

Just Green Bananas: Towards Full Sustainability of the Export Banana Trade

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Keywords: Certification, environment, ethical trade, marketing, retail, standards

Abstract

Bananas are an important food item for European and American consumers. It is generally the best-selling fruit item in the typical European supermarket. In recent years, concerns about food safety and sustainability issues have increased greatly. Although apparently high on the agenda of the public and policy makers, sustainability does not appear in the top three buying motives of consumers. People in their role as citizens may find sustainability important, but as consumers they set a higher value on price, quality and appearance. Retailers offer sustainable product categories, like organic and Fairtrade bananas, but these labels have only captured a small percentage of the market. A breakthrough for Fairtrade only occurs when retailers replace their offering by Fairtrade at the same price as conventional bananas. The retail industry has a key responsibility in guiding the mainstream consumer towards sustainable choices; consumers on their own cannot drive this agenda. Sustainability should encompass the broad range of bananas, and not just some high-price, niche categories. There is a shift in approach of sustainability in terms of immediate local impacts of a banana crop (e.g. farm pesticide, farm labor) to global impacts (e.g. on world climate and water resources). The industry has introduced voluntary business-to-business standards such as SA8000, business-to-consumer standards, such as Fairtrade, organic and Rainforest Alliance, or environmental management systems, notably ISO 14001. These standards were not designed for bananas, but derived from other commodities, have different focuses and are not based on the involvement of multiple stakeholders of the banana value-chain. The question is how adequate these standards are to measure and improve sustainability specifically for the banana chain. These standards are farm based, but sustainability should go beyond the farm and include the supply chain. Efficient water and energy use and greenhouse gas emissions along the chain can be estimated using life-cycle approaches with standardized protocols. The World Banana Forum is a process to discuss and exchange best practices, but does not aim yet to develop a sustainable banana standard, though it has the potential to become the nucleus for a process dedicated to banana sustainability. There is a need for a comprehensive mainstream “green banana” standard; this will avoid the confusion of multiple standards and could become a benchmark for sustainability for all export bananas. The article concludes with proposing a research agenda towards full sustainability of the export banana trade, including in standards and certifications, disease management, organic farming principles and integrated farming, climate change and energy use, and economics and marketing.

WHY A SUSTAINABLE BANANA IS IMPORTANT

Bananas are an important food item for European and American consumers. In 2010, a total of 4.49 million metric tons of fresh bananas were imported into the European Union, which is sufficient to provide the full daily energy requirements of 4.4 million people for a whole year. The banana is one of the cheapest fruits available, e.g. in the United Kingdom it is cheaper than local apples. As such, it is an important fruit for poorer consumers as well as for children in school fruit schemes.

However the shopping public is generally unaware that this popular tropical fruit faces some serious sustainability issues, most notably the abundant use of fungicides, nematicides and post-harvest agents, as well as soil degradation and labour issues, such as low wages, health risks and violation of trade-union rights. A recent study conducted by Oxfam called the working situations in Ecuadorian plantations “intolerable and exploitative” (Humbert, 2011).

Only a minor part of bananas sold has a visible sustainable identity (“front-of-pack”, visible to the consumer), most notably organic and Fairtrade certified fruit. These bananas carry a price premium in the market, and are usually carried as high-end products in the shops. The total marketed volume of this certified segment is estimated at around 500,000 MT per year, so about 11% of the total EU27 banana market (FLO, 2011; Liu, 2009). Within recent years, Rainforest Alliance (RA) certification has also been visible on bananas, through the RA frog logo carried by Chiquita-branded bananas in the EU and the USA. These branded bananas are also a premium product, and have a market share of about 15% (Rainforest Alliance, 2011).

The conclusion is that three quarters of all exported dessert bananas are not certified as sustainable against any form of publicly available sustainability standard. And even if all bananas were certified in some way, there is still the problem that the standards differ in claims, content, scope and style. Sustainability is and should be a lot more than what happens on the farm. It is also to do with economic viability and environmental and social performance of the whole chain and ideally should cover the mainstream of commercial trade flows, not just a small premium segment for the most well-to-do consumers.

The export banana is one of the largest commercial crops in the world and a major income earner and a livelihood for hundreds of thousands of poor people in poor countries. Export banana production has deep impact on social relations and environmental issues in the producing countries. These countries have to cope with the impact of climate change, increasing populations with increasing aspirations, threatened biodiversity and pressure on land, water and resources, potentially leading to deforestation and land degradation.

