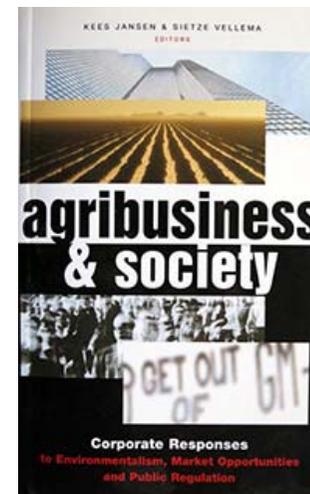


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In: Jansen, K. and S. Vellema (2004), *Agribusiness and Society: Corporate Responses to Environmentalism, market opportunities and public regulation*. London: Zed Books, pp. 145-175.

SEVEN | Greening bananas and institutionalizing environmentalism: self-regulation by fruit corporations

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§ Self-regulation by agribusiness is increasingly seen as the *piece de resistance* for realizing a true shift to sustainable agriculture. Self-regulation means that private sector organizations themselves define the objectives, procedures, time frames, instruments and monitoring programmes for the improvement of environmental performance. Many policy-makers at the recent World Summit on Sustainable Development in Johannesburg in 2002 viewed self-regulation as the principal win-win solution for sustainable development, thus provoking disapproval from civil society organizations and independent scientists. In this view, self-regulation fits well into the contemporary policy discourses of deregulation and privatization since it can perfectly substitute mandatory or command-and-control regulation by the state. In contrast to the latter, self-regulation is supposed to be more flexible and efficient to improve environmental performance because it uses the advanced knowledge, informational advantages and entrepreneurial dynamism of the industry, avoids putting constraints on competitiveness, and creates a sense of mutual responsibility instead of perpetuating corporate self-interest (e.g. Bennett, 1999; Gouldson and Murphy, 1998). Approaches of environmental regulation that move away from command-and-control regulation – with its emphasis on monitoring, data analysis and police action – are viewed as particularly relevant for developing countries as these approaches are supposedly more cost-effective, feasible and less time-consuming (World Bank, 2000). Postmodernist perspectives consider self-regulation as the answer to the increased complexities arising from globalization processes, and ‘the announcement of the death of modern mandatory regulation’ (Middun, 1999).

These views are contested by a second perspective that questions to what extent profit-seeking companies will be able or willing to improve their environmental performance if externally imposed restrictions are

lacking. This perspective supposes that, in general, self-regulation is a form of 'greenwash', i.e. disinformation to present an environmentally responsible public image (Bruno, 2002; Greer and Bruno, 1996; Korten, 1999). A core problem of self-regulation is the lack of accountability. The issue these critics put forward is how to bring corporate behaviour under democratic control at the national and international level.

Quite likely the discussion between these contrasting perspectives will become even more heated over the next years. But is self-regulation greenwash by definition or is it possible to discern different forms of self-regulation and environmental performance of corporations thereby judging some better than others? An equally relevant question is whether the emphasis on self-regulation is justified in the context of a weak state – as present in many developing countries – or whether development efforts should instead focus again on improving the regulatory capacity of the state. The stalemate in the discussion between devotees of self-regulation and fervent corporation critics cannot be solved without reconsidering the relationships between self-regulation by industry and external pressures, for example by state regulation or civil society organizations. To find answers to these intriguing issues we need more empirical research into concrete cases of self-regulation.

One possible relevant case for deepening this discussion is the efforts of the banana companies Chiquita and Dole to bring a certified green banana to the market. This chapter compares the process of certification, auditing and restructuring of banana production in Chiquita and Dole's plantations in Honduras.¹ It particularly focuses on the interaction between technological change and the nature of the chosen alliances with certification agencies. It addresses the following questions. Which changes in environmental performance, internal organization, production systems and external linkages have been brought about through self-regulation by Chiquita and Dole? Why did Chiquita and Dole opt for different forms of environmental labelling and did this lead to diverse effects? What are the limitations of these forms of self-regulation and how do they relate to mandatory regulation?

IMAGES AND INTERNATIONAL MARKETS

The banana sector has been the subject of fierce environmentalist criticism with regard to massive pesticide intoxication (Jiménez, 1995; Wheat, 1996) and deforestation (Lewis, 1992), as well as of social criticism. In the early 1990s, over 16,000 banana labourers and ex-labourers of twelve different countries became involved in a class

action lawsuit filed in the USA, arguing that exposure to the nematicide DBCP in the late 1970s had sterilized them (see Rosenthal, ch. 8). The International Water Tribunal in 1992 denounced Dole's pesticide contamination in Costa Rica. The activist journal *Multinational Monitor* listed Dole in its 1994 list of 'Ten Worst Corporations' and Chiquita in its 1995 selection. The *Cincinnati Enquirer* published in 1998 a series of controversial articles questioning Chiquita's business practices (Gallagher and McWhirter, 1998), and these were succeeded by a series of legal battles with the company. Several websites critically follow the comings and goings of the banana corporations.² The call for a boycott has been in the air for a long time. In the midst of these activist campaigns, the banana companies intensified their efforts to create an image of a 'nutritious, wholesome, and good tasting' banana. Certifying their bananas as environmentally-friendly products is seen as a major contribution to this image. Environmental certificates encode in one message to the consumer their good intentions, strict morality, good practices, transparency and submission to independent control. Visitors to Chiquita and Dole's internet sites will certainly come across their claims of environmental responsibility.³

The market arena of internationally traded dessert bananas is dominated by three very large companies (Dole, Chiquita, Del Monte), which account for 65-70 per cent of world exports, and two large companies (Noboa, Fyffes), which control another 16-17 per cent (Andreatta, 1997; Kastelee, 1998). An enormous expansion of production area without the expected growth of demand led to overproduction in the 1990s.⁴ Furthermore, since 1993 a European trade regime intended to protect EU producers (Canary Islands, Martinique and Guadeloupe) and banana-producing ACP countries (the African, Caribbean and Pacific Group of States which developed a partnership with the European Union) with a complex quota system. In this world-market banana crisis, market prices tended to fall below production costs (Chambron, 1999; Kastelee, 1998).⁵ The companies responded to the fall in prices with major restructuring of their organizations. There was a general pressure to eliminate workers' social guarantees and reduce salaries, non-profitable plantations were abandoned, and contracts with contract farmers were renegotiated or terminated. Moreover, tax reductions were negotiated in various exporting countries.

To some extent Chiquita and Dole responded differently to the crisis and the new EU trade regime. Chiquita reacted late to the EU trade regime, possibly anticipating that the regime would not hold very long, but also because of financial limitations. Once the regime was installed

Chiquita fiercely opposed it. The close links between Chiquita and US politicians and administrators were a major force behind US complaints to the WTO and the EU-USA banana trade conflict, which lasted until spring 2001. Dole, instead, approached the European market more pragmatically. It invested successfully in banana production and trade in the Canary Islands and former European colonies, and developed strategic joint ventures with European distribution networks, thus increasing access to banana licences in Europe (Kastele, 1998). It also made agreements with Fyffes in order to use other channels to locate its bananas. Dole effectively combined sourcing of dollar bananas, EU bananas and ACP bananas to obtain the EU banana quota. This difference in strategy contributed to an increase of Dole's market share in Europe at the cost of Chiquita's share, particularly in Germany.⁶

In the established banana markets of the USA and the EU, successful 'branding' is seen as a prerequisite for success in the struggle over market shares. For Chiquita, its well-known brand is its main asset. Furthermore, a brand that links 'high-quality' and 'wholesome food' with 'environmental-friendliness' may be instrumental in counteracting the image of the banana as a symbol of environmentally and socially unfriendly monocultures as projected in activist campaigns. Chiquita was the first to seek labelling by joining the ECO-OK green label initiative of the Rainforest Alliance, a US-based environmental movement. Dole followed and expanded its ISO 9000 quality system to the field of environment by registering for the ISO 14001 label, designed by the International Standard Organization (ISO). As will be explained below, seeking certification and green labels was not simply a social construction of images. It led to, and could only be a result of, organizational change as well as innovations in production methods within the firms.

