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FINAL REPORT

**The Business Costs of Ethical Supply
Chain Management: Kenya Flower
Industry Case Study**

by
Chris Collinson

NRET - Natural Resources and Ethical Trade Programme



**Natural
Resources
Institute**

DFID Department for
International
Development



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**The Business Costs of Ethical Supply Chain Management: Kenyan Flower Industry
Case Study**

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Summary

The funder of this research, the Department for International Development (DFID), wishes to enhance the private sector's contribution to sustainable development by encouraging business practices that embrace social, environmental and financial responsibility. Ethical supply chain management is a critical aspect of responsible business in developing countries. Work by the Natural Resources and Ethical Trade Programme (NRET) and the Ethical Trading Initiative (ETI) has shown that trading partners in the North and South are willing to develop this approach to managing social and environmental performance, but have highlighted the need to understand the cost implications more thoroughly. In particular, there is concern that improved social performance will increase employment costs, and lead either to companies avoiding such approaches or to reduced foreign direct investment in developing countries.

This case study of the Kenyan cut-flower industry's experience with its own "home-grown" ethical labour and environmental code is one of three studies undertaken by NRET to answer the following questions:

1. How much does complying with ethical standards cost each participant in the supply chain?
2. How large are the gains in labour productivity, management efficiency and other factors that arise from introducing ethical standards?
3. How can the compliance costs be distributed among participants in the marketing chain (including the consumer)?

The other two case studies involve the South African wine industry and the Kenyan tea industry. Findings from these studies are presented in separate reports.

Key findings from the flower industry research

- Kenya's flower industry operates in a very weak domestic economy and in an increasingly competitive international market. It is currently suffering a powerful cost-price squeeze that is restricting profitability. However, in contrast to most other sub-sectors in the Kenyan economy, business confidence among large commercial flower growers is reasonably high.
- Kenya has one of the most codified flower industries in the world. Social and environmental code compliance is now encouraged by European buyers, Kenya's conservation movement and the flower industry itself. Large growers currently comply with at least three different codes, which tend to differ more in emphasis than content.
- Compliance with new codes of practice holds little fear for the more progressive flower growers. Such is the prevalence of social and environmental codes within the industry that the standards they contain have become internalised and represent industry entry requirements for serious new growers.

- The KFC has yet to prescribe a minimum living wage for its members' workers. Instead KFC audits concentrate on ensuring that employers pay at least the legislated minimum wage and make the correct payments into national social security funds. The great majority of members were already compliant in these respects and therefore, in most cases, KFC compliance does not increase costs of employing workers.
- From the small sample of companies studied in this research, it appears that compliance costs have an inverse relationship to company size, especially when expressed as a percentage of annual turnover. However, even in the worst case, compliance costs are affordable.
- Management time required to plan, implement and maintain compliance represents one of the biggest compliance costs that KFC members bear.
- The largest non-managerial KFC compliance costs fall into the "Agrochemicals – Pesticides and Fertilizer" category. Improvements to chemical stores, worker safety during and after pesticide application and chemical disposal form the majority of these costs.
- The KFC does more than just audit against its code of practice. It also helps to spread best procedural and managerial practice within the industry, thereby helping members to reduce their costs. This benefit is well recognised among the KFC members.
- Two further benefits from code compliance that are non-KFC specific are: Improved worker health, leading to greater worker productivity and lower medical bills; and the promotion of long term business viability through environmental sustainability.

Introduction

The Department for International Development (DFID) wishes to enhance the private sector's contribution to sustainable development by encouraging business practices that embrace social, environmental and financial responsibility. Ethical supply chain management is a critical aspect of responsible business in developing countries. Work by the Natural Resources and Ethical Trade Programme (NRET) and the Ethical Trading Initiative (ETI) has shown that trading partners in the North and South are willing to develop this approach to managing social and environmental performance, but have highlighted the need to understand the cost implications more thoroughly. In particular, there is concern that improved social performance will increase employment costs, and lead either to companies avoiding such approaches or to reduced foreign direct investment in developing countries.

This case study of the Kenyan cut-flower industry's experience with its own "home-grown" ethical labour and environmental code is one of three studies undertaken by NRET to answer the following questions:

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Part1. Kenya Flower Suppliers

1.1 Background

Kenya's economic climate

The Kenyan economy is in a weak and worsening position. Growth in the twelve months to October 2000 was estimated at 0.1%, a substantial decline from the previous twelve months' figure of 1.4% (Central Bank 2001). This poor performance is partly explained by the severe drought of 2000, which affected water supplies, agricultural output and power generation. Poor infrastructure and growing insecurity also put a brake on growth.

In December 2000 the average annual underlying rate of inflation rose to 9.2%, having shown a steady increase over the previous two years. Low agricultural and manufacturing output, and the increased cost of imports, notably fuel, have driven domestic prices upwards. The devaluation of the Shilling against the US Dollar has added to this problem (in the twelve months to December 2000, the Shilling lost approximately 6% of its value against the Dollar).

The current account (exports minus imports, and the net trade in services) has been in consistent deficit for the last three years. In the twelve months to November 2000, the value of exports declined through a combination of poor international coffee prices, low tea output and high domestic prices that made exports to the region less competitive. During the same period the value of imports increased substantially, a result of higher fuel prices and the necessity of importing power generating equipment and food to counter the effects of the drought. By contrast, trade in services has recently improved on the back of good performance by the tourism industry.

Business climate

Low business confidence persists due to the high cost of domestic borrowing, insecurity and a poor government record in dealing with the ailing economy. The IMF's withdrawal of a large loan facility in January 2001 due to its lack of confidence in the government's willingness to tackle political and public sector corruption, merely added to the gloom. The nominal cost of borrowing on domestic markets ranges between 25 and 30%, while returns on equity in most businesses are probably less than the underlying rate of inflation (meaning negative real returns). The cost of borrowing on domestic financial markets is currently high because of substantial public sector borrowing requirements, a high proportion of non-performing bank loans (approximately 40%), and the lack of effective competition in the banking industry (Kenya Central Bank 2001).

Social climate

With an annual population growth of approximately 2.4% and a poorly performing economy, per capita GDP has consistently declined over recent years. Consequently, poverty has worsened. According to census data, in 1994, 40.1% of the population (10.6

million people) lived below the poverty line. Three years later, the figure stood at 52.6% (13.4 million people) (Central Bureau of Statistics 2000). Urban poverty is increasingly severe, having grown by 20.3% over the same period.

1.2 Agriculture

In 1999, total agricultural output contributed 24.5% of overall GDP, while manufacturing, the second largest sector, yielded 13.2%. In the twelve months to October 2000, the value of agricultural growth was just 0.2%. This poor performance is explained by the severe drought in 2000, poor infrastructure, and an ever tightening cost-price squeeze. With the exception of coffee, export earnings from the major commercial crops declined (Central Bank of Kenya 2001).

The cost-price squeeze is a major concern to commercial agriculture. Between 1995 and 1999, prices for fertilizer and energy increased by 142% and 45% respectively. In the same period, the weighted average price of agricultural output rose by just 21%. Exporters are of course insulated against some of the currency effects that strengthen the cost price squeeze, but the recent strength of the US Dollar (the “oil currency”¹) against the European currencies and increases in the price of oil have meant that the horticultural sub-sector, which mainly exports to Europe, has suffered considerably.

1.3 The flower industry

Brief history

Kenya’s cut flower industry had its humble beginnings soon after the end of the Second World War. Exports did not begin to take off, quite literally as it happens, until the late sixties, when wide-bodied jets started to bring large numbers of tourists to Kenya and service the fresh produce industry. The flower industry’s link with fresh produce goes deeper than the mere sharing of transport. It grew largely from expertise, infrastructure and investment provided by the burgeoning vegetable industry. Flower production is now largely concentrated around Lake Naivasha, to the north-west of Nairobi.