HOW CONSUMERS AND RETAILERS VIEW SUSTAINABLE BANANAS

Consumer Attitudes to Sustainability

Sustainability is a much discussed topic of public debate. Sustainability initiatives now cover themes like global warming, climate change, food security and food prices. Sustainability is even discussed in reference to the political developments in the Middle East or the need to green our economy, and is clearly not a passing trend or hype. Of course, there are differences in consumer attitudes and perceptions in different countries. In this article, we draw from surveys conducted in some selected European countries.

Research conducted in the Netherlands shows that the three most important purchasing motives in supermarkets are: taste, quality and price. Sustainability issues like

animal welfare, environment and developing countries are increasing in importance but play a role for only 20% of the consumers (Bramer, 2011). Similar findings are reported for the United Kingdom (Guardian, 2010). Only 17% of the Dutch population claims to eat sustainably. The major obstacle to a breakthrough in sales of sustainable food is price. Consumers often expect that a “green” product should not be more expensive and is of equal quality and functionality. Another major reason is the lack of clarity and transparency about sustainability claims and disinterest of the consumer.

Researchers have noted a divide between consumer attitudes and consumer behavior. Surveys indicate that consumers are positive towards ethical products and are willing to pay price premiums, but actual consumer behavior does not follow suit. This “attitude-behavior”-gap has various causes; respondents may answer in socially desirable way; they are not taking a risk or making an actual expense as they answer; a survey does not take into account more complex phenomena occurring in an actual market place (Cotte and Trudel, 2009). We could also characterize this as a “citizen-consumer” contrast. Many consumers are not aware of what sustainable products are. Most may be unaware when they buy a “green” product. They buy a product because they think the quality, price and performance are good, not because it is sustainable. Inversely, consumers seem to think that “green” choices do not need to be more expensive or deserve a price premium (Cotte and Trudel, 2009).

Customers are also interested in new experiences of taste, color, shape, and presentation. This offers perspectives for innovations, like different varieties or concepts (Rabobank, 2011).

Banana Retail

1. The banana in the fresh fruit and vegetable (FFV) category. Bananas are an important category in the fresh fruit and vegetable section of supermarkets in developed countries. In the United Kingdom, they are reported to be the number one in volume and sales value (Doward, 2009). It is a very visible and strategic retail product. In most European countries, it is a key contributor to the retail gross margin. In the United Kingdom, with one of the most developed retail industries in Europe, bananas are a Key Value Item (KVI) or “loss leader”; a product used as a symbol of the price level of the retail company in question.

2. Sustainability. Many retail companies have sustainability policies nowadays, though they may differ in nature and scope. Usually sustainability is promoted by requiring various forms of certification against sustainability standards or benchmarks of suppliers. Such standards can also be proprietary to the retailer. A retailer may have specific policies as to the use of certain (post-harvest) chemicals. A retailer may choose to group various sustainability systems under an umbrella private label. The tendency is that retailers determine the content and manner of sustainability communication for the whole FFV category, which leaves little or no room for brand communication by suppliers. This is an issue for suppliers who want control and to distinguish their product. It means that the consumer leaves the choice for sustainability to the retailer and may even expect the retailer to buy sustainable products. Research shows that retailers and suppliers should expand the offer of sustainable products and not wait for consumers to ask for these (Bramer, 2011).

3. Branding, marketing, labeling. Though many brands and trade names exist for bananas sold in European supermarkets, only a few producer brands play a significant role. In the FFV category in general, brand names do not play an important role. Most

fruit is indistinguishable from each other and the possibilities to differentiate the product and communicate to the public by means of packaging are very limited. A notable exception is Chiquita Brands, which started a massive advertisement campaign in 1963 (Chiquita Brands Inc., 2011). It appears that, unless the product has a significant advantage over the commodity product, branding is a difficult approach. In many cases, the brand recognition of the retailer selling the products has a higher impact in conveying messages to the consumer than branding of the product. Where advertisement and marketing by banana companies have their limitations in conveying the advantages of buying the brand in question, retailer private labels and third-party certification labels have a role in conveying messages about sustainability to the consumer.

4. Supply chain governance. Most of the FFV sales in Europe pass through retail chains, even though this may differ from country to country. Independent local greengrocers have declined in importance. Likewise, the supply of bananas now mostly passes through the hands of a small number of banana companies that integrate production, transport and distribution. Two factors have however opened the banana supply chain to new entrants: the European Banana Regime lost its licensing structure to become a tariff-only scheme on 1st January 2006; so existing banana companies lost their oligopoly. Since then banana importation is possible for any company wishing to do so. Secondly, and partly as a consequence, the gradual shift of banana transport in refrigerated ships requiring a high capital outlay or at least contractual obligation for the importer, to transport in refrigerated containers carried by container lines, has allowed smaller and more flexible contracts, both in terms of volume commitments as well as ports used. This has allowed new companies to enter the market and retail companies to start sourcing bananas directly, bypassing the banana companies. These developments have led to an oversupply of bananas. Retailers can now control the marketing and branding and even the sourcing; they have become the chain leaders, governing the supply chain.