HONDURAN PRESSURE TO IMPROVE ENVIRONMENTAL PERFORMANCE

The international critique of banana production has its roots in a long history of local struggles between workers, nationalist social groups and the banana companies. Honduran scholars have fiercely criticized the multinational fruit companies for their involvement in the suppression of labour unions (Argueta, 1992; Barahona, 1994; MacCameron, 1983), in dominating national political projects (Flores, 1979), in their control of national territory and natural resources (Del-Cid, 1976; Murga Frassinetti, 1978), and in sabotaging or subsuming alternative projects of co-operative production (Posas, 1985, 1992; Slutzky and Alonso, 1980).⁷

On these waves of an anti-imperialist critique of foreign-owned plantation production rides most of the more recent public outrage following pesticide accidents in banana production. About half of all pesticide imports in Honduras are used in banana production (Jansen, 2002). In the early 1990s, Dole was accused of having continued the use of the nematicide DBCP until the late 1970s, even while the management knew that this pesticide could cause infertility. Heated public discussions followed when workers and ex-workers pursued litigation in United States' courts. In 1992, Dole also made the headlines when impressive photographs appeared in Honduran newspapers showing rivers filled with dead fish, a consequence of pollution with the insecticides ethoprophos and endosulfan near a pineapple plantation.

As a response to such environmentalist critique, the fruit companies participated in the 'Rational and Safe Use' programmes as designed by the pesticide industry. Moreover, they argued that they had always followed the concept of rational pesticide use: given the high costs of pesticide applications they would never apply pesticides unnecessarily. Furthermore, the companies contended they had been applying Integrated Pest Management, including biological control and pest monitoring, for several decades. For several years, 'Safe Use' was the key phrase. Possible flaws in the pesticide use system were attributed to the ignorance of labourers who did not practise what they had learned.

Despite these claims of 'Rational and Safe Use' of pesticides, the social pressure for governmental action against existing pesticide practices increased. Responding to this pressure several state agencies joined to initiate environmental audits of Dole's operations by an Interinstitutional Committee under leadership of CESCOCO (Centro de Estudios y Control de Contaminantes, Tegucigalpa).⁸ The immediate reason for sending auditing teams to Dole's plantations was the above-mentioned massive fish mortality. Eight audits were carried out between 1992 and 1998. Initially, Dole was seen as very unco-operative. For example, it did not recognize the laboratory analyses of water samples carried out by CESCOCO (Munguia, 1995). However, involved officials found that its attitude changed after the first audit. Since then, the auditing teams have been well received and most visits lasted several days. The main recommendations of the environmental audits covered a wide range of issues, including unsuitable or broken spraying equipment, cholinesterase monitoring of all plantation labourers/ the enormous amount of plastic waste in and around the plantations and packing stations, the mixing of pesticides at the airports and the pesticide contamination of the drainage canals, lack of protective clothing as well as the lack of

control to ensure that labourers wear their protective clothing, lack of adequate infrastructure such as separate canteens, showers and equipped warehouses, lack of monitoring systems of pesticide residues, training of labourers, and problems with aerial spraying and the contamination of human beings in the plantations.

Initially, Dole did not implement many recommendations and justified delay or lack of implementation by referring to the high costs they could not bear at a time of low banana prices. Nevertheless, some changes were implemented, such as more training of labourers, better availability of protective clothing and control of their use, the construction of canteens, better control of spraying equipment, collection of plastic waste and washing of clothes by the company. After the first controversies, the technicians of Dole and the various state agencies were able to collaborate rather well and at least on one occasion the technicians publicly defended Dole against specific accusations of pesticide contamination. Nevertheless, several voices within the Interinstitutional Committee wanted to discuss a restructuring of the audit process because substantial change failed to appear. However, at the same time (in 1997), the situation altered dramatically after Dole announced its plans to obtain the ISO 14001 environmental certification. From then onwards the state officials felt that Dole really wanted them to visit its plantations and to provide comments on its environmental behaviour.

In the early 1990s, state officials also visited Chiquita's plantations after complaints about its pesticide practices. The identified problems related to the use of the herbicide paraquat, applied with backpack sprayers, and the aerial spraying of mancozeb fungicides while labourers were working in the plantations. More serious environmental audits of Chiquita's plantations did not start until 1995. Many of the environmental problems corresponded to Dole's situation and, likewise, the type of recommendations in the audit reports. But in contrast to the process at Dole, officials felt that Chiquita had worked hard from the start to change its whole system of pesticide management. Although Chiquita had embarked on the auditing process much later, it soon 'seemed to overtake' Dole according to some state officials. One reason was that Chiquita was already involved in a process of environmental certification when the governmental auditing process started.

TWO ENVIRONMENTAL CERTIFICATES

Chiquita's subsidiary in Costa Rica was the first to seek certification and for this purpose it allied with the Rainforest Alliance. This organ-

ization, with experience in certifying tropical hardwood, initiated its ECO-OK Banana Project in 1991. This project was particularly aimed at halting deforestation and conserving biodiversity. The Rainforest Alliance intended to bridge the gulf between environmentalists and industry and to build trust, transparency, involvement and consensus, at a time when environmentalist and social movements mainly opposed banana corporations and were thinking more in terms of boycotts (see Wille, 1997; <www.rainforest-alliance.org>). An anti-boycott position characterized the Rainforest Alliance.

With a group of expert volunteers, the ECO-OK Project developed a set of standards for banana production which were, according to the Rainforest Alliance, 'sufficiently strict to really make a difference, but at the same time practical and realistic' (Wille, 1997: 45). These standards included, among others, the prohibition of certain pesticides, a prohibition against cutting more forest for establishing new plantations, the obligation to provide training as well as protective clothing to workers, the obligation to protect rivers with native vegetation, and adequate management of waste. Once banana producers comply with these standards they can opt for an ECO-OK certificate. A firm that seeks ECO-OK certification has to collaborate with a non-governmental organization from the same country. In Honduras, Chiquita carries out joint programmes with the environmentalist group Fundación Hector Rodrigo Pastor Fasquelle, although, in the first half of 2000, the certification procedure was still being carried out by the Rainforest Alliance office in Costa Rica. With the Rainforest Alliance, the company developed its own evaluation and monitoring system. This system gives marks to different aspects of the production process and calculates a final score for a whole plantation. Above a specific score that plantation is eligible for certification.

The ECO-OK project was criticized for being 'too cosy with the companies it certifies' and the certification criteria for being 'too lax' and 'too narrowly limited to technical environmental criteria', excluding the welfare interests of banana workers (Wheat, 1996). In the mid-1990s, the name of the project was changed to the Better Banana Project (BBP). Since the regulation of organic agriculture in the European Union restricts the use of the notion of 'eco', these non-organic bananas could not be exported to the European Union with 'eco' on their label (CEC, 1991).¹⁰ The name change was accompanied by a reconsideration of the standards: the Better Banana Project included three social clauses in addition to the earlier six environmental clauses.¹¹

Several years later than Chiquita, Dole pursued an environmental

certificate and developed an ISO 14001 environmental management system for all its plantations worldwide. The ISO 14001 standard is an outcome of the 1992 Earth Summit in Rio de Janeiro and was released in 1996 by the International Organization for Standardization (ISO). Companies that apply for an ISO 14001 certification must identify those aspects of their operation that could have an environmental impact, set goals and targets for environmental improvement, define and ensure the participation of each employee in implementing the environmental policy, and monitor the effectiveness of their environmental operations and continually look for ways to improve them. ISO 14001 does not state specific environmental performance criteria. Another major characteristic of this environmental management system is that improvements are driven from within the organization, rather than by external forces such as regulatory agencies or environmental movements. Environmental audits focus on the compliance with environmental policy and objectives and targets defined by the management itself. Ranking criteria to define priority aspects in an organization's environmental policy include, interestingly, legal compliance and concern to interest groups and other stakeholders (Horsley, n.d.). The company SGS ICS carries out audits and certification along ISO guidelines and certified a Dole plantation in Costa Rica as the first banana export company worldwide to ISO 14001 in July 1998.¹² The ISO 14001 standard builds upon the ISO 9000 model of Total Quality Management, a programme that Dole had started several years earlier. Dole's Department of Industrial Security and Environment was assigned to implement the ISO 14001 environmental management system. A huge documentation system was set up to monitor each employee, from field labourer to general manager, on the followed training sessions and other ISO 14001-related activities. The complete Honduran legislation that has any significance for banana production and trade, water management, pesticide use, labour issues and so on, was put in a database, directly accessible via Dole's intranet for all plantation managers.

In both cases of environmental certification, the companies not only had to establish new relationships with external organizations but also within their own organizations. In various interviews it was explained how difficult it was to 'to convince our own people' at all levels within the firm. Initially, Dole faced opposition from the labour unions in implementing ISO 14001; they regarded it as an extension of the ISO 9000 quality management programme, thus creating work and exertion for the labourers without any increase in wage.

