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# **Growing to Retailing, A Global Perspective Australia's Position**



**by Marc Jackson**

**Scholarship: One Farmer from Queensland  
Sponsored by the Queensland  
Nuffield Scholarship Association.**

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# 1. EXECUTIVE SUMMARY . . . . .

The following two statements were echoed around the world,

- “We are sick of doing this for nothing, costs are going up and returns are going down,” said farmers.
- “You have to supply me cheaper, you must improve the quality and cut your costs,” said retailers.

Until growers and retailers sit down and talk, nothing will change. An example of change is the quality of fruit through the UK. It is exceptional and the reason is that the growers became involved in the price setting.

It soon became obvious to me that the most profitable, efficient and productive were mostly the multi-nationals. They grew their own fruit and had growers grow the fruit for them, owned the carton and plastics factories and did the aerial spraying, fertilising, importing, distributing, shipping, ripening and wholesaling.

The next profitable group was the farmers that were large enough to duplicate that of the multi-nationals. They also invested in this vertical integration and owned from the growing to the retailing.

The third group are the growers that are still large enough or can work together in groups or co-ops to market fruit direct, especially into Europe. They are able to negotiate their own price and set fixed contracts. The only downfall is the risk of non-payment.

And lastly is the group of growers that have no option but to supply the large multi-nationals. They are at the mercy of consistent low returns, and for this reason the government has stepped in and set minimum prices for these growers and at present in Ecuador it is US\$3.00 per 20 kg carton of bananas.

Niche marketing seems to be only working with the growers that also market the fruit direct. These growers work with retailers to achieve a better price and are very successful. An example is small fruit marketed to New Zealand from the Philippines. It gets a premium of \$4.00 when packed in a plastic bag and marketed as a "bobby banana". Growers who supply a wholesaler seem not to achieve any premium. Only the extra work and the cost of the bags are recovered.

Niche markets include:

- Different varieties sold as they are or packed into cluster bags or punnets.
- Standard Cavendish packed in a plastic bag.
- Small bananas, to 180mm, packed in bags.
- Green and ripe fruit sold as "eat me keep me" packs.
- Ripe bananas sold in long life bags to insure longer shelf life.
- Fair trade and ethical trade bananas.
- Low chemical, clean green or eco-ok.
- Organic bananas.
- Supa sweet, bananas grown slower and at high altitude with a higher brix (sugar) content.

The Ecuadorian regions are the best suited for the production of bananas. Ecuador is immune to cyclones or hurricanes. It has distinct wet and dry seasons allowing for good controls of black sigatoka (leaf fungus spread by rain). The temperature never goes below 18f or above 32f so no incidents of under peel chill are experienced. Because of the weather a plantation can cycle every 7-8 months.

The growing and production is helped by the cost of labour. Labour is used extensively throughout Central America and the Caribbean to the point of employing one person for one hectare. Labour in banana farms cannot be replaced by mechanics. What machine will tend a bunch four times before bagging is completed?

It is a disgrace to drive past some plantations in Australia and see the discarded bags and string left to rot in the elements. It's a disgrace to travel by boat down the Tully and Johnstone rivers and see the results of discarded bags, string, chemical drums etc. It is plainly obvious that some farmers have no regard for our environment. This is the picture of what I expected to see in the banana growing areas of Central America and the Philippines. However, it was the opposite. These countries are doing their utmost to improve the environment and have either implemented ISO 14001 or eco-ok programs.

## 2 INTRODUCTION .....

The study consisted of two weeks in Singapore, Malaysia and Thailand, followed by four weeks in Europe, organised by the Australian and UK Nuffield Associations. I then continued on to pursue my own studies, visiting countries throughout the world such as Singapore, Japan, UK, Europe, New Zealand, Central America, South America and the Caribbean.

The first six weeks was organised by the Australian and UK Nuffield Scholarship Associations and was a valuable tool in understanding farming, trade, economies, subsidies and the culture of these places. These initial weeks were a very important stepping-stone for the rest of the study. I was able to visit many farming operations and processing plants and although they were not bananas, many of the management, cultural and marketing practices are similar to the production of bananas. An open mind is very important and much can be learnt from listening to other farmers, marketers and processors. On my arrival to the UK, the Ministry of Agriculture had announced the detection of Foot and Mouth. As we now know, this was caused by the importation of cheap meat from possibly The Middle East with the scraps fed as swill to pigs. Thousands of sheep, pigs and cattle had to be slaughtered on a daily basis. Every night on the TV news there were visions of piled up timber and straw burning, while cranes and loaders are used to lower the shot dead animals onto the flames. You could see the desperation and pain in the farmers faces as many years of breeding and their livelihoods went up in smoke. People from town (Townies) were ordered to stay away from the country, while many country events were cancelled. Farms were quarantined and movement of stock was stopped. I stayed with a pig farmer, James King was in the business of selling piglets, to be grown on by other farmers. Because of the ban on the transportation of animals and the fact that he did not have the facilities to house them or the food to continue feeding them they had to be put down. He did not have foot and mouth. One consolation was that he was paid for the destroyed stock.

The reason why Foot and Mouth became so wide spread was that with rationalising and the reduction of abattoirs, livestock had to move much further afield. The idea of mass-produced cheap food promoted by governments could be the downfall which led to the BSE crises and now the foot and mouth. Farmers have been the main victims of their own mass production.

I also benefitted from listening to government officials as they spoke of their countries' position globally, their economy, their cultures and the protection they offer for farmers to stay on the land. I have included an outstanding example of this from Malaysia.

The Malaysian Government spoke of the mistakes they made in the past. The farmers were not supported, therefore, returns were low. Farmers and their families moved to the cities and now Malaysian imports are up to 80% of its food requirements. An example of this shift is shown in Figure 1.

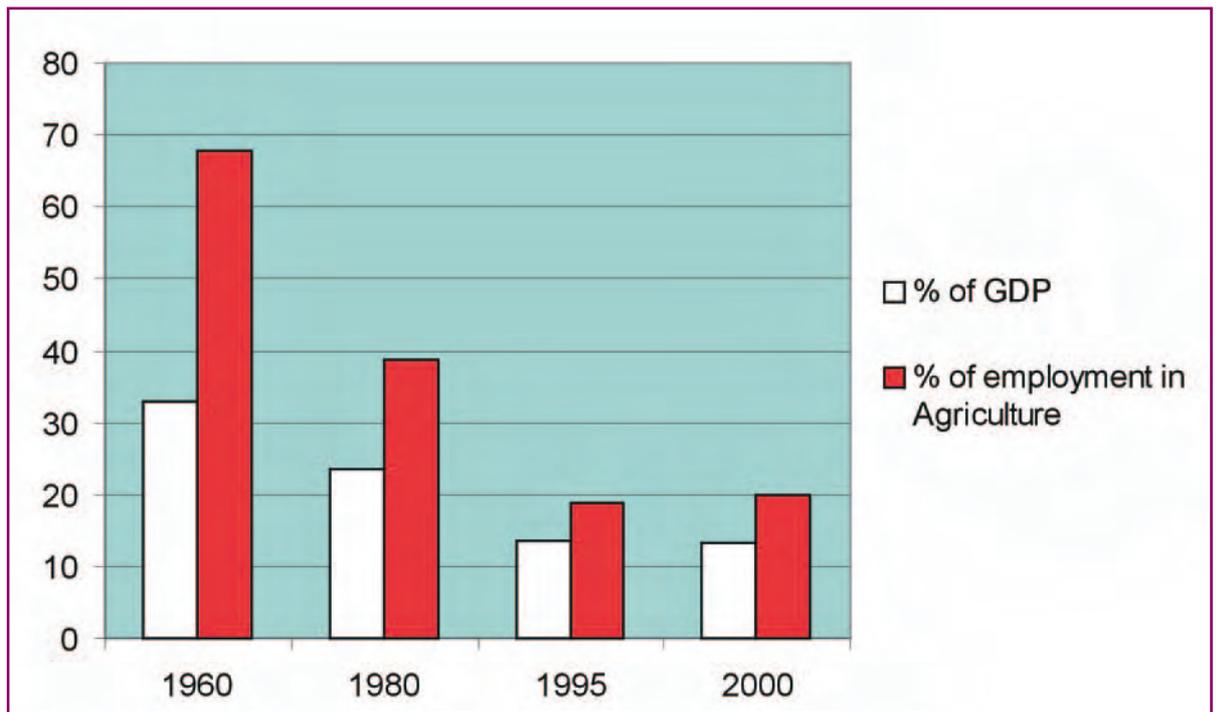


Figure 1: Change in GDP & Agricultural Employment

The 1960's and 1970's were years of primary production. During the late 1970's to the 1990's the government moved to import substitution. Realising that this was too costly and causing social and unemployment problems, the government moved toward export promotion and food production in 1999.

The government has developed and implemented policies and strategies for food production. The policies and strategies are as followed:

- Industry for food production and postproduction.
- Agribusiness and marketing.
- Food security at a self-sufficient level.
- Small farmers and commercialisation. (Small farmers are our food producers.)

The Malaysian government is getting behind all areas of development and has some interesting mottos.

- Education from "Cradle to the Grave."
- Agribusiness from "Paddock to the Plate."
- Research and Development from "Bench to Business."
- I.T. from "Bee to Bytes."

"We should be in tune with the paradigm shift in Agriculture philosophy of sustainability and the optimisation of our natural resources. We should be versed in precision agriculture. We must be competent in economics and business to tackle the problems of global competition," said Professor Dr. Yusof Hussein, Dean of Agriculture.

Throughout the world, no matter what language farmers speak, the one common thing all farmers understand is "Is the work profitable? The returns are just not good enough." I heard this from every corner of the globe. A 200Ha banana farmer in Costa Rica, who now takes the risk and deals direct. A melon grower on the Central Valley of California USA quoted "I sell my own produce now direct and I'm a lot better off." A grape grower in Greece where wholesalers are receiving fewer grapes due to the growers' preference for fixed prices. "We do not do much business with Greece because they favour the supermarkets and we only deal with the wholesale trade," says a wholesaler. "We used to sell 50 trucks a season, now we are something of a last resort." A Mushroom grower supplying the UK market stated "While we are making a living, we are not earning enough to invest in the future." I could write a report just on the complaints of the treatments received by, not just the wholesalers but also the supermarket chains and the large multi-national companies. Overall the farmers that are supplying the supermarket chains direct or sell at fixed contracted prices are by far better off, and once they tried this way, would not do business any other way.

In general I was able to research retail and wholesaling bananas in New Zealand Singapore, Japan, London and France. The Philippines and Central America are the biggest growing areas in the world and were a source of vast amounts of information. Martinique offered an overview of high cost banana production. The benefits and pit falls of growing bananas in Belize are similar to those of Australia's as it is situated at the same latitude above the equator as Australia is below.

This report will firstly discuss the background of banana production which includes the basic agronomy of the banana plant, the ripening of the bananas, the production on a world scale, the major banana traders and the types of bananas marketed. Then the production of a banana plantation, including infrastructure, planting, crop management, irrigation, harvesting and packing will be discussed followed by the weather influencing the production and the marketing of bananas. This report will also emphasise the importance of government support and sustainable production, with reference to real life examples. Finally, this report will discuss the trade possibilities for the Australian banana industry and offer suggestions to growers that may enhance and protect our industry. This study will be of interest to the major supermarket chains and the Australian banana wholesalers.