5. Pricing and seasonal patterns. Banana sales in Europe are highest in the winter and spring seasons, when there is less European fruit available. This creates a serious challenge for the production, as the production volume does not follow this pattern. On the contrary, in many producing countries production goes up during the summer time, when European demand is at its lowest, only to recover in autumn, when it has to compete with the new harvest of Europe's own fruit. Consequentially, the pricing for export bananas follow the same pattern. In the first two quarters of the year, the prices are high, followed by a slump in the third quarter and a recovery in the fourth quarter.

Supermarkets often stock at most three different types of bananas: a budget banana, a premium banana and a "sustainable" banana, e.g. Fairtrade and/or organic, each with its own price. There is considerable pressure on prices, especially in the UK, where price wars around bananas are frequent (Barker, 2009). At the moment bananas prices are around GBP 0.68 per kg (EUR 0.78/kg), but they have been as low as GBP 0.38/kg (EUR 0.44 per kg) (2010a, 2010b). These price wars (sometimes called a "race-to-the bottom") compromise sustainability efforts by producers, as it promotes cutting any costly practices that can be avoided somehow; such as proper waste disposal, waste water treatment, decent treatment of laborers etc.

WHAT ARE THE SUSTAINABILITY ISSUES IN BANANAS?

The sustainability issues in the export banana supply chain can be inventoried at the level of each individual chain actor. It is customary to look closely at sustainability at

farm level, but there are also issues overarching the whole supply chain, such as greenhouse gas (GHG) emissions.

At the Farm Level

At the farm level, we list the most obvious sustainability issues, which are interlinked.

1. Disease and pest management and agrochemical use. In the wet tropics, black leaf streak disease (BLS, caused by *Mycosphaerella fijiensis*) is an important problem, rendering the leaves of the plant dysfunctional. If insufficient functional leaves are left, accelerated maturing occurs, leading to serious commercial damage (“ship yellow” or “ripe and turning” after transport). The control is difficult and requires frequent aerial applications (up to 60 per year) of a cocktail of systemic fungicides. The aerial applications lack precision, with risk of inadvertent pollution of waterways, spraying humans inadvertently present in the plantation and drift into human settlements. Other important chemical uses are fertilizers, nematicides, insecticides, herbicides and post-harvest fungicides to prevent crown rot. (Lassoudière, 2007; Stover, 1986).

2. Water use. Water use has been made visible by the concept of water foot-printing, using the concepts of green, blue and grey water (Hoekstra et al., 2011; Mekonnen and Hoekstra, 2010). For bananas, only preliminary studies have been performed (Dole Food Company, 2011).

Bananas favor a wet and warm climate and hence consume a lot of water for their growth, which in their traditional production regions is usually supplied as rainwater (“green water”). In the packaging process, a lot of water is used in the washing basins where bananas are washed and allowed to lose excess latex. Water courses can be contaminated (“grey water”) with pesticide residues or waste material, harming flora and fauna, and in this way polluting fresh water by making it unfit for purpose (Castillo et al., 2000). There can be a profound negative effect on aquatic life (Castillo et al., 2006). Organic production of export bananas succeeds well in areas with low aerial humidity which prevents BLS disease, but the lower the humidity, the higher the water requirement. Water is supplied by irrigation with water drawn from rivers, dams or aquifers (“blue water”).

3. Waste prevention and disposal. The use of plastic cover bags, impregnated with insecticides and packaging material of agro-chemicals form an environmental hazard if not disposed of in a proper manner.

4. Soil health and conservation. As a monoculture, bananas are threatened by nematodes (e.g. *Radopholus similis*), which are frequently controlled by nematicides. These products are extremely harmful for the environment and human health, and may kill also useful soil organisms, the importance of which for pest control becomes increasingly evident. The poor management of soils and fertilizer can reduce the soil organic matter and structure and increase banana diseases carried in the soil.

5. Biodiversity. Commercially important banana production is mostly on land converted from tropical rainforest, though most conversion would have taken place more than 20 years ago. However, the growing world population, demand for food and competition for land-use drives pressure to clear and convert more forest, which threatens biodiversity and the integrity of the world’s ecosystems. Within banana production areas, banana sometimes dominates the landscape and it is important that some land (e.g. steep-land, river banks etc.) is reserved and that provision is made for biodiversity protection in these shelters. Land use and biodiversity issues are important parts of sustainability. It is now

increasingly accepted that highly efficient and productive agriculture is a prerequisite to ensuring that demand for land is minimized in future.

