



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Case Study

Promoting Sustainable Products in Dry Consumer Packaged Goods: What Should a Grocer Do?

Michael A. Boland^a, Xiaowei Zhang^a^aUniversity of Minnesota

JEL Codes: A22, Q13

Keywords: Agribusiness, coffee, fair trade, food, grocery, retail supermarket

Abstract

The objective of the decision case study is to make a recommendation on whether to introduce a new product into the planogram of an independent retail grocery chain that does not have a formal sustainability strategy. The decision maker is the chief operating officer of the retail grocery chain. The product is a fair trade-certified coffee produced by Equal Exchange, a worker cooperative. Information is presented about the retail grocery chain, an overview of fair trade, a description of Equal Exchange, and background reading on the coffee supply chain.

1 Introduction

Janice shut her office door. It was a Saturday morning, and the supermarket was full of shoppers. Her office was tucked behind the front of the store checkout area. She needs to get her thoughts together for a Monday meeting regarding carrying products from Equal Exchange, a cooperative that sells fair trade-certified products such as coffee, cashews, almonds, tea, and other dry consumer packaged goods. Janice has watched consumer trends about sustainability, and she wants to have the meeting. After graduating from college, Janice traveled to Central America and northern Africa for three months. She is sympathetic to help small farmers, especially those who sell products like coffee that do not compete with U.S. farmers. Her employer does not have an explicit plan for promoting sustainability, and she believes some of her customers are beginning to ask for such products. The National Grocers Association has begun including the topic in its February annual meeting program, but it is not a major topic of the program. It is Janice's call to make changes to a planogram for coffee in all stores. Her chief executive officer (CEO) tends to follow Janice's recommendations but what would her managers and customers think about such products? Her specific purpose is to introduce her managers and employees to how one might consider introducing a new product based on sustainability label claims.

2 Background on Barton's Foods

The retail grocery store chain, Barton's Foods, is part of a family-owned chain managed by a fourth-generation family member as CEO. There are twenty-seven stores with three different store banners. Barton's is the flagship store with twenty-one locations. Lakeview is a retail grocer acquired in 2011, and the name is retained on the four stores. Save-a-Bunch is a new concept of two stores with small square footage and a high volume of limited products.¹ Janice is the chief operating officer, and her responsibilities include planning what foods are sold in the stores within the store planogram. A planogram is a diagram, drawing, model, or plan for displaying and placement of store merchandise (Figure 1). It can be thought of as a linear programming problem that maximizes net income subject to store shelf space. For example, a planogram for coffee and related products might use brand, packaging size, flavor, and formulation in creating the planogram. A branded coffee might have its

¹ Unless otherwise noted, Barton's is used to refer to all twenty-seven stores.

Top Shelf	Instant Coffees (Nescafe, etc.)	Dark Roast K Cups (Caribou, Green Mountain, Starbucks)	Dark Roast Coffee Beans (Equal Exchange, Peace, Starbucks, etc.)
	Instant chocolate and malted milk (Neskwik)	Medium Roast K Cups (Caribou, Dunkin, Green Mountain, Starbucks)	Medium Roast Coffee Beans
	3-pound coffee cans (Chock Full of Nuts, Folgers, Maxwell House)	Flavored roast and geographically located K Cups (Caribou, Dunkin, Green Mountain, Starbucks)	Flavored roast and geographically located coffee beans
Light Roast K Cups (Caribou, Dunkin, Green Mountain, Starbucks)		Light Roast Coffee Beans	
Bottom Shelf		Hot Chocolate K Cups	3-pound coffee can beans (Folgers)

Figure 1: Planogram for Coffee Section at Barton’s

products displayed vertically in the planogram with larger volume containers on the bottom and single serve coffee K-cups in the middle. Flavors in each category might lie horizontally in this space. The most valuable space tends to be at eye level. Planograms for the center part of the store often have a planogram that is set up the same way with close substitutes on either side of the packaged food product to make it easier for consumers to make choices. Planograms are unique to a store because of a store’s size, etc., but in this case, the coffee planogram is similar across stores.

Barton’s is considered a chain store. Major and Chanil (2012) classify stores as independent, or chain retail supermarkets based upon the number of stores operated by the firm. In that study, chain stores are defined as firms that own more than ten stores under a single banner, and independent stores are defined as firms with ten or fewer stores. However, Barton’s has its roots as an independent family-owned grocer and thought of itself in that way. In 2012, Major and Chanil (2012) reported that independent retail grocery supermarkets, with ten or fewer stores, account for 17.8 percent of all supermarkets and 5.46 percent of total supermarket sales.