## 3 ~ AIMS & OBJECTIVES.....

My original study was a very intensive look at the production and marketing of bananas around the world and to study sugar cane and the production and marketing of sugar and ethanol.

Once plans were put in place for travel it became evident that it would be impossible to travel and study both sugar and bananas. As bananas are my main crop I decided that I should concentrate on that topic and do it justice. Therefore, from here I was able to list the main areas of study of banana production. These areas are as follows:

- Marketing including Niche Markets
- Quality issues
- Production, Irrigation, Crop Management and the Weather
- Environmental and Sustainable Production
- Trade Possibilities

We have difficulties in Australia with low quality produce, mixed weather and marketing. It was my intention to look at the worlds banana growing and production systems and marketing and see if any improvements could be implemented.

Some two years ago, the Australian Banana Industry received an application from the Philippines Government to import bananas. This report will give a guide as to where Australia sits globally in regards to production and how we may insulate ourselves from future import applications by growing only quality bananas. The other area that has come to light in recent years is the markets expectation of quality and the costs of obtaining this quality.

## 4 ~ BACKGROUND .....

### 4.1 The Banana Plant

The banana plant, often erroneously referred to as a “tree”, is actually a large herb, with succulent, very juicy stem (pseudostem), which is a cylinder of leaf-petiole sheaths, reaching a height of 6-7.5 m and arising from a fleshy rhizome or corm. Suckers spring up around the main plant forming a clump or “stool”. The eldest sucker replaces the main plant when it fruits and dies and this process of succession continues indefinitely. Tender, smooth, oblong or elliptic, fleshy-stalked leaves, numbering 4 to 15, are arranged spirally. They uncurl as the plant grows at the rate of one per week in warm weather and extend upward and outward, becoming as much as 2.75 m long and 60 cm wide. They may be entirely green, green with maroon splotches or green on the upper side and red purple beneath. The inflorescence, a transformed growing point, is a terminal spike shooting out from the heart in the tip of the stem. At first, it is a large, long-oval, tapering, purple-clad bud. However, as it opens, it is seen that the slim, nectar-rich, tubular, toothed, white flowers are clustered in whorled double rows along the floral stalk, each cluster covered by a thick, waxy, hood like bract, purple outside, deep-red within. Normally, the bract will lift from the first hand in 3 to 10 days. If the plant is weak, opening may not occur until 10 or 15 days. Female flowers occupy the lower 5 to 15 rows; above them may be some rows of hermaphrodite or neuter flowers. Male flowers are borne in the upper rows. In some types, the inflorescence remains erect but generally, shortly after opening, it begins to bend downward. About one day after the opening of the flower clusters, the male flowers and their bracts are shed, leaving most of the upper stalk naked except at the very tip where there usually remains an unopened bud containing the last-formed of the male flowers. However, there are some mutants such as ‘Dwarf Cavendish’ with persistent male flowers and bracts that wither and remain, filling the space between the fruits and the terminal bud.

As the young fruits develop from the female flowers, they look like slender green fingers. The bracts are soon shed and the fully-grown fruits in each cluster become a “hand” of bananas, and the stalk droops with the weight until the bunch is upside down. The number of “hands” varies with the species and variety.

The fruit (technically a “berry”) turns from deep-green to yellow or red, or, in some forms, green-and white-striped. It may range from 6.4-30 cm in length and 1.9-5 cm in width, and from oblong, cylindrical and blunt to pronouncedly 3-angled, somewhat curved and hornlike. The flesh, ivory-white to yellow or salmon-yellow, may be firm, astringent, even gummy with latex, when unripe, turning tender and slippery, or soft and mellow or rather dry and mealy or starchy when ripe. The flavor may be mild and sweet or sub acid with a distinct apple tone. Wild types may be nearly filled with black, hard, rounded or angled seeds 3-16 mm wide and have scant flesh. The common cultivated types are generally seedless with just minute vestiges of ovules visible as brown specks in the slightly hollow or faintly pithy centre, especially when the fruit is overripe. Occasionally, cross-pollination by wild types will result in a number of seeds in a normally seedless variety such as ‘Gros Michel’, but never in the Cavendish type.

Sourced; <http://www.hort.purdue.edu/newcrop/morton/banana.html>

Some interesting facts about bananas are as follows:

- Banana plants are the largest plants on earth without a woody stem. They are actually giant herbs of the same family as lilies, orchids and palms.
- Today's commercial bananas are scientifically classified into the genus *Musa* of the Musaceae family.
- The Cavendish is the most common variety of bananas now imported to the United States. The Cavendish is a shorter, stubbier plant than earlier varieties. It was developed to resist plant diseases, insects and windstorms better than its predecessors. The Cavendish fruit is of medium size has a creamier, smooth texture and a thinner peel than earlier varieties.
- Bananas are perennial crops that are grown and harvested year-round. The banana plant does not grow from a seed but rather from a rhizome or bulb. Each fleshy bulb will sprout new shoots year after year.
- Each banana plant bears only one stem of fruit. To produce a new stem, only two shoots (known as the daughter and the granddaughter) are allowed to grow and be cultivated from the main plant.
- The plant thrives in tropical climates and is generally grown within 30 degrees North and South of the equator. It needs temperatures around 30°C, annual rainfall of 2000mm to 2500mm and moist soil with good drainage.
- The banana plant reaches its full height of 4.5m to 7.5m in about one year. The trunk of a banana plant is made of sheaths of overlapping leaves, tightly wrapped around each other like celery stalks.
- Because the banana stalk is not woody and is 93% water, even moderate winds can blow down a plant. Severe windstorms known as blow downs can destroy acres of plants in minutes. To help prevent such damage, each plant is propped with sturdy poles or overhead cables.
- When leaf formation is completed, in approximately six months, a flowering stalk emerges from the top and a large bud grows downward from the stalk's tip. Purplish leaves around the bud unfold and banana blossoms are revealed. Each female blossom becomes an individual banana fruit.
- After the stem forms on the plant, it is covered with a large, plastic bag which shields it from insects, birds and leaf damage, yet allowing the sun to reach the fruit.
- On each stem, ten or more bananas growing together are called "hands" and a single banana is called a "finger." Four to six bananas sold in the retail store are called a "cluster."
- Banana plants require intensive, individual care: clearing away of jungle growth, propping to counter bending from the weight of the growing fruit and irrigation during the dry season.
- Within 8 to 10 months, stems are ready to be harvested. Stems average 150 fingers and weigh 40 to 50 kilograms each. Once a stem is removed, the main plant is cut away and the daughter becomes the main plant repeating the cycle.

Sourced: <http://www.eatmorebananas.com/facts/plants.htm>

## 4.2 Ripening

Bananas are one of the few fruits that ripen best off the plant. If left on the plant, the fruit splits open and the pulp has a “cottony” texture and flavour. Even in tropical growing areas, bananas for domestic consumption are cut green and stored in moist shady places to ripen slowly. As bananas ripen, the starch in the fruit turns to sugar. Therefore, the riper the banana the sweeter it will taste. The commercial practice is to ripen bananas artificially by using ethylene gas. A substance produced by the fruits accelerates the normal process of fruit maturation. Temperature monitoring during ripening is critical. Normally temperatures between 14.5 degrees and 16.5 degrees Celsius will be adequate. If ripening temperatures are too high (normally above 18 degrees) the fruit can become over-ripe too fast, soften but remain green and or split through the skin. Relative Air Humidity during ripening is also critical and levels lower than 85% RH can produce ripe fruit with too much scarring and symptoms of dehydration, as well as fruit with a greyish tan. There are two types of commercial ripening rooms; conventional rooms and pressurized or forced-air rooms. The conventional rooms are cold rooms with adequate air circulation to move the ethylene somewhat passively around and through the fruit. Pressurized rooms create a pressure gradient between rows of stacked boxes lined up into a tunnel with a differential pressure gradient between the inside and outside of this tunnel to force the air through the fruit, rather than around the boxes. Ripening programs usually run from 4 to 8 days (Figure 3). The temperature inside the ripening room is initially high and then is lowered according to when and what colour stage the fruit needs to be taken out for shipment to the retail stores. Longer ripening schedules, with a more gradual reduction in temperatures are better for the fruit, but in many situations ripeners allow the fruit to go through as short a cycle as possible before releasing the product to the retail outlets. The colour of the peel is used as an indicator of ripening progression. A scale of 1-7 is generally accepted: 1 is hard green, 2 is light green, 3 is more green than yellow, 4 is turning 50% green and 50% yellow, 5 is yellow with green tips, 6 is fully yellow, 7 is flecking and into brown (Figure 2 Colour Chart). Most ripeners take fruit out of the ripening rooms and ship to retailers when at colour stage 3.5.

Sourced; <http://www.eatmorebananas.com/facts/ripening.htm>

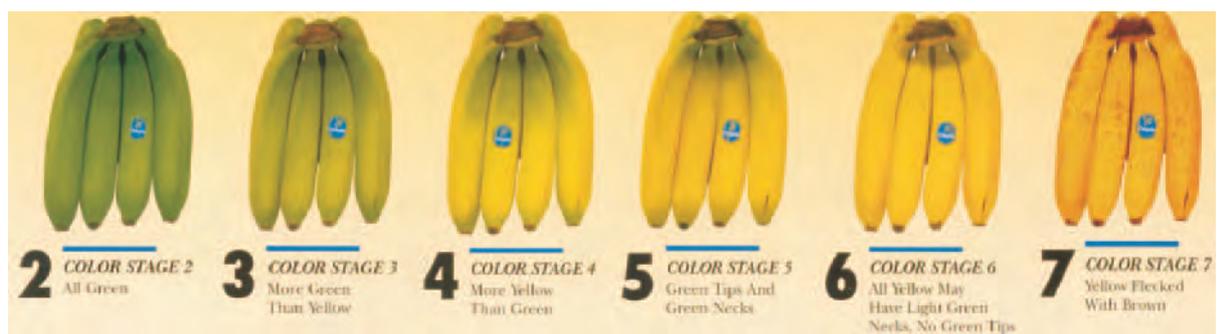


Figure 2: Colour Chart

The most common room is the pressurised rooms. Both high and low humidity (70%) are used with not that much difference in results. For example, Mack Multiples ripening facilities at Paddock Wood, Kent UK ripens the fruit over a seven-day cycle. They will not force the fruit in short supply but will continue with the rotation of fruit as normally required.

ETHYLENE	18°	18°	16,5°	15,5°	14,5°	Store and deliver		4 days
ETHYLENE	16,5°	16,5°	16,5°	15,5°	14,5°	14,5°		5 days
ETHYLENE	16,5°	16,5°	15,5°	15,5°	15,5°	14,5°	14,5°	6 days
ETHYLENE	15,5°	15,5°	15,5°	15,5°	15,5°	14,5°	14,5°	7 days
ETHYLENE	14,5°	14,5°	14,5°	14,5°	14,5°	14,5°	14,5°	8 days
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8

Figure 3: Typical ripening schedule



Noboa fruit - New Zealand



*Lependays' (Philippines) fruit in Japan*

Most fruit exported around the world is packed in a vacuum bag. Before ripening can begin each bag must be pulled through the carry hole and cut, to allow the ethylene gases to penetrate.

### 4.3 World Production

Bananas are the fourth most important staple crop in the world, critical for food security in many tropical countries. World banana production amounts to some 55 million tonnes per year concentrated in Africa, Asia, the Caribbean and Latin America because of the favourable climatic conditions.

