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Colombia, Plants

Colombia: The End of the Banana Could Be the Start of More Sustainable Farming

Sustainable farming and the promotion of environmentally friendly farming practices are gaining attention in the United States and other countries. Developing countries, however, are often unable to implement the new ideas and innovations that stem from the interest in these topics. These countries typically have fragile economies that rely heavily on agricultural exports to the United States of America and other countries to survive. The farmers in these countries are commonly forced to worry more about providing for their families than employing renewable farming practices. This is the case with the Cavendish banana. Because of its importance to the economies of many developing countries, banana production is driven by demand rather than environmental concerns. With only one variety of banana cultivated, which has no genetic diversity, disease has a prime opportunity. Finding solutions to this crisis could show developing countries that lasting stability in the banana industry can be feasible.

Colombia is a place of many natural wonders and a small, but important, agriculture industry. The breathtaking Andes Mountains and the fearsome array of dormant and active volcanoes, including a Decade Volcano named Galeras, contribute to the charm of this Spanish-speaking South American country. Unique among its neighbors, this presidential republic has access to both the North Pacific Ocean and the Caribbean Sea. Colombia's location near the equator and variety of climates contribute to its lush agriculture industry. Although only 37.5 percent of the land is used for agriculture, Colombia grows a variety of crops including cut flowers, bananas, and coffee. Its array of climates, such as tropical regions and cooler highlands and mountains, make it suited to growing this variety of crops. It also boasts coastal and plains lowlands. Most of this agriculture production is concentrated in the north and western portions of the country. In addition to agricultural products, Colombia also exports oil, coal, and textiles. These industries and the services industry contribute to the 81.4 percent urban population of the 49,084,841 people living in Colombia (Central). Colombia, while increasingly more urban, is well suited to agriculture.

For just a moment, step into the world of a child living on a farm in rural Colombia. Here, you wake up in the morning and eat a breakfast of juice, fruit, and bread that your mother has prepared. (Colombia). Your father has already left for his job working on the family coffee farm where he earns enough to keep the family afloat. This fragile livelihood crop can be heavily affected by disasters, such as extreme weather, but your father is a member of a coffee cooperative that helps provide insurance and pensions (Duckett). You finish your breakfast and get ready for school with your sister in the shared bathroom in the house. You walk home at lunch to eat with your family. It is a large meal, and today your mother has cooked soup, chicken with sauce, and fresh fruit (Colombia). After walking home from school at the end of the day, you and your sister help your father in the coffee fields (Duckett). Sometimes you miss school to help, but today you are free to go (Hamdan). Your house is made of wood and clay painted white with green trim. It has a kitchen, a living room, and two bedrooms (Colombia). It has a toilet, but the drinking

water has to be boiled to be safe to drink. However, the house does have electricity (Ruiz). While there are hospitals in the city, there isn't one close to you. At the end of the day, the family eats a light dinner of fish with potatoes and salad. You get ready for bed and go to your bedroom that you share with your sister, ready to wake up early the next morning and go to school (Colombia).

This family's survival depends on money provided by following monoculture farming practices, which can create a multitude of problems. Monoculture farming is growing only one variety of crop. This practice opens up entire populations of crops to decimation by disease. However, many farmers use this method because it is cheaper, faster, and yields more profit. Monoculture is often considered the modern farming method (Watts). It has even reached countries like Colombia, where agriculture, specifically banana production, is an important factor in the economy. In these countries poorer families rely on the jobs these banana farms give to sustain themselves. In Colombia, most banana farms grow only one type of banana. Year in and year out, they grow the same crop. To make matters even worse for the banana, there is only one variety of banana being grown right now for 99 percent of export, the Cavendish (Kambhampatys). The Cavendish banana is genetically unsustainable. Originally, mutations caused banana plants that had no seeds, which was a desirable quality for eating. These female sterile plants took over as the preferred variety of banana. Since the Cavendish banana is one of these sterile plants with no seeds, it can only reproduce asexually. This means that every banana plant is exactly identical with no genetic diversity and no ability to adapt to change (Canine). Monoculture farming can cut expenses, but it can also have devastating consequences.