The governance structure of conventional retail grocery supermarkets comprises mostly family or employee ownership, as opposed to supercenters, which are owned primarily by multinational firms (Volpe, Risch, and Boland 2015). Major and Chanil (2012) note that there are approximately 36,000 retail supermarket stores in the United States, including supercenters, convenience stores, and online grocers, with conventional supermarkets representing 65.6 percent of supermarket sales. Volpe and Boland (2022) report that Wal-Mart dominates this category with approximately 90 percent of supercenter stores and 80 percent of supercenter grocery sales. Other supercenters include Meijer and Target. Limited assortment supermarkets, such as Aldi and Save-A-Lot, provide a smaller selection at lower prices.

3 Barton’s Food Products

Barton’s has Wal-Mart, Target, Aldi’s, and similar stores as geographic competitors. Similarly, its stores are located in a metropolitan area, and there are three food cooperatives in its area. Barton’s stores have two broad sets of customer demographic segments that dominate its geographic footprint. Five stores comprise millennials and low-income parents, and sixteen stores have a predominance of baby boomers

and low-income singles. In 2023, Barton's has not spotlighted sustainability in its promotions. It does have a locally grown fruit, meat, and vegetable program, which is mostly seasonal in nature but most of its meat and produce are sourced from its wholesaler, Independent Grocers Alliance (IGA), and Barton's incorporates the IGA slogan of "Hometown Proud" into its advertising. The IGA is the largest organization devoted for independent grocers such as Barton's, and grocers who are affiliated with IGA have access to improved food purchasing, marketing services, and other resources. Barton's purchases large volumes of products from wholesalers such as IGA to sell directly to consumers because food wholesalers sell to retail grocers rather than consumers. The program consists mostly of sourcing beef and pork products from local farmers and vegetables such as root vegetables (potatoes, carrots, beets); and fruits such as strawberries, raspberries, blueberries, and apples. Janice believes the program volumes are about what could be expected and an option for consumers, but its shoppers do not necessarily come to Barton's stores because they have locally grown fruits, meats, and vegetables.

Barton's has organic options in its fruits and vegetables, but the volumes are lower than the conventional fruit and vegetable substitutes. Janice has seen a headline recently by a University of Minnesota study that found organic premiums have narrowed as supply has increased, and Barton's has seen an uptick in organic purchases (Çakır et al. 2022). The dairy department has many organic products in fluid milk and yogurt but not in cheese spreads and ice cream products. The frozen foods department does not have organic products apart from some entrees and soups.

Barton's built a reputation around several signature products that help attract consumers. Its butchers often have seasonal meat products that are popular and have a line of smoked meats that are sold under a Barton's label. In frozen foods, Barton's has a line of frozen soups that are popular using traditional recipes. In bakery, Barton's baked bread and rolls come to the store frozen and are partially baked. Its produce aisle features cut fruits that are available in single serve with various flavors containing antioxidants that are quite popular. Finally, its twenty-one flagship stores have grocerants that have ready-to-eat and heat-to-eat foods that are quite popular with differing menus by store depending upon ethnicity and cultural differences. Some modifications have been made post-COVID-19, but shoppers have come back to Barton's cafeteria style grocerants.

4 Barton's Sustainability Efforts

The issue of spotlighting sustainability is something Janice has brought up previously, but so far, the Barton family owners have not viewed it as important relative to advertising and promotions and personal services, such as offering a drive-up service for consumers to pick up their groceries, having a butcher in its meat department, and carrying its signature products. The locally grown and organic products are on the "outside" part of the store planogram in the produce and meat departments, but the "center" part of the store planogram, where dry packaged consumer goods are sold, do not have any such products for all practical purposes.²

The store planogram for the section with coffee, tea, and similar products is fairly typical of other competing retail grocery stores. Bulk coffee in bags for grinding, boxes of K-cups for single serve in various counts and brands and flavors, traditional ground coffee, accessories such as coffee filters, and similar products are available. Tea is a much smaller category and includes boxes of various flavors and brands. Some of the brands have various sustainability claims on their labels, but Barton's has not done anything to highlight sustainability labeling in its stores.