More than 85 countries produce bananas and plantains. For at least 15 Latin American and Caribbean producer countries, the Cavendish variety of banana is a crucial source of export income. Several million people depend on the banana trade for their livelihood. Only 20% of the 55 million tonnes of bananas produced each year enter world trade. In fact Brazil and India, the two biggest banana-producing countries, are hardly involved in the international banana trade at all. The highest consumption per person is in Uganda, where bananas are produced solely for local consumption.

Millions of small-scale farmers in Africa, South Asia and Northern Latin America grow bananas for household consumption and/or local markets. Most of this production is achieved with little or no external inputs. However, once a producer starts growing bananas for export to the industrialised world, considerable and increasing levels of "external" inputs (seed and agrochemicals) are required to effectively compete in this market. Less than 20% of bananas grown enter world trade, but the socio-economic and ecological sustainability of production for export is increasingly challenged in both producing and consuming countries, as the trade becomes increasingly dominated by a small number of aggressive transnational companies.

Sourced: [http://www.corporatewatch.org.uk/magazine/issue5\\_6/cw5w1.html](http://www.corporatewatch.org.uk/magazine/issue5_6/cw5w1.html)  
<[http://www.corporatewatch.org.uk/magazine/issue5\\_6/cw5w1.html](http://www.corporatewatch.org.uk/magazine/issue5_6/cw5w1.html)>

## 4.4 Major Traders

The world's largest producer and marketer of bananas is Chiquita (formerly United Fruit). Chiquita is owned by United Brands and sells about a third of the world's bananas. These sales account for 60% of the corporation's profits. Chiquita's prepared foods division, mostly meats and packaged goods, accounts for about half of its sales but less than 10% of profits. Close on Chiquita's heels is the US company, Dole, owned by Castle & Cooke, a property and food group. Dole is the world's largest producer and marketer of fresh fruit and vegetables. Both these companies own vast banana plantations in Central America, and together effectively act as price-setters. The third largest transnational banana company is Del Monte, which was taken over in June 1996 by Grupo IAT, which owns Chile's third-largest fruit exporter Del Monte's canned food division eventually went to a consortium of Del Monte management, Japan's Kikkoman food company and Citicorp investors. Meanwhile, Irish-based company Fyffes (which together with WIBDECO, a company set up by the Windward Islands' governments, bought up British company Geest in 1995) is the UK and Ireland's main banana distributor.

These multinationals are closely associated with banana exports from Latin America, and especially Central America, where they are directly involved in the production of around 60% of their export supply. However, they were quick to become involved in the Philippines and more recently in Indonesia after the opening of the Japanese market in the 1980's. They are also active to a lesser degree in certain ACP (African, Caribbean and Pacific countries) exporters. Chiquita, for example, has been involved in the management of the banana industry in Belize, Suriname and Jamaica and, until the mid 1980's, owned Fyffes which was closely involved with ACP production. Since the beginning of the 90's however, transnational corporations have gradually relinquished direct ownership of plantations, preferring guaranteed supply contracts with medium- and large-scale producers from the countries that actually grow the bananas. This trend is not confined to the banana sector. It allows Northern-based corporations to shift the responsibility for labour and environmental conditions in the plantations onto local shoulders, arguing that they have no control over these conditions and that national legislation is in place to ensure that minimum standards are respected. Trade unions in the region regularly report that wages, labour conditions and environmental management practices on these nationally owned plantations are generally as bad, if not worse, than in their multinationally owned neighbours'. Adequate labour and environmental legislation often exists, but is rarely enforced until directly challenged in court.

*Sources: FAO, CIRAD 1995 Sourced:*

*[http://www.corporatewatch.org.uk/magazine/issue5\\_6/cw5w1.html](http://www.corporatewatch.org.uk/magazine/issue5_6/cw5w1.html)*

## 4.5 Dollar vs. ACP

World banana exports have traditionally been split between "Dollar" bananas. Dollar bananas are produced on large estates extending over 5000 hectares in Central America and the North West of South America, and traded by a handful of large companies. Afro-Caribbean-Pacific (ACP) bananas are grown in countries that have trading relationships with European countries. Many of these relationships were developed during the colonial period, with the consequence that many of these countries are largely dependent upon the banana trade for survival. One example is the Windward Islands, (St. Lucia, St. Vincent, Dominica and Grenada) located in the Eastern Caribbean. Banana production here is characterised by smallholders, who grow their fruit on family-owned farms - usually less than five hectares in size. The system is labour intensive and the use of agrochemicals is low. In stark contrast, Dollar banana production is directly or indirectly controlled by the multinationals and the plantations require massive capital investments in the form of roads, cableways, irrigation, drainage and packing facilities. Despite these inputs, production costs are much lower than ACP bananas. However, the plantations have an unhappy history of low-wages, limited workers' rights, poor working conditions and the high-levels of agrochemicals.

The combination of inadequate worker protection and the frequent applications of nematicide, DBCP which was used in banana producing regions for some years after it was banned in the countries where it was manufactured, has led to more than 20,000 cases of male sterility amongst workers, as well as skin cancer and birth defects. The chemical companies Shell, Dow Chemical and Occidental Corporation and the banana companies Dole (Standard Fruit) and Chiquita are all involved in legal cases relating to the production and use of DBCP.

Sourced: [http://www.corporatewatch.org.uk/magazine/issue5\\_6/cw5w1.html](http://www.corporatewatch.org.uk/magazine/issue5_6/cw5w1.html)

## 5 ~ PRODUCTION.....

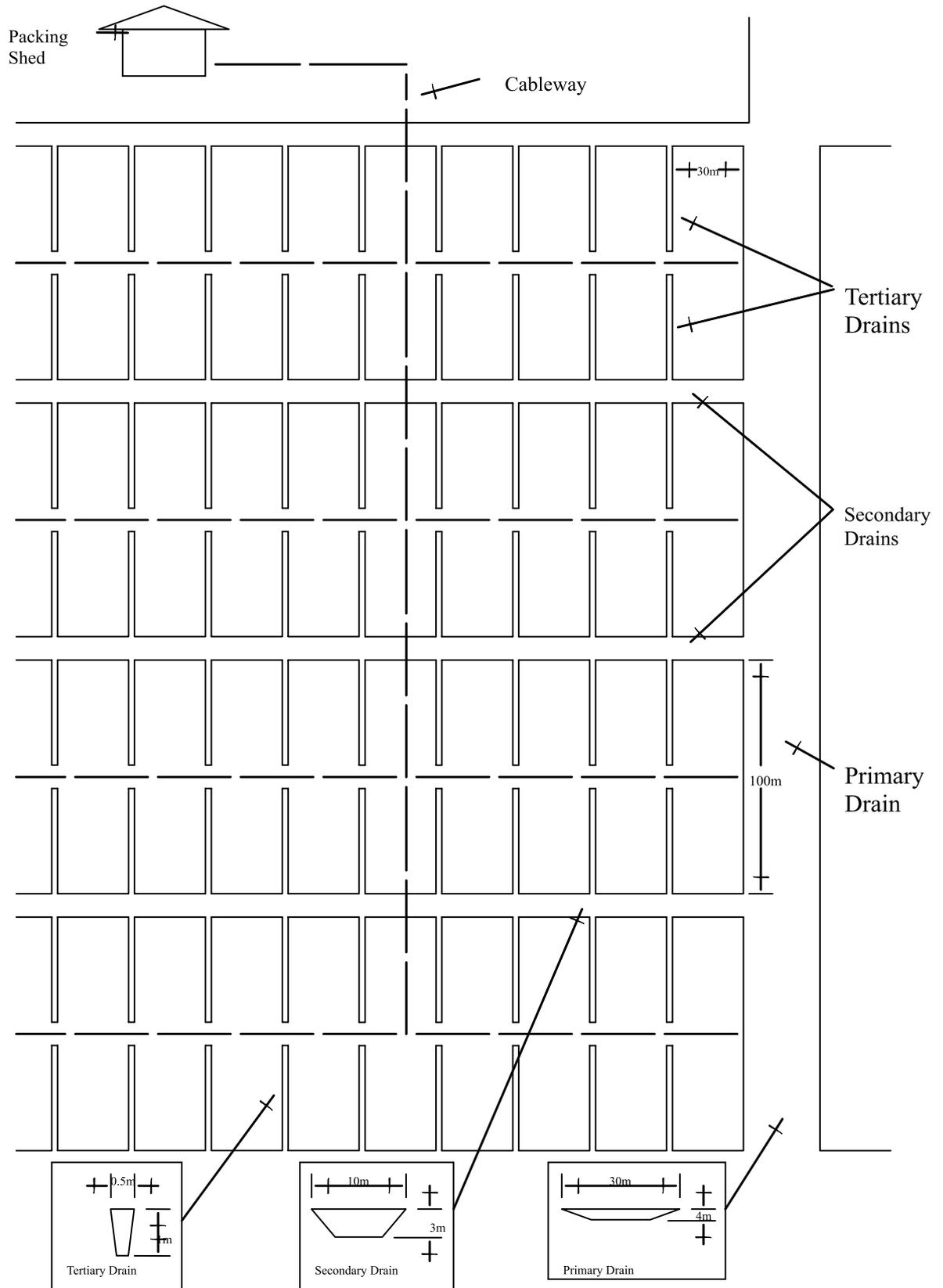
### 5.1 Infrastructure

#### 5.1.1 Drainage

Even though a banana plant is a very large user of water, a banana plant is unable to sustain any long periods of water lodging. Damage will occur after 2 hours in stagnate water and as the water becomes heated the sever damage will cause the plant to die. The banana plant breathes oxygen through its roots, therefore a period of flooded, oxygenated, running water is sustainable.

Quality starts from the growing. A very high capital expenditure is needed to protect the fruit from any problems that could interfere with the quality. Before any banana plants are planted an extensive and detailed drainage system is developed. Up to 120 kilometres of primary, secondary and tertiary drainage could be dug on a 200 hectares farm. A diagram of an effective drainage system follows.





## 5.1.2 Cableways

Cableways are installed also. Cableways carry bunches to the packinghouse, up to 25 if hand pulled or up to 70 if motorised. The quality of the bananas are protected, since they are smoothly transported on the cables. Therefore the road conditions which normally have a negative effect in the rainy seasons are of no concern.

The cableways are an integral system, it handles the banana crop, is used for chemical and fertiliser transportation and reduces and protects the soils from compaction.



*Manual cableways*





*Motorised Cableways - Honduras*



### 5.1.3 Overhead Tying

Because the banana pseudostem is not woody and is 93% water, even moderate winds can blow down a plant. Severe windstorms known as blow downs can destroy acres of plants in minutes. To help prevent such damage each plant is propped with sturdy poles or overhead-cables. Overhead tying is the preferred option. To secure the weight of the bunches and the plant, twine or string is tied around the throat of the plant on to a 4mm wire some 4 metres off the ground. This system is used in all areas of high wind. Ecuador has the luxury of not having to invest in this system. Being on the Equator means they don't experience cyclones or hurricanes, although they do prop, using bamboo poles to support the heavy bunch weights.

There are many variations to aerial tying throughout the banana growing countries. I have inserted two examples of the main systems used. Figure 5 is a system used in Costa Rica; cement poles support the overhead wire. The bananas are planted in a double row 5 metres between centres. Wires are also used across the rows to support lateral rows.