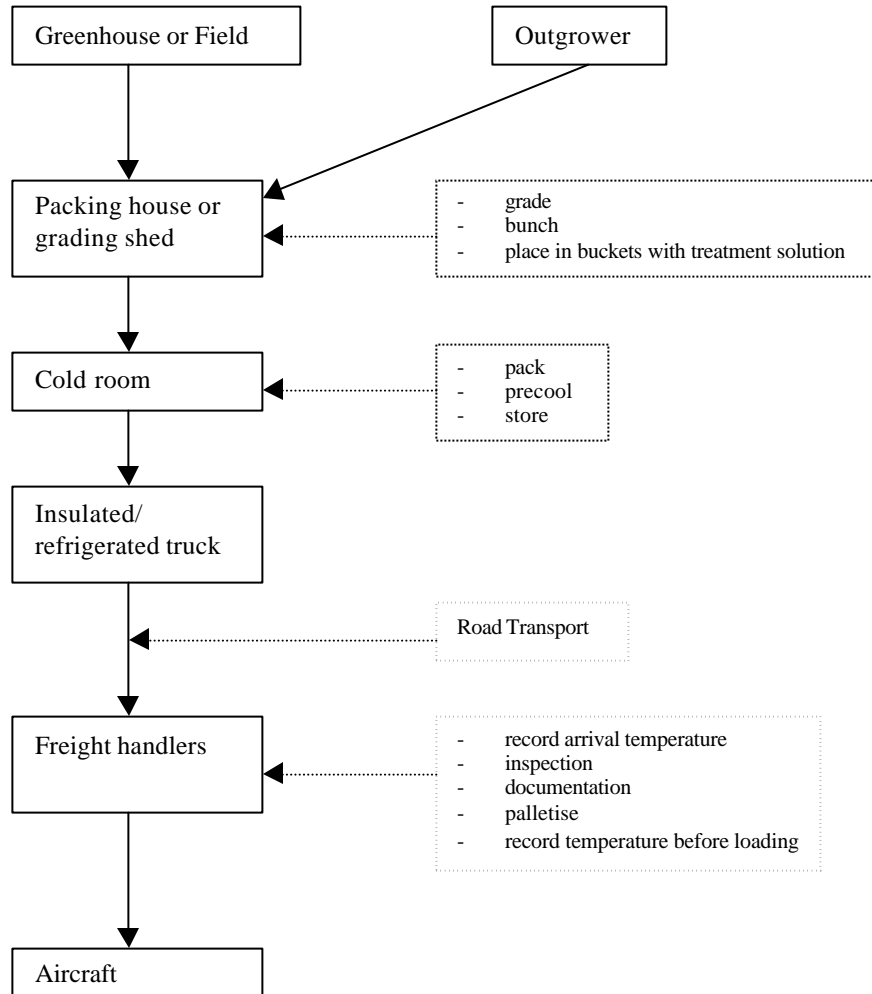
Structure

Although there are now some 500 commercial flower growers in Kenya, approximately 75% of Kenya’s cut flower exports is grown by about two dozen large and medium scale producers. Such operations range in size from 20 to over 100 hectares, with workforces of between 250 and 6000 (Thoen et al, forthcoming). Much of the remaining flowers production is grown by smallholders in open plots of less than half a hectare. The quality of flowers coming from these growers is poor, thereby adding further difficulties to the already considerable infrastructural problems of linking smallholders to export markets.

¹ The oil price not only affects vehicle and aviation fuel prices but also the price of fertilizers and agro-chemicals, which contain oil derived chemicals.

The Kenya Flower Council (KFC) and the Fresh Producer Exporters' Association of Kenya (FPEAK) represent the industry at home and abroad, and work to raise production, social and environmental standards within the industry. Most medium and large scale flower producers belong to at least one of these bodies.

Figure 1. Supply Chain for Kenyan Cut Flowers from the Field to Aircraft



Source: Thoen et al. (Forthcoming)

Figure 1 describes the domestic part of the export supply chain. The largest flower companies have vertically integrated most of (and in at least one case, all of) the functions described above. However, the social and environmental standards used in the flower industry do not apply to parts of the supply chain beyond the “Cold room”.

Markets

Over the last three decades, the flower industry's exported output has increased substantially. Between 1978 and 1998, annual exported volumes grew nearly tenfold, from 3,265 to 30,221 tonnes (Thoen et al, forthcoming).

By far the greatest proportion of Kenyan flower exports go to markets in Europe. The Dutch flower auctions have historically been the most important channels through which Kenyan flowers have reached European wholesalers and retailers. However, changing consumption patterns and supermarket supply chain rationalisations are beginning to erode the auctions' importance. In a few key importing countries, particularly the UK, buying behaviour has changed away from occasional towards regular flower purchasing. This has increased not only the volume of purchases but also the importance of convenience stores (such as fuel station shops and supermarkets) as retail outlets. Simultaneously, several large European supermarkets have simplified their horticultural supply chains by establishing direct links with producers. Although supermarkets continue to buy flowers through the Dutch auctions, direct trade with growers or their import agents has gained considerable importance over recent years.

Kenya is now the third largest cut flower supplier to the European market after the Netherlands and Israel. The UK is Kenya's fastest growing market, and only second in importance to Holland in terms of volume. Kenya's flower industry has traditionally exported carnations and roses but the need to maintain profitability has encouraged many growers to diversify into other flower crops and value adding services such as packaging flowers directly for supermarket shelves.

Profitability

There has been no comprehensive study of profitability within the Kenyan flower industry. Even if there had been, there would be a need to continually revise figures in the light rapidly changing costs and revenues. The high price of oil and the strength of the dollar have recently combined to raise production and marketing costs (particularly the cost of airfreight). Carnation and rose markets have matured over the last decade and revenues per stem are not as large as once they were. Market preferences have changed to the extent that the production of certain varieties of rose is no longer profitable. Increased competition both from within Kenya and from other countries has increased quality requirements and reduced margins, thereby creating a market that can only be served profitably by high quality production and high volume marketing.

Despite this rather gloomy picture, flower growers still expect to make profits into the future, as indicated by the number of new greenhouses that are currently being erected around Lake Naivasha. But the business of growing flowers has become much more complicated and growers now require sophisticated market information in order to make profitable planting and marketing decisions.

Codes of practice

Close trading links with European buyers, the sensitivity of Kenya's natural environment, the strength of the Kenyan conservation movement and the lack of comprehensive and enforceable national legislation have meant that Kenya has one of the most codified flower industry in the world.

Codes have originated from a variety of sources:

- Initially more concerned with quality management, UK supermarkets are now adding social and environmental requirements to their supplier codes of practice. Most large growers can now expect up to two monitoring visits a year from each of their major UK retail buyers.
- By creating their own internationally recognised social and environmental standards, Kenyan growers have largely managed to resist pressure to comply with European flower industry codes of practice (most notably the Dutch MPS code). Currently there are two "home-grown" code options for Kenyan flower growers. The more rigorous code has been developed by the Kenya Flower Council (KFC) and is the subject of this study. The alternative is offered by the Fresh Produce Exporters' Association of Kenya (FPEAK), which, as the name suggests, caters for vegetable as well as flower production. In the near future, the horticulture industry will start to implement a new harmonised national code of practice. Its supporters hope that they can persuade the Kenyan government to licence horticultural exports on the basis of code compliance. Only this way, they claim, can Kenya build a strong reputation for consistently high quality horticultural exports. The KFC code is likely to survive the introduction of the national code because it offers flower growers higher standards that specifically relate to flower production.
- Codes of practice also exist to conserve the natural environment of specific areas. Two of the best known are administered by the Lake Naivasha Growers Group and the Lake Naivasha Riparian Association, which aim to ensure that the lake and its surrounding natural environment are conserved.

There is considerable overlap between the various codes of practice. As a minimum, most codes now cover worker health and safety, employment terms and conditions, and environmental performance. The abundance of codes means that the requirements on new businesses who wish to enter the industry are extremely tough. Codes have become a way of life for many businesses, many of whom readily admit that codes have helped to sharpen their operations (refer section 1.7)

1.4 The KFC codes of practice

The Kenya Flower Council was launched in March 1997 partly in response to the growing number of European flower industry codes of practice. The hope in creating a robust Kenyan code was that local growers would be able to avoid having to comply simultaneously with two or more European codes. Consequently, the KFC has had to raise its profile in Europe in order to convince buyers that its code is of a sufficiently high

standard. To a large extent this has been achieved, although the pressure to comply with the European codes has not entirely disappeared. By the beginning of 2001, the KFC had attracted 28 grower members, most of which fall into the medium and large scale categories.

As it has evolved, the KFC has become a means of disseminating social and environmental best practice throughout the industry. This has helped to temper the high degree of secretiveness between companies that, in some instances, has produced a suboptimal outcome for the industry.

KFC offers two levels of code compliance. The silver standard covers worker terms and condition, health and safety, and environmental responsibilities. Having successfully complied with this standard, KFC members are free to progress to the gold standard, which concentrates on achieving much higher standards of environmental performance. Approximately half of the current silver standard membership is planning compliance with the gold standard, although as of February 2001 only one was close to certification.

I have focussed this study on the silver standard because its broad based approach covers both social and environmental responsibilities. On the social side, the silver standard's adherence to ILO conventions and Kenyan employment law makes it comparable with the other case studies in the South African wine and the Kenyan tea industries.