² Produce, meat, dairy, and frozen foods departments are often on the outside of the retail grocery store planogram against a wall since they require an energy source to keep them refrigerated whereas foods that do not require refrigeration are in the center of the store.

5 The Monday Meeting

A member of Equal Exchange's Citizen Consumer Network introduced himself as Sean and enters Janice's office. Janice is not familiar with the program except that the citizens were customers and not employees or members of Equal Exchange's cooperative structure. The Citizen Consumers are volunteers who visit with retailers to discuss why they should consider carrying Equal Exchange products.

Janice asks Sean to educate her on fair trade concepts and who the potential consumers might be for Equal Exchange products. She explains that it is unclear whether Barton's customers would really purchase products that are considered "sustainable" from a fair trade supply chain. Specifically, because Barton's has organic and locally grown options for the outside part of the store, but there was little promotion and advertising, would a fair trade option for the center part of the store offer any advantages? Would consumers even notice?

6 What Is Fair Trade?³

Sean explains to her that fair trade was a social movement that encouraged the development of local communities in lower income countries. Fair trade is a labeling initiative, whose aim is to improve living conditions of farmers and workers in lower income countries. The emergence of fair trade labels dates back to 1988, when a faith-based non-governmental organization (NGO) from the Netherlands began an initiative to ensure coffee growers in low-income countries are provided "sufficient wages." The NGO created a fair trade label for their products called "Max Havelaar" after a fictional Dutch character who opposed the exploitation of coffee pickers in Dutch colonies. Initially, the label was only used for coffee sold in the Netherlands, but similar initiatives soon grew across the globe. According to Laura Reynolds (2009), fair trade "represents a critique of historically rooted international trade inequalities and efforts to create more egalitarian commodity networks linking marginalized producers in the global South with progressive consumers in the global North."

Sean points out that the fair trade movement has three main components: "(i) the organization of alternative trading networks; (ii) the marketing of Fair Trade labeled products through licensed conventional traders and retailers; and (iii) the campaign-based promotion of Fair Trade to change both purchasing practices and the rules of conventional trade" (Wilkinson 2007). Fair trade gives farmers better prices and long-term trade links, and it also gives consumers more options to buy products produced at high social and environmental standards. Both farmers and consumers are better off in the fair trade transaction. Essentially fair trade begins with a producer price that enables a producer and family to be paid a living wage, and the supply chain adds margins for value-added activities and services on top of this price, which may result in a consumer price that is greater than a similar product not produced under a fair trade program.

Janice asks how far upstream the fair trade certification extends in a supply chain. Sean explains that for a product to be sold under the fair trade label, all actors in the supply chain must be fair trade-certified, as described in Appendix A. Janice inquires whether there are other programs that accomplish the same goals as fair trade. Sean says there are other certification standards such as Rainforest Alliance and USDA Organic. For different products, there are similarly prominent labels, including the Forest Stewardship Council, Marine Stewardship Council, Roundtable on Sustainable Palm Oil, and GLOBALG.A.P (Meemken et al. 2021). However, he points out that the fair trade program has the deepest knowledge among consumers.

Cocoa is used as an example. Fairtrade International has taken significant steps toward improving the lives of cocoa farmers. In 2018, they announced an increase in their minimum price for cocoa and are currently piloting a plan that pays farmers based on production costs and fair livelihoods.

³ Fair trade is capitalized when referring to a specific program and not capitalized when used in a generic sense.

In contrast, Rainforest Alliance has yet to implement any such measures or even require a minimum price for cocoa despite claiming to be reimagining certification and improving it in 2023. But if there is no commitment to ensure a minimum livable price, then calling something “ethical” and labeling it is simply rebranding poverty and exploitation, Sean suggests.

7 The Use of Fair Trade in Supply Chains

Janice asks what consumers think about fair trade labeling and whether they really believe that fair trade balances the power of economic agents in supply chains. Sean explains that supply chains are now characterized by massive concentrations of purchasing power at the level of retailers who are referred to as chain captains and large traders. Janice knows this because she deals with it every day in her job. Small producers in lower income countries have little bargaining power and often face a choice of whether to sell at a low price or not to sell at all. In addition to low profits, they may work for hours in unsafe conditions, such as forced labor, child labor, and discrimination. By paying producers a sustainable price and giving them safe working conditions, fair trade strengthens the bargaining power of marginalized producers, who suffer most from unequal power in supply chains.