6. Labour relations. The position of workers in plantations has been and continues to be debated. Clearly, in an industry operating on very tight margins, labor costs are under pressure. Whereas plantation workers have mostly managed to enter into framework contracts with major industry players, the position of workers of small producers, minors and migrant workers deserves attention. Though reliable data are not available, the workers' income does not seem to provide living wages in many cases (see for example Oxfam 2011). Integrated banana trading companies have stepped out of production, leaving labor relations largely to fragmented contracted producers. Women's rights in the workplace also deserve conscious attention.

7. Occupational health and safety (OHS). Working conditions tend to be poor. Though efforts have been made to improve conditions over the years, exposure to pesticides remains a problem. Not only workers are affected, also neighboring communities. The main pathways of exposure are drift of aerial sprays, contact with post-harvest agents, and consumption of contaminated fish and shrimps by plantation drain-off (Barraza et al., 2011)

8. Inclusive business. The bulk of conventional export bananas are produced in large scale plantations in Central America. However, Ecuador is noted for the presence of a large number of small producers. This is also the country where there is a significant spot market. Small producers serve to fill the demand peaks of the market, but have no income stability and hence cannot invest in their farms. Small farmers have a better position if they are organic certified. In all cases the ever increasing (cosmetic) quality and food safety requirements of the retailers form an obstacle to small farmer participation in the export banana industry (van der Waal, 2010).

9. Farm economics. This is an indispensable element for sustainability. Farm income should allow a sustainable production system. It is supposed that increased sustainability of farms and supply chains can also save money (e.g. by saving on the energy and pesticide bill) and hence make the operations economically more viable. Precision farming holds promises for the future, but so far limited experience is available. However, in order to achieve higher efficiency, actors need stability of contracts and income to invest in their farms. Increasing yields and productivity are important objectives, also from the point of view of the world commodity scarcity, which cannot be solved by using more land and resource, but by using land and other resources more efficiently. Dealing effectively with demand highs and lows in relation to the normal production pattern is also an important aspect of efficiency.

Along the Whole Chain

10. Climate change. Climate change has two very distinct aspects (1) adaptation (the response to the effects of climate change) and (2) mitigation (global efforts to reduce emissions). Both are important to the future of export banana.

Adaptation: greenhouse gas emissions cause global warming and a disturbance of temperature patterns in the world's oceans and weather phenomena, affecting temperature and rainfall patterns, with profound impact on the production regions. They lead to flooding, retarded growth and lower volumes. Plantations in Central America have also been affected recently by cold weather, heavy rains, increased frequency of hurricane and floods. Small farmers are particularly at risk as they have no financial buffers to cope with disaster. The retail industry may also hedge its bets by supporting development of a supply base in regions less vulnerable to floods and storms, such as West Africa.

Strategies for adaptation to changed weather and calamities should be implemented consciously, such as promoting risk insurance. These can be part of responsible management of the value chain in future.

Mitigation: Bananas seem to generally have a low carbon footprint compared to price and food value (Berners-Lee, 2010). However, most major companies (including most major retailers in Europe) are making carbon and energy efficiency core parts of their strategy; for example Tesco is in the top ten companies on the Carbon Disclosure Leadership index (CDP, 2011). It is probably inevitable that the banana industry like all others will be increasingly expected to measure emissions and demonstrate reductions in future.

11. Nutrient balance. The cultivation of bananas requires nutrient inputs, often of synthetic-mineral origin. These nutrients are partly absorbed by the plant, the fruit part of which is exported and leaves the farm, and partly washed out or emanated into the air, also leaving the farm. Plant nutrients increasingly become a scarce resource. Improving the efficient utilization, by precision farming, the use of beneficial micro-organisms, green manures and efficient organic matter recycling techniques, can also help to attain a better farm economy, lower carbon footprint (increasing carbon fixing capacity of soils). Reducing losses by spoilage and recycling organic waste at the consumer end requires attention.

12. Varietal diversity. Virtually all export bananas are of the same Cavendish group (AAA genome). These Cavendish cultivars replaced the ‘Gros Michel’ (AAA) in the 1960s, which succumbed to Fusarium wilt (caused by *Fusarium oxysporum* f. sp. *cubense*). Cavendish is currently threatened by a new strain of Fusarium wilt (tropical race 4). The question is whether a suitable replacement can be found among existing varieties (see also Daniells et al., this volume). It may be necessary to improve the Cavendish with genetic material from other varieties by classical breeding or by cisgenic modification, comprising transfer of resistant genes from within the banana genome. This technique will not be adopted by the industry and consumers without very good evaluation of risks and provision of information. There is also a frequent question about the diversification in export markets with varieties other than Cavendish. Only ‘Pisang Mas’ (syn. ‘Sucrier’AA), ‘Apple Banana’ (syn. Silk, AAB) and red bananas (‘Red Dacca’, AAA) have found very limited export markets so far. However, the situation as it is cannot be described as sustainable in the long term, with the entire industry dependent on such a narrow genetic base, and bananas thus highly vulnerable to fungal disease yet with no well-funded global program to develop new genetic material being available.