The silver standard is laid out in five sections (the full code is reproduced in Appendix 1):

- ◆ “Farm management, responsibilities and documentation” requires growers to keep records on health and safety, worker terms and conditions, employee remuneration, wage deductions, and agrochemical stocks, application and training. It also requires growers to pay royalties to plant breeders according to international rules.
- ◆ “General Worker Welfare” covers worker wages, labour conditions and health and safety. The section stresses the importance of complying with national labour and health and safety legislation (particularly the Regulation of Wages and Conditions of Employment Act²). In only a few instances does the code go beyond the provisions of the law³ and consequently few responsible flower industry employers fall foul of the code.
- ◆ “Agrochemicals” covers crop protection strategies, worker protection, and the use, application, storage, transport, and disposal of pesticides. Kenyan law contained in “The Factories Act” and “The Pest Control Products Act” gives some guidance on these issues. However the code takes most of its provisions from widely recognised principles of best agricultural practice.

² Also mentioned in the code are The Employment Act, The Trade Unions Act, The National Hospital Insurance Act, The Workmen's Compensation Act, The Factories Act, The National Social Security Fund Act and the Trade Disputes Act.

³ Contracts for seasonal workers and greater clarity of what constitutes suitable worker housing are two notable areas where the code exceeds the provisions of the law.

- ◆ “Protection of the natural environment” covers use of fertilizers, water management, soil conservation, disposal of non-hazardous waste, and the protection of wildlife and water sources. Until recently there has been little legal guidance on protecting the environment. However, in 1999 new legislation was enacted to cover a wide range of environmental issues. Implementation of the act has yet to take place and the extent to which it will affect the KFC code has yet to be fully gauged. The Kenyan flower industry continues to come under considerable criticism from environmentalists worried that pollution and over-exploitation of natural resources will permanently degrade the natural environment. The KFCs silver standard code, and more particularly the gold standard, are designed to deflect criticism from KFC members. During the course of the fieldwork for this study, several KFC members expressed the apparently genuine opinion that maintaining a sustainable natural environment was crucial to the long term future of the industry.
- ◆ “Post harvest” covers health and safety, and environmental requirements that are specific to grading, packing houses and coldstores.

Living wage

Most parts of the code provide well defined standards for members to meet. An area that is currently open to interpretation is the issue of what constitutes a living wage. The Regulation of Wages (Agricultural Industry) Order dated 1 May 2000 gives the minimum cash wage for farm labourers as KShs 1,629 (approximately £14 or US\$21) per month. The KFC does not currently prescribe a minimum wage for its members’ workers, preferring merely to establish that their members pay over the legal minimum wage. Apparently, this is done in order to avoid challenging national labour legislation. Data collected for this case study support KFC claims that its members pay their workers at least three to four times the minimum wage.

1.5 Costs of compliance

Methodological problems

The considerable overlap between the many codes that the flower industry has implemented means that the only practical way of estimating the KFC code compliance costs is to examine the specific corrective actions that arise from KFC monitoring visits. Although the KFC code requires a broad range of social and environmental standards, code overlap means that in all likelihood companies that wish to implement the KFC base code are already complying with most of the provisions. In most cases, costs of compliance are low.

Mutiple code compliance is now so common among the larger flower producers that the standards have become industry entry requirements for new companies. This internalisation of standards further reduces compliance costs as measured by the strict definition used in this study. In reality, progressive companies “do it anyway”. In its silver standard code of practice document, the KFC recognises this and says “serious and responsible growers should be able to meet [the standard] without too much effort”.

Results

This research estimated the compliance costs for five flower growing companies, selected to cover the size range of KFC members. For easy reference, each company is described in Table 1.

	Approx. no. of employees in flower production	Ha under flower production	Scale*	KFC membership	Flowers grown	Other comments
Company A	100	4	Small	1999	Roses	
Company B	120	15	Medium	1998	Roses, Lisanthus	Also grows vegetables
Company C	1100	80	Large	1999	Roses Carnations Gypsophila Hypericum	Also grows vegetables
Company D	800	>100	Large	1997	Roses Carnations Arum lilies Gypsophila Molucella	Also grows vegetables
Company E	7000	>100	Large	1997	Chrysanthemum Carnations Roses Statice Alstromeria	

* Scale refers to the relative sizes of KFC's current membership. "Small" is still considerably larger than a smallholder flower grower.

** Includes both vegetable and flower production

Table 2 gives estimated compliance costs for each of the companies across time. Not all the companies started compliance in the same year and consequently "Year 1" refers to the first calendar year in which each company started compliance. However, costs have been estimated using December 2000 values and are consequently comparable.

	Year 1	Year 2	Year 3	Year 4	Year 5
Company A	4,971	2,887	2,887	2,887	2,887
Company B	297	716	716	716	716
Company C	341	5,745	5,837	5,837	5,837
Company D	?	10,018	10,018	10,018	10,018
Company E	1,919	2,617	2,617	2,642	2,642

Source: Author's calculations

Year 1 costs differ from those of subsequent years for two reasons. Firstly, compliance was not necessarily started right at the beginning of the calendar year. Secondly, "Year 1" includes the cost of management time used to plan and implement the majority of compliance actions. Subsequent years do not require such large management inputs. Company A's first year costs are relatively high because, as a small and young enterprise, it had to make several changes that its larger and older competitors had adopted before

the KFC started operating. A question mark appears against Company D's first year compliance costs because the company was heavily involved in the establishment of the KFC. Distinguishing between management time spent on this activity and time spent on planning and implementing the company's own compliance actions is not possible. Company D has an unusually high commitment to the KFC and consequently its compliance costs in Table 2 represent expenditure that is considerably beyond what was required simply to satisfy the standard.

None of the costs in Table 2 represents an unmanageable burden for any of the companies. Company A's estimated costs in year 1 represented approximately 1% of its annual turnover, but in subsequent years, the proportion declined to only 0.6%. For the other three companies, the estimated compliance costs are less than 0.1% of annual turnover, and in the case of Company E, the ratio is less than 0.003%.

Table 3 gives a breakdown of costs for each company in year 3 of compliance (chosen as representative). The table contains a large number of zero entries because, as mentioned previously, most KFC members already comply with many of the code requirements before their KFC audits. Company A is the only business that has borne "General Worker Welfare" compliance costs. This is a reflection of the company's relative youth and inexperience. To its credit however, the management has responded quickly and with good will to all the KFC corrective requirements.

The largest non-managerial compliance costs in Table 3 fall into the "Agrochemicals – Pesticides and Fertilizer" category. Improvements to chemical stores, worker safety during and after pesticide application and chemical disposal form the majority of these costs.

Management is the other major compliance cost category. Estimating the incremental managerial inputs that KFC code compliance requires is open to considerable error. This potential failing of the analysis is partly corrected in the next section, where the sensitivity of total compliance costs to changes in management inputs is summarised.

Table 3. Cross Section of Costs in Year 3 of Compliance					
	Company A	Company B	Company C	Company D	Company E
	£	£	£	£	£
General Worker Welfare					
Wages	-	-	-	-	-
Labour Conditions	334	-	-	-	-
Health and Safety	237	-	-	-	-
Agrochemicals – Pesticides and Fertilizer					
Crop protection strategy	-	-	-	-	-
Use of pesticides	-	-	-	-	-
Application of pesticides and protection of workers	269	174	1,750	-	131
Storage of pesticides	428	229	65	7,632	59
Transport of pesticides	-	-	122	-	-
Disposal of pesticides	69	33	176	-	-
Protection of the Natural Environment					
Fertilizers	-	-	-	1,145	-
Water management	-	-	-	-	-
Soil conservation	-	-	-	-	-
Disposal of non-hazardous waste	-	-	-	-	-
Wildlife	-	-	-	-	-
Water Sources	70	-	-	-	-
Post Harvest					
Grading, packing houses and cold stores	-	-	-	-	-
Worker conditions	-	-	-	-	118
Packaging Stores	-	-	9	-	444
Treatment Disposal	-	-	-	-	-
Waste Disposal	-	-	-	-	-
Management costs					
Management time planning and implementing compliance	-	-	-	-	-
Management time spent on maintaining compliance	1,741	72	3,264	417	1,567
Audit costs	174	174	174	348	174
Sub total	2,750	682	5,559	9,541	2,492
Miscellaneous (5%)	137	34	278	477	125
Total	2,887	716	5,837	10,018	2,617

All figures in December 2000 values

Source: Author's calculations

1.6 Sensitivity analysis

Table 4. Sensitivity Analysis on Management Costs – the effect of changing management inputs by plus and minus 50%		Year 1	Year 2	Year 3	Year 4	Year 5
Company A	High estimate	7,164	3,801	3,801	3,801	3,801
	Low estimate	2,778	1,974	1,974	1,974	1,974
Company B	High estimate	354	754	754	754	754
	Low estimate	240	678	678	678	678
Company C	High estimate	420	7,458	7,551	7,551	7,551
	Low estimate	262	4,032	4,124	4,124	4,124
Company D	High estimate	?	10,237	10,237	10,237	10,237
	Low estimate	?	9,799	9,799	9,799	9,799
Company E	High estimate	2,742	3,439	3,439	3,464	3,464
	Low estimate	1,097	1,794	1,794	1,819	1,819

Source: Author's calculations

Table 4 reports the impact on total compliance costs of varying management inputs by plus and minus 50%. Given possible errors in estimating management inputs, the sensitivity analysis gives a non-statistical confidence interval in which the “true” total compliance cost probably falls. So, for instance, I am reasonably confident that Company B's true compliance costs in year 2 lie between £678 and £754.