Fair trade helps brands monitor potential risks in their supply chains. Certain product categories are at high risk of serious problems like child labor. Fair trade assists brands in selling those goods to monitor risks. For example, the Fairtrade International system has a strong track record of combating child labor by investing in a youth and community approach. Sean shares how fair trade makes most economic agents in supply chains economically better off because they achieve profitability and sustainability. Consumers receive ethical and sustainable products they want, and have assurance that there is compliance in the labeling. Janice asks whether there is a premium for fair trade products such as Equal Exchange. Brands earn higher profits by selling fair trade products that are highly competitive on the shelf. According to a Nielsen (2018) sustainability study, fair trade coffee sells five times faster than conventional coffee, outperforming conventional coffee sales by 22 percent. In addition, Naegele (2020) estimates consumers pay about \$1.50 extra per pound of fair trade-certified coffee compared to non-labeled. Fair trade seeks to transfer wealth from consumers to farmers, but it is hard to realize. According to Naegele’s (2020) research, most of the fair trade premium paid by consumers goes to coffee roasters. Sean says in his experience, retailers make smaller profits on fair trade-certified coffee compared to conventional coffee. If that is the case, why would Barton’s sell a coffee produced by Equal Exchange, asks Janice?

8 What Made Equal Exchange Unique Among Fair Trade Products?

Equal Exchange was the first company to bring fair trade coffee to the United States in 1991 and remained the only organization using the fair trade model until 1998. All Equal Exchange coffee is fair trade. Janice is told that for other companies, fair trade coffee usually constitutes only a small percentage of their total sales. In such cases, fair trade coffee products are something added on to, and possibly subsidized by, a much larger conventional coffee operation. Equal Exchange offers fair trade products in wholesale case pricing, so consumers can access lower prices on coffee, tea, and chocolate for serving and fundraising. As a worker cooperative, Equal Exchange operates in the same democratic, equitable, and transparent manner that the fair trade certification system requires of participating farmer cooperatives. Conventional companies are neither obliged to, nor do, operate in accordance with these fair trade principles.

Janice asks again about coffee. It is the largest shelf item in the planogram for that section, and Barton’s sells coffee in various forms. She explains how their local sourcing of meat produce and fruits worked, and discusses the organic products they sell. How can Equal Exchange help a retail grocer like Barton’s introduce sustainability concepts into the center part of their store? Sean explains the unique features of coffee production and how consumers might want to know more about coffee production.

That information is shown in Appendix B. Janice is surprised at how labor-intensive coffee production is and how different production methods help dictate the quality of coffee and where value creation occurs. Janice is curious to know more about the coffee producers and how Equal Exchange decides whom to partner with in the supply chain. She learns that Equal Exchange trades directly with small-scale farmer cooperatives. They partner with farmer cooperatives who are democratically organized, sharing resources and decision making among their members.

She is told that Equal Exchange locates farmer groups and sources coffees from cooperatives in Latin America and Africa. Equal Exchange had become part of the European Fair Trade network—aligning with groups that were at least a decade ahead of what was happening in the United States. That movement in Europe is growing rapidly, and counterparts there help the cooperative to establish links with farmer cooperatives worldwide. Tea also seems like a step in the right direction. It is a commodity consumed by millions and is a natural complement to coffee. In 2023, Equal Exchange is working to establish markets for small-scale tea farmers from India, Sri Lanka, and South Africa. Finally, Equal Exchange is currently expanding into pecans, cashews, peanut butter, and cheese. Janice learns that these products should be available for purchase in 2024.

9 Issues to Consider

Janice knows that to carry Equal Exchange products on the store shelf, Barton's needs to displace a competitor's product from the planogram. There is not enough space to add an additional item. Existing competitors include Peace Coffee, BLK & Bold, Kicking Horse Coffee, and Peet's. Peace Coffee and Kicking Horse Coffee sell whole bean and ground coffee. BLK & Bold's product line includes whole bean, K-cup, and ground coffee. Barton's sells light, medium, and dark roasted coffee and various flavors. In addition, Folgers, Maxwell House, Chock Full o'Nuts, and Nescafe are sold by Barton's.