HOW ARE THESE ISSUES ADDRESSED?

Standards, Certifications and Codes of Conduct

Sustainability issues are addressed in different ways. A common approach is through adopting standards concerning the subject matter. Such standards can be audited and the operator is certified by a certification body. Standards or codes of conduct can be adopted voluntarily without auditing (common for some “process standards”). A third approach is self-regulation in the form of an environmental or social management system internal to the operator. The operator sets its own objectives. The functioning of the system is audited, but there are no independently set or independently checked benchmarks.

Comparison of Standards Used for Banana

Comparing the different voluntary certification standards used in the banana industry is difficult, because each is structured differently and they overlap in some respects. To compare them it is useful to look at how the standards are structured around a hierarchy from aspirational high-level objectives to specific points that can be checked and measured. This is how the typical hierarchy is structured:

- It starts with a general statement about the mission and overall goal of the standard;
- This is followed by a listing of principles;
- These principles are defined by several criteria;
- Control points or indicators are used to check if these criteria are met;
- Control points or indicators are clarified and explained in various types of guidance notes.

This standard is embedded in a governance system (Who controls it and how?); a verification system (How is it certified, how credible is this?); and often a traceability and labeling system (What has been certified, where has it gone, how do we know what is inside?). Some standards, like SA8000 and ISO 14000, are process standards based around management processes that drive continuous improvement. Most common standards are based on meeting discrete performance criteria that can be checked through a certifiers' audit. Some have a core standard with additional modules; for example GlobalGAP now has a Risk Assessment on Social Practices (GRASP), which is voluntary extra module covering basic worker welfare.

To be able to compare the various standards used for bananas today we have used information on the underlying principles or highest level objectives taken from the standard organizations' own websites and documents, which is paraphrased and abbreviated (table 1). From this table we can compare the overarching objectives of these standards. This shows how they tend to be strongest around issues related to farm practices and worker conditions; environment is mostly included, but global impacts such as climate change and water use are not common components. Some comparisons using this table are confusing or misleading, for example, traceability is listed as a GLOBALGAP category, but not by FLO, RSPO or RA, even though these include traceability as part of their system.

1. GlobalGAP. GlobalGAP certification is a widespread certification. It is primarily concerned with food safety, pesticide use and compliance with minimum residue levels in the fruit.

2. Rainforest Alliance. The large banana multinationals took different approaches to certification. Chiquita started in the 1990s the Better Banana Project in collaboration with the Sustainable Agricultural Network (SAN). Rainforest Alliance was the outcome of this collaboration; it is an American non-governmental organization promoting conservation of biodiversity and environment. This has evolved into a sustainability standard for several tropical crops, including bananas, managed by SAN. The SAN standard consists of ten principles, both related to the environment and to social and farm related issues. Within each principle, a minimum of 50% of the control points needs to be in compliance, and totally at least 80% of the control points from the standard as a whole needs to be in compliance. Within the standard, there is also a number of critical control points for which compliance is compulsory to achieve certification (SAN, 2010). The standard includes a list of forbidden pesticides, which can be updated. The Chiquita-RFA environmental alliance has been described as “one of the most strategic and effective in

the world” (Esty and Winston, 2009). Chiquita is reported to have invested 20 million US dollars in the conversion of its own and associated farms to RFA certification, and claims to have achieved not only improved sustainability, but also a 17% increase in productivity (Chiquita Brands Int'l, 2008).

3. ISO 14000. Dole chose another path towards improved sustainability, by adopting internal environmental management systems (EMS) and having these systems certified according to the ISO 14000 series. The different approach led to different results which cannot be easily compared to each other (Jansen, 2004). To remedy this, Dole also gained RA certification for some of its farms, based on work already achieved based on its own ISO 14000 EMS (Liu, 2009; Dole Food Company, Inc., 2011). Dole also adopted the SA 8000 standard. Del Monte implemented ISO 14000 based on its existing EMSs.