Figure 5: Cable Tying Farm Layout

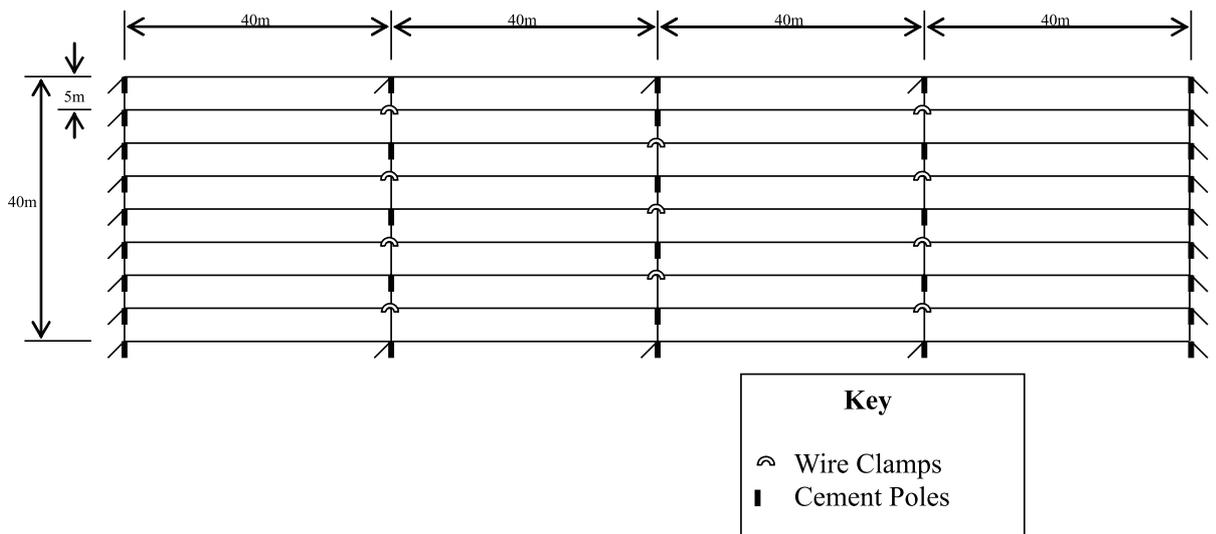


Figure 6 is a system used in the Philippines, and is similar although they use a timber poles. Rather than using wire across the row, every second support down the row use bamboo poles. These bamboo poles are tied together and support the wire in the apex. This supports the sideways movement of the wires.

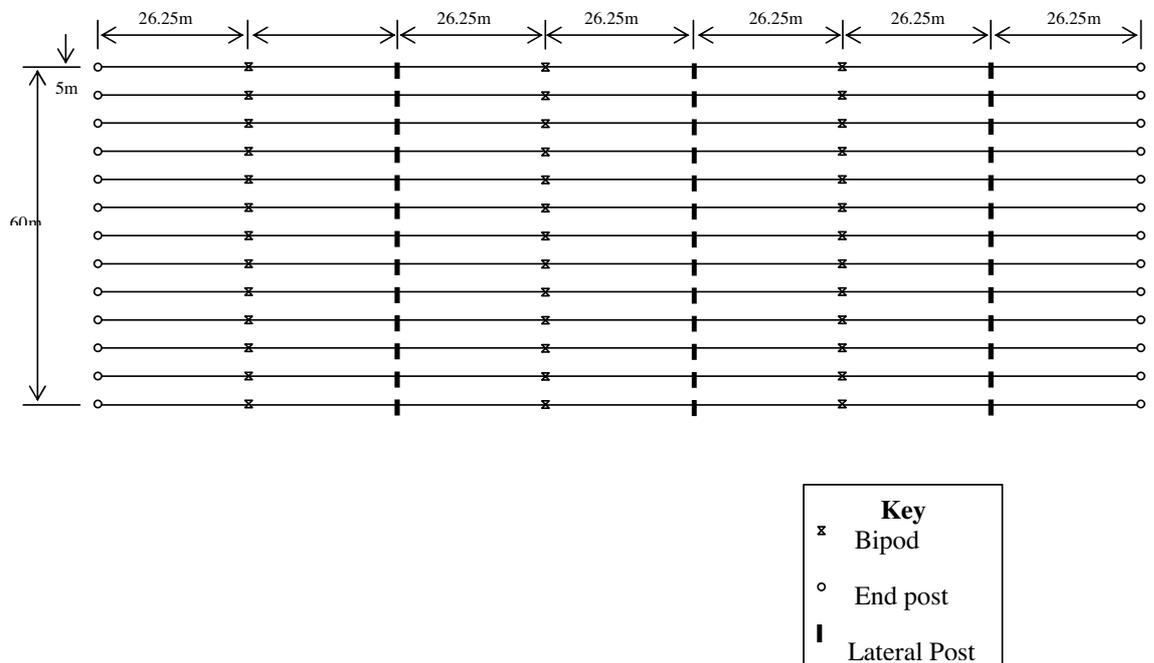


Figure 6: Cable Tying Farm Layout

## 5.2 Planting

Banana plantings are in production for many years. The conventional hexagonal plantation design is the industry standard, which contains an average of 1800 plants (or production units) per hectare. A production unit is defined as containing one main or “mother” plant and one follower or “daughter” plant.

The normal interval between harvests of mother and daughter plants is 8 to 10 months. Therefore, it is estimated that the continuous production process enables banana plants to yield between 1.2 - 1.5 crops per year.

Through out the major growing areas banana plantings are either in rows or planted in a 3 metre x 2.5 metre triangle. In the Philippines plantations have been developed some 30 years ago and are now still producing very good quality fruit. Apart from Martinique, no other plantations were developed for mechanisation. All plantation managers spent time and training on the workforce. One of Lapenday Food's employers informed me of the importance of doing his job correctly and the importance choosing the correct sucker for future generations and the production of bananas.

## 5.3 Irrigation

Most of the exporting countries use irrigation with the exception of Costa Rica. The oldest system is the overhead water cannon. This is being replaced by under tree sprinkler and trickle irrigation. The overhead water cannons contribute to the spread of Black Sigatoka.

In the Philippines farms are reluctant to fertigate through the under tree sprinklers or trickle. This is due to the incidences of workers using these irrigation systems for drinking water.

## 5.4 Crop Management

All of the large commercial farms have every procedure recorded and monitored. Fertilizing and nematicides are used on a regular basis. They are not applied haphazardly but are applied with the use of monitoring and as needed. Fertilizer and lime/dolomite is applied either every two or three weeks. It is a proven fact that smaller amounts more often are better.

In Costa Rica contractors apply nematicides. The contractors are responsible for the health and safety of their workers. Each contracting group have blood tests to test the levels of any chemicals. This is done before and after the job. This not only protects the employees but also the employer. The contractors are also responsible for monitoring the weather conditions and must stop when rain is imminent. All farmers are aware of leaching nematicides through to the drainage systems. They are eager to prevent any loss that could result in fish kills or contaminated water ways. All personal safety equipment is supplied and must be used. Special wash down areas are provided where an employee can enter remove his clothes, move through a shower and dress with clean clothes. His dirty clothes are washed and dried for next time. All the water from the clothes washing and showers is filtered through a charcoal filter before entering any drainage system.

The same applies with Black Sigatoka treatments. All treatments are applied as needed and protectants and systemics are applied as per sampling and monitoring. Costa Rica applies fungicide on an average every 10 days while Ecuador is every 14-20 days and Martinique is 7 times per year. Martinique has only Yellow Sigatoka. All treatments are applied by either aircraft or helicopter.

## 5.5 Bell Injection and Bagging

Bell injection is used in the Philippines to protect the fruit against Flower Thrips. No bell injection is used in any of the Central and South American countries. They do not have scab moth, however flower thrips are a problem. To eliminate this, early bagging is performed. The bags are placed over the bells as they drop from the throat.

## 5.6 Bagging

Most farmers are removing the false hand (small and large fruit mixed) plus three hands, the bell and deflowering the fruit at or before bagging. A plastic sleeve is placed over the inside whorl. This is commonly called a glove or dipper.



*Bagging the fruit*

All fruit cut for export must meet some high standards and one is the age. At bagging a coloured plastic tie is either tied around the top of the bag to secure the bag to the stalk or is tied to the bottom of the stalk to allow the cutter to see it.



*Bagger Applying a Red Ribbon*

Baggers can use a red ribbon which will tell the cutter, in some ten weeks time, the date it was bagged. This employee removes the flowers from the ends of the fingers, removes the false plus three hands and also ties the plant to the overhead wire. Note the cement pole that holds the overhead wires.

## 5.7 Harvesting

Two workers are required to harvest bananas: a “cutter” and a “humper”. Once the cutter selects the bunch for harvesting a small cut is made into the pseudostem. The bunch is then pulled and the stem starts to fold over. Here a prop about 2.5 metres is placed near the top of the plant and the ground. This allows the bunch to hang in a position that is very accessible to the humper. It also allows both the cutter and humper to place protective slips between each hand. Once the slips are in place the bunch is placed on the padded shoulder of the humper, to be carried to the cableways. The top cut section of the stalk is covered with part of the bunch cover to stop the flow of latex or sap on the fruit.



*Padding the fruit ready for transport by cableway to the packing shed.*

## 5.8 Packing



*The fruit as it arrives in the packing shed.*

In the packing shed the pads are removed and stored in a large bag to be used again. The previous photo shows the lawsban bag wrapped around the stalk to stop sap/latex damaging or staining the fruit.

In the packing shed, the bananas are removed hand by hand by skilled workers (dehanders). The dehanders start at the top of the bunch and work down, although I did see many that started from the bottom and worked up. Some dehanders were dehanding bunches that were hung upside down, starting from the bottom hands and working down to the bigger hands. It seemed that each way had no advantage over the other. A bunch will hold as many as 15 hands, which are then cut into smaller clusters of 4 to 6 fingers. Each cluster is washed in large floating tanks of moving fresh water to clean them and remove field heat prior to shipping. Clusters are examined by selectors and quality control personnel for grading and sorting. The hands are removed either by a small knife with a hook end or a curved spade like tool. The removed hands contain a lot of stalk or wood and the clusters or sorters trim this.



*Sorters clustering and grading the fruit*

Next a person will select and place on a specially made tray, 18.5 kgs of fruit. The fruit will then be stickered the move along to be sprayed with a fungicide to protect the crown end from rots and infections. The tray then moves along to the packer. Each tray will contain at least one row of small fruit, one row of medium fruit and two rows of large fruit. The fruit is packed in a plastic bag and mostly with a cardboard liner that protect the layers of fruit. The packer makes an effort with the presentation of the finished carton. The finished product must meet very stringent quality and presentation criteria.



