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Case information from Kenya, Chile, Malaysia and South Africa

by

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Acronyms

ABMP	Brazilian Association of Apple Producers
ACFS	National Bureau of Agricultural Commodity and Food Standards – Thailand
AGS	Rural Infrastructure and Agro-Industries Division
AMCL	Approved Modified Check List
APEDA	Agricultural and Processed Food Products Export Development Authority – India
ARC	Agricultural Research Council – South Africa
ASEAN	Association of South East Asian Nations
ASOEX	Chilean Exporters Association
BCS	BCS Öko Garantie GmbH – certification body
BDS	business development services
BRC	British Retail Consortium
BSMDP	Business Services Market Development Project
B2B	Business to Business
B2C	Business to Consumers
CAADP	Comprehensive Africa Agriculture Development Plan
CB	certification body
CERES	Certification of Environmental Standards GmbH – certification body
CGA	Citrus Growers Associations – South Africa
CMi	Checkmate International – certification body
COAG	Committee on Agriculture of the FAO
COLEACP-PIP	Europe-Africa-Caribbean-Pacific Liaison Committee – Pesticides Initiative Programme
CoP	code of practice
CORFO	Corporation for the Promotion of the Production – Chile
COSATU	organized labour – South Africa
DFID	Department for International Development – United Kingdom
DFPT	Deciduous Fruit Industry of South Africa
DoA	Department of Agriculture
DSM	Department of Standards Malaysia
DTI	Department of Trade and Industry – South Africa
EPC	Export Promotion Council – Kenya
EurepGAP	Euro-Retailer Produce Good Agricultural Practice
EMBRAPA	Brazilian Agricultural Research Company
EU	European Union
FAMA	Federal Agricultural Marketing Authority – Malaysia
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Statistical Database
FAWU	Food and Allied Workers Union – South Africa
FBO	Food Business Operators
FDF	Fundación para el Desarrollo Frutícola – Chile
FEDEFRUTA	Chilean Fruit Growers Federation

FFV	fresh fruit and vegetable
FIA	Foundation for Agricultural Innovation – Chile
FOB	free on board
FPEAK	Fresh Produce Exporters' Association of Kenya
FPEF	Fresh Produce Exporters' Forum – South Africa
GAP	good agricultural practice
GATT	General Agreement on Tariffs and Trade
GFSI	Global Food Safety Initiative
GLOBALGAP	Global Partnership for Good Agricultural Practice
GMP	Good Manufacturing Practices
GTZ	Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation)
HACCP	Hazard Analysis and Critical Control Point
HCDA	Horticultural Crops Development Authority – Kenya
HPOU	Horticulture Promotion Organization of Uganda
IAF	International Accreditation Forum
ICIPE	International Centre of Insect Physiology and Ecology
IFAD	International Fund for Agricultural Development
IFS	International Food Standard
ILO	International Labour Organization
INDAP	Governmental Agricultural Development Institute – Chile
INN	National Standards Institute – Chile
IPM	Integrated Pest Management
ISO	International Organization for Standardization
ISP	Public Health Institute – Chile
JGAI	Japan Good Agricultural Initiative
JGAP	Japan Good Agricultural Practice
JICA	Japan International Cooperation Agency
KARI	Kenya Agricultural Research Institute
KEBS	Kenya Bureau of Standards
KENAS	Kenya Accreditation Service
KEPHIS	Kenya Plant Health Inspectorate Services
KHDP	Kenyan Horticultural Development Programme
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries – Uganda
MAP	Mycotoxin Analytical Programme – South Africa
MAPA	Ministry of Agriculture, Livestock and Food Supply – Brazil
MARDI	Malaysian Agricultural Research and Development Institute
MINAGRI	Ministry of Agriculture – Chile
MoA	Ministry of Agriculture
MRL	maximum residue limits
NAFU	National African Farmers Union – South Africa
NAMC	National Agricultural Marketing Council – South Africa
NEPAD	New Partnership for Africa's Development
NGO	non-governmental organization
ODEPA	Oficina de Estudio y Planificacion Agricola de Chile
OIE	World Organization for Animal Health
PCPB	Pest Control Product Board – Kenya
PIF	Integrated Fruit Production – Brazil