[Dole] wanted ISO due to market demand ... Maybe it is now their politics to say that labour conditions should be the same as in developed countries, but this, of course, involves costs ... We live from the reality and the practical conditions. For us the policy of the company does not count but what it shows in practice. But we have seen that more things are done [to protect the worker] with ISO than in the past. Now it is more easy to negotiate. We now give them a taste of their own medicine. We say 'that is against the rules of ISO'. In last instance we even may make an accusation. (union leader of one of Dole's plantations)

Furthermore, both Dole and Chiquita intend to draw their contract growers into the certification schemes. However, this requires large investments while there is no premium price on certified bananas. Dole finances ISO required investments, thus enlarging the debt of contract growers to the buying corporation. Chiquita was at the time of data collection not in a financial position to provide such credit to Honduran contract growers.¹³

THE SCOPE FOR CHANGING PESTICIDE USE

Before further characterizing the differences between these two strategies for seeking environmental certification, they should first be related to changes in agricultural technologies and practices. The concept 'politics of technology innovation', as developed in Chapter I, encourages researchers to go beyond earlier social studies of fruit multinationals. Most sociological treatises on banana companies debated issues of labour and labour control on banana plantations, neo-colonialism and political power exerted by foreign capital groups, as well as foreign control overland and the regional economy in the banana enclaves, while they paid much less attention to the politics of technology use and technology development within plantations.¹⁴ Complementary to conventional approaches investigating capital-labour relations and the insertion of transnationals into globalized food regimes, more attention could be given to understanding variation between firms in their interpretation of technological options and strategizing for technology innovation.

Pesticide management is probably the most controversial environmental issue for the banana companies. Banana production units have to understand, consider, work with and combine or resist the conflicting and often incompatible demands and characteristics of yields, pests, pesticide producers, pesticides, biological control, population dynamics of pests and natural enemies, workers, environmental movements, con-

sumers, retailers/buyers, soils, climate, pesticide registrars, certifying consultants, GPS flight-control systems, local residents, laws and so on. Although the description below may read like a technical treatise, it is central to understanding how the companies dealt with different powers. Successively, the discussion deals with the dynamics of Sigatoka control (the major fungus disease), nematode control (which involves the most toxic pesticides), weed control and, finally, the protection of the fruit itself against insects and post-harvest fungi attacks. This section intends to provide more insight into how companies think about the risks of changing conventional control methods of major diseases and pests.

Pest control is a major cost factor in banana production. Consequently, reducing and rationalizing pesticide use have received considerable attention from the companies. Initially, improvement in pesticide management was primarily a sort of end-of-pipe technology. Both companies improved transport and storage of pesticides and introduced closed systems to fill the spray planes with pesticides. They introduced new spraying equipment, better control over the proper functioning of equipment, more protective clothing, new pesticide warehouses, waste water treatment, new constructions that allow workers to take showers and to eat in special canteens, the washing of clothes on the plantations and not at home, and so on. Organizational change focused on the training of workers in the safe use of agro-chemicals. However, these changes hardly addressed the conventional planning of pesticide use in banana cultivation, and the continuous use of pesticides, questioned by environmental and solidarity movements, has kept fuelling controversy. Changes in cultivation practices, choice of pesticides and choice of pest control method turned out to be much more difficult to realize.

Sigatoka

Pictures of aerial pesticide spraying while labourers work in the plantations or while a flagman is running away to avoid being drenched with pesticides have been widely distributed and have left an impression of irresponsible business behaviour. Aerial spraying is used principally to control Black Sigatoka, a leaf spot disease caused by the fungus *Mycosphaerella fijiensis*, and accounts for the most important part of all expenditure on crop protection; the costs for Sigatoka control may well be responsible for 25 per cent of the final retail price in importing countries (Ploetz, 1999), and is about US \$1,000 per hectare in Honduras.¹⁵ Black Sigatoka was observed for the first time in Honduras in 1972 (Gowen, 1995) and became epidemic in 1973 (Stover, 1990). It turned out to be a difficult disease to control. Between 1972 and 1981 the number of aerial

applications per year of Chiquita's plantations increased from 15.1 to 44 and the related costs increased seventeenfold (Alvarez, 1983). This weekly or bi-weekly 'Yellow Rain' has hampered the construction of an environmentally friendly image for banana cultivation.

An important characteristic of the fungus is its remarkable capacity to develop resistance to systemic fungicides. This makes resistance management a crucial activity. Systemic fungicides are absorbed by the plant and remain effective for a longer period, while protectant fungicides (such as mancozeb and chlorothalonil) have to make contact with the fungus outside the plant. Systemic fungicides therefore tend to control the disease more effectively. Benomyl (Benlate®) was the first systemic product and proved very effective, but after a few years of frequent and wide applications resistance appeared (Stover, 1990). Tridemorph (Calixin®) and, after 1984, triazoles (such as tebuconazole and propiconazole or Tilt®) became important alternatives. In 1992 and 1993, the fruit companies almost lost control of the Black Sigatoka epidemic; national fungicides imports doubled and the number of applications increased. Part of the solution was found in a new system of defoliation, that is manually cutting away parts of the infected leaves in order to reduce infection. Higher frequencies of application with systemics was not considered a sound solution since it would lead to more resistance. The arrival of azoxystrobin (Bankit®) in 1996, one of the first strobilurins, a new class of supposedly more environmentally-friendly fungicides, helped to avoid an increase in the number of applications. Crucial for resistance management, and for keeping the number of aerial sprays low, is the design of complex application sequences with different fungicides. The companies alternated between different systemics and protectants (in the rainy season often mixed with oil). The elimination of one fungicide, due to unwanted environmental effects of that fungicide, would complicate the design of spraying schemes and probably increase the number of sprays.

The elimination of chlorothalonil, currently the fungicide in the spraying schemes that is most questioned, is approached differently by Chiquita and Dole. Unlike Dole, Chiquita has dropped the use of chlorothalonil, even though Chiquita's technicians praised its effectiveness. Chiquita yielded to the environmentalist critique that chlorothalonil is highly toxic to fish and aquatic invertebrates.¹⁶ Chiquita has held to its decision to comply with the Better Banana Project criteria, and, as one involved technician suggested, to evade further critiques on their pesticide use: 'There are some small fish in the drainage canals that die when chlorothalonil is sprayed. If the environmentalists see

[these dying fish] they directly say that all pesticides cause this fish death and that spraying should stop. They cannot distinguish the different pesticides. It is a corporate decision not to use chlorothalonil.' Dole has continued the use of chlorothalonil, at least for the moment. One defence line presented to me was that they observed fish in the ditches in their plantations, which proved that these were sufficiently protected against contamination.

Both the type of pesticide and the method of application are highly controversial. A major problem is that of organizing frequent aerial applications without drenching workers in the plantations and contaminating adjacent rivers and residential areas. The companies are moving the people living in camps within the plantations to nearby villages or cities.¹⁷ To increase the precision of spraying, the companies introduced GPS in their aeroplanes. This allowed Dole to switch to nocturnal spraying while Chiquita developed a form of alternate spraying by dividing its plantations into two sections and spraying only the part where no labourers are working.

These solutions to problems in crop protection are another example of how Chiquita and Dole try to solve problems differently. With its solution, Chiquita faces the new problem of how to inform all workers which specific section is being sprayed. Decisions to spray are not always planned a long time in advance. The mistakes that easily occur may arouse criticism that the company makes errors with its new spraying practice. Dole's technological solution faced other problems. First, Dole had to convince the aviation authorities to issue a permit for nocturnal spraying. Then, the people of nearby communities protested because they were convinced that Dole was spraying illegal products; nocturnal activities suggested to them that Dole had something to hide. In the context of its local history, Dole cannot easily overcome such suspicion. A major technical problem is the larger risks pilots face while spraying at night. They fly close over the crop and any unobserved difference in field level or a cable crossing the field may have fatal consequences. Finally, at night supervisors find it more difficult to observe approaching rain. If rain falls just after spraying the control effect of the chemical may be nil and a second spraying may be required. This would increase the number of applications. Chiquita's and Dole's different choices of aerial spraying systems are based on different assessments of risks and advantages, and pose new problems for both companies.