In addition, Barton's needs to promote the product to educate consumers because the overall price is likely to be higher. Barton's promotes the unique features of Equal Exchange's products. Sean mentions that Citizen Consumers like himself help retailers through a variety of methods, including working with local faith-based groups, NGOs, and other entities to build awareness within the store. Janice believes that Barton's can promote the products to consumers from five aspects.

- Equal Exchange products are fairly traded. Fair trade products are better for farmers, better for the environment, and better for consumers. Sean says, if you want to promote social justice, environmental sustainability, and fair trading relationships, buying from Equal Exchange is a way to connect your values with your actions as a consumer without sacrificing taste or quality.
- Consumers are supporting a different kind of business model based on dignity and transparency by choosing fair trade products.
- Equal Exchange has a track record for market access using fair trade for small-scale farmers from the moment they were founded in 1986. They are a worker-owned cooperative whose mission is tied to building a food system where consumers have choices and feel connected to the people in the supply chains. Equal Exchange works only with other democratically organized farmer groups. This might be used as a point of differentiation, he notes.
- Consumers do not need to worry about quality and freshness of products from Equal Exchange. Quality might be another source of promotion. Equal Exchange roasts their own organic coffee in Massachusetts daily with a team of quality control professionals. Each batch of coffee is "cupped" to make sure it meets the consistent and high-quality standards Equal Exchange set for their coffees. They seal in the freshness on each package, so it arrives directly to the consumers' door fresh.
- Fair trade products usually cost about as much as other organic and specialty-grade products of similar quality. They also offer wholesale case pricing to consumers.

The Citizen Consumers explain that none of Barton's direct competitors carry Equal Exchange products except two of the three food cooperatives. In addition, there is a wholesale cooperative warehouse being built in the area, and Equal Exchange can rent space so distribution and inventory issues should not be an issue. Sean leaves a box of chocolate and coffee samples, and Janice says farewell noting that she will discuss this with her team.

10 Barton's Decisions to Make

Janice needs to decide whether it was worth recommending that Barton's place Equal Exchange's fair trade-certified products in its planogram in coffee, tea, and hot cocoa. In doing so, she knows that it is likely that the products are higher priced and require a certain amount of promotion dollars. She knows that local food cooperatives carry Equal Exchange's products, but she believes that these stores carried organic and locally grown meat and produce before Barton's implemented such programs. The center part of Barton's stores does not have a theme built around sustainability, but the theme of linking with small-scale farmers in lower income countries appeals to her altruism. Coffee and tea can be a start. Barton's needs to promote it to make it visible and work with the Citizen Consumers on education. Would that be enough to convince consumers to buy it? There is not any data to plan a decision like this, and Janice needs to convince the store owners that this is a logical next step to try and build a small program in sustainability.

The twenty-seven store managers meet weekly in person or via Microsoft Teams. Although the store managers do not have authority to make their own buying decisions, their opinion is considered regarding changes to the store planogram. Janice wants their opinion because sustainability is something that was not easy to communicate, and it is likely that not every manager will buy into the concept of trying to promote this in the center part of the store. And each store has different ethnic and cultural characteristics as well as different sets of consumers. It is likely that these individuals will have different approaches to Equal Exchange's story.

About the Author: Michael A. Boland is a Professor at the University of Minnesota (Corresponding author: boland@umn.edu). Xiaowei Zhang is a PhD student at the University of Minnesota.

Acknowledgments: The authors would like to thank two reviewers for their helpful suggestions and comments.

Appendix A: Historical Background and Concepts of Fair Trade

In 1997, the various national labeling initiatives formed an umbrella association called Fairtrade International or Fairtrade Labelling Organizations International (FLO), along with three other organizations including TransFair USA. “Fairtrade” is used by Fairtrade International for their specific certification mark, which is different from the general initiative. A common “Fair Trade” certification mark was launched in 2002. In 2012, Fairtrade International’s largest adherent, TransFair USA, split from the organization and launched a parallel label, Fair Trade USA. Fairtrade International, Fair Trade USA, Fair for Life, World Fair Trade Organization (WFTO), and Fair Trade Federation are five widely recognized fair trade labels. According to Dragusanu, Giovannucci, and Nunn (2014), the mechanisms of fair trade standards consist of six aspects.