Companies A and C's high and low cost estimates vary so much because management is a large component of their overall compliance costs. In company A's case, this reflects the steep learning curve that the management has experienced through KFC compliance. In company C's case, the high management costs reflect the hierarchical nature of the management structure.

1.7 Benefits from compliance

Overlap between codes of practice not only complicates the estimation of KFC compliance costs but also creates difficulties when attributing the benefits of code compliance to the KFC code. However, in contrast to the horticultural codes used in Kenya, the KFC code includes management practices that help to minimise the amount of time that managers spend supervising routine tasks. Furthermore the code helps managers to minimise agrochemical costs by reducing the opportunity for theft and accidental spillage. In effect, the management procedures that the code requires ultimately become useful management tools. In cases where company control is particularly hierarchical, KFC recommendations have given middle managers credibility when they push senior managers or company boards for increased investment.

During the fieldwork for this research, several managers spoke of two further benefits that are non-KFC specific. These were:

- Improved worker health, leading to greater worker productivity and lower medical bills.
- Codes encourage environmental sustainability, thereby promoting long term business viability

Part 2 The UK – Buyers

Buyers in the UK bear no costs associated with KFC code of practice compliance. Furthermore, buyers are unlikely to compensate growers for their compliance costs in the future because:

- The KFC code compliance is voluntary. Although many UK supermarkets support the KFC's activities, they do not insist that their suppliers become members.
- There are clear business and commercial benefits to growers who comply with the KFC's standards (refer to section 1.7).

Even if buyers, particularly supermarkets, were to compensate growers, it is highly unlikely that they would increase the retail price in order to do so. UK demand for cut-flowers is price sensitive. For instance, sales doubled when a supermarket recently reduced the price of a bunch of flowers from £2.99 to £1.99. Clearly, growers, supermarkets and consumers would gain nothing if a price increase designed to compensate growers for their compliance costs caused a substantial decline in sales. Furthermore, to compensate growers at the retail level, supermarkets would either have to abandon price points⁴ to allow marginal increases in prices or reduce the number of stems in each retail bunch. Neither is an option that supermarkets would readily take.

⁴ The familiar £2.99, £3.49 etc.

Part 3 Key findings

- Kenya's flower industry operates in a very weak domestic economy and in an increasingly competitive international market. It is currently suffering a powerful cost-price squeeze that is restricting profitability. However, in contrast to most other sub-sectors in the Kenyan economy, business confidence among large commercial flower growers is reasonably high.
- Kenya has one of the most codified flower industries in the world. Social and environmental code compliance is now encouraged by European buyers, Kenya's conservation movement and the flower industry itself. Large growers currently comply with at least three different codes, which tend to differ more in emphasis than content.
- Compliance with new codes of practice holds little fear for the more progressive flower growers. Such is the prevalence of social and environmental codes within the industry that the standards they contain have become internalised and represent industry entry requirements for serious new growers.
- The KFC has yet to prescribe a minimum living wage for its members' workers. Instead KFC audits concentrate on ensuring that employers pay at least the legislated minimum wage and make the correct payments into national social security funds. The great majority of members were already compliant in these respects and therefore, in most cases, KFC compliance does not increase costs of employing workers.
- From the small sample of companies studied in this research, it appears that compliance costs have an inverse relationship to company size, especially when expressed as a percentage of annual turnover. However, even in the worst case, compliance costs are affordable.
- Management time required to plan, implement and maintain compliance represents one of the biggest compliance costs that KFC members bear.
- The largest non-managerial KFC compliance costs fall into the "Agrochemicals – Pesticides and Fertilizer" category. Improvements to chemical stores, worker safety during and after pesticide application and chemical disposal form the majority of these costs.
- The KFC does more than just audit against its code of practice. It also helps to spread best procedural and managerial practice within the industry, thereby helping members to reduce their costs. This benefit is well recognised among the KFC members.
- Two further benefits from code compliance that are non-KFC specific are: Improved worker health, leading to greater worker productivity and lower medical bills; and the promotion of long term business viability through environmental sustainability.

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Appendix 1. The KFC silver code of practice.

INTRODUCTION

This Code of Practice gives the requirements and guidelines on meeting your responsibilities as a Member of the Kenya Flower Council.

1.0 AIMS AND OBJECTIVES

- To foster the responsible and safe production of cut flowers and related products as defined in the constitution of The Kenya Flower Council with due regard for the interests of the community and of the environment.
- To promote a safe working environment for all farm staff.
- To ensure the welfare of all workers is in accordance with the Laws of Kenya.
- To grow flowers in such a manner as to safeguard the natural environment.

Methods of achieving these objectives are contained within this Code of Practice. A monitoring unit and audit team will ensure that members comply with the Code. Such compliance over periods of time (as set out below) will enable a member to ultimately display certification of compliance including use of the Council's logo.

Compliance with the Code of Practice

On joining, a new member confirms in writing the intention to meet the requirements of the Code of Practice. The grower will be allowed to display the Kenya Flower Council logo on letterheads. The grower then has 12 months in which to attain the **Primary Standards (P)**, most of which serious and responsible growers should be able to meet without too much effort. Following on a successful farm audit of the primary standards, the grower can display the **Kenya Flower Council Silver Environment Friendly Logo** on all packaging, promotional material and products.

Growers can, if they so wish, be classified as Gold Members on compliance with a higher level of responsibility, particularly with respect to the environment. Growers can then display the **Gold Environment Friendly Logo. These standards are being drawn up and will be advised to members at a future date.**

On achieving either status members will hold that category for a period of six months after which time the evaluation team will undertake a further visit. Those failing to maintain either Primary or Secondary Standards will be given fourteen days to comply when a further audit will be undertaken. Subsequent non-compliance will result in the Council withdrawing the right of the member to display the logo with all affected parties being notified by the Council. The next audit on members failing to comply will be undertaken after a period of six months has elapsed. Members must notify the Council after that date if they are ready to be evaluated

Once members consider they are in a position to meet silver status (should it be less than the time period outlined above) they can request evaluation from the Council who will undertake the farm audit within thirty days of notification.

Members will be subject to further farm audits at six monthly intervals.

Funding

New members pay a joining fee, thereafter they pay a quarterly subscription based on their export tonnage from the date of their joining.

2.0 FARM MANAGEMENT RESPONSIBILITIES AND DOCUMENTATION.

This Code of Practice assumes the use of skill and experience in a sensible way to ensure a balance between farm operations and the safety of people, fauna and flora of the natural environment. Simply following this Code might not suffice in some cases. Nothing in this Code should be taken as providing justification for failure to comply with other legal requirements. Whilst failure to comply with any provision of this Code is not in itself an offence, that failure may be taken by a court in criminal proceedings as proof of contravention and be judged accordingly.

Farm Audits will be conducted based not only on compliance with Primary Standards but also on the content of the various appendices.

Employers must ensure that employees are given information, instruction, training and guidance to carry out their work and to be aware of the risks to health from exposure to chemicals, pesticides, etc, and the precautions to be taken.

P Ultimate responsibility for compliance with the Code of Practice rests with the Owners / Board of Directors of each member company.

P Each member company will appoint a Senior Manager who will liaise with the KFC, be responsible for the day to day management of the Code of Practice and the health and safety of all personnel.

2.1 DOCUMENTATION

Proforma sample documentation is available in Appendix 7 [not reproduced here].

In order that members be able to prove that they have taken all reasonable precautions and exercised all due diligence in carrying out their business in regard to the Code of Practice, all actions relating to the Code must be adequately documented.

An essential element of such documentation is the need to prove that the Code has been carefully followed and that the actions identified have been followed and that the management system, with regard to the Code, is a pro-active, self-improving system, thus demonstrating that all reasonable precautions and all due diligence has been taken.

Records and documentation to be kept over and above those required by the Laws of Kenya, must include:

P Agrochemical stock check record. (Form 1)

P A list of personnel who have access to pesticide stores, those responsible for transport, mixing and handling of pesticides and record of training given.