Nematicides

A second contentious issue is the application of highly toxic nematicides that expose workers to major health risks. Nematicides control nematode infestations in the soil and generally are highly hazardous as they belong to the carbamates or organophosphates, two controversial groups of pesticides.¹⁸ Chiquita did not apply nematicides in its plantations in the Sula Valley, while Dole did so on the plantations of its contract growers. Chiquita held the view that the level of nematode infestation did not justify nematicide application, claiming that the use of nematicide did not lead to statistical differences in yield even though it had an effect on the number of nematodes. According to Dole technicians, losses were considerable: in the order of 15-10 per cent. Nematicides were applied two to three times per year and different types of nematicides were alternated.¹⁹ An independent pest control scientist told me that over the last ten years *Pratylenchus* nematodes have increasingly caused a certain degree of damage, but that the specific type of damage (loss of weight of the bunch) has not been recognized by Chiquita technicians who have stuck to their old research data. Chiquita technicians stated that nematicide spraying in the Sula Valley is unnecessary; but their discourse seems to have shifted. They no longer argue that research has indicated that nematicide spraying does not increase yields.²⁰ Instead, they use an environmentalist narrative for explaining why they do not use nematicides in Honduras: 'We do not control nematodes [chemically]. We live together (*convivir*) with the nematodes and have therefore a margin of loss. Nematicides are very toxic and culturally we are not very gifted with obedience' (manager, Chiquita). The manager here refers to the idea that, in daily plantation practice, people tend not to follow the guidelines for safe pesticide applications. It is suggested that Chiquita does not apply nematicides merely because of environmental and health reasons and therefore accepts smaller margins. This was possibly a socially desirable comment, but environmentalist considerations may indeed have played a role. Even though nematicide application may not have been cost-effective in the past, it seems to be so nowadays.²¹ Therefore, it is quite likely that the current decision not to apply nematicides is informed by environmentalist criteria. Dole faces the environmentalist critique of its use of nematicides and is urgently seeking alternatives. It currently experiments with a broad-spectrum biological nematicide (DiTera®) as a possible alternative to the highly questioned organophosphates and carbamates (Castro and Gonzalez, 1997).²²

Weed control

Weed control is second in terms of number of applications: about six to eight applications per year in an established plantation with products

such as paraquat and glyphosate (Roundup®). Many of the occupational accidents registered occur with spraying herbicides. Recently, Chiquita cancelled the use of paraquat. The Better Banana Project standards prohibit the use of pesticides on the so-called 'dirty dozen' list. Paraquat, a preferred herbicide for weed control in banana, appears on the extended list because of the health risks of occupational paraquat exposure (Wendel de Joode et al., 1996). At the time of field work, Chiquita had replaced paraquat with diquat, a herbicide of the same chemical group. Diquat was not a targeted pesticide in anti-pesticide campaigns. However, diquat has several analogous toxicological effects, although a somewhat lower acute toxicity than paraquat and a similar chronic toxicity (Morgan, 1982; Extoxnet, 1996). In its public relations activities, Chiquita referred to its ban on paraquat use. Dole did not consider the elimination of paraquat from its weed control programme. Dole technicians stated that paraquat is cost-effective, is classified only as moderately hazardous, and is not a major problem if applied safely.

Other diseases and pests

Two last controversial subjects concern post-harvest treatments with thiabendazole (Mertect®) and imazalil, to control post-harvest diseases such as fruit spot and crown rot, and insecticide use for bunch protection. The companies have sought ways to improve working conditions in post-harvest treatment with fungicides. As a main improvement bananas are now sprayed in closed spraying chambers. Chiquita furthermore introduced electrostatic application which reduces the amount of required fungicide, but Dole states that it researched this option and but had to conclude that it does not function well.

Insecticide use is now a relatively minor problem in Honduras but still arouses discussion. Spraying of chemicals to control insects has been abandoned since the early 1970s, when the banana industry realized that large-scale calendar spraying led to more pests, more applications, increased costs in banana cultivation and held down profits (Stephens, 1984). Nowadays, spraying against insects only takes place in delimited areas in case of high levels of infestation. Chemical control of fruit insects takes place by covering the ripening bunch with an impregnated polyethylene bag. Recently, Dole stopped impregnating these bags with insecticides and now ties a plastic tape with a relatively low dose of chlorpyrifos around the stalk of the inflorescence. Alternatives for chlorpyrifos are being sought, as it is possible that the United States Environmental Protection Agency (EPA) will lower tolerance levels and restrict its use in the USA in the near future.²³

Different pest control systems

The nature of pest and diseases has changed considerably over time. This has led not only to new forms of crop protection but has to a large extent determined the history of banana production in Honduras (Ellis, 1983; Stover, 1990; Soluri, 1998).²⁴ Uncertainties about pests, diseases and chemical control options continuously create diversity in responses. Dole and Chiquita may interpret technical problems in contrasting ways, as we have seen, for example, with their approaches to nematode control. They also choose different technical control solutions. Other issues, such as Sigatoka control, however, seem to be less poly-interpretable. The frequent and alternating application of fungicides is, for example, presented as a sort of 'natural necessity'. Considering the characteristics of Black Sigatoka and other pests and diseases, it is difficult, at this moment, to imagine a response to pest and diseases in banana plantations other than chemical spraying.²⁵ The cultural and organizational adoption of environmentalism has not affected the basic thinking about spraying. It has, nevertheless, affected some of the spraying activities.

Focusing on these spraying activities, it follows from the description above that Chiquita and Dole make different choices. Chiquita was influenced more by the popular views on pesticides. It took paraquat and chlorothalonil off its pesticide list and decided not to use nematicides, even though regulations in Honduras and importing countries approved the use of these products. Dole did not let itself be influenced by such populist demands and argued that it follows all official regulations and best scientific practice. In contrast to Chiquita, Dole seeks changes through large investments in agricultural research. In its view it is the latter that should drive technological innovations, not 'uninformed environmentalist opinions'. The question that emerges is to what extent is self-regulation by these banana companies able to bring about the requested but difficult transformation of banana production. The following sections will discuss the nature and limitations of these forms of self-regulation.

FORMS OF SELF-REGULATION

Evolution of environmental strategies

The evolution of Chiquita's and Dole's environmental strategies over the past decade have roughly coincided with the different phases in the greening of industry distinguished elsewhere (here I follow Simons et al., 2000). In the first phase, Chiquita and Dole reacted defensively or even with hostility to national criticism of pesticide accidents, such as the

DBCP affair, the chemical spills and massive fish deaths, accidents with paraquat sprayers and people drowned by aerial pesticide spraying.

In the second phase, technological innovations were introduced to reduce environmental and worker contamination with pesticides. Responsibility for environmental performance within the firms grew and to win back the public's confidence the companies little by little collaborated with environmental auditing by the Honduran government. Most technological improvements in this phase did not go beyond end-of-pipe technologies. Solutions were sought for the most pressing contamination of workers (safe spraying equipment, protective clothing and so on) and the environment (waste water run off on airports). Most recommendations made by the state's auditing team remained within the discourse of Rational and Safe Use of pesticides. In this phase, recommendations were regularly rejected as too costly. Technological innovations hardly touched upon the system of banana cultivation itself; the choice of specific pesticides was not really questioned. The companies were still able to shift responsibility for accidents and death to the workers, that is to the people's 'cultural ignorance' about risks. This is in line with Beck's observation (1992: 42) that management can issue strict safety regulations, knowing they will be unenforceable, and insist that they be obeyed.

In the third phase the companies went beyond prevention programmes and Safe Use approaches and introduced organizational and process changes. More actors became involved; internally, it was no longer a selected group of environment managers or doctors but also researchers, production managers, workers at many levels and top management. Externally, the companies had to become more transparent to, and collaborate with, certifying agencies, auditors, consumers and other stakeholders. Chiquita wrote its environment charter and code of conduct, and Dole wrote its environmental policy statement. Formally, the companies now assume responsibility for all accidents, independent of the direct cause. Investments in environmental management systems were made to improve priority setting, monitoring and reporting. The general change to a proactive environmental strategy was possible because environmental branding was identified as a strategic asset, particularly to gain, or at least maintain, market share in Europe.

Different ways Chiquita and Dole institutionalized environmentalism

Apart from the general similarities in the evolution of environmental strategies, some remarkable differences can be identified in

the way Chiquita and Dole institutionalized environmentalism. I will conceptualize Chiquita's environmentalism as a populist-entrepreneurial approach and Dole's environmentalism as a science-driven, bureaucratic approach. This conceptualization is partly based upon narratives in existence within the companies. The reader should keep in mind that the characterized differences are only gradual and relative.

Chiquita's alliance with the ECO-OK/Better Banana Project can be called populist because it takes the environmental wisdom of non-expert rainforest conservation activists and ordinary people as the starting point for action.²⁶ It does so in a rather ad-hoc, pragmatic style with simple targets and procedures, which I call entrepreneurial. This is clearly reflected in the following quotation from a Chiquita manager:

ISO 14001 is very exigent in methodology, the whole office is filled with beautiful files, but the test is in the field. Those guys of BBP are maybe a bunch of cowboys and BBP is a mess.²⁷ But these fellows are entrepreneurs. They have their Smartwood certification for over ten years. They did not know anything of bananas but came to talk and to consult before deciding what should happen ...

BBP requires every year an evaluation while ISO has only one evaluation each three years. With our Latin culture I believe that BBP is better. With ISO 14001 you have to define your own targets and indicate the time schedule, but then it is very easy to slow down afterwards. BBP is more a benchmark. It indicates exactly what should be done and below the line you do not get the certification. Only if you come above the line. BBP is from an NGO and they do not only look at papers, which can appear very nicely. An NGO goes into the field to look what has happened. The test is in the field.