*Dole fruit Costa Rica*



*Independent grower Costa Rica*



*Reybanpac fruit Ecuador*



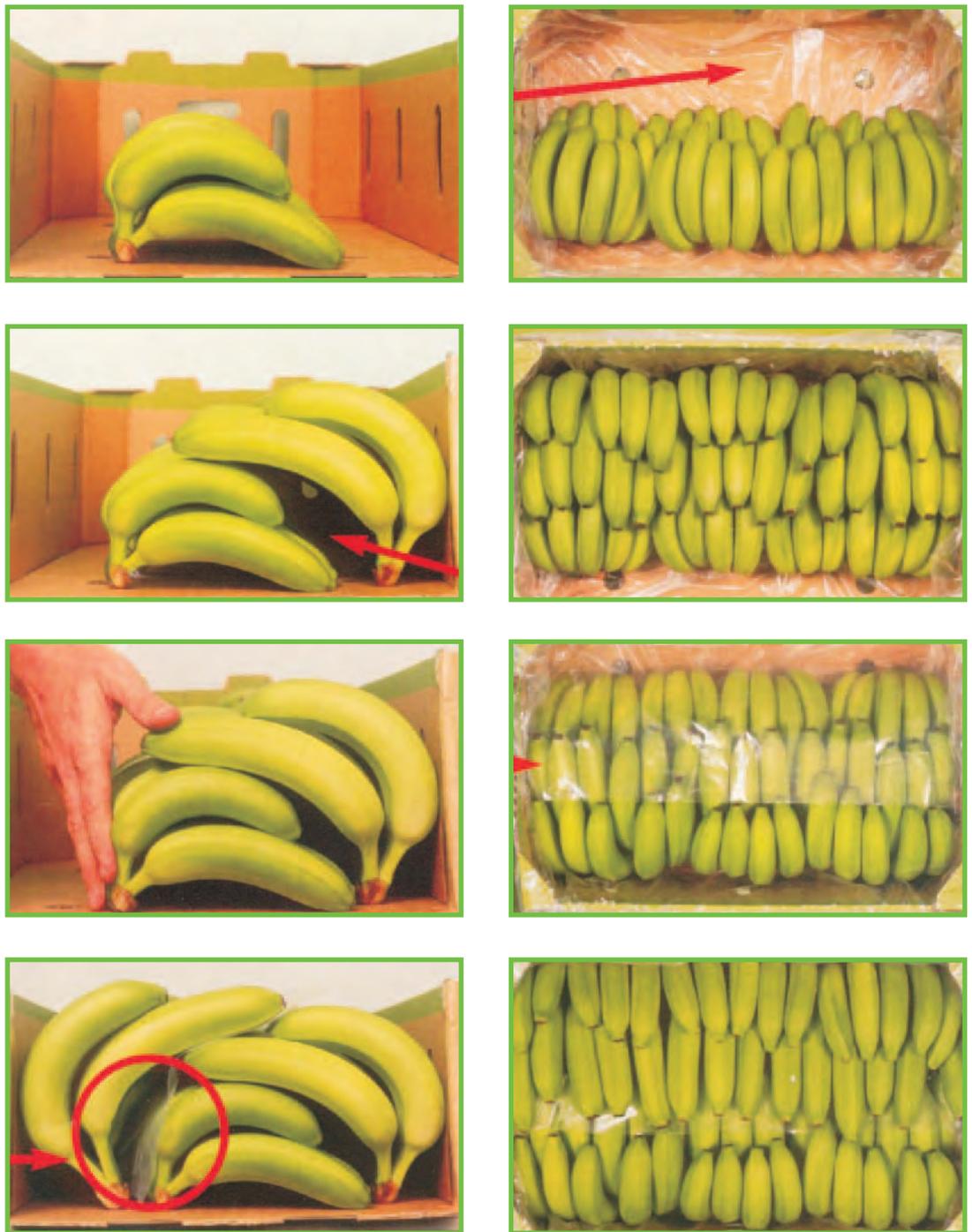
*Fruit packed by Chiquita Honduras*



*Fruit packed in Martinique*

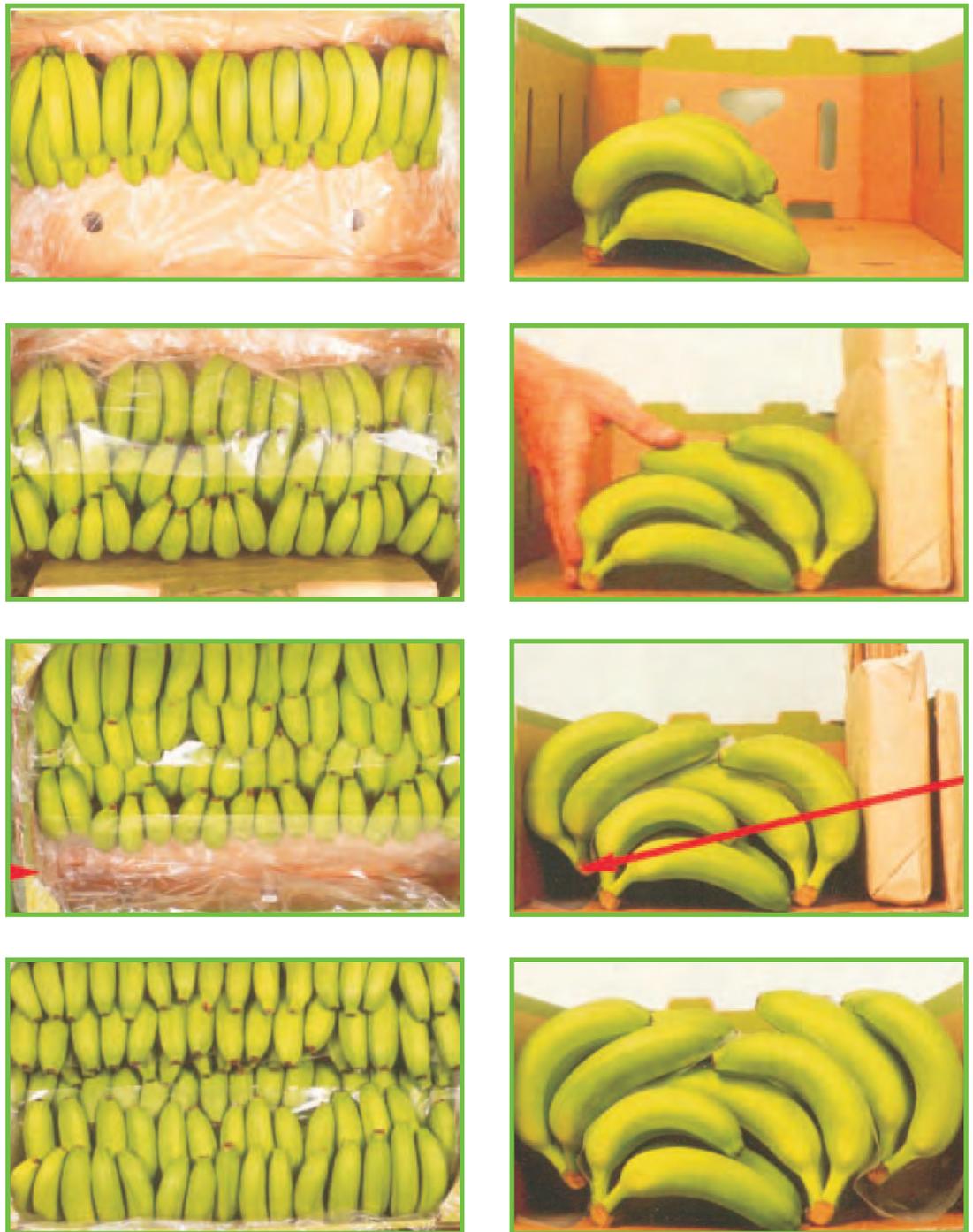
- The fruit is then packed for shipping in special 18.4 KG/40-pound, corrugated boxes. The bananas are precisely arranged to prevent movement during shipping. Plastic film and paperboard padding are placed between layers to further reduce bruising.
- Banana boxes are loaded into special refrigerated, truckload-sized containers and driven to the port where a container ship will be scheduled to load. Bananas are loaded onto the ship within 24 to 48 hours of being cut from the plant.
- Because heat and humidity speeds up the process of converting starches into sugars, (ripening the fruit), bananas are carefully maintained at 14.5 degrees and the temperature and humidity conditions are monitored throughout the voyage.

Sourced: <http://www.eatmorebananas.com/facts/production.htm>



Photos by Gipam Martiniquev  
Figure 7: Packing system for a 17 kg open carton in three rows.

Special attention is given to the crowns. Note that all the crowns are sitting or touching the bottom of the carton. One slip-sheet is placed between the last row of fruit. The fruit is packed in a vacuum-sealed bag ready cooling and shipment.



*Photo Supplied by Gipam Martiniquev*  
*Figure 8: Packing system for a 17 kg open carton in four rows*

The best quality care must be taken in selecting the right shaped clusters.

## 5.8.1 Quality Issues

Quality is the dominating factor to a successful business and a high return. All exporting farms must do quality inspections and failure to do so could land the grower with the expense of picking up his fruit from the shipping ports. The major exporting companies have stringent inspections before the bananas are loaded on the ships. If a consignment is rejected the farmer will have it sold locally, dumped or shipped back to the farm for repacking. The rejected fruit costs are split between the workers that packed the fruit. This deters them from packing outside the guidelines.

'Our People are your Assurance of Quality'. The return for who companies invest in training and development programs, is a highly motivated, highly skilled workforces who are dedicated to meeting the needs of their customers.

# 6 ~ WEATHER.....

## 6.1 Temperature

The ideal growing condition is a tropical climate with slight fluctuations in temperature with the optimum range of between 22° and 31°. Ecuador was the closest with a minimum low of 19° and a maximum of 32°. Although Belize is 17° above the Equator, banana producers don't experience the same cold resulting in under peel chill (discolouration or dull yellow to brown fruit) as Australia does in wintertime. At times some chill does show up and when this occurs the fruit must be discarded, as it does not meet export quality requirements. Bananas are grown on the coastal flats and the flow of warm air from the Caribbean is sufficient for the production of export bananas.

The last occurrences of under peel chill damage in Honduras were 20 years ago and the banana industry does not consider it an issue. Under peel chill damage is a major quality issue and would not pass an inspection at the shipping ports. The fruit would be dumped.

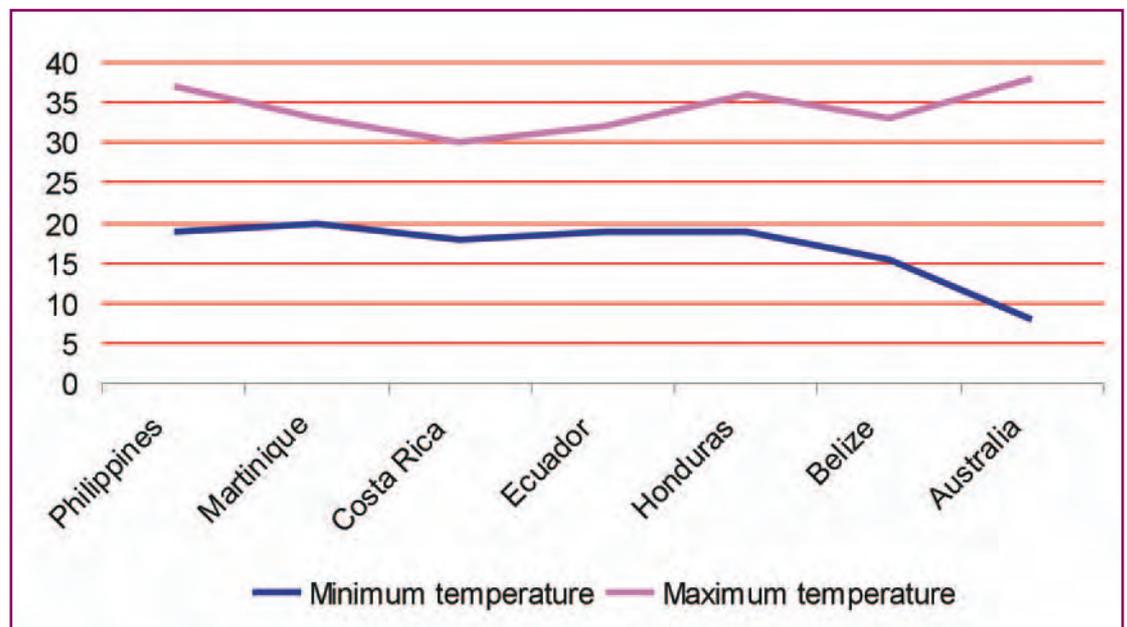


Figure 9: Minimum & Maximum Temperatures for Banana Growing Regions

## 6.2 Rainfall and Flooding

Fast growing bananas require large amounts of water for sustained growth and production. The ideal distribution of water is 25mm per week, although this would never occur. The average rainfall of 2000mm would satisfy the total yearly demand for banana production if it were distributed evenly through out the year. Rain normally occurs during a wet/rain season giving excess water, the rest of the year the rainfall is deficient. Irrigation in this period is vital to maintain the normal growth and development of the banana plant.