4. Organic standard. There are dozens of organic certification bodies and organic standards in EU countries which was a problem for retailers and consumers. The EU has therefore, in consultation with the International Federation of Organic Agricultural Movements (IFOAM), created a baseline definition that is the basis for an EU regulation, so anything sold as “organic certified” must at least meet the conditions of the regulation (www.ifoam.org). According to the regulation (European Commission, 2007), “Organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes.” A limiting factor for organic production of bananas is the incidence of BLS disease. The disease incidence correlates with annual rainfall and humidity, high levels of which favor the development of the fungus. Currently, there are no effective organically approved remedies for BLS, though spraying of mineral oil and organic acids provides some protection. Low humidity decreases the disease threat, so the places where organic export bananas are grown successfully tend to be dry tropical climates with ample irrigation opportunities, and close to ports and affordable maritime logistics. Such places are scarce. Even when good conditions are available, the productivity of organic banana farms can be 40% lower than conventional farms (Jimenez et al., 2007). Consequently the opportunities for the expansion of organic production are limited. The water footprint of organic bananas is also likely to be high.

5. Social Accounting 8000 (SA 8000). As well as RA certification, Chiquita has the majority of its farms and associated farms certified according to the SA 8000 standard. Dole is also known to have many SA 8000 certifications in place. SA 8000 is an auditable process standard based on principles of national and international law and the conventions of the International Labour Organization (ILO). Dole also adopted the SA 8000 standard.

6. Fairtrade / Fairtrade Labeling Organization (FLO). Fairtrade was originally a social standard for small producers, extended to plantation workers, with environmental paragraphs. It stands out from other certifications in that it is based on calculating the cost of sustainable production (COSP) on which a minimum price to be paid to the producer. These minimum prices are determined using an iterative consultative process involving producers, traders and other stakeholders, and are differentiated according to product and country of production. On top of the standard and the minimum price, there is a premium for socio-economic development, for bananas currently at 1 USD per box of 18.14 kg. Recently, FLO started allowing a part of the premium to be used for improving productivity (see the set of standards on www.fairtrade.net). There is a list of forbidden pesticides in the FLO rules for bananas.

HOW COMPREHENSIVE AND EFFECTIVE ARE THESE STANDARDS?

Table 1 lists the most important standards and their major principles and objectives, allowing a comparison. A comprehensive comparison of Fairtrade, RA and Utz (a sustainability code of conduct for coffee, cocoa and tea) can be found in NBV (2011) and Ellis and Keane (2008), whereas SA 8000 is evaluated in more detail in Hiscox et al. (2008). The principal objectives of these standards are not centered around sustainability for bananas. There is no common opinion of what sustainability in the export banana trade means, and what good practice in banana production, and the banana value-chain as whole is considered to be. The combined market share of sustainably labeled (defined as RA, FLO and organic certified) bananas is just over 25%. Only in a few countries do sustainably labeled bananas have a high market share, such as in Switzerland (>50% Fairtrade) and the United Kingdom (>25% Fairtrade). It is undeniable that much good work on sustainability has been carried out by many actors. However, much work also remains to be done to consolidate and extend the concept of sustainability for the banana industry. In spite of certification, the use of agrochemicals still has a profound negative effect on workers, human populations (Barraza et al., 2011) and the environment. We believe that an objective should be that 100% of all export bananas are socially (“just”) and ecologically (“green”) sustainably and efficiently produced and traded. A first and very difficult step would be to agree on a generally accepted principle of banana sustainability.

THE WORLD BANANA FORUM

This was facilitated by the UN’s Food and Agriculture Organization. A World Banana Forum (WBF) was convened in December 2009 in Rome. At this meeting, representatives of most types of stakeholders in the business met, and three working groups were created, giving a broad coverage of sustainability issues:

Working Group 01 – Sustainable Production Systems and Environmental Impact;

Working Group 02 – Distribution of Value;

Working Group 03 – Labor Rights.

Meant as a permanent space for open dialogue on challenges facing the banana supply, its objective is to promote collaboration between stakeholders and achieve an industry-wide consensus of best practices. This is a process and so the anticipated objectives have not been fully worked out. Development and dissemination of concepts of good practices are goals, but the establishment of a standard is not yet a stated output of this excellent initiative.

WHY IS THERE NO SPECIFIC BANANA STANDARD?

Banana has no specialized standard. Rainforest Alliance originated as a standard specifically for bananas, but not as part of a broad-based international multi-stakeholder consultation. It has since become a well-known generic standard used on a range of commodities. Some standards have specific rules for banana; e.g. FLO has rules on certain agrochemicals, linked to its principle on environmental responsibility. Alternatively, the content and approach of SA8000 is such that it does not need to be crop specific, and it is used by banana companies.