The environmental management system of Dole is different. It puts documentation and procedures first and is less interested in externally imposed, simple performance criteria. Dole's staff consider ECO-OK as 'only a few standards' you have to comply with, such as no plastic waste in the plantation. In contrast, ISO is seen as a 'total and deep affair'. ISO 14001 requires a much larger documentation system and is linked through the auditing system to a large 'scientific' bureaucracy of standards; 'scientific' in the sense that it is entirely based on expert reviews. This bureaucracy defines what the system is but not how effective the system will be (Godshall, 2000). In contrast, the auditing procedure of the Better Banana Projects intends to set clear technical production criteria with which the producers have to comply. While ISO 14001 responds to an internationally negotiated compromise be-

tween scientists, administrators and businesses about procedures for improving environmental management, the BBP standards stem from a relatively small environmentalist group and a few invited scientists who developed practical performance criteria.²⁸ ISO 14001 certifies the *process* whereas BBP certifies the *performance*.

Why did Chiquita and Dole opt for a specific certification programme? Most likely, it is a combination of two main factors, which will be elaborated below. The reason for a particular alliance, that is the choice of who should set the standards, is first of all an issue of assessment of the credibility of a specific label in the marketplace. A second factor is how a particular option fits into the organizational culture or cultural matrix of a company.

Market credibility and the choice for alliances

Chiquita was initially convinced that it needed NGO involvement to regain its credibility (Bendell, 2000). The choice of an NGO working on rainforest issues was not illogical, given the many public campaigns for rainforest conservation in the early 1990s. The Rainforest Alliance invited all banana producers to join their initiative, but Chiquita's main competitors, Dole and Del Monte, declined; both would opt for ISO labelling later on. With hindsight, a Del Monte director in Costa Rica suggested that the ECO-OK label would not automatically grant credibility: 'We decided that ECO-OK was largely a PR exercise. We wanted something that would defend itself and not have to be defended. ISO's new system fulfilled these aspirations, as it involves a third party assessment and is an internationally recognised standard' (cited in Bendell, 2000).

Similarly, Dole sought a credible third party that, according to one manager, would merely justify what they were already doing: 'The ISO programme started in 1997, but the whole process of change had actually started in 1992. Our system [of safe use management of pesticides] was already good, but time and again we were criticized. We could not explain [our work] – as a transnational – to our critics. That must be done by an organization with more credibility. In 1996-1997 we started with ISO 14001, a certification organization that could explain what Dole is doing.'

Chiquita's competitors thus suggested that the ISO label stands for independent assessment. This implied that the ECO-OK/BBP label does not stand for an independent environmental audit.

Credibility is furthermore related to the type of market and there is a difference in what creates credibility in the US and European mar-

kets. The Rainforest Alliance is a United States NGO with experience in awareness-raising among US citizens. But what was at stake was mainly the European market, where the quota system resulted in higher margins, where the battle of market shares took place, and where green consumption was gaining a place in the supermarket. Despite several efforts, the Rainforest Alliance did not succeed in effective network-building with European NGOs working on banana issues (Bendell, 2000). The Rainforest Alliance was viewed as a dependent ally of Chiquita, who laid too much emphasis on environmental conservation and had too little thought for the social issues that motivated much of the anti-multinational activism in Europe. It would take a lot of effort to change this view. One can draw a parallel here with Chiquita's strategically erroneous assessment of the future of the European trade regime. The unlucky choice of a label with 'ECO' in the name exemplifies the distance to the European context and legislation. The BBP label intends to attract environmentally conscious consumers. In contrast, the ISO label merely focuses on retailers, is hardly known to consumers and rather difficult to explain.

Dole was well aware that an ISO label was not very important in the US market, but had 'got quite a name' in Europe. It probably had contributed to the rise of their market share. This is not to say that the BBP label did not bring benefits to Chiquita. According to an internal communication, Chiquita recognized the BBP project as a main asset for the company; estimates circulated that without BBP the company would have lost 80 per cent of its yearly gross sales of US \$250 million in Europe. Nevertheless, Chiquita set up activities to develop an environmental management system according to ISO standards, primarily for the European markets where 'ISO is better known and has more credibility'. But now Chiquita was lagging behind several years and managers indicated that it would take at least until 2003 to certify the Honduran plantations.²⁹

Organizational culture and the choice for alliances

A second factor explaining why Chiquita joined the Rainforest Alliance initiative and Dole the ISO system was the difference in organizational cultures. In an entrepreneurial spirit, Chiquita was the first company to plunge into environmentalist adventures. At that time, ISO 14001 even did not exist and was not an option. The first initiatives to work together with an NGO came from below; managers at COBAL, a Chiquita subsidiary in Costa Rica, participated in ECO-OK discussions. Initially, the Chiquita bosses in Cincinnati were confused about the pro-

posed NGO-business relationship and concerned that the certification of one division only would reflect badly on produce from other divisions (Bendell, 2000). Later they gave in to this bottom-up leverage, but the programme started only after Chiquita Brands International decided to turn all its Latin American operations into certified farms. Such bottom-up leverage tends to be less likely within Dole, given its stronger top-down management style.

Dole's choice for the ISO 14001 standard was a logical sequel to its ISO 9000 quality management system. Dole could make use of an already existing actor-network involved in ISO standards. Furthermore, ISO coincides with Dole's strong belief in the role of science-driven research for improving banana cultivation.³⁰ In the late 1970s, Chiquita closed down its world-famous research facility in La Lima, Honduras. The company leaders at that time did not expect major technical improvements from research. In contrast, Dole increased its investments in research in the 1980s and 1990s.³¹ The current organizational culture within Dole prescribes that its Research Department should lead technological change. This department plays a decisive role in planning production activities and has kept a dominant influence in environmental issues, even after the foundation of a special department for environmental affairs. Recommendations from government auditors were directly translated by Dole's agronomists in the Research Department in terms of practical feasibility and cost increases. A ban on paraquat and chlorothalonil, as upheld by Chiquita, was a difficult proposition for the agronomy researchers of Dole to accept. These pesticides are essential for good farming, according to the agronomist perspective. Unlike Dole, Chiquita delegated its environmental issues mainly to its medical team, to which some environmental experts were later added. Chiquita considered pesticide problems in the first place as a workers' health issue. This may explain the lower level of resistance within Chiquita against eliminating certain pesticides.

Dole believes more strongly than Chiquita that innovations arise from within the company. Dole's researchers are proud of the advanced level of their research. This strong focus on internal knowledge-generation is reflected in the career perspectives of employees. Most higher-level employees I talked to in Chiquita had worked for the company for a short time and were thinking about job possibilities outside the company in the future. In contrast, most of the Dole employees clearly expressed their hopes of a long future within the company and strongly identified themselves with its professional research culture.

Dole's strong belief in internally driven technological change dove-

tails with the choice of the ISO 14001 standard with its focus on process as well as the definition and shaping of environmental change from within the firm. Paradoxically, this belief also inspires the view that ISO is not a major source of technological innovation. According to Dole technicians, ISO did not change the process already underway before the ISO standards of environmental management were applied: 'With ISO we only document what we were doing; eight years ago we already had a Manual for Management and Safe Use of Pesticides. It included training on all levels. We did much to use returnables [pesticide containers] and to do cholinesterase tests. We have already practised Integrated Pest Management for thirty years.'

In a similar vein, governmental audits were viewed as technically not really important for Dole's management process.³² The audits were primarily an additional source of defence against environmentalist criticism, and, in the view of getting ISO certification, a test of whether the operations complied with all the laws.

Unlike Dole, Chiquita simply buys the technologies it needs and does not generate new knowledge itself. It implements new technologies with less rigorous testing than Dole does. It started rapidly with azoxystrobin, then it introduced electrostatic fungicide application in post-harvest treatment, a technology that never passed the test phase in Dole, and it casts anxious looks at how others study the issue of soil health. Unlike Dole, it delegates crucial production tasks to others. Spraying, for example, is not done by Chiquita itself but by a contracted firm. The relative ease and swiftness with which Chiquita introduces external technologies have a parallel in its rapid start with an environmental label. Within Dole, change takes more time and investment in research.

GREEN BANANAS AND THE LIMITATIONS OF SELF-REGULATION

In the world of bananas, self-regulation has considerably changed the internal organization of firms as well the infrastructure of plantations. Can one conclude on the basis of these cases of environmentalism in corporations that self-regulation is a good alternative to conventional command-and-control regulation? A closer look at these cases suggests that it is too early to draw such a conclusion since they reveal four important limitations.