Drainage is an integral part in plantation development. It is a very costly but important feature of any tropical commercial plantation. Flooding and excessive rainfall (loss of day-light hours) causes more losses to production in Costa Rica than wind.

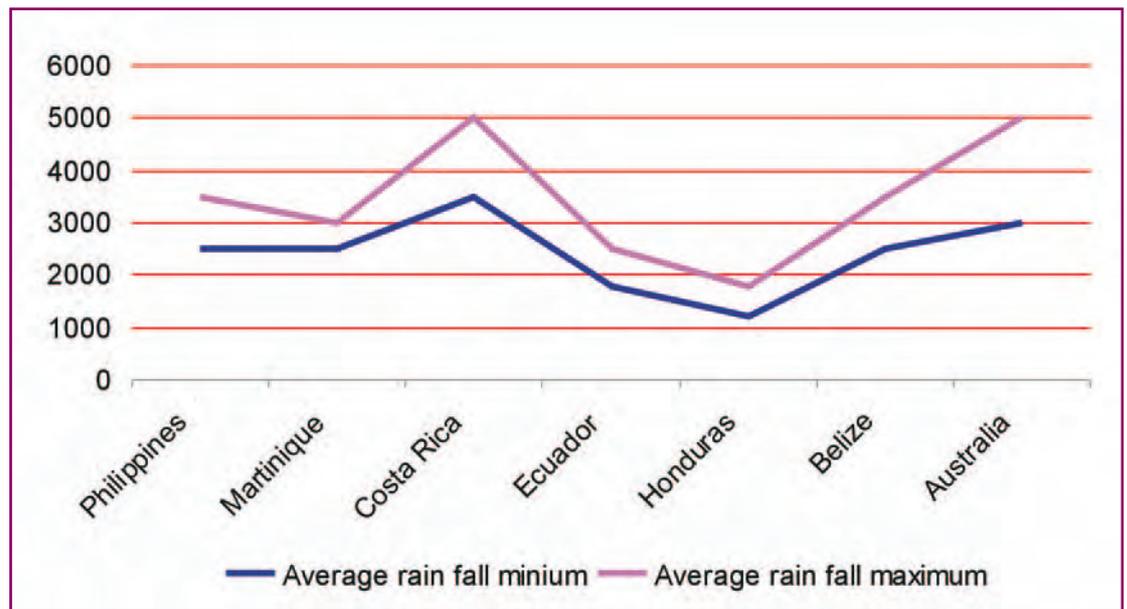


Figure 10: Minimum & Maximum Rainfall Averages for Banana Growing Regions

### 6.3 Wind

The most serious climatic problem for the production of bananas is tropical storms or cyclones (typhoons, hurricanes) that regularly cause severe damage. Bananas are sensitive to strong winds. Winds from 17-36 kph will cause shredding of leaves, reducing productivity. Tropical storms up to 72 kph cause serious blow downs, while cyclones over 72 kph will result in complete destruction of a banana plantation. Wind breaks are common in the Caribbean, but do little in the case of a severe storm.

Aerial tying and propping are used to lessen the effects of high winds, but plantations will still sustain damage in cyclonic conditions. Belize is prone to hurricanes and any money spent on infrastructure will be on installing overhead tying systems. Currently they are propping.

The most common solution to the problem of growing bananas in a cyclonic belt is annual cropping. Annual cropping of bananas was first developed in Taiwan as the Island lies in a typhoon belt in the northwestern Pacific. Planting at the correct time and having the plant grow through the typhoon season with out the burden of a bunch is sufficient for the annual production and export of bananas. Although, once the crop is harvested and exported, production is suspended until the following year and harvest. The harvesting and trade in bananas in Taiwan is well defined and leaves supply on the domestic market very scarce.

The same system of annual cropping is performed in Cuba. Cuba plants up 11,000 hectares of banana every year using tissue culture. All the bananas grown in Cuba are for local consumption. On the other hand Ecuador's position along the Equatorial strip means it is immune to the incidences of tropical cyclones or hurricanes. Farmers are still propping to support the bunch weight.

## 7 ~ MARKETING.....

All of the places visited relied on the importation of fresh bananas. This to an extent, limits the supply as all importing countries rely on shipping. From what I have seen, most distributors/ripeners order only the quantity of fruit that they will be selling. Fyffes also have standing orders with the supermarket chains and these orders are very rarely different. Any over supply finds its way to the central markets. Here is where the price fluctuates the most. Most commonly bananas are sold directly to the large supermarkets at minimal price fluctuations. Retailers need a consistently good quality banana and are prepared to pay for it. Although there are occasions that they will demand the bananas for below the cost of production. One example is in the USA where a major chain usual weekly order of 500000 18kg cartons could be cancelled if the wholesaler did not reduce the price. The growers lost some US\$1.0M that week. The problem is that there is another wholesaler ready to discount the fruit to get the business, with no regard for the grower. Most of the arrangements regarding prices are made a number of ways. A price is set before the packing begins for that week. A price is fixed for twelve months and the grower supplies 100% of his fruit. A grower that commits a percentage of fruit at a fixed price and the remainder is sold at that current weeks price. One of the best systems that I did see was in Japan, where the fruit was auctioned and a fixed cost was deducted. See detailed report on the markets of Singapore and Japan in Appendix 1. Bananas are marketed in many ways and the most popular is a large display of clustered bananas.



*Organic bananas in Italy*

The better-looking displays are where the bananas are displayed in the lid of a three-piece carton.



*The three-piece carton*

Once ripened the carton is turned over. The bottom lid and centrepiece are removed along with the plastic. The bananas are ready to be purchased directly from this lid. There is no additional handling to have this display. Pre-packaged bananas were, small kids size, organic, supa-sweet, fair trade or long life. Standard bananas were also pre-packed and available in most shopping centres in Japan.

Opportunities are out there for organic bananas and a supa-sweet (high brix content) banana. Fair trade and Ethical trade bananas are gaining popularity.

## 7.1 Cost of Production

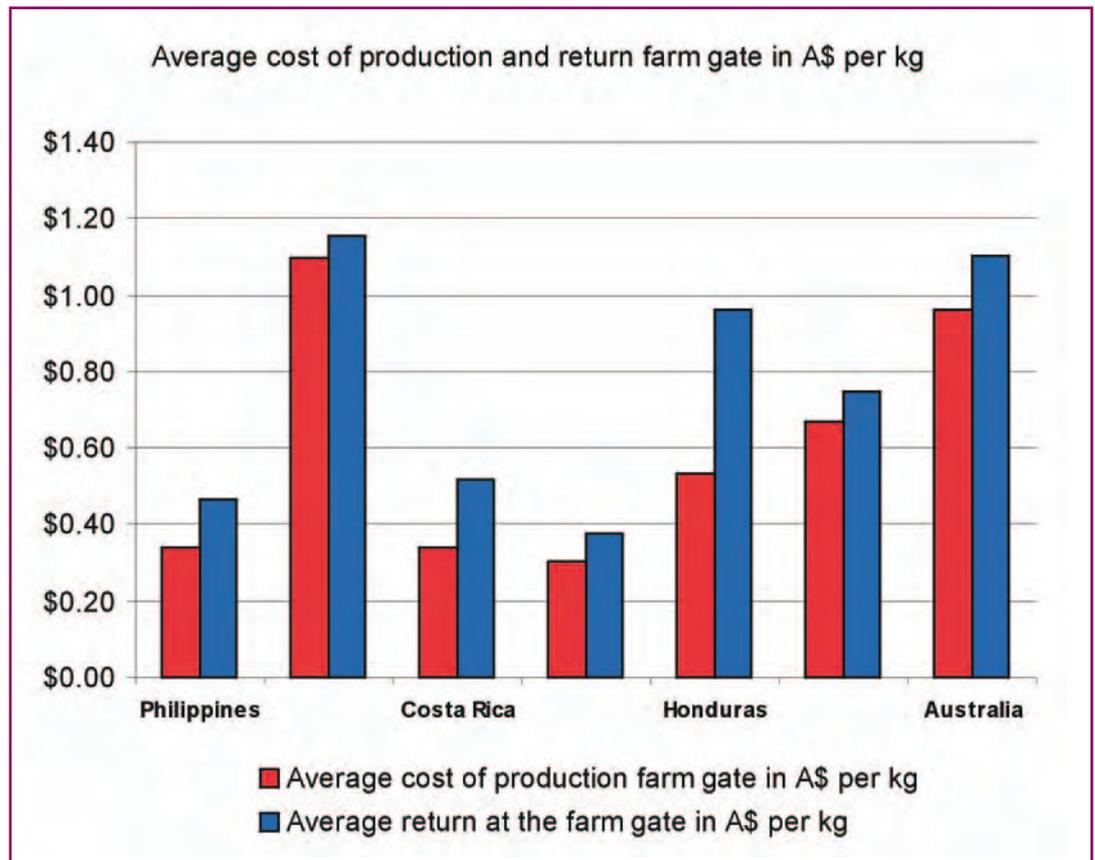


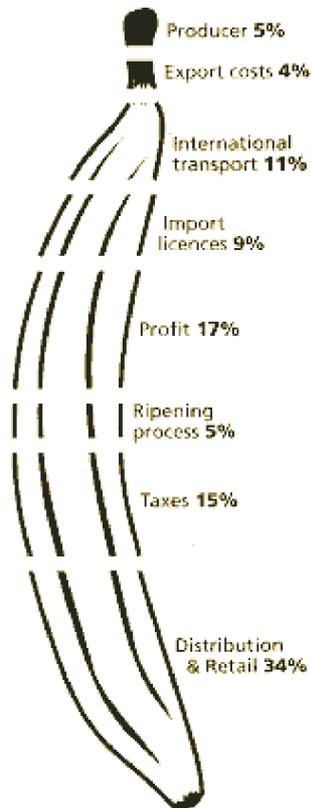
Figure 11: Average Cost of Production & Returns for Banana Growing Regions

The cost of production differs from country to country. In the Philippines aerial spraying is the biggest cost in producing fruit while Australia and Martinique it is labour costs. There is no substitute for employing people in bananas. The more people the better the quality. Machines can replace many people or machines will make the job easier, but it is manpower and the amount of times a farmer is prepared to visit the bunch that will determine quality.

### 7.1.1 Split – Who gets what from the price of a banana

As with almost all commodities produced in the South and consumed in the North, more than 90% of the price paid by the consumer stays in the North and never reaches the producer. Most of the risks of producing a perishable fruit are, however, born by the producer. The largest chunk of all is taken by the retailers – mostly the dominant supermarkets and chain stores.

