Decaffeinated	\$9.93	CO ₂ Decaffeinated Full City	\$11.90	19.8%
Thanksgiving Coffee Co. <www.thanksgivingcoffee.com>	New Orleans Traditional Blend Decaffeinated	\$9.25	New Orleans Decaffeinated Organic	\$11.35	22.7%

Notes:

- (a) Since none of the vendors carried identical varieties of organic and conventional coffees, we chose varieties that appeared to be similar in taste characteristics and/or country of origin.
- (b) Prices from mid-February, 1999.

Table 12: Coffee labels in use in the U.S. and Europe

Label	Description
<i>Organic labels</i>	
Certified organic by...(certifier's name)	Standard organic certification by certifiers that also certify organic produce and other organic products.
Organic (not certified)	Grower's claim of organic growing methods.
<i>Shade-grown labels and brands</i>	
Shade-grown	General label identifying coffee grown under shade cover.
Bird Friendly	Shade-grown seal issued by the Smithsonian Migratory Bird Center.
Cafe Audubon	Coffees sponsored by the National Audubon Society, with the Smithsonian's Bird Friendly seal. Distributed by ECO Organic Coffee Company.
ECO-O.K	Label issued by the Rainforest Alliance based on environmental criteria.
Song Bird Coffee	Coffees sponsored by the American Birding Association. Distributed by Thanksgiving Coffee Company.
<i>Fair trade labels and brands</i>	
Equal Exchange	Largest U.S. fair trade coffee distributor.
Max Havelaar	Fair trade label used in at least six European countries.
TransFair International	Fair trade label used in eight northern countries, including the U.S.
<i>Criteria programs for coffee</i>	
International Fair Trade Coffee Producers' Register	European listing of coffee growers eligible for the Max Havelaar, Transfair, and other fair trade labels.
SCAA's Criteria for Sustainable Coffee	List of criteria for quality, environment, social issues, etc. added to the Specialty Coffee Association of America's mission statement.

Sources: NFM (1997); NRDC (1996); websites of labeling organizations.