First, there is the question of whether the standards developed in self-regulation are really comprehensive when it comes to addressing

major environmental problems. In the case of Dole-ISO, ISO as a standard does not change the type of pesticides Dole is using, nor the number of applications or the amount. The impact of the ISO 14001 standard is severely limited by its lack of performance standards. It does not define concrete criteria for environmentally-friendly banana production. This leads some to argue that ISO should involve third-party certifiers who apply concrete performance standards (Godshall, 2000). Egger (1998) proposes that parallel work with non-governmental organizations should influence the ISO and make eco-labels a requirement for ISO certification of bananas.

The current intentions of Chiquita to combine the Better Banana label with the ISO certification show, however, a major pitfall of such an approach. Local technicians estimate that current work to certify Costa Rican plantations according to ISO standards has slackened the efforts to comply with BBP standards as attention has been shifted from changes in the field to fulfilling administrative requirements in the office. This confirms the general suggestion of some authors that ISO 14001 may lower environmental performance instead of improving it (e.g. Clapp, 1998; Krut and Gleckman, 1998). This raises the question to what extent corporations are willing to yield decisive influence to external bodies setting real technical limits to their production system.

The Chiquita-BBP case shows how such an alliance with NGOs may turn out to focus on rather 'touchable' issues: trees, birds and the 'dirty dozen' pesticides. The more subtle differences between pesticides such as paraquat and diquat remained hidden. It can be questioned whether an NGO like the Rainforest Alliance is strong enough to set, independent of a large corporation, new standards that are complex, less 'touchable' and more difficult to understand.

A second limitation concerns the exaggerated importance given to self-regulation, which conceals the importance of governmental regulations for setting the real benchmarks. The question 'Who sets the real pesticide standards?' remains a crucial one. Dole foresees that some pesticides may not be used in the near future. That will mainly be a result of the EPA (or its European equivalent) questioning specific pesticides rather than because of the green label environmental standards. Dole rejects populist critiques of pesticides and only acknowledges formalized standards by official regulatory bodies as decisive pesticide standards. Important here is the observation that, with regard to Dole's pesticide use, the bottom line is still defined by state regulation, particularly the EPA norms. Self-regulation of the ISO form does not lead to the restriction of hazardous pesticides; tightened state regulation may

do so. The BBP criteria may seem different as these are explicit in banning a number of pesticides that are still EPA-approved. However, this attention concerns only a few pesticides and the BBP system is never capable of regulating all other pesticides or evaluating all kinds of new pesticides currently introduced. Its issue-based approach cannot replace a comprehensive regulation by government agencies.

A third limitation is the expected influence of self-regulation on innovation. The impact of BBP on R&D innovation by the company is limited. New technologies are applied but they predominantly consist of products and instruments acquired from others. Apparently, the impact of ISO on actually stimulating innovation seems more prominent. ISO standards require that firms keep innovating in order to improve their environmental performance. Dole is doing that, for example by exploring more extensively than Chiquita the usefulness of all kinds of biological agents, investigating ways to monitor weed growth and experimenting with cover crops (both may reduce herbicide use), and studying biological control (cf. Castro and Gonzalez, 1997; Wielemaker, 1997). As we have seen, however, technological innovation is more driven by Dole's research culture than by ISO.

A fourth limitation is the unresolved issue of transparency and accountability. The idea in both versions of environmental certification that local laws have to be obeyed sounds positive but does not address the question of control nor the question of proper law-making. It is still difficult for government agencies and civil society organizations to get all the information they need to make a sound judgement about the industry's performance. For example, the Honduran law obliges firms to report labour accidents, but these data remain hidden from any transparent public control. Efforts by the national government to improve auditing were initially not welcomed and did not lead to real changes since any adaptation had to be cost-neutral. Later, this auditing process improved but was principally made instrumental to the process of getting the plantations certified. More recently, auditing efforts slackened and some involved people stated that they are no longer needed. In this account, the companies appear to be more sensitive to consumer demands than to the regulatory efforts of the Honduran state. This issue of who and what transforms the corporations thus points at a more general problem of democratic control in the globalized free market ideology, where the world's elite consumers seem to have more power than democratically elected Third World governments.

CONCLUSION

This chapter has shown that fruit multinationals respond to consumers' environmental awareness and social activism, and change production processes on their banana plantations. Companies have combined organizational change, technical change, change in infrastructure, change in communication (transparency, codes of conduct), new relationships with partners (certifying and audit organizations, relationships with NGOs) and shifts in older relationships, such as between company and workers, in order to improve the image of the banana. Even during a world-market banana crisis, with pressure on profits and the need to reduce costs, remarkably large investments were made in operations that neither reduced costs nor increased yields. It also did not lead to a new product. The driving force behind these investments was the need to secure market shares and to protect the image of the banana, the brand and the firm.

Chiquita and Dole opted for different certification schemes due to different assessments of stakeholder roles, of the organizations that could improve credibility in the market, particularly the European market, and of the importance of technology innovation from within the company. Chiquita chose the populist path and linked with an NGO producing public discourses of deforestation and environmental protection. It adhered to clear and understandable performance standards. Dole put more trust in the credibility of science-driven, bureaucratic environmental management. The chosen alliance influenced the technical outcomes. For example, while Chiquita abolished the use of chlorothalonil and paraquat in line with the demands of environmentalist NGOs, Dole argued that no changes in pesticide choice are required as they comply with all national registration requirements and international regulation.

These cases show that self-regulation is able to enhance environmental performance. It is too early to judge whether the banana is now a 'healthy' fruit, since the amount of pesticide residues on the banana has probably not changed very much. The most important improvement seems to be a more healthy working environment for banana workers resulting from changed forms of pesticide use and new infrastructure. This observation of real changes within banana production does not mean, however, that self-regulation can now be proclaimed as an alternative to governmental or other forms of mandatory regulation. First, the case of bananas is special because of the huge image problem banana corporations faced. Changes were initially not driven by responsible behaviour, as a cornerstone of self-regulation, but by external pressure groups that combined environmental and social demands. They held

the 'stick' of possible boycotts. Second, this case of self-regulation has revealed several limitations to self-regulation. It is highly questionable whether it leads to comprehensive performance standards. Even in these cases, governmental regulatory agencies remain the core entities for setting real benchmarks. The quality of mandatory regulation, law-making and law implementation therefore remains crucial for the outcome of this process of improving environmental management. Furthermore, self-regulation has a rather limited influence on the development of new technologies. A final limitation concerns the continuous lack of transparency and accountability, particularly towards Honduran society.

The central role of the reconstructed image of the banana within environmental discourse means that Dole and Chiquita are both drawn into a new technology regime in which pesticides have been defined as a problem. They cannot deviate from the chosen path of pesticide reduction even while pesticides have not yet been substantially reduced. This explains why they seek with conviction biological agents that can replace synthetic pesticides. The fruit companies will also have to confront the problem of how to obey all laws and labour regulations. The responses of the companies to an environmentalist critique have created new rule-sets that make them even more prone to future environmental and social critiques.

NOTES

1. Data were gathered through interviews with managers, researchers, technicians and union leaders of both companies, non-company organizations, as well as with state officials of various agencies in 1999 and 2000. Other data resulted from an extensive review of published and unpublished documents, reports, newspaper articles and web pages. Following anthropological practice to protect informants, no names are given. I am grateful to all informants, including those whose information could not be used for this publication. All translations from original Spanish-language sources were made by the author. The research was supported by the Netherlands Foundation of the Advancement of Tropical Studies (WOTRO). This chapter's main focus is on pesticide use as this is the key element of environmental performance of banana production. Mentioning product names does not mean any endorsement or validation of the product. This chapter does not evaluate quantitatively the environmental appropriateness of the certification procedures since that would require additional research.

2. See, for example: <www.bananalink.org.uk>, <www.banafair.de> and <<http://bananas.agoranet.be/>>

3. For example: <www.chiquita.com>: 'We committed more than \$20 million of capital expenditures to a comprehensive environmental strategy, along with millions of dollars of annual operating costs and expenses for environmental programs'; <www.dole.com>: 'Environmental stewardship is an integral part

of Dole's concept of "quality", embodied in our label ... Some companies treat the environment as a public relations issue. At Dole, it's an operations issue. We strive to integrate consideration for the environment into everything we do. We invest in environmental protection – in making real improvements in our people, our facilities and our operations – not in boasting about what we do.'

4. The area with export-oriented banana plantations in Latin America increased 92 per cent (to 280,554 ha) between 1985 and 1996 (Arias, 1997).