Sourced: <http://www.newint.org/issue317/facts.htm>



The cost of growing bananas is determined by the cartons produced per hectare. Honduras had a shortage of fruit at the time of my visit and was demanding a higher price. Apart from Honduras, growers on an average around the world receive between .05c and .10c per kg profit. It is not enough and plantations are now restructuring and reducing in size. Honduras has gone from producing 60 million cartons to 25 million. The trend is more to the production of a sweet pineapple for fresh consumption. In Belize the return back to the grower is US\$7.60 per carton. The cost of freight to the UK is US\$2.30. Two days after talking with growers in Belize, I arrived in the UK and visited a Tesco store (major supermarket chain) and Belize bananas sold for ?0.94 per kg. This equates to US\$25.38 per carton or A\$2.45 per kg. Budgens a smaller chain of groceries stores sold Del Monte bananas for ?1.25 per kg or US\$33.75 per 18 kg carton. From these two examples the retail price is nearly five times the cost of production.

To combat low prices Costa Rica is working very hard on its production per hectare, and by applying the right chemicals and fertilisers, having the available labour, Costa Rica is in the forefront of quality and production.

## 7.2 Landed Prices

As you can see from the next graph the landed prices in the United States are very low, while the Europe market is more lucrative. A quota system applies in Europe and the ACP countries have the right to send bananas without a quota.

With integration of the European market, the EU tried to combine two main objectives:

- To create an integrated market for bananas harmonising different banana trade agreements,
- To guarantee that access to this market for their traditional ACP and European suppliers was not hampered by the foreseen influx of cheap Latin American bananas.

The complicated 404/93-trade mechanism, introduced on 1 July 1993, was the result. The EU established four categories of suppliers, each receiving different treatment.

1. EU producers (mainly Canary Islands, Martinique and Guadeloupe) were covered by internal aspects of the common market. For this category, income support of up to 854,000 tonnes was guaranteed in case prices fell below the costs of production. This mechanism has been used for several years.
2. Traditional ACP countries, i.e., the ACP banana suppliers in the years preceding the single market, have duty-free access up to a maximum amount of 857,700 tonnes per year.

3. Non-traditional ACP countries (e.g. Dominican Republic) and quantities from traditional ACP countries above the ceiling of 857,700 tonnes.
4. Third countries, the so-called 'Dollar' countries, together with category 3 producers, share a tariff quota of 2m. tonnes - duty free for non-traditional ACP countries and with a tariff of 75 ECU per tonne for the Dollar bananas. The quota to be increased to 2.5m. tonnes with the accession to the EU of Sweden, Finland and Austria.

The Dollar allocation was granted to trading companies in the following way:

- ~A licences: 66.5% reserved for traditional traders in Dollar bananas;
- ~B licences: 30% reserved for established operators of Community and/or traditional ACP bananas;
- ~ C licences: 3.5% for newcomers with ambitions within the sector.

The allocation of Dollar quotas to the ACP companies was designed to cross-subsidise the expensive ACP bananas with some Dollar banana quota rent and thus strengthen the position of the ACP companies in relation to the Dollar companies. At the same time, it led the Dollar companies to invest in ACP countries to build rights to future Dollar quota allocation within this category.

Within this tariff quota, each import category is again subdivided according to specific economic activities, such as producing, purchasing, transport and ripening, making the future allocation of 100% of actual quotas only possible if a company operates in all economic activities. Therefore, this last subdivision directly resulted in the need for further ongoing vertical integration to guarantee the future allocation of quotas.

Due to the insufficient level of the quota allocation, the system has resulted in an active trade in Dollar licences which, depending on demand, has been fluctuating enormously up to around \$7-8 per box. The total cash value of the licences is calculated to be over \$1bn. annually. Trading in and leasing quotas and licences can earn the big importers more than they would normally make from selling bananas.

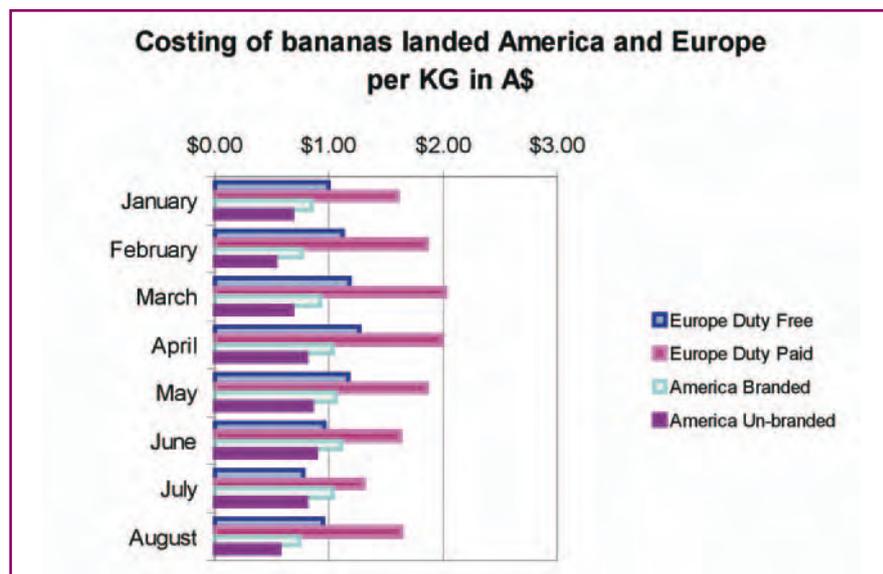


Figure 12: Costing of Bananas Landed in America & Europe

<http://www.bananalink.org.uk/documents/The%20Banana%20Chain%20by%20A%20van%20de%20Kastele.doc>

# 8 ~ ENVIRONMENTAL AND SUSTAINABLE PRODUCTION AND SOCIAL INVESTMENTS

## 8.1 The Issue

Agriculture is the principle agent of the ecosystem destruction and species loss. Food production uses more land and freshwater than any other human activity. Parks and wildlife reserves are essential to the survival of wild nature, but they are not enough.

Conservationist must work with those who use the land, primarily farmers.

Like all farming, the production of tropical commodities such as bananas takes a toll on the environment, farm workers and surrounding communities. These crops grow where tropical forests once thrived. Although much land for agriculture was cleared decades ago, most of the deforestation has occurred in the past 20 years. When diverse tropical ecosystems are replaced with sterile monocultures, wildlife is displaced. Pesticide use on farms threatens worker health and safety and contaminates nearby streams. Soil erosion converts fertile soil, one of the most valuable natural resources, into pollution, and the sedimentation of streams and coral reefs. This is a serious and widespread consequence of poorly managed tropical agriculture.

Agriculture also has enormous social, cultural, political and economic implications. Oxfam estimates that one billion small farmers and farm workers live in rural areas of developing countries and produce primary commodities. The Sustainable Agriculture Network helps ensure basic right and benefits to farmers and farm workers.

## 8.2 Solutions

For more than ten years Rainforest Alliance has been committed to implementing practical, measurable, science-based standards for sustainable crop production throughout Latin America. Aspects of this sustainable solution include:

- Conducting ecological, social and industry research
- Developing practical, concrete and measurable guidelines for reduced impact on farming
- Providing environmental education to farm managers, workers and their families
- Providing a forum for community input on the impacts of agriculture
- Rewarding growers who meet the socio-environmental standards by encouraging consumer demand for certified products.

## 8.3 Results

The integrated landscape approach to farming rewards growers who meet the socio-environmental standards by encouraging consumer demand for products grown on certified farms. Following are the results of improving social and environmental conditions on farms, illustrating the benefits of sustainable production.

- The Rainforest Alliance has certified almost 130,000 acres for the production of bananas, oranges, coffee and cacao.
- More than 40,000 farm families directly benefit from the program
- Complying with the program's standards dramatically decreases pollution of rivers and beaches.
- Reforestation of 2,000 acres of key buffer zones using native species
- Integrated Crop Management used on all farms.
- The most dangerous pesticides are prohibited. All agrochemicals are strictly regulated and farmers must demonstrate continual reductions in toxicity and quantity with the goal of eliminating the problematic pesticides altogether.
- Many smallholders have increased production and quality without resorting to agrochemicals.
- Wages on certified banana farms throughout Central America now average twice the minimum wage.
- Workers on certified farms enjoy all the rights of international treaties and national laws as well as the benefits guaranteed by the certification program, such as clean water, sanitary and bathing facilities, access to health care, safe and sanitary working conditions, dignified housing, training, and environmental education.
- Collaborations between farm managers and neighbouring parks.
- More than 15% of the bananas in the international trade come from certified farms.
- Major supermarket chains Albertson's, Kroger's, and Safeway carry coffee from a Rainforest Alliance-certified Guatemalan estate.
- Chiquita Brands International, Inc. and Reybancorp S.A., two leading banana companies, achieved Rainforest Alliance certification on 100% of their banana farms in Latin America.

The standards prohibit clearing rainforests for new plantations. Growers must use land that has already been cleared. Companies are required to plant trees along rivers thereby creating a strip of vegetation to control erosion. Plantations must be at least two miles away from parks and wildlife habitats must be protected. The use of pesticides is strictly regulated. Companies are encouraged to recycle plastics. Plantation workers must receive proper safety equipment, health check-ups and improved housing. Farms that meet all standards earn the right to use the ECO-O.K. seal of approval. Farms that fall short receive specific instructions on how to bring themselves up to ECO-O.K. standards.

*Sourced: <http://www.rainforest-alliance.org/programs/cap/>*

## 8.4 Reybanpac ñ An Example of Sustainability

One of the best examples of environmentally and sustainable farming was Reybanpac in Ecuador. Every farm that I visited had either Eco-Ok or ISO 14001 in place. In particular, Dole Ecuador, Chitiqua Honduras and Costa Rica, Reybanpac Ecuador, Fyffes Belize, many of the independent farmers of Costa Rica and Gipam farmers of Martinique stood out. They are the industry leaders and they must be congratulated for their commitment.

Reybanpac is one of the leading conglomerates in Ecuador's agribusiness sector. The company operates other wholly-owned subsidiaries whose activities include trading and shipping bananas, operating the Fertisa port terminal, importing fertilizers, producing cardboard boxes and plastic bags, and providing fumigation (Aerial Spraying) services.

Reybanpacs farming business consists of:

- 8000 Ha of bananas
- 2080 Ha of forestry and plants for research
- 1200 Ha of oil palm
- 600 Ha of rice and soybeans
- 350 Ha of pineapples

Reybanpac is an ECO-OK and ISO14001 farming operation. All of the 8000 Ha of bananas are now or having the ISO 14001 systems put into place. All the farms that I visited had hedged roadways planted with hibiscus scrubs and a ground cover of pinto peanut grass and were very well presented. They were tidy; no rubbish was left on the ground, not even string or bags etc. All the eating, packing, office, storage and housing areas had buffer zones and well-presented and maintained gardens.

The Wong Foundation, part of the Reybandcorp provides some US\$300,000 per year on schooling (32 schools), teachers and books. It also provides for doctors and research.

The farming companies also provide doctors and dentists to any worker and their immediate family. Many housing projects are provided to the workers and many managers have very neat farmhouses. All the required safety gear is provided and must be worn. Workers using chemicals must have blood tests done on a regular basis. The results provide the management with an evaluation of precautions being undertaken and an assurance that regulations are being adhered to.