P A list of “Extremely Hazardous” and “Highly Hazardous” (WHO Class 1a or 1b) chemicals in use on the farm (Appendix 10) [not reproduced here].

P All pesticide applications, time and date, details of chemicals used, active ingredient and toxicology rating (Appendix 12 [not reproduced here]), location of crop, weather conditions, names of spray men and supervisors, dosage rates, crops and reason for use and re-entry intervals (Appendix 3 [not reproduced here]) to be tabulated (Forms 2 and 3).

P A list of Spray Operators indicating status, most recent attendance at a spray training course (Form 4) and records of regular blood cholinesterase tests (Form 5).

P Maintenance of a Spray Supervisor log book (Form 6).

P Sprayer machine log book, showing regular calibration checks, dates of service (Form 7).

P A record of the daily water consumption from metered readings, where applicable (Form 8).

P All fertilizer usage, date, type, crop, weather conditions (Form 9).

P An accident and incident diary should record all accidents and emergency incidents such as spillages, poison cases etc and the remedial action taken.

P Notices should be posted giving emergency procedures in case of fire, spillages, contamination of humans or animals etc (Appendix 2 is a guide to action to be taken).

P A list of First Aiders and training given.

P A record of disposal of dilute pesticides, pesticide containers etc and a simple map of the disposal sites.

P A record of work contracts for all permanent and seasonal workers.

P A record of the daily muster rolls for all casual workers.

P A record of all receipts by workers in accordance with the payroll.

2.2 PLANT BREEDERS RIGHTS

The Senior Manager must provide evidence that the member adheres to the standards required on International Plant Breeders rights

3.0 GENERAL WORKER WELFARE

All companies will follow the regulations of wages and conditions of the Employment Act (Regulation of Wages and Conditions of Employment Act – ROWA)

3.1 WAGES

P Wages and benefits paid for a standard working week shall meet at least legal or industry minimum standards and always be sufficient to meet basic needs of workers and their families and to provide some discretionary income.

P All employees shall be paid in cash or by some mutually acceptable monetary means. Information regarding wages shall be made available to employees in a detailed and understandable form.

P No deductions shall be made from employee's wages without mutual agreement.

P All workers shall receive equal pay for equal work.

3.2 LABOUR CONDITIONS

Work Contracts

P Work contracts can be executed for a fixed term, for a period of time to complete a task or for an indefinite period to accomplish an occasional task.

Work Hours

P Work hours will be 46 hours spread over 6 days of the week or such hours that may be agreed by a collective bargaining agreement or an agreement between an individual employer and the workers' representative.

Overtime

P Where overtime is required due to seasonal demands payment shall be made at rates set out in ROWA. Such overtime to be voluntary and shall not exceed 12 hours per employee per week.

National Social Security Fund (NSSF)

P Employers must make the necessary deduction and pay contributions in accordance with Government regulations.

National Hospital Insurance Fund (NHIF)

P Employers must make the necessary deductions and pay contributions in accordance with Government regulations.

Leave

P All permanent/seasonal staff shall be entitled to not less than twenty one (21) working days leave with full pay after completion of 12 consecutive months of service or a proportionate time for periods worked of more than two months (ie six months / 11 working days). The leave above is in addition to all public holidays, weekly rest days and any sick leave taken by an employee. The leave to be taken at times agreed by the employer.

Female Employees

P Female employees shall not be employed in the handling, mixing or application of pesticides.

P Women shall not be discriminated against during ante or postnatal periods in regard to recruitment, selection or termination of a particular job.

Redundancy

P Employees made redundant shall be entitled to compensation as set out in ROWA.

Severance

P Employees whose employment is terminated by the employer for reasons other than gross misconduct shall be entitled to severance pay as set out in ROWA.

Sick Leave

P After one month's continuous service an employee shall be entitled to sick leave up to a maximum period of thirty (30) days on full pay and a further thirty days (30) on half pay in each period of twelve (12) months continuous work. (This only to be granted on production of a certified letter of incapacity signed by a recognised medical practitioner otherwise ROWA conditions apply.

Maternity Leave

P Female employees shall be entitled to two (2) months' maternity leave on full pay. However, female employees shall forfeit annual leave in that year. The employee will not incur any loss of privileges for reason of being on such leave.

Workman's Compensation

P Any member of the workforce who is injured when undertaking duties is entitled to compensation in accordance with the Workman's Compensation Act Chapter 236.

Employers should provide insurance cover for losses and compensation due to accidents at work.

Housing

P Every employer shall at all times, at his own expense, provide reasonable housing accommodation with adequate clean water and toilet facilities for each of his employees or shall pay to the employee such sufficient sum as rent allowance in addition to wages or salary as will enable the employee to obtain reasonable accommodation.

- Unions, Worker Forums
- P All workers shall be free to join a Trade Union of their own choice should they so wish and employers will deduct dues from wages as required.
- P All employers must have a forum in which staff welfare and safety can be monitored and discussed freely and openly. Records of proceedings should be available for scrutiny.
- P Clear grievance procedures shall be developed and communicated through a worker's forum or similar.
- P All employees shall receive information orally and written about their rights, obligations and entitlements.
- Child Labour / Minors
- P No farm shall employ juveniles under the age of sixteen (16) for any duty or task.
- Forced Labour
- P No farm shall make use of forced labour nor coerce anyone to work against his / her will.
- Discrimination
- P The company shall not engage in or support discrimination, intimidation or coercion in any form based on ethnic origin, religion, gender, union membership or political affiliation.
- 3.3 HEALTH AND SAFETY
- Training
- P All personnel shall receive regular and recorded health and safety training and that such training is repeated for new and reassigned personnel. Training can be in house or contracted out to a responsible organisation (GCPF formerly GIFAP etc).
- Medical
- P Medical treatment for the workforce will be provided at the expense of the employer unless the illness / injury was contracted during any period when the employee was absent from his place of employment or the illness / injury was self-inflicted or the result of substance abuse.
- P First Aid facilities shall be provided at all operating sites where at least two persons trained in First Aid procedures should be available.
- P Medical facilities shall be provided on site or nearby with trained health workers and simple medicines.
- P All employers should be contracted to a recognised medical practitioner who can visit the farm on a regular basis and be available to deal with any medical emergency.
- P Antidotes to pesticide poisoning should be available with people trained to administer them. (Guidelines to Organophosphorous poisoning, monitoring and treatment are available from the Kenya Flower Council).
- P Employers must establish written procedures on how to get injured / sick workers to medical facilities as efficiently and safely as possible. An accident / sick record book should be carefully maintained.
- Protective Clothing
- P Employers will supply, at their own expense, protective clothing and equipment suitable and appropriate for the tasks to be performed
- P Facilities for changing clothes and washing shall be available to all staff. For those handling or applying pesticides or dangerous substances there should be provision of shower facilities and showering after work shall be mandatory.
- Re-Entry Intervals
- P After applying pesticides in a greenhouse or in the open, harvesting staff should not work in the area until the specified re-entry interval has been observed. Adequate signage to this effect should be prominently displayed. If workers must have access to the crop within the re-entry time they must use appropriate protective clothing and equipment (See Appendix 6 [not reproduced here]).
- P Adequate precautions and measures should be taken to ensure other persons or areas are not contaminated due to application of chemicals – drift, watercourses etc.
- General
- P Workers should have ready access to water of potable quality at all times.
- P Workers shall have ready access to flush toilets or pit latrines and clean water for washing.

- P All machinery, tractors, sprayers etc shall be fully guarded and be well maintained.**
- S Transport should be provided to and from the work area (if required) or an allowance paid as part of the salary.**

4.0 AGROCHEMICALS – PESTICIDES AND FERTILIZER

4.1 CROP PROTECTION STRATEGY

Reduction of chemical inputs is usually possible by evaluation of all available options and use of appropriate measures. However, it will be the nature and size of the problem that dictates the solution.

Management strategies to keep pest levels below economically damaging thresholds should be devised using the most appropriate combination of biological, cultural, mechanical and chemical methods. They should be based on a thorough evaluation of the situation, taking into account:

- Previous experience of pest incidence and crop susceptibility.
- Weather
- Regular crop inspection to identify and assess pest levels.
- Use of established pest thresholds.
 - Trapping of pests where appropriate
 - Employment of field scouts competent in such duties by training or experience.
 - Where necessary, laboratory diagnosis.

The presence of pests and disease is inevitable and control should be achieved by an integrated strategy. Consequently as part of a responsible approach, a longer-term strategy for control should be drawn up for each crop including:-

- Past history of infestation.
- Identification of main threats.
- Understanding and implementation, where possible, of non-chemical options; including rotations, crop hygiene, resistant varieties, cultural control and biological control.
- Understanding that establishment of healthy crops reduces the need for spray and that over application of nitrogen can render crops more susceptible to disease.