Many major agricultural commodities have standards that address issues specific to that commodity (e.g. Roundtable for Sustainable Soy, Better Cotton Initiative, Utz Cocoa, etc.). One important and well-known commodity standard is the Roundtable for

Sustainable Palm Oil. RSPO has eight principles, defined by stakeholders including international NGOs. It has a secretariat dedicated to the evolution of the standard, managing certification processes, guiding national interpretation of the standard, data-recording and policing traceability of certified products etc. Stakeholders have not yet created a similar organization for banana.

AN AGENDA FOR THE FUTURE

The Need for a Comprehensive “Sustainable Banana Standard”.

There are visible sustainably labeled bananas, carrying the Fairtrade, organic and Rainforest labels; and we do not underestimate their ground-breaking work in improving the industry; but neither one of them can be comprehensive, and growth in their market share is lagging. As yet there is no shared understanding of different stakeholders of what comprehensive sustainability in bananas means throughout the chain.

The WBF is bringing actors together in a constructive way, which is unique and praiseworthy, and works towards this goal. It also tries to share learning and promote research and development. Nevertheless, we believe there is a need for a comprehensive sustainable banana standard (CSBS), similar to standards that have emerged for other commodities, such as palm oil, cocoa and soy. Such a comprehensive standard should take shape in a participatory process, in which industry partners, workers, NGO's, trade unions, and the research community should participate. The standard could become a new certifiable standard, but could also take the form of a body of knowledge that can serve as the product-specific backbone or reference of existing standards, just as ILO conventions serve as a basic structure for social sustainability. It would lead to a harmonization of sustainability standards, e.g. using the same prohibited pesticide lists, while still allowing certifications to be different and distinguish themselves. It should be dynamic and push the frontiers of sustainability, by incorporating the latest insights of research.

Sustainable bananas should not be a premium product, marketed separately in supermarkets at premium prices. On the contrary, all bananas should be sustainable and consumers buying bananas should be able to trust that they are buying a responsibly produced and traded product. Consumers expect retailers to take the lead in this. An authoritative commodity-specific banana reference will help retailers achieving this without having to make choices between labels and certificates. We expect that a generic sustainable banana standard will make it easy for retailers to demand compliance with the sustainable banana standard by their suppliers. It will save sustainability conscious retailers from having to set their own standards, which then interfere with the agricultural practices of producers supplying various retailers. Other stakeholders can require compliance to a sustainable banana standard, such as banks financing the trade. The standard will also fit well into the tendency for Rainforest, Utz and Fairtrade to converge, and strengthen their banana specificity and comprehensiveness (FLO, 2011).

A Banana Observatory

A sustainable banana should be affordable for the consumer, and be economically sustainable to produce for the producer. The “race to the bottom” putting excessive pressure on the prices should not be allowed to frustrate achieving greater sustainability. Fairtrade is currently the only standard that has a guaranteed minimum price level for sustainable production to be paid to the producer. The process for price setting and adjustment is cumbersome and has high transaction costs, because of the limited traded volume, and the

lack of specialization of the price setting organization. The transaction costs are even higher, because the compliance of the minimum price is monitored by a “flow of goods” reporting mechanism and inspection of contracts and invoices during audits.

A “banana observatory” could work to counteract the race to the bottom effectively in order to improve sustainability of the bulk of export production. The banana observatory would standardize good sustainable practice in the production countries, and publish a “reference price for sustainable production”, based on the comprehensive sustainable banana standard. Payment of this price to the producer does not need to be enforced. It would be sufficient that buyers require compliance of their suppliers. Non-compliance will lead to complaining producers and draw the attention of interest groups.

Research Topics Relevant to the a Sustainable Export Banana Industry

The export banana industry is a mixture of small, medium sized and large producers. Research efforts should be devoted to applied sustainability research, the results of which should be accessible to all actors. A sustainability forum can also be a forum for the industry as a whole to come together to agree on priority topics for research and also to set up a mechanism for funding. A transparent joint funding process might encourage contributions from the international public sector and parts of the value-chain that do not normally fund research, including retailers, who are now the dominant actors. Grouped by theme, topics might include:

1. Standards and certifications. A better evaluation of the current sustainability situation in the sector, and impact measurement of current standards and certification systems. How extensively are they used? Are they effective? Do they provide adequate guarantees?

2. Disease management. The effective control of BLS disease, with new strategies and agents (such as antagonistic microbiological agents), is an ever-more serious and costly issue, which requires a concerted approach leading to short-term practical solutions. The effective prevention and management of Fusarium wilt tropical race 4 (TR4). TR4 not only threatens the export industry but also the livelihoods of millions of people depending on plantains as a staple food. Imparting resistance to diseases by using resistant genes from within the banana genome and gaining more public acceptance of cisgenesis.