PHC	Pack House Codes
PPE	personal protective equipment
PPECB	Perishable Products Export Control Board
PUC	Production Units Codes
PVS	Private Voluntary Standards
QAS	quality assurance system
QMS	quality management system
R&D	research and development
SAAGA	South African Avocado Growers' Association
SABS	South African Bureau of Standards
SADC	Southern African Development Community
SADCSTAN	South African Development Community for Cooperation in Standardization
SADCMEL	Southern African Development Community Cooperation in Legal Metrology
SAGP	Livestock and Agriculture Service – Chile
SAGARPA	Ministry of Agriculture – Mexico
SALM	Farm Accreditation Scheme of Malaysia
SAMGA	South African Mango Producers Association
SANAS	South African National Accreditation Service
SAPIP	South African Pesticide Initiative Programme
SASP	Strategic Agricultural Sector Plan – South Africa
SENASICA	National Service for Food Safety, Sanitation & Quality – Mexico
SENCE	National Training and Employment Service – Chile
SGS	Société Générale de Surveillance - International certification body
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
TNC	Tesco Nature's Choice
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency for International Development
WTO	World Trade Organization

Preface

FAO's Committee on Agriculture (COAG) considered the "Challenges of Agribusiness and Agro-Industries Development" during its twentieth session in 2007. Key challenges considered by the COAG were the rapid proliferation of industry developed standards and quality requirements. Several members expressed that governments have a role in optimizing the impacts and improving the fairness of industry developed standards and requirements. The Committee called on FAO to appraise regional and global trends and to provide information to reinforce expertise and support policy formulation.

Among all of the private industry standards worldwide, perhaps the best known is the Global Partnership for Good Agricultural Practices (GLOBALGAP). AGS had started to assess the impacts of GLOBALGAP on smallholders even before the COAG meeting in 2007, when GLOBALGAP was still EurepGAP. The fundamental concern of AGS was that the costs of compliance with certification requirement were potentially prohibitive to small farmers, even if those farmers were using good agricultural practices.

Two questions were of particular interest to AGS. The first was: What are the main components of the costs of certification? This is potentially relevant as a basis for negotiation. If a cost factor is a high component of total cost and yet has a limited or even negligible relationship to food safety or consumer satisfaction, then perhaps countervailing pressure could be brought to bear in order to modify the requirement to better fit local circumstances. Additionally implementing food standards in developing countries involves a great effort from both the public and private sector in order to upgrade the overall management systems. In many countries, this challenge has been accepted and different actions to build capacity have been initiated. This leads to the second question of the study: Which institutional organization and capacity building do countries need at different levels to comply with private food standards?

These questions were addressed through case studies in Chile, South Africa, Kenya and Malaysia. Individual country studies were first commissioned and then a comparative analysis was carried out. It is not easy to carry out such cost appraisals on the basis of case studies, particularly when the approaches to certification were different in each country. Ideally, there would have been resources for detailed cost recording. Nevertheless, the authors have done a solid job of extracting data and information from the cases and developing a comparative appraisal of the cost factors and how these differ across the countries and approaches.

More work needs to be done on the issue of "costs of certification compliance" but this study points to the right direction, and certainly makes the case that both institutional innovation and building capabilities are required in order to minimize the risk that certification costs themselves become an impediment to the participation of small farmers in market challenges governed by GLOBALGAP or other private "voluntary" standards.

Executive summary

This paper seeks to provide an understanding of the institutional and managerial responses that can facilitate the participation of small-scale farmers into markets of certified high-value products through meeting good agricultural practice (GAP) standards. Specifically this report discusses the investments and capacity building needed to become certified to a GAP programme such as GLOBALGAP and examines the relationship between market standards and increase in the number of GAP programmes around the world.

The study analyses case studies from Chile, South Africa and Kenya, countries that have had long experience in the horticulture export sector, and Malaysia, which is in its infant stage.

Each studied country provides different institutional arrangements for compliance to GAP standards according to the relative importance of its horticulture subsector. Chile and South Africa, which ranked as the top fruit exporters from the developing world, have up- dated policies and programmes to enable producers to comply with market demands on food quality and safety. In these countries, fruit and vegetable production is characterized by medium-sized commercial farms, with very few large-scale plantations or smallholders. Similarly Kenya has achieved a remarkable growth with institutional support focusing on vegetable export. Here a substantial number of smallholder farmers are involved in the export of vegetables, fruits and flowers. In addition, at least two million Kenyan employees earn all or part of their income from horticulture. Malaysia has given prominence to this sector in efforts to become self-sufficient and a net exporter by 2010. Most of its horticultural producers are still small-scale farmers.

The analysis of the investment items at farm level across the four countries indicated that the highest initial costs were for fixed structures. This fixed structure was the pesticide and fertilizer storage in the case of Malaysia and South Africa, accounting for 67 and 69 percent of all investment costs respectively. In Kenya the most expensive investment cost was the packing house at 50 percent, while the toilet and hand-wash facilities were the highest capital cost in Chile at 53 percent. These differences depend on the quality of building materials and transport costs in the countries and if the costs were shared or carried out by each individual farmer. The average investment costs per farmer ranked from an average of US$480 in Kenya to US$3 820 in Chile.