4.2 USE OF PESTICIDES

- Products should be used as responsibly and appropriately as possible. Pesticide applications should be targeted and timed to achieve their full potential. Where possible an application can be confined to insect hot spots or disease foci.
- Products must be chosen to avoid reliance or continued use of any one single chemical grouping, thus reducing the emergence of pest resistance. The use of curative (systemic / absorbed by plant) products should be considered over prophylactic (contact) products as the quantities needed to achieve control are substantially less.

P Under no circumstances should products banned in Kenya be used or stored on the company premises. Stores should be available for inspection. (Appendix 1 [not reproduced here]).

P Only products registered by the Pest Control Products Board (PCPB) can be used. Labels / manufacturers instructions should be followed. (Appendix 12 [not reproduced here]).

P Products classified as ‘Extremely Hazardous’ and ‘Highly Hazardous’ (WHO class group 1. (Appendix 10 [not reproduced here]) should only be used in justified circumstances.

Where a choice exists, a product which is safer to handle and has less environmental impact should be chosen.

4.3 APPLICATION OF PESTICIDES AND PROTECTION OF WORKERS

Appendix 4 [not reproduced here] contains guidelines covering application of pesticides and the protection of workers involved.

The following requirements are to be implemented.

P All Spray Operators must be suitably trained by a recognised institution or body such as GCPF Safe Use Project.

- P All Spray Operators must wear personal protective clothing and equipment suitable for the task in hand and this to be provided by the employer. See Appendix 8. Spray Operators should not wear personal clothing when spraying. Provision of secure storage should be provided for personal clothing.
- P Where WHO Class 1 pesticides are used, all workers involved must be provided with waterproof overalls as well as the appropriate respirators etc.
- P After applying pesticides, spray operators must remove all protective clothing and take a shower. Facilities for this, including soap and towels, must be made available.
- P All waterproof equipment must be rinsed immediately after use. Protective clothing must be laundered at least twice a week and be stored in a hygienic location on the farm.
- P All staff frequently involved in the use and application of pesticides shall have a medical check at least twice a year but preferably every three months. Such check up to include sampling of blood cholinesterase levels along with a baseline level determined after a time away from pesticide exposure ie a period of leave. (Guidelines on Organophosphorus poisoning, monitoring and treatment are available from the Kenya Flower Council).
- P All equipment used for spraying must be regularly inspected, well maintained and serviced. Any defective equipment must be repaired or replaced immediately.
- P All workers within the vicinity to be sprayed and without protective clothing must leave the area. Warning signs must be displayed at greenhouse entry points and field gates stating time and date of application, pesticide being used and indicating when entry will be safe without the use of protective clothing. (Appendix 3 [not reproduced here]).
- P Detailed spray records shall be kept covering the time and date of application, amount and type of pesticide, treated area, reason for application and the names of the spray operators.
- P Material Safety Data Sheets (MSDS) / information sheets of all chemicals used shall be kept on file (Database on most pesticides is available from the Kenya Flower Council).
- P Spray mixing and application shall only be carried out by trained personnel. No female workers to handle, mix, or apply pesticides.
- P The application rate of pesticides per given area and the dilution rates must comply with recommendations on the product label.
- 4.5 STORAGE OF PESTICIDES
 - The guidelines relating to the transport, storage and disposal of pesticides are contained in Appendix 2 [not reproduced here].
 - P In accordance with the Pest Control Products Act Cap 346, all chemical stores are required to have a PCPB licence by law.
 - P Small quantities of pesticides should be kept in a securely locked cupboard or box away from foodstuffs, fires, stoves or lamps. Should not be in an occupied room and be secure from children and animals.
 - P Large quantities of pesticides should be kept in a purpose built store, separate from other buildings or a section of a building which can be securely locked. (A plan for the construction of a pesticide store is available from Kenya Flower Council office).
 - P Notices must be placed on the outside of the pesticide store stating “DANGER PESTICIDES, AUTHORISED PERSONS ONLY”. Notices and symbols indicating “NO SMOKING, NO NAKED FLAME” must be displayed both inside and outside.
 - P Stock must be inspected regularly and stock records maintained.
 - P Store keepers must receive training regarding the toxicity of pesticides, their storage, handling and dispensing.
 - P Written procedures in the event of fire, spillage or contamination of personnel must be developed and displayed.
 - P Store keepers must be trained in emergency procedures in case of fire, spillage and contamination of personnel.
- 4.5 TRANSPORT OF PESTICIDES
 - P Written procedures for transport of pesticides shall be developed and communicated to all staff involved in the transport whether on the farm or on the public roads.

- P Drivers must be trained in emergency procedures in the event of accident, fire, spillage and contamination of persons.
 - P Pesticides must not be transported with food, animal feed, clothing or general consumer goods.
 - P Vehicles used to transport pesticides should be provided with suitable equipment to deal with emergencies, protective clothing, fire extinguisher, sand, shovel, etc.
 - S Transport of pesticides should, if possible, be in a dedicated vehicle.
- 4.6 DISPOSAL OF PESTICIDES
- P Written procedures for safe disposal of concentrate and dilute pesticides and empty containers must be developed and communicated.
 - P Disposal sites for chemicals should be at least 500m from surface water and at least 250m from boreholes.
 - P Disposal site must be securely fenced, locked and labelled with warning signs.
 - P Disposal of Silver thiosulfate should be as in Appendix 6 [not reproduced here].

5.0	PROTECTION OF THE NATURAL ENVIRONMENT
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5.1 FERTILIZERS

- P A written fertilizer plan should be developed.
- P No fertilizer, organic or inorganic, should be applied within six metres of any water channel or water source.
- P There should be no direct access for run-off water to any water source.
- P Fertilizer stores should be placed so that accidental flooding will not wash fertilizer into any water channels or water sources, such as lakes, boreholes, etc.

5.2 WATER MANAGEMENT

- P All growers must maintain valid water abstraction permits where applicable and in accordance with the Water Act Cap 372
- P All growers must be conversant with the most water efficient means of irrigation for their particular types of crop production.
- P Overhead sprinkler systems use should be avoided and only used where it can be agronomically justified.
- P Forms of irrigation which minimise water usage such as drip, mini sprinklers and other forms of direct water application to the ground surface and directly adjacent to the root zone must be used.
- P All growers must be conversant with the physical concepts of soil / water relations which enable water requirements to be accurately estimated, taking into account soil moisture deficits, evapo-transpiration, rainfall, temperature and other meteorological data. Soil tensiometers or similar equipment should be used to aid water management decisions.
- P Field personnel should be trained to recognise and rectify irrigation deficiencies such as pipe bursts to ensure remedial action is taken promptly to avoid wastage of water.
- P Growers should maintain records of water consumption particularly of ground water.
- S Growers should endeavour to collect rainwater and re-cycle water used within their farms to reduce reliance on natural sources.

5.3 SOIL CONSERVATION

- P Soil drainage systems shall be well maintained.
- P Sloping land should be contoured / terraced.
- P Good Agricultural Practice (GAP) must be maintained in all respects.

- 5.4 DISPOSAL OF NON-HAZARDOUS WASTE
- P** Written procedures for the disposal of non-hazardous waste must be developed and communicated.
 - P** Organic waste should be composted.
 - P** There should be designated areas for the burning or burial of non-hazardous waste which cannot be recycled or composted.
 - P** Waste material such as plastic sheet, cardboard, wood etc should be recycled.
 - S** Only packaging material which can be re-used or recycled in the importing country should be used.
 - S** Use of chlorinated plastics (PVC) should be avoided.
 - S** Every effort should be made to reduce the use of natural materials that have not been grown specifically for commercial use (timber etc).
- 5.5 WILDLIFE
- S** All non-cropped areas should be managed so as to encourage wildlife. Tree planting areas should be defined so waste disposal and unnecessary disturbance is avoided to enable environmental upgrading.
 - P** Natural corridors should be maintained to allow wild animals access to water.
- 5.5 WATER SOURCES
- P** There should be no disposal of hazardous chemicals or empty containers within 500m of open water source, 250m of a borehole or on riparian land.
 - P** There should be no pit latrine, flush toilets or septic tanks within 500m of an open water source, 250m of a borehole or on riparian land.
 - P** Riparian land requires special care and where a Code of Practice exists such as the Lake Naivasha Riparian Owners Association, this should be adhered to in its entirety.