- *Price floor*: Fair trade’s central characteristic is setting a minimum price for fair trade-certified products to ensure sustainable production costs and a living wage for producers. When the world price is below this, fair trade buyers must pay at least the minimum price, but higher prices can still be negotiated based on quality and other factors. The guaranteed minimum price serves as a safety net for growers, reducing their risk.
- *Fair trade premium*: Fair trade involves a price premium paid by buyers to cooperatives in addition to the sales price, with a portion earmarked for productivity improvement. The premium is meant to promote democracy and association, with producers deciding democratically how the premium should be used. The premium funds a variety of projects, including those aimed at increasing farmer productivity, building community infrastructure, offering training for members of the community, improving water treatment systems, and so on.
- *Stability and access to credit*: Fair trade buyers agree to long-term contracts for at least one year, and usually multiple years. They may also offer advance crop financing to producer groups, providing up to 60 percent of the financing if it is requested.
- *Working conditions*: Fair trade standards require safe working conditions, freedom of association for workers, and payment of wages that meet or exceed legal minimums or regional averages. Certain forms of child labor are prohibited.
- *Institutional structure*: Fair trade encourages farmers to form associations or cooperatives with transparent administration and democratic decision making, while larger enterprises for certain products, such as tea, bananas, and flowers, must have joint committees of workers and managers that are democratically structured.
- *Environmental protection*: Fair trade prohibits the use of certain harmful chemicals in production, and requires members to adopt good environmental practices, including minimizing or eliminating the use of less-desirable agrochemicals and using natural methods. Producers must provide basic environmental reports summarizing their impact on the environment. The production of genetically modified crops is not allowed.
- The standards are tailored for each crop and for the different actors involved in the supply chain.

Appendix B: Overview of Coffee Supply Chain

Coffee is typically grown in regions with warm, moist climates, which provide ideal conditions for pests and diseases to thrive. As a result, farmers often resort to using chemical pesticides and herbicides to protect their crops. In addition, chemical fertilizers may be used to boost yields and replace the nutrients lost from the soil due to intensive farming practices.

1 Coffee Production

Equal Exchange coffee is fair trade and certified organic, produced without the use of synthetic fertilizers or chemicals, which means cleaner beans, air, land, and water. The coffee is grown with only organic fertilizers, like coffee pulp, chicken manure, or compost. As a bonus, fair trade coffee beans are richer in healthful antioxidants, and many people can even taste the difference. In addition, most conventionally grown coffee plants are hybrids developed to flourish in open sun. Forests are cleared to make room for open fields in which to grow mass amounts of this sun-loving coffee variety. In contrast, Equal Exchange coffee is shade-grown. Shade-grown coffee is grown within the shade of lush forests, providing a home for wild plants and animals, sustaining soil fertility, and producing a richer and more flavorful cup of coffee.

Coffee is grown on trees that thrive in tropical and subtropical climates, usually 1,000 miles from the equator or less and at altitudes of up to 7,000 feet above sea level. Coffee trees begin their lives in a nursery and are transplanted to farms about a year later. The coffee tree then matures for another four to five years before it begins its annual cycle of production, starting as small white flowers and developing into small green cherries. The green cherries ripen into a deep red color inside of which are two coffee seeds. These seeds are eventually used to plant more coffee trees or processed into green coffee beans that are later roasted and ground into coffee ready to be brewed.

Once coffee cherries are red and ripe, a series of processing events take place before the green coffee beans are moved to the next stage of the commodity value chain. The manual labor needed for these processing events is intensive. Coffee beans must first be harvested from the trees. Harvesting is done by hand in an effort that can require up to seven gathering cycles since not all coffee cherries ripen at the same time. In large, commercial farms located on relatively flat land, mechanical harvesters are increasingly used to harvest the crop. Most specialty coffees are picked exclusively by hand and are only taken from the middle part of the crop for the highest quality of beans.

Although production advancements have been made, most of the 25 million coffee farmers work in small family farms with less than 6 hectares, or about 15 acres, without access to information on improved cultivation techniques and market conditions. In larger, wealthier coffee-producing countries such as Brazil and Colombia, farmers are organized into cooperatives that provide and share information and resources for improving production and marketing decisions.

2 Coffee Harvesting and Processing

Coffee ripens depending on the climate, the altitude, the type of soil, and the variety of coffee. Some areas and farms have their own microclimate. In remote areas, the coffee produced has its own particular and quality flavor. To guarantee a high-quality coffee, the ripe cherries are hand-plucked from the tree or bush. Immediately after harvesting, the outer skin is peeled off the cherry using a pulping machine. To make the process smooth, water is poured while pulping. After this process is done, the pulp is used as nutrition for new coffee trees.