3. Organic farming principles and integrated farming. The use of principles from organic agriculture in the conventional production, for instance the use of compost, fermented products (“biols”) and microbiological adjuvants improving the uptake of minerals and the resistance to pathogens. There is a need to evaluate efficacy and a need for fundamental understanding of the mechanisms by which these methods work. Develop integrated farming, using energy and nutrients produced on the farm efficiently, reducing inputs, using organic waste or other renewable as a source of energy (for instance to make biogas for driving irrigation pumps in organic production), and recycling nutrients, maximizing their uptake by adjuvant microorganisms. Developing strategies for reduced pesticide use. The development of a methodology for a pesticide footprint could be a part of such a strategy (Müller et al., 2010). The pesticide footprint would make visible the total pesticide use per unit of traded product and provide a different way of viewing pesticides than measuring minimum residue levels in fruit. It would also be very interesting to map the relation between the quality standards and the pesticide footprint and to verify if relaxing e.g. the cosmetic requirements of consumers would have a favorable influence on pesticide use. It would also be insightful to see if a relation could be established between water footprint and pesticide footprint.

4. Climate change and energy use. Understanding the impact of climate change, adaptation to it and mitigation of its effects, affecting not just smallholders, but also plantations. Develop energy-efficient transport and packaging systems, e.g. returnable crates, saving much cardboard and resulting waste (even though recyclable).

5. Economics and marketing. Making banana production more economically viable, increasing the interest to invest in sustainable production, by developing techniques to manage the produced volume better in function of market demand. This could be done by means of precision agriculture, treating bananas as an annual crop. More needs to be learned about how volumes can be planned more precisely in function of market demand. Commercial varietal innovation. The monopoly of the Cavendish banana is perfectly understandable, as it allows companies to use their investments in reefer ships and ripening facilities in an efficient way. With the shift to container transport, there could be more room for other varieties with interesting taste experiences or nutritional value and disease resistance or alternative applications (fiber, ornamentals) to be commercially developed. This would be particularly interesting for smaller producers, who could strengthen their position in the supply chain.

ACKNOWLEDGEMENTS

The author wishes to thank ISHS/ProMusa, Bioversity International and EMBRAPA for the opportunity to present this paper. Thanks also to all colleagues and partners of AgroFair in the Netherlands and Latin America for contributing their experience of many years.

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Tables

Table 1. Comparison of sustainability standards relevant to export bananas.

SA 8000 (9 criteria)	Rainforest Alliance (10 principles)	European Organic Standard (3 principles for crop production)	FLO Fairtrade (5 key objectives)	GLOBALGAP (IFA v.4) (12 categories)	GLOBALGAP GRASP module (11 control points)	Roundtable for Sustainable Palm Oil (8 principles)
No inappropriate child labour; No forced labour; A safe and healthy workplace, no hazardous work; Freedom of association and the right to collective bargaining; No discrimination (e.g. in hiring and workplace practices); Disciplinary practices, all workers treated with dignity and respect; Working hours that comply with laws and standards; Remuneration, a living wage; Management systems in place that support compliance with SA 8000.	A social and environmental management system; Ecosystem conservation; Wildlife protection; Water conservation; Fair treatment and good working conditions for workers; Occupational health and safety; Community relations; Integrated crop management; Soil management and conservation; Integrated waste management.	Appropriate design and management of biological processes based on ecological systems using natural resources. Restriction of the use of external inputs. In exceptional cases where external inputs must be used then strict limitation of the use of chemically synthesized products.	Producers receive prices that cover costs of sustainable production; Additional premium paid for projects to enhance social, economic and environmental development; Pre-financing for producers who require it; Long-term trading partnerships and greater producer control over the trading process; Conditions of production and trade of all Fairtrade certified products are socially, economically fair and environmentally responsible.	Site (field/production unit) history and site management; Record keeping and internal self-assessment/internal inspection; Workers health, safety and welfare; Subcontractors; Waste and pollution management, recycling and re-use; Environment and conservation; Complaints management; Product recall / withdrawal procedure; Food defense (not applicable for flowers and ornamentals); Communication on GLOBALGAP status; Logo use; Traceability and segregation.	Representation of staff to management; Worker grievance procedure; Self-declaration on good social practice and human rights; Knowledge about national labour regulations; Proper employment contracts; Regular payment of salaries; Pay conforms to regulations and agreements; Child employment Appropriate/legal; Proper recording of time worked; Work practices (as per agreements and laws).	Commitment to transparency; Compliance with local / international laws; Commitment to long-term economic and financial viability; Use of good agricultural practices; Environmental responsibility and conservation of natural resources and biodiversity; Responsible consideration of employees, individuals and communities affected by growers and mills; Responsible development of new plantings; Commitment to continuous improvement in key areas of activity.