6.0	POST HARVEST
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- 6.1 GRADING, PACKING HOUSES AND COLD STORES
- P** Buildings and interior fittings must allow for good hygiene practices, provide protection to the workers and the product and be easy to maintain and keep clean.
 - P** Signs should be displayed forbidding smoking and food from the area. Children should be excluded.
- 6.2 WORKER CONDITIONS
- P** Supervisory staff should be adequately trained in emergency procedures in the case of fire or accidents.
 - P** General workers should be provided with clothing suitable to the tasks performed.
 - P** All machinery must be well maintained and fully guarded to minimise accidents and conform to the Factories Act 514.
 - P** Lighting and ventilation must be adequate.
 - P** Toilet and washing facilities must be sufficient and adequate for the workforce employed.
- 6.3 PACKAGING STORES
- P** Building must be rain proof and be provided with adequate fire fighting equipment.
 - P** Store must be vermin proof (rats, bats and birds) and a regular system of vermin control employed.
- 6.4 TREATMENT DISPOSAL

P All treatment chemicals, disinfectants etc should be disposed of in a responsible manner.

6.5 WASTE DISPOSAL

P Written procedures for the disposal of waste materials – organic, packaging etc – should be developed and communicated.

Appendix 2 Compliance cost assumptions and workings.

Company A - Assumptions and Workings

Exchange rate	
£1 (December Shillings)	114.9
US\$1 (December Shillings)	78.7
Weighted average nominal cost of capital (1:1 borrowed to equity)	5.00%
Chemical stores	
Estimated total cost of building chemical stores (KShs)	612,427
Average life of chemical store (years)	20
Annualised cost of chemical store (KShs)	49,143
Shower facilities	
Total capital cost of installing a bund (KShs)	100,000
Average life of bund (years)	20
Annualised cost of bund installation (KShs)	8,024
Medical equipment	
Cost of adding first aid kits in packhouse and chemical store	12,000
Fire equipment	
Cost of installing fire extinguisher(s) in grading hall, packhouse and coldstore	22,500
Average life of fire extinguisher (years)	5
Annualised cost of fire extinguisher installation (KShs)	5,197
Health and safety of pesticide workers	
Cost of health checks (including cholinesterase tests) per spray man per year	1,500
Number of spray men	10
Total cost of health checks	15,000
Pesticides disposal	
Cost of building chemical disposal site	61,243
Average life of chemical disposal site (years)	10
Annualised cost of disposal site (KShs)	7,931
Clothing lockers	
Cost of installing clothes lockers for pesticide workers	122,485
Average life of clothes lockers (years)	10
Annualised cost of clothes lockers (KShs)	15,862
NHIF payments	
Average NHIF payment per worker (per month)	80
Number of workers	40
Total monthly cost of NHIF payments	3,200
First aid training	
Cost of first aid training per worker per year	5,000
Number of workers trained	2
Total annual cost of first aid training	10,000
Audit costs	
Number of auditor days required for initial audit	2
Number of auditor days required for subsequent six monthly audits	2
Estimated cost of a KFC auditor day (covered by subscription)	5,000
Management	
Cost of a manager month (KShs)	200,000
Manager months spent on planning and implementing corrective actions	2
Manager months to maintain compliance including the operation of new procedures (per year)	1

Company A - Summary of Compliance Costs

	2000	2001 (expected)	2002 (expected)	2003 (expected)
	KShs	KShs	KShs	KShs
General Worker Welfare				
Wages				
Labour Conditions				
Incremental cost of NHIF payments	19,200	38,400	38,400	38,400
Health and Safety				
Cost of first aid equipment	6,000	12,000	12,000	12,000
Cost of first aid training	5,000	10,000	10,000	10,000
Cost of fire equipment	2,598	5,197	5,197	5,197
Agrochemicals - Pesticides and Fertilizer				
Crop protection strategy*				
Use of pesticides*				
Application of pesticides and protection of workers				
Annual cost of health checks for spray men	7,500	15,000	15,000	15,000
Annualised cost of installing clothes lockers for spray men	7,931	15,862	15,862	15,862
Storage of pesticides				
Cost of building new chemical store	24,571	49,143	49,143	49,143
Transport of pesticides				
Disposal of pesticides				
Annualised cost of building disposal site	3,966	7,931	7,931	7,931
Protection of the Natural Environment				
Fertilizers				
Water management				
Soil conservation				
Disposal of non-hazardous waste				
Wildlife				
Water Sources				
Annualised cost of installing a bund on shower facilities	-	8,024	8,024	8,024
Post Harvest				
Grading, packing houses and cold stores				
Worker conditions*				
Packaging Stores				
Treatment Disposal				
Waste Disposal				
Management costs				
Management time spent on planning and implementing compliance actions	480,000	-	-	-
Management time spent on maintaining compliance	-	200,000	200,000	200,000
Audit costs	20,000	20,000	20,000	20,000
Sub total	543,968	315,961	315,961	315,961
Miscellaneous (5%)	27,198	15,798	15,798	15,798
Total (KShs)	571,167	331,759	331,759	331,759
Total (£)	4,971	2,887	2,887	2,887
Total (\$)	7,258	4,215	4,215	4,215

Company B - Assumptions and Workings

Exchange rate	
£1 (December Shillings)	114.9
US\$1 (December Shillings)	78.7
Weighted average nominal cost of capital (1:1 borrowed to equity)	5.00%
Chemical stores	
Estimated total cost of installing false ceiling in chemical stores (KShs)	226,216
Average life of chemical store (years)	20
Annualised cost of chemical store upgrade (KShs)	18,152
Methyl bromide shed	
Total capital cost of building shed (KShs)	62,838
Average life of shed (years)	10
Annualised cost of shed (KShs)	8,138
Agro-chemicals training	
Cost of application and handling training per year (KShs)	20,000
Improved waste disposal facilities	
Total capital improving waste disposal facilities (KShs)	16,338
Average life of improved facilities (years)	5
Annualised cost of improved facilities (KShs)	3,774
Audit costs	
Number of auditor days required for initial audit	2
Number of auditor days required for subsequent six monthly audits	2
Estimated cost of a KFC auditor day (covered by subscription)	5,000
Management	
Cost of a manager month (KShs)	54,000
Manager months spent on planning and implementing corrective actions	0.23
Manager months to maintain compliance including the operation of new procedures (per year)	0.15

Company B - Summary of Compliance Costs

	1999	2000	2001	2002	2003
	KShs	KShs	(expected) KShs	(expected) KShs	(expected) KShs
General Worker Welfare					
Wages					
Labour Conditions					
Health and Safety					
Agrochemicals - Pesticides and Fertilizer					
Crop protection strategy*					
Use of pesticides*					
Application of pesticides and protection of workers					
Training for pesticide handling and training		20,000	20,000	20,000	20,000
Storage of pesticides					
Cost of upgrading chemical store		18,152	18,152	18,152	18,152
Cost of building methyl bromide shed		8,138	8,138	8,138	8,138
Transport of pesticides					
Disposal of pesticides					
Annualised cost of improved waste disposal facilities		3,774	3,774	3,774	3,774
Protection of the Natural Environment					
Fertilizers					
Water management					
Soil conservation					
Disposal of non-hazardous waste					
Wildlife					
Water Sources					
Post Harvest					
Grading, packing houses and cold stores					
Worker conditions*					
Packaging Stores					
Treatment Disposal					
Waste Disposal					
Management costs					
Management time spent on planning and implementing compliance actions	12,462	-	-	-	-
Management time spent on maintaining compliance	-	8,308	8,308	8,308	8,308
Audit costs	20,000	20,000	20,000	20,000	20,000
Sub total	32,462	78,371	78,371	78,371	78,371
Miscellaneous (5%)	1,623	3,919	3,919	3,919	3,919
Total (KShs)	34,085	82,290	82,290	82,290	82,290
Total (£)	297	716	716	716	716
Total (\$)	433	1,046	1,046	1,046	1,046

Company C - Assumptions and Workings

Exchange rate	
£1 (December Shillings)	114.9
US\$1 (December Shillings)	78.7
Weighted average nominal cost of capital (1:1 borrowed to equity)	5.00%
Chemical stores	
Cost of constructing bund around chemical stores (KShs)	3,037
Cost constructing separate storage facilities for powders and liquids	90,067
Average life of chemical store improvements (years)	20
Annualised cost of chemical store improvements (KShs)	7,471
Soakpits around around greenhouses	
Total capital cost of soakpits (KShs)	37,528
Average life of soakpit (years)	2
Annualised cost of soakpits (KShs)	20,183
Safety cages for chemical transport on farm	
Number of cages built	7
Cost per cage	2,502
Average life of cages (years)	5
Annualised cost of cages (KShs)	4,045
Driver training	
Cost of providing spillage training for driver (Kinangop Farm)	10,000
Pest control	
Annual cost of rat control in packaging store	1,028
Audit costs	
Number of auditor days required for pre-audit	2
Number of auditor days required for subsequent six monthly audits	2
Estimated cost of a KFC auditor day (covered by subscription)	5,000
Management	
Cost of a manager month (KShs)	50,000
Manager months spent on planning and implementing corrective actions	0.35
Manager months to maintain compliance including the operation of new procedures (per year)	7.50