After pulping, the cherries are submerged in water pools. This cleans them and also removes any remaining layers. The beans that sink are considered good quality and kept, while the floaters are

separated from the rest of the bunch. Before coffee beans end up on the drying trays, they are washed several times to remove the sweet sugar coating on their outside, that would otherwise create a bitter flavor.

The beans are dried in the sun for several days until the moisture is approximately 11 percent. The farmer chooses an area that's wide, flat, and clean, and spreads the beans out with a rake. They turn the beans with this rake while the sun shines, and then hurry to cover them with a huge sheet if there is a hint of rain or moisture about. Farmers cover the beans every night, to keep off the dew.

Once the coffee has dried, parchment beans are formed. The farmers sell the parchments off to the coffee cooperative. Once the parchment beans arrive at a fair trade cooperative, they are then turned into green beans. This involves the beans being judged by their weight and appearance. They are being "polished," which means removing the last layer of skin covering the coffee beans. Then, the beans are sampled by buyers, which they call "coffee cupping." These samples are sent to the cooperative, so they can easily vouch for the quality of the coffee to buyers.

3 Coffee Marketing

Equal Exchange roasts their coffee in Massachusetts daily with a team of quality control professionals. Each batch of coffee is "cupped" to make sure it meets the consistent and high-quality standards Equal Exchange set for their coffees. Equal Exchange offers both regular and decaffeinated coffee. To decaffeinate their coffee, Equal Exchange uses a natural water process. This process involves soaking the coffee beans in hot water to extract the caffeine, and then replacing the water with a natural solvent called ethyl acetate, which is extracted from fruits. This solvent binds to the caffeine molecules and is then removed along with the water. Finally, the beans are then dried to remove excess moisture and are ready for roasting. This process is all-natural, ensuring the coffee beans retain their flavor and aroma without the extra caffeine.

Coffee is one of the world's most valuable "soft" commodities and among the largest food value imports in many developed countries (Chaddad and Boland 2009). There are two different species of coffee. Arabica coffee beans are used for higher grade coffee and accounted for 60 percent of total world production. Robusta is a lower grade coffee with a neutral flavor and stronger caffeine content. Robusta coffee beans are grown at lower altitudes and are more resilient to disease and weather, while Arabica coffee beans are usually grown at higher elevations and mature more slowly. Arabica coffee bean production is concentrated in South America and Central America, while Robusta coffee bean production is concentrated in Asia and South America. Brazil is the only leading country to produce both Arabica and Robusta coffee beans.

Even though Robusta and Arabica coffees have different characteristics, their markets are highly interdependent because processors (or roasters) use both types of coffees in their blends. Robusta is normally used as "filler" in coffee blends—as it has a neutral flavor—with Arabica beans originated from different regions giving the coffee blend its distinctive attributes in terms of aroma, body, and flavor. Another distinguishing characteristic between Arabica and Robusta is that "defects" due to improper post-harvest handling of coffee beans in Robusta may be corrected by means of new processing technologies such as "steaming." In other words, whenever a Robusta bean is not properly harvested or handled, which creates a harsher or sour flavor, steaming is used to wash out undesired tastes. For Arabica beans, post-harvest handling operations at the farm and quality segregation and grading by the marketer (cooperative or trader) are substantially more important to preserve the desired coffee bean attributes valued by roasters. Figure B1 shows a description of the coffee supply chain.