The farms are well presented with hedges (Hibiscus) and ground cover (Pinto peanut), both inside and out side along all the roadways and highways. Creek banks and drains are being rehabilitated with Bamboo so that the cover will protect the water and eco system below from aerial fungicide applications. Any additional land not used for the production of bananas is being planted with either oil palm, millable forest timbers, bamboo or just reforested with local species of plants and trees. Old dumpsites have been cleaned up and rehabilitated with gardens and reforested. All building areas have constructed garden buffer zones to protect the workers from any spray drifts and chemicals from the bananas.

Rubbish, bags and string are removed from the paddock and placed in bins either for recycling or for the refuse tip. The farms are very clean. As the farms undergo the change to ISO 14001, staff must participate in an induction program before commencement of employment. Workers applying chemicals must have regular blood tests to insure that no chemicals are entering their blood system. Every operation on the farm is recorded to comply with the ISO14001 auditing system.

### 8.4.1 The Packing Shed

The waste bananas are sold for cattle feed and the stalks are returned to the paddock and used as mulch. All the plastic bags are compressed and sent off to be recycled. Water from the shed is filtered then allowed to drain off. This water is tested on a regular basis in order to comply with acceptable levels of wast water. Any fungicide water mix is collected and filtered through a charcoal filter before being drained off. This is also tested to insure the levels of chemicals are within the recommended levels. Staff use gloves, aprons, shoes and any safety gear needed. Each shed has a buffer zone of plants and gardens.

### 8.4.2 Pump Sites

The pump sites also have the buffer zones consisting of gardens plants and trees. Workers attending the pumps must wear the appropriate safety gear including earmuffs and each site is tested so that the noise levels comply and are within the acceptable level required by the law. Each diesel tank is mounted on top of a bunted area (a containment area that if need would contain the total of the tank capacity in the case of a spill or leakage), housed in a mesh and roofed enclosure. The bunted area is capable of storing the full contents in the case of a ruptured tank. The diesel engine and pump is housed in a separate mesh-roofed enclosure that is on tracks for easy removal in case of repairs or installation. The shaft between the motor and pump is covered to protect any employer from entanglement or breakage. Fire extinguishers are at each site and sawdust is also provided in the case of an oil leak. Each pump irrigates an area of 40 to 50 Ha and pumps some 48,000 GPH. Some farms are being watered by fixed water cannon guns, while the most popular is the under tree sprinkler. Under tree sprinklers are replacing overhead guns.

### 8.4.3 Storage areas

Again each storage area has a buffer zone consisting of gardens, plants and trees. The storage areas are constructed of cement brick, lockable and constructed with plenty of ventilation. The chemical areas have bunting to protect from spills. A wash down area is also provided for staff using chemicals. It consists of a one-way building. The staff enters through one door, remove their clothes and safety gear and pass them through a wall to be washed. They then move through a shower area. From here they move onto a dry area where they can dry off and dress in clean clothes. The water from the shower and from washing is filtered before being allowed to drain off. This water is tested regularly to conform with regulations.

## 8.4.4 Vegetation as Degradation Control

In the fields some farmers are using a ground cover to reduce the levels of soil run-off. The drains are covered the same way to prevent erosion and soil loss. Drains are also being covered by small bushy type scrubs, to stop the aerial spray drift entering the water system. Bamboo is commonly used in Ecuador to reduce the incidences of toxic chemicals entering the water systems.

## 8.4.5 Other Examples



*Drain with high ground cover to prevent erosion.*



*A scrub planted to prevent contamination of water in drain.*

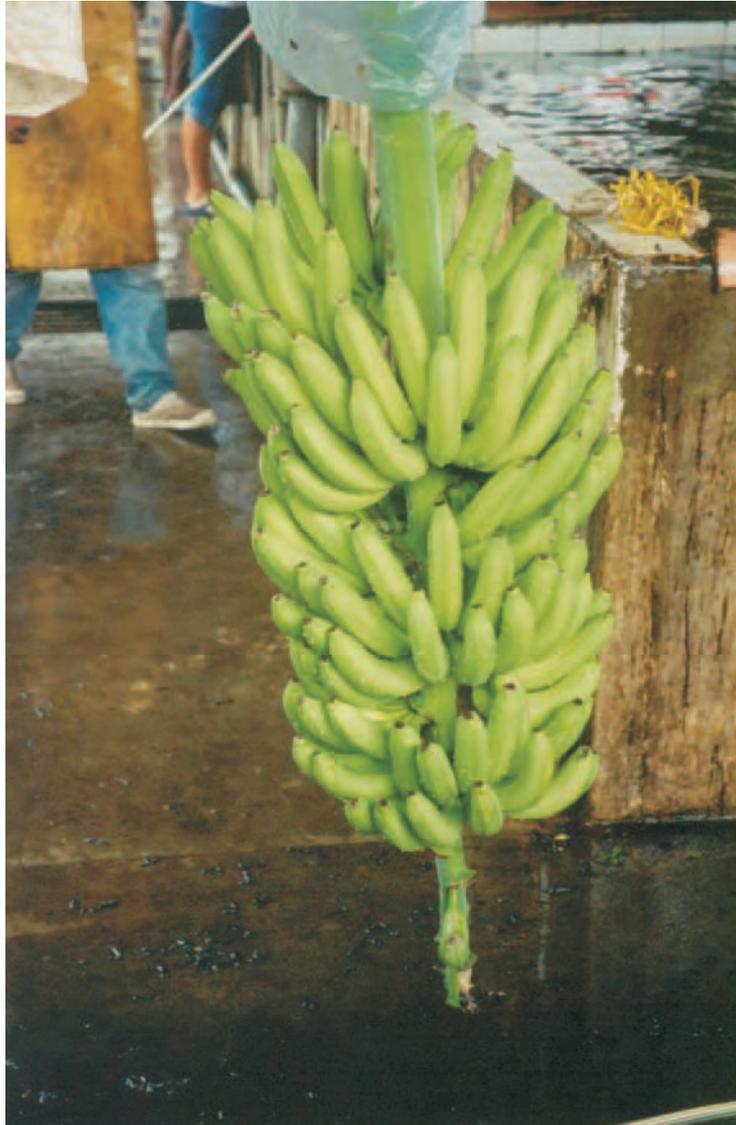
This is a farm in Costa Rica where a scrub is planted down one side of the drain. This allows for cleaning but also covers the drain to reduce any aerial spraying drift entering the drainage system.

In the Philippines, some farms have gone as far as the ISO14001, however this is mainly a market issue as it is very expensive to process such an application. In terms of government rules, farms established after 1990 need to obtain the Environmental Compliance Certificate (ECC). The requirements are quite detailed and are community focused. Some growers are now developing products using limited chemicals and other IPM (Integrated Pest Management) methods. This trend has been quite slow as the market for low-chemicals bananas is limited and sometimes unstable. Organic growing is still in the infant stage. Unless the markets can accept higher quarantine risks and imperfect fruit coupled with a premium price, this style of growing will not go into commercial growing.

A lesson can be learnt from the environmental programs in place through out the Philippines, Central and South America. I was taken back by the environmental standards being put in place. Most of the farms were ISO 14001 and ECO-OK. accredited. While researching my visits to Central and South America, I was amazed at the adverse publicity and expected to see multi-national companies raping and pillaging the land, resources and the labour force. I had prepared myself to see the worst. I was delighted to see the opposite. In fact I think its time we had a good hard look at ourselves. Large banana companies and multi-nationals are to be commended. Discouragement of child labour was extensively publicised. I've seen more child labour in my packing shed.

## 9 ~ TRADE POSSIBILITIES....

These next three photos below shows fruit that will be shipped to China. This farmer is receiving US1.90 at the farm gate and the exporter Reybanpac pays for the cartons, plastics and fungicide. This grower must insure that all the cartons are in this condition or he will have his fruit rejected before it is loaded on the ship.



*Fruit being shipped to China*



Australia is in a difficult position as it cannot supply fruit to the standard of the major chains through out the world, for 52 weeks per year. With the fierce competition from banana producing countries for market share, the quality bar has lifted very high. From reading this report you must note the cost of labour and the additional work farmers are doing to improve the quality of their produce. Australia could not compete just on price. Australia cannot supply big quantities consistently and Australia is noted for its inconsistencies in regards to supply. Many overseas wholesalers commented on Australians lack of commitment and the fact that they would drop an order for \$1.00 more from somewhere else. For example who would fill a ship of 120,000 cartons for China at \$12.00 per carton when the prices in Sydney jump to \$30.00?

We do however have opportunities that could be pursued and follow an example from New Zealand. If you go through the case study of New Zealand we certainly could compete financially. The wholesale price is NZ\$32.00 for an 18 kg carton. Australia could fill the gaps of short supply.

Another possibility is the supply of Supa-Sweet bananas to Japan. The Japanese have a taste for a high brix sweet banana. These are produced in colder climates at high altitudes.

Low chemical and organics are another option. At the moment they are well supplied but the rate of usage will soon outstrip supply. Countries like New Zealand, The UK, Europe and Japan are becoming ever more health conscious and the demand is ever increasing. Much emphasis is being placed on fair trade and ethically produced products. Consumers now have a choice between purchasing these products. Australia would fit into these categories because our wage structure is socially and economically sound.



*Fair Trade Bananas*

## 9.1 ~ Suggestions to the Banana Industry of Australia

- Contact both New Zealand officials and importers of bananas to see if there is a place for our Australian product. Can we compete or can we supply a niche product? Small sized bananas in New Zealand are very popular and lucrative; this is the place to start as most of our small bananas are discarded or sold at an unacceptable price.
- A need for a fairer and equitable return to growers who can produce very good quality fruit, not withstanding the weather conditions. Some examples are Belize where the price is a contract for twelve months, Costa Rica where you know the price three months in advance. Ecuador you know the price before packing or Japan's (refer to Marketing Bananas in Singapore and Japan) auction system are systems to be examined.
- Australia would have some of the most adverse growing conditions, extremes in temperature both hot and cold, cyclones, hail and water lodging. Each time any of these instances occur, some damage and loss occur, along with a reduction in quality. To reduce the incidence of loss, more capital and infrastructure could be invested. Investigate the use of drainage systems and overhead tying systems.
- Investigate new or existing cartons. Try cartons that are more adaptable to packing clusters. Make change, have the major chains (the ones who take the blame for not being adaptable to change) understand the benefits of new packaging and sizes of cartons.
- Have the fruit checked for quality in the growing areas. This would be fairer for all. Remembering that overseas it wouldn't go on the ship if it didn't meet the specifications.
- To value add. I was very interested in the cluster pack presented in bags. From what I have seen cluster bagged fruit is very popular. Again it seems that the only growers doing this job are the farmers selling direct. They command a premium price and get it whereas a farmer selling on to a wholesaler very rarely receives any benefit.

## 10 ~ CONCLUSIONS .....

It is not only Australia that experiences difficult weather patterns that effect the growing of bananas. It's the weather affecting production that will determine the price returned to the grower. The ideal situation would be to grow bananas in a controlled temperature glasshouse. This is not possible so the next step is to insulate your farm against these problems as much as possible. Quality and production per hectare can be enhanced by some serious investments in drainage and aerial tying systems. The use of cableways and the benefits should be examinded. Regular fertiliser usage is important. The question is, will the Australian consumer pay to have the bunch deflowered and gloved before bagging?

I am not sure that the wholesaling and marketing will change, although direct selling now is bigger than ever. It is unfortunate that smaller growers can't work together for a common goal and market fruit direct also. To be able to do this, strict quality procedures would have to be put in place and followed, without exception.



## 11 ~ ACKNOWLEDGEMENTS ...

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