5. However, the EU trade regime allowed for higher margins in Europe (Kastele, 1998).

6. According to Kastele (1998), Chiquita's market share dropped, between 1992 and 1995, from more than 30 per cent to 19 per cent, at a time when total imports in the EU also decreased. In the same period, Dole's share grew from 12 per cent to 15-16 per cent, while Fyffes (including Geest) grew from a mere 10 per cent to 17-18 per cent. An unknown proportion of Fyffes' bananas were sourced from Dole's plantations.

7. The expansion of banana production since the late nineteenth century considerably reshaped the Honduran landscape. The area under production reached its peak in the late 1930s when the United Fruit Company (now Chiquita) alone cultivated about 38,000 ha of banana (Soluri, 1998: 130). In the mid-1980s, Dole and Chiquita owned about 10,000 ha planted with bananas which provided work to about 13,400 labourers (Andrade et al., 1987). Yields varied somewhat according to this source: Chiquita produced 3,220 boxes of 40 pounds per hectare, Dole about 2,660 boxes per hectare, and national producers about 2,540 boxes. In the 1990s, the total area of all banana production just exceeded 22,000 ha (FAOSTAT, 2000), about half of it cultivated directly by Chiquita and Dole and the other half by independent producers and co-operatives. The export value of bananas in 1992 was US \$256 million and in 1993 \$229 million and by then about 22,000 labourers found full-time employment in banana cultivation (SECPLAN, 1994). Chiquita's plantations are located along the Uluva river in the Sula Valley in the north, while Dole cultivate its bananas more to the east, in the Aguan Valley. Most so-called 'independent' producers, who have contracts with Dole or Chiquita, are located in the Sula Valley.

8. The auditing teams also included officials of the Ministry of Environment (SERNA), the Ministry of Agriculture (SAG, through SENASA, the Servicio Nacional de Sanidad Agropecuaria), the Ministry of Health and the Ministry of Work.

9. Organophosphate and carbamate pesticides, the most common ones, cause cholinesterase inhibition. Cholinesterase is an important enzyme in the nervous system and its activity can be measured in blood samples.

10. Another reason for modifying the project's name was a change in the organization. A wider network called Conservation Agriculture Network, which linked the Rainforest Alliance to other groups involved in certification work across Latin America, ran the Better Banana Project. Bendell (2000) offers a good and detailed account of the evolution of the Better Banana Project, its special relation with Chiquita and its problematic relations with other stakeholders.

11. The nine principles include: (i) ecosystem conservation, (ii) wildlife conservation, (iii) minimal, strictly managed use of agrochemicals, (iv) complete,

integrated management of wastes, (v) conservation of water resources, (vi) soil conservation, (vii) fair treatment and good conditions for workers, (viii) community relations, and (ix) environmental planning and monitoring.

12. Del Monte Bananas in Costa Rica were ISO certified in December 1998 by BVQI.

13. A Dole technician stated that investments in ISO-related activities are about US \$800-1,000 per hectare or 30 dollar cents per box of bananas. An informant from Chiquita stated that investments in ECO-OK/BBP-related activities may exceed US \$170,000 to prepare a plantation of 400 ha for certification (i.e. \$425/ha). These data are not comparable because we do not know what is included and excluded in these numbers. Furthermore, these informants were not the persons who do the accounting. Specific cost data are generally firm secrets. These data obtained through hearsay give, however, as gross estimates an impression of the magnitude of environmental investments. Formally Chiquita states that it invested US \$20 million in infrastructure improvements to get certified all its 127 owned banana farms (26,500 ha), that is \$755 per hectare (Chiquita, n.d.). Again, we do not know what is included in these data.

14. Good exceptions are Ellis (1983) and Soluri (1998).

15. Rough estimate by Mauricio Rivera, phytopathologist, FHIA-Honduras (personal communication).

16. Chiquita had to face complaints by Zeneca, its supplier of chlorothalonil, which pushed Chiquita to reconsider its decision. Zeneca is one of Chiquita's partners in educational programmes about environmental issues.

17. In 1998, Hurricane Mitch destroyed most banana plantations as well as the camps in Honduras (Jansen, 2003). These camps are not being included in the reconstruction work.

18. Important nematicides imported in 1998 or 1999 and used in banana production in Honduras were fenamiphos (Nemacur®), dichloropropene (Telone®), cadusafos (Rugby®), terbufos (Counter®), ethoprop (Mocap®), oxamyl (Vydate®) and carbofuran (Furadan®).

19. Alternation is required; not so much because nematodes develop resistance against these pesticides, but because the nematicides are increasingly biodegraded by micro-organisms in the soil.

20. Like Dole, Chiquita is experimenting with biological nematicides.

21. This, at least, is the view of the independent scientist mentioned above, as well as Dole.

22. The search for environmentally friendly alternatives may have a second more direct reason than environmental awareness alone. Top priority in Dole's research programme is the question of soil health. In the 1990s, yields stagnated or even declined and problems with soil management and root health were seen as the causes. It is supposed that nematicide use may influence negatively the life of beneficial soil organisms such as certain mycorrhiza.

23. The USA Environmental Protection Agency has set a 'tolerance level' of acceptable residue of a particular pesticide for crops, including bananas. Fruits sprayed with pesticides without an 'EPA tolerance' cannot be imported into the United States. Europe and Japan follow a similar procedure.

24. The word 'determined' is used here deliberately. It does not mean a comprehensive determination, nor over-determination by technology, and thus is far off technological determinism; but it expresses a position different from social constructivism, which would approach pests, diseases and pesticides as social constructs only. Conceptually, the essential characteristics of pests, diseases and epidemics are seen here as contingently related to social structures. These non-social 'powers' can, in that sense, influence or 'determine' social structures and practices.

25. In this sense the companies share the views of some of their opponents who argue that large-scale monocultures can never produce high yields without pesticides.

26. This does not mean that Rainforest Alliance representatives had no expertise at all or did not gain expertise during the process. What is meant here is that, at the start of the process, they were not experts in all aspects of banana production, although they may have had expertise in the ecology and the biology of rainforests.

27. See Bendell (2000) for a description of the lack of clarity in the ECO-OK/Better Banana Project.

28. Flexibility is built into the certification systems in different ways. The ISO standards permit Dole to formulate its own environmental targets while Chiquita has to comply with the ECO-OK/BBP standards. However, as the Rainforest Alliance developed a one-to-one relationship with Chiquita (Bendell, 2000), the company was closely involved in developing the standards and in formulating how to adhere to these standards.

29. More recently, Chiquita (n.d.) stated that it had achieved the certification of the Costa Rican division to the ISO 14001 standard in 2000. It does not plan to certify other banana divisions to the ISO 14001 standard since it believes that the BBP standard is more valuable in driving real performance improvement.

30. The Dole Europe website reflects the scientific bent: 'Inspections, tests and sampling: they are a way of life at Dole'.

31. One difference with Chiquita's past research is that its researchers were actively producing scientific publications, while the results of Dole's current research are mostly kept secret and are not published.