Company C - Summary of Compliance Costs

	1999	2000	2001	2002	2003
	KShs	KShs	(expected) KShs	(expected) KShs	(expected) KShs
General Worker Welfare					
Wages					
Labour Conditions					
Health and Safety					
Agrochemicals - Pesticides and Fertilizer					
Crop protection strategy*					
Use of pesticides*					
Application of pesticides and protection of workers					
Increased frequency of cholinesterase testing		200,000	200,000	200,000	200,000
Training for pesticide handling and training		1,028	1,028	1,028	1,028
Storage of pesticides					
Annualised cost of building bund around chemical store		7,471	7,471	7,471	7,471
Transport of pesticides					
Annualised cost of safety cages for chemicals		4,045	4,045	4,045	4,045
Annual cost of spillage training for driver (Kinangop Farm)		10,000	10,000	10,000	10,000
Disposal of pesticides					
Annualised cost of building soakpits around greenhouses		10,091	20,183	20,183	20,183
Protection of the Natural Environment					
Fertilizers					
Water management					
Soil conservation					
Disposal of non-hazardous waste					
Wildlife					
Water Sources					
Post Harvest					
Grading, packing houses and cold stores					
Worker conditions*					
Packaging Stores					
Annual cost of rat control		1,028	1,028	1,028	1,028
Treatment Disposal					
Waste Disposal					
Management costs					
Management time spent on planning and implementing compliance actions	17,308	-	-	-	-
Management time spent on maintaining compliance	-	375,000	375,000	375,000	375,000
Audit costs	20,000	20,000	20,000	20,000	20,000
Sub total	37,308	628,663	638,755	638,755	638,755
Miscellaneous (5%)	1,865	31,433	31,938	31,938	31,938
Total (KShs)	39,173	660,096	670,692	670,692	670,692
Total (£)	341	5,745	5,837	5,837	5,837
Total (\$)	498	8,388	8,522	8,522	8,522

Company D - Assumptions and workings

Exchange rate	
£1 (December Shillings)	114.9
US\$1 (December Shillings)	78.7
Weighted average nominal cost of capital (1:1 borrowed to equity)	7.5%
Spray team	
No. of extra spray men to allow for greater rotation of spray team	-
Spray man wage including cash and non-cash benefits (KShs/month)	12,400
Annual cost of employing extra spray men	-
Staff canteen	
Cost of building staff canteen (KShs)	-
Average life of canteen (years)	20
Annualised cost of chemical store (KShs)	-
Chemical stores	
Cost of making improvements to chemical stores (KShs)	8,939,167
Average life of chemical store (years)	20
Annualised cost of chemical store (KShs)	876,862
Waste water management	
Cost of installing sumps for water treatment (KShs)	1,340,875
Average life of sump (years)	20
Annualised cost sumps (KShs)	131,529
Showers for pesticide workers	
Cost of upgrading showers (KShs)	1,862,326
Average life of shower installation (years)	20
Annualised cost of shower upgrade (KShs)	182,680
Transport of pesticides	
Cost of dedicated vehicle (KShs)	-
Average life of vehicle (years)	5
Annualised cost of dedicated vehicle (KShs)	-
Audit costs	
Number of auditor days required for initial audit	4
Number of auditor days required for subsequent six monthly audits	4
Estimated cost of a KFC auditor day (covered by subscription)	5,000
Management	
Cost of a manager month (KShs)	207,500
Manager months to maintain compliance (per year)	0.23

Company D - Summary of Compliance Costs

	Year 1 ('97) KShs	Year 2 ('98) KShs	Year 3 ('99) KShs	Year 4 ('00) KShs	Year 5 ('01) KShs
General Worker Welfare					
Wages	-	-	-	-	-
Labour Conditions	-	-	-	-	-
Cost of staff canteen***	-	-	-	-	-
Health and Safety	-	-	-	-	-
Incremental cost of increasing spray team size***	-	-	-	-	-
Agrochemicals - Pesticides and Fertilizer					
Crop protection strategy*	-	-	-	-	-
Use of pesticides*	-	-	-	-	-
Application of pesticides and protection of workers*	-	-	-	-	-
Storage of pesticides	-	-	-	-	-
Annualised cost of upgrading chemical stores	-	876,862	876,862	876,862	876,862
Transport of pesticides	-	-	-	-	-
Annualised cost of dedicated pesticides vehicle	-	-	-	-	-
Disposal of pesticides	-	-	-	-	-
Protection of the Natural Environment					
Fertilizers and agrochemicals					
Annualised cost of installing water sumps	-	131,529	131,529	131,529	131,529
Water management	-	-	-	-	-
Soil conservation	-	-	-	-	-
Disposal of non-hazardous waste	-	-	-	-	-
Wildlife	-	-	-	-	-
Water Sources	-	-	-	-	-
Post Harvest					
Grading, packing houses and cold stores	-	-	-	-	-
Worker conditions*	-	-	-	-	-
Packaging Stores	-	-	-	-	-
Treatment Disposal	-	-	-	-	-
Waste Disposal	-	-	-	-	-
Management costs					
Management time spent planning and implementing compliance actions	-	-	-	-	-
Management time spent on maintaining compliance	-	47,885	47,885	47,885	47,885
Audit costs**	40,000	40,000	40,000	40,000	40,000
Sub total	40,000	1,096,276	1,096,276	1,096,276	1,096,276
Miscellaneous (5%)	2,000	54,814	54,814	54,814	54,814
Total (KShs)	42,000	1,151,090	1,151,090	1,151,090	1,151,090
Total (£)	366	10,018	10,018	10,018	10,018
Total (\$)	534	14,626	14,626	14,626	14,626

Company E - Assumptions and Workings

Exchange rate	
£1 (December Shillings)	114.9
US\$1 (December Shillings)	78.7
Weighted average nominal cost of capital (1:1 borrowed to equity)	7.50%
Chemical stores	
Cost of installing lightning conductor on chemical store (KShs)	69,139
Average life of bund (years)	20
Annualised cost of bund construction (KShs)	6,782
Grading and packaging hall	
Total capital cost of installing extra washing and toilet facilities (KShs)	138,278
Average life of facilities (years)	20
Annualised cost of facilities (KShs)	13,564
Packaging store	
Cost of fire fighting equipment	206,292
Average life of fire fighting equipment (years)	5
Annualised cost of installing fire fighting equipment (KShs)	50,988
Satellite Stores	
Cost of installing bunding around store entrances	18,764
Average life of bunding (years)	10
Annualised cost of installing bunding (KShs)	2,734
Pesticide training	
Annual cost of providing pesticide training for all personnel	15,000
Audit costs	
Number of auditor days required for pre-audit	4
Number of auditor days required for subsequent six monthly audits	2
Estimated cost of a KFC auditor day (covered by subscription)	5,000
Management	
Cost of a manager month (KShs)	60,000
Manager months to maintain compliance including the operation of new procedures (per year)	3.00

Company E - Summary of Compliance Costs

	1997	1998	1999	2000	2001 (expected)
	KShs	KShs	KShs	KShs	KShs
General Worker Welfare					
Wages					
Labour Conditions					
Health and Safety					
Agrochemicals - Pesticides and Fertilizer					
Crop protection strategy*					
Use of pesticides*					
Application of pesticides and protection of workers					
Annual cost of pesticide training		15,000	15,000	15,000	15,000
Storage of pesticides					
Annualised cost of installing lightning conductor		6,782	6,782	6,782	6,782
Annual cost of installing bunding around satellite stores				2,734	2,734
Transport of pesticides					
Disposal of pesticides					
Protection of the Natural Environment					
Fertilizers					
Water management					
Soil conservation					
Disposal of non-hazardous waste					
Wildlife					
Water Sources					
Post Harvest					
Grading, packing houses and cold stores					
Worker conditions					
Annualised costs of extra washing and toilet facilities		13,564	13,564	13,564	13,564
Packaging Stores					
Annualised cost of installing fire fighting equipment		50,988	50,988	50,988	50,988
Treatment Disposal					
Waste Disposal					
Management costs					
Management time spent on planning, implementing and maintaining compliance	180,000	180,000	180,000	180,000	180,000
Audit costs	30,000	20,000	20,000	20,000	20,000
Sub total	210,000	286,334	286,334	289,068	289,068
Miscellaneous (5%)	10,500	14,317	14,317	14,453	14,453
Total (KShs)	220,500	300,651	300,651	303,521	303,521
Total (£)	1,919	2,617	2,617	2,642	2,642
Total (\$)	2,802	3,820	3,820	3,857	3,857



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