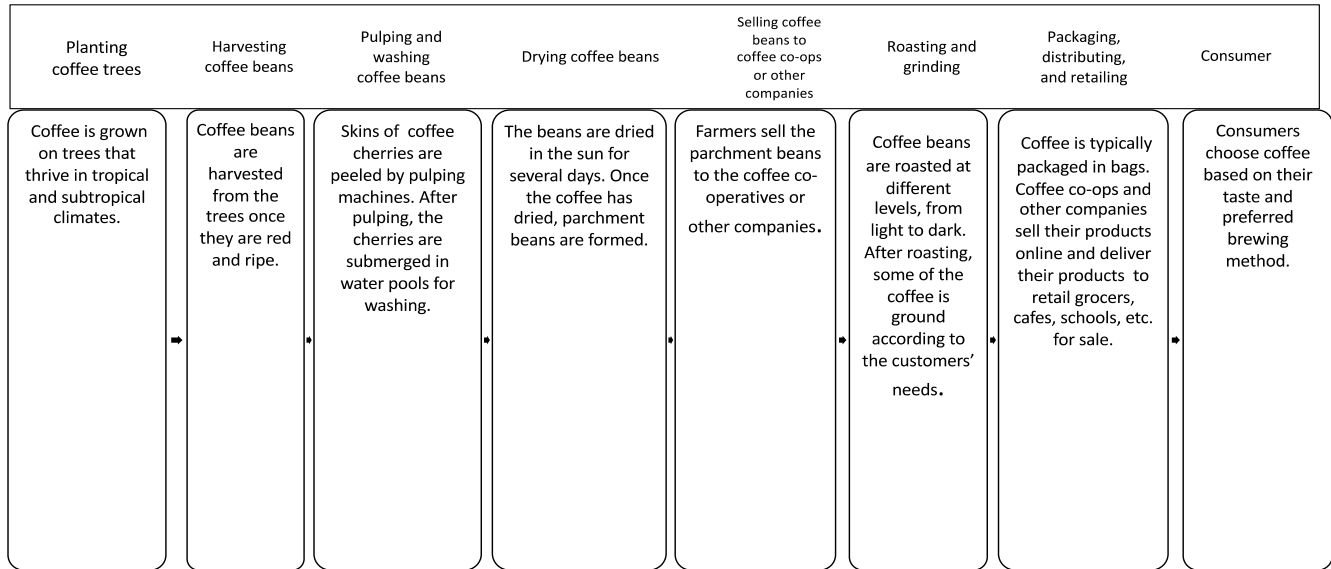


Figure B1: Overview of the Global Coffee Supply Chain

References

- Çakır, M., T.K.M. Beatty, M.A. Boland, Q. Li, T.A. Park, and Y. Wang. 2022. "An Index Number Approach to Estimating Organic Price Premia at Retail." *Journal of the Agricultural and Applied Economics Association* 1(1):33–46.
- Chaddad, F.R., and M. Boland. 2009. "Strategy-Structure Alignment in the World Coffee Industry: The Case of Cooxupé." *Review of Agricultural Economics* 31(3):653–665.
- Dragusanu, R., D. Giovannucci, and N. Nunn. 2014. "The Economics of Fair Trade." *Journal of Economic Perspectives* 28(3):217–236.
- Major, M., and D. Chanil. 2012. "The Super 50." *Progressive Grocer* 91:34–40.
- Meemken, E., C.B. Barrett, H.C. Michelson, M. Qaim, T. Reardon, and J. Sellare. 2021. "Sustainability Standards in Global Agrifood Supply Chains." *Nature Food* 2(10):758–765.
- Naegele, H. 2020. "Where Does the Fair Trade Money Go? How Much Consumers Pay Extra for Fair Trade Coffee and How This Value Is Split Along the Value Chain." *World Development* 133:109006.
- Nielsen. 2018. "What's Sustainability Got to Do With It? Retrieved from <https://www.nielsen.com/insights/2018/whats-sustainability-got-to-do-with-it.html/>
- Raynolds, L.T. 2009. "Mainstreaming Fair Trade Coffee: From Partnership to Traceability." *World Development* 37(6):1083–1093.
- Volpe, R., and M.A. Boland. 2022. "The Economic Impact of Walmart Supercenters." *Annals of Resource Economics* 14(1):43–62.
- Volpe, R., C. Risch, and M.A. Boland. 2015. "The Determinants of Price Adjustments in Retail Supermarkets." *Managerial and Decision Economics* 38(1):37–52.
- Wilkinson, J. 2007. "Fair Trade: Dynamic and Dilemmas of a Market Oriented Global Social Movement." *Journal of Consumer Policy* 30(3):219–239.

6(2) DOI: 10.22004/ag.econ.343481

©2024 All Authors. Copyright is governed under Creative Commons BY-NC-SA 4.0

(<https://creativecommons.org/licenses/by-nc-sa/4.0/>). Articles may be reproduced or electronically distributed as long as attribution to the authors, Applied Economics Teaching Resources and the Agricultural & Applied Economics Association is maintained. Applied Economics Teaching Resources submissions and other information can be found at: <https://www.aaea.org/publications/applied-economics-teaching-resources>.