32. The government auditors often felt that they could not manage the technical arguments used by Dole's staff.

REFERENCES

- Alvarez Argueta, R. C. (1983) 'Análisis de los métodos de evaluación para la detección del avance de *Mycosphaerella fijiensis* var. *difformis*, causante de Sigatoka Negra en banana'. La Ceiba, Honduras: Informe del servicio social, UNAH.
- Andrade, D. A., L. Avila, M. Velásquez, M. Chavez, J. L. Martínez and A. Reyes (1987) 'Uso y comercialización de agroquímicos en Honduras'. Tesis de Licenciatura en Economía, UNAH.
- Andreatta, S. L. (1997) 'Bananas, are They the Quintessential Health Food? A Global/Local Perspective', *Human Organization* 56 (4): 437-49.
- Argueta, M. R. (1992) *Historia de los sin historia*. Tegucigalpa: Guaymuras.
- Arias, O. (1997) 'Current Advances in the Biotechnology of Banana', in J. Yglesias Luconi (ed.), *Memoria primer taller internacional sobre control biológico y producción integrada en el cultivo de banana*, pp. 171-9. Costa Rica: EARTH.
- Barahona, M. (1994) *El silencio quedó atrás. Testimonios de la huelga bananera de 1954*. Tegucigalpa: Guaymuras.
- Beck, U. (1992) *Risk Society: Towards a New Modernity*. London: Sage.
- Bendell, J. (2000) 'Growing Pain? The Lessons of Allying with a Transnational Company to Lessen the Environmental and Social Impacts of Banana Monocultures'. Paper presented at the 4th ISTR Conference, Dublin, July 2000.
- Bennett, P. (1999) 'Governing Environmental Risk: Regulation, Insurance and Moral Economy', *Progress in Human Geography* 23 (2): 189-208.
- Bruno, K. (2002) 'Greenwash + 10: The UN's Global Compact, Corporate Accountability and the Johannesburg Earth Summit'. CorpWatch/Tides Center <www.corpwatch.org/campaigns/PCD.jsp?articleid=1348> (7 October 2002).
- Castro, M. and J. Gonzalez (1997) 'Biological Control Options in an Integrated Pest Management Program for Banana Nematodes and Insects', in J. Yglesias Luconi (ed.), *Memoria primer taller internacional sobre control biológico y producción integrada en el cultivo de banana*, pp. 71-82. Costa Rica: EARTH.
- CEC (Council of the European Communities) (1991) 'Council Regulation (EEC) No. 2092/91 of 24 June 1991 On Organic Production of Agricultural Products and Indications of Referring Thereto on Agricultural Products and Foodstuffs', *Official Journal of the European Communities* 34 (L 198): 1-15.
- Challenger, D. and C. Friend (2001) 'Fruit of the Poisonous Tree: Journalistic Ethics and Voice-Mail Surveillance', *Journal of Mass Media Ethics* 16 (4): 255-72.
- Chambron, A. C. (1999) 'Bananas: the "Green Gold" of the TNCs', in J. Madeley (ed.), *Hungry for Power. The Impact of Transnational Corporations on Food Security*, pp. 46-65. London: UK Food Group.
- Chiquita (n.d.) '2000 Corporate Responsibility Report'. Chiquita Brands International <www.chiquita.com/chiquitacr2/References/pdfs/English.pdf> (9 October 2002).
- Clapp, J. (1998) 'The Privatization of Global Environmental Governance: ISO 14000 and the Developing World', *Global Governance* 4 (3): 295-316.
- Del-Cid, J. R. (1976) 'Aproximación al estudio de las clases sociales en el agro hondureño', in Departamento de Ciencias Sociales (ed.), *Lecturas sobre la realidad nacional*, pp. 75-100. Tegucigalpa: Editorial Universitaria.
- Egger, M. (1998) 'Are ISO Standards a Sustainable Instrument for Supporting a Sustainable Banana Economy?' <<http://www.bananalink.org.uk/resources/resmain.htm>> (8 May 2000).
- Ellis, F. (1983) *Las transnacionales del banana en Centroamerica*. San José, Costa Rica: Editorial Universitaria Centroamericana.
- Extoxnet (1996) 'Pesticide Information Profiles: Paraquat'. <<http://ace.orst.edu/cgi-bin/mfs/01/pips/paraquat.htm?8#mfs>> (10 October 2002).
- FAOSTAT (2000) 'FAOSTAT Agricultural Data'. <<http://apps.fao.org/cgi-bin/nph-db.pl?subset=agriculture>>

- Flores Valeriano, E. (1979) *La explotación bananera en Honduras*. Tegucigalpa: Editorial Universitaria.
- Gallagher, M. and C. McWhirter (1998) 'Chiquita Secrets Revealed', *Cincinnati Enquirer* (3 May).
- Godshall, L. E. (2000) 'ISO 14001: A Case Study in Certification at Bayer Pharmaceuticals in Berkeley, California'. Paper presented at the 2nd POSTI meeting and the ESST Annual Scientific Conference, Strasbourg, 27-28 May 2000.
- Gouldson, A. and J. Murphy (1998) *Regulatory Realities. The Implementation and Impact of Industrial Environmental Regulation*. London: Earthscan.
- Gowen, S. (1995) *Bananas and Plantains*. London: Chapman and Hall.
- Greer, J. and K. Bruno (1996) *Greenwash: The Reality Behind Corporate Environmentalism*. Penang, Malaysia: Third World Network.
- Horsley, V. (n.d.) 'Implementation of the ISO 14001 Environmental Management System'. <www.sgs.ca> (11 July 2000).
- Jansen, K. (2002) 'Plaguicidas y su regulación en Honduras', *Ceiba* 43 (2): 273-89.
- Jansen, K. (2003) 'Crisis Discourses and Technology Regulation in a Weak State: Responses to a Pesticide Disaster in Honduras', *Development and Change* 34 (1): 45-66.
- Jimenez, J. N. (1995) *Plaguicidas y salud en las bananeras de Costa Rica*. San Jose: ASEPROLA.
- Kastele, A. v. d. (1998) 'The Banana Chain: The Macro Economics of the Banana Trade'. <www.bananalink.org.uk/resources/resmain.htm> (8 May 2000).
- Korten, D. C. (1999) *The Post-Corporate World: Life After Capitalism*. San Francisco, CA: Berrett-Koehler.
- Krut, R. and H. Gleckman (1998) *ISO 14001: A Missed Opportunity for Sustainable Global Industrial Development*. London: Earthscan.
- Lewis, S. (1992) 'Banana Bonanza: Multinational Fruit Companies in Costa Rica', *The Ecologist* 22 (6): 289-90.
- MacCameron, R. (1983) *Bananas, Labor, and Politics in Honduras: 1954-1963*. New York: Maxwell School of Citizenship and Public Affairs, Syracuse University.
- Midttun, A. (1999) 'The Weakness of Strong Regulation and the Strength of Soft Regulation: Environmental Governance in Post-modern Form', *Innovation* 12 (2), 235-50.
- Morgan, D. P. (1982) *Diagnostico y tratamiento de los evenamientos con plaguicidas*. Washington, DC: EPA (United States Environmental Protection Agency).
- Munguía Guerrero, L. (1995) 'Caso estudio: Normatización empresa Standard Fruit Company con su subsidiaria Agropor, dedicada al cultivo de piña, en el Porvenir, Atlantida, Honduras, Centroamérica', *Cuaderno sobre el estado sanitario ambiental de Honduras* 3: 3-7.
- Murga Frassinetti, A. (1978) *Enclave y sociedad en Honduras*. Tegucigalpa: Editorial Universitaria.
- Plötz, R. (1999) 'The Most Important Disease of a Most Important Fruit'. APSnet feature. <www.scisoc.org/feature/banana/top.html> (28 April 2000).
- Posas, M. (1985) 'In the Jaws of the Standard Fruit Company', in N. Peckenham and A. Street (eds), *Honduras: Portrait of a Captive Nation*, pp. 152-6. New York: Praeger.
- (1992) *La autogestión en el agro hondureño. El caso de la Empresa Asociativa Campesina 'Isletas' (EACT)*. Tegucigalpa: Editorial Universitaria.
- SECPLAN (1994) *IV Censo Nacional Agropecuario 1993*. Tegucigalpa: Graficentro Editores.
- Simons, L. P., A. Slob and H. Holswilder (2000) 'The Fourth Generation: New Strategies Call for New Eco-indicators'. Unpublished paper. Delft: TNO-Institute of Strategy, Technology and Policy.
- Slutzky, D. and E. Alonso (1980) *Empresas transnacionales y agricultura: el caso del enclave bananero en Honduras*. Tegucigalpa: Editorial Universitaria.
- Soluri, J. (1998), 'Landscape and Livelihood: An Agroecological History of Export Banana Growing in Honduras, 1959-1989'. PhD dissertation, University of Michigan.
- Stephens, C. S. (1984) 'Ecological Upset and Recuperation of Natural Control of Insect Pests in Some Costa Rican Banana Plantations', *Turrialba* 34 (1): 101-5.
- Stover, R. H. (1990) 'Sigatoka Leaf Spots: Thirty Years of Changing Control Strategies: 1959-1989', in R. A. Fullerton and R. H. Stover (eds), *Sigatoka Leaf Spot Diseases of Bananas*, pp. 66-74. Montpellier: INIBAP.
- Wendel de Joode, B. N. van, I. A. M. de Graaf, C. Wesseling and H. Kromhout (1996) 'Paraquat Exposure of Knapsack Spray Operators on Banana Plantations in Costa Rica', *International Journal of Occupational and Environmental Health* 2 (4): 294-304.
- Wheat, A. (1996) 'Toxic Bananas', *Multinational Monitor* 17 (9).
- Wielemaker, F. (1997) 'Banana Production with "Pinto's Peanut" (*Arachis pintoi* cv. amarillo) and "Oreja de Raton" (*Geophila repens*) as Cover Crops', in J. Yglesias Luconi (ed.), *Memoria primer taller internacional sobre control biológico y producción integrada en el cultivo de banana*, pp. 84-9. Costa Rica: EARTH.
- Wille, C. (1997) 'Los programas de certificación ECO-O.K. y BETTER BANANA PROJECT: acuerdos entre ambientalistas y agricultores', in J. Yglesias Luconi (ed.), *Memoria primer taller internacional sobre control biológico y producción integrada en el cultivo de banana*, pp. 43-9. Costa Rica: EARTH.
- World Bank (2000) *Greening Industry: New Roles for Communities, Markets, and Governments*. Oxford: Oxford University Press.