The highest recurring cost on farm was for certification where the figure varied for all countries, from 50 to 80 percent of the total costs. The cost of laboratory analysis in Malaysia, South Africa and Chile was broadly similar because similar laboratory procedures have a standard average cost, if the proper facilities and support staff are in place. Kenya had a high cost of the analysis at 40 percent of total recurring costs, explained by the fact that some groups or exporters use laboratories outside the country, which increases the costs and time involved. The lowest recurring costs per farmer were on average US$1 500 in Kenya with the most expensive at US$2 130 in Malaysia.

When analyzing the data in a more disaggregated way it is clear that the needs of commercial farmers are identical in different countries, while they differ between better-off and emerging or small-scale farmers even within the same country. The investment needs in equipment or material showed that items

considered essential for the smaller, poorer farmers in Malaysia and South Africa were water treatment and chemicals, hand-washing and toilet facilities for their workers and packaging and storage areas. These were the same in Chile and could be considered the essential items needed for a farm to become GLOBALGAP certified. However there is a longer list of more expensive items considered necessary for commercial farms. These include high quality seed and propagation materials, protective equipment for workers, information signboards, calibration scales and farm vehicles.

In terms of capacity building, a difficult task for farmers has been to adopt record-keeping practices, such as registering the application of fertilizer and crop protection products, stock inventory and keeping receipts of input purchases and sales. Increasing awareness and attitudes on safety and hygiene has been also a difficult process as farmers tend to rely on traditional practices and are slow to change.

The needs of the actors in the supply chain have to be understood by those supporting and facilitating the supply chain. It was considered very important for supporting and government staff to have a good understanding of GAP, Integrated Pest Management (IPM), packing and post-harvest technologies, and requirements for markets. In addition, there is the need to strengthen the quality assurance systems (QAS), to educate qualified trainers and auditors, set up traceability systems and procedures, and establish marketing information systems.

The lessons learned from the study are clustered into five main topics: the importance of government support to upgrade the food safety control systems; the relevance of public-private alliances and partnerships; the need for coordinated supply chains and proactive marketing strategies; the effective extension and training; and the reduced investment costs.

The main mechanisms identified to reduce expenditure include cost-sharing mechanisms and strengthened market linkages. Cost-sharing mechanisms refer to any type of joint investment in infrastructure, for auditing or training programmes. Strengthened market linkages will ensure better relations with the buyers or exporters who offer several services and supervised production to guarantee top quality production with better returns.

The real opportunities that standards and certification offer to a country depend on the "critical mass" of interested producers and exporters that are necessary to effectively support the cost of development and promotion among producers and to justify institutional change and development. The well-developed fruit supply chains comprising of a large number of producers in South Africa and Chile exemplify this.

In conclusion, for farmers and other actors in the supply chain, implementing protocols of GAPs is a basic requirement in order to meet market demands for food safety standards. In order to support the implementation of these protocols, many countries have established GAP programmes as a mechanism to focus programme resources and establish coordination between public and private bodies to deal with market challenges and opportunities. However, this study illustrates that although government support is a necessary condition, market incentives are also required to fully support farmers in order that they meet market demands for food safety standards.

1. Introduction

There has been increasing concern over recent years about food quality and safety worldwide. Consumers are demanding high standards from both domestically produced and imported food. Industrialized countries have put in place legislation to ensure an acceptable level of safety for food imports. In parallel, many private sector companies have developed standards and codes of practice (CoP) that have been passed down the supply chain to primary producer suppliers in developing countries.

These private sector standards have increased in number in recent years and moved from being a niche phenomenon to becoming, in some cases, a de facto necessity to obtain market access. The number of private voluntary standards developed by private operators has been estimated at 400 in Europe alone and is still increasing. They range from those developed by individual firms to national schemes to collective international schemes (WTO, 2007). Some of these standards apply to the pre-farmgate stage of the supply chain, which are often called standards of "Good Agricultural Practice" (GAP). Many governments have developed national GAP programmes in order to improve GAPs, promote food safety standards and enable market access for small-scale farmers.

In line with the increased number of standards, there has been an increase in the need for certification of agricultural practices carried out on farm. Certification, which acts as a guarantee of compliance with these GAP standards or other private standards, can facilitate access to more lucrative markets than those for non-certified products. Certified products may receive a price premium, as in the organic and fair trade market segments, or they can provide access to new or existing conventional export markets, as is the case of the GAP market segment.

European supermarket chains considered the most relevant market channel for fruit and vegetables, are increasingly demanding that their suppliers be certified against a private food safety standard such as the Global Partnership for Good Agricultural Practice (GLOBALGAP), the British Retail Consortium (BRC) and International Food Standard (IFS) (FAO, 2007). These chains account for over 65 percent of fresh produce retail sales in many European