It is easy to predict the danger of a monoculture crop with no genetic diversity or ability to adapt to change. Disease has a prime opportunity against these banana plant clones. With one strike it could infect every banana plant with no cure (Kambhampaty). And this is exactly what happened in the 1950s, when a strain of Panama disease infected the then popular banana variety, Gros Michael. Unable to stop the impending doom, banana producers switched to the Cavendish banana, which was resistant to the disease. Now, the situation is repeating itself (Canine). The Cavendish banana has been attacked in Colombia by the Tropical Race 4 disease or TR4. The disease has no known cure and is capable of destroying whole banana plantations. Since the disease can live in the soil for a year before plants show any signs of infection, the disease can be carried anywhere by shoes or tires before the outbreak is discovered (Charles; Kambhampaty). Because banana farming is such an important part of the Colombian economy, the Colombian government issued a state of national emergency last August due to the disease (Rueda). Although the virus may not completely destroy all the bananas, since it tends to move very slowly through a country, its effects would mostly fall upon the farmers who rely on the banana farms to provide their livelihood (Charles) Also, many of these families rely on bananas as a cheap form of nutritious food (Canine). The Cavendish banana provides an extreme example to show people that monoculture, particularly of varieties that have no genetic diversity, is a precarious approach that values quick money over stability.

Past solutions always appear the easiest to apply in current situations. It has been tried before. Its steps are clear, and it has none of the uncertainty of innovative solutions. In the case of the banana crisis, this tried and true solution has been tried before. It consists of replacing the infected banana population with a new resistant variety. Completely bypassing the underlying problems and farming practices that brought about the devastating disease, this solution is a quick fix. The solution worked, and then failed (Kambhampaty). Now, scientists are scrambling to repeat the solution. They are searching for a new banana plant that is

resistant to the TR4 disease (Canine). However, this method is a complicated one considering the many qualifications that a banana needs for mass export. It needs to ripen slowly enough to be brought to market in other countries. It needs to be rather tough to withstand the long journey. It should be a pleasant tasting banana that has minimal seeds and is a good size (Rueda; Charles). It must also be resistant to the TR4 disease. In addition, the banana plant should preferably be of short stature to combat the common problem of banana plants falling over (Canine). Needless to say, this magical banana is rather hard to find. One researcher found that of the three hundred banana varieties he tested, 80 percent were susceptible to the disease. The rest were exclusively for cooking, were very small, or had too many seeds (Charles). Finding a new super banana this time is going to be a more difficult search than before.

Because finding an already existing banana variety to replace the Cavendish is proving unfruitful, many scientists are trying to breed a new resistant variety (Canine). This banana would need all the same desirable traits of the Cavendish banana, but be insusceptible to the disease that may prove the demise of the favored fruit. This type of solution was successful in the 1990s with the papaya and its nemesis the papaya ringspot virus (Kambhampaty). The solution seems simple until you learn how hard it is to breed bananas. The method used in the past for breeding banana plants to ascertain if they were resistant was a time consuming one. By gathering pollen from a male plant and fertilizing a female plant, seeds could be collected in four or five months. Then, seedlings were planted and another nine to eighteen months passed before testing could be done to discover if the cultivar had the desired resistance and characteristics. Even with the advances in technology that have shortened this procedure considerably, it is still more complicated than simply creating a new hybrid pea plant. It is a long and involved process with many factors. Despite the difficulty, Phil Rowe, who led the banana breeding program at the Honduran Foundation for Agriculture Research (FHIA), created a possible commercial contender to the Cavendish, the Goldfinger. This was after decades of work by the breeders (Canine; Kambhampaty). This method could lead to a potential competitor to the Cavendish that has all the desired qualities and the necessary disease resistance.

The solutions that help solve the underlying problems are always the most satisfying and revolutionary. The problem with the banana business is not the TR4 disease, it is the unsustainable farming practices that initiated the problem (Kambhampaty). Walking down the produce aisle in a grocery store shows at least three different types of grapes and seemingly endless varieties of apples. The banana aisle reflects no such variety. After eating the same variety of banana for seventy years, grocery store patrons are ready to taste the Ice Cream banana with its smooth texture, or the Burro banana that has a lemon flavor and square sides. With over a thousand different varieties of bananas, each with a unique flavor and use, growing just one type of banana seems strange (Mach). Consumers leap at the chance to try this year's new apple variety at a premium because they want to try something new. The banana would be no different. The bananas that taste sweet and buttery, or starchy, or even have hints of vanilla or cinnamon deserve a chance in the grocery stores (Canine). To do this, the banana producers need an assurance that consumers will truly buy these varieties of bananas that may cost more to grow (Kambhampaty). Otherwise, they will not expend the extra effort to grow them. We must educate and advocate for the variety in bananas that will allow farmers to achieve sustainability and consumers to enjoy unique and exciting flavors.

Finding or breeding a new resistant variety of banana fails to encourage more renewable farming practices. Both of these solutions involve substituting a new banana for the Cavendish, just by different methods (Charles). The solution that would truly bring about change would be switching to many

different varieties of bananas instead of tying the fate of all banana production to one variety of banana (Rueda). Diseases would not be able to wipe out whole populations if there were hundreds of different banana varieties grown and offered at grocery stores. Even offering ten varieties of bananas at the grocery store would mean that disease would only cause a minor disturbance in the industry instead of crippling it. Economies would also be able to recover more easily because less money would need to be spent on sanitation to combat the disease (Rueda). Switching to more varieties would allow smaller banana farms to succeed by supplying specialty bananas. To accomplish this switch, the consumers in the United States and other import countries would need to assure the farmers and governments of countries like Colombia that they are ready to receive these new varieties that cost more to produce (Rueda). The banana cooperatives could be instrumental in finding and creating markets for the new varieties and communicating with consumers, similar to what the coffee cooperatives do for the coffee farmers (Duckett). The governments would need to approve the plan. Also, the support of the large banana companies could provide a vital impetus for the change. Yet, even just one banana farm deciding to grow and market a different variety of banana could have a significant impact on the industry. It would take some time for the Colombian farmers, big brands, and consumers to become accustomed to the switch, but media coverage and outreach programs could educate consumers on all they are missing by eating only one type of banana. In the end, the banana population would be able to adapt to change more easily, and disease would not create so much havoc in the industry.

Having an idea and applying it are two very different things. The idea of sustainable banana farming through the medium of several different varieties is a simple idea, but one that would take a major redesigning of the banana industry as it now stands (Canine). Right now, the large banana companies are able to standardize banana packing and shipping facilities since all the bananas are the same variety (Kambhampaty). This cuts costs in building and training. Switching to more banana varieties would involve building more specialized facilities for each banana variety, requiring more buildings and training than before. Farmers are also an instrumental part of the switch. These farmers have grown the same variety of banana through generations and are familiar with its growing requirements (Canine). While the farmers and companies know that the current situation of the banana is precarious, switching to more varieties would include the need for more information on what varieties would be accepted in the import countries and partnership with individual farmers to supply certain varieties. The farmers would also need education and resources to learn how to grow a new type of banana and the seedlings to start the new farms along with a monetary incentive to do so. These farmers and companies would need to sacrifice initial profit loss and adjust to a new and unknown system of growing, packing, shipping, and reception in import countries.

Convincing Colombian farmers to change their farming practices will take support from the consumers and funds from outside sources. Interest and encouragement for this change in production needs to come from the United States and other large import countries. Through social media and other forms, we need to affirm that we are ready and willing to pay slightly higher prices to not only receive different flavors in bananas, but also foster sustainability and stability in developing countries. However, words alone are not enough to achieve lasting change. Convincing farmers to sacrifice short term success for long term stability will require funds and resources. This is where the large banana brands such as Chiquita® and Dole® can play a pivotal role in influencing and encouraging diversity. Their participation would be fueled not only by the large import countries' interest, but also by the looming extinction of the Cavendish banana crop. By advocating for more diversity, people in the import countries could encourage the big brands to start and fund banana cooperatives like coffee brands do with the current coffee

cooperatives in Colombia (Duckett). These banana cooperatives could provide resources such as education on the new varieties and seedlings, along with monetary incentives. The large companies would also be instrumental in communicating with the consumers to determine which varieties would be most accepted and preferred. These cooperatives started by the big brands would then work directly with farmers and help facilitate the transition from monoculture farming to stable and diverse practices involving hundreds of new banana varieties. Encouraging large banana companies to facilitate local banana cooperatives that partner with farmers to change farming practices could be the start of a chain reaction of sustainability in Colombia and other countries.

Finding solutions to the banana crisis in Colombia could be instrumental in convincing other countries that enduring stability in banana farming is possible. Colombia can lead the nations by example through switching to more varieties of banana instead of the monoculture practice now employed. That success could encourage other industries in Colombia, and even other countries, to change their practices as well. Education and discussion need to take place before the switch can be made successfully, but this is a necessary change that would alleviate some of the pressure felt by the loss of the Cavendish banana. Variety is accepted, even demanded in all other facets of life, but is somehow overlooked in the case of the banana. Diversity enriches every part of our lives, and the banana is no different. Variety is the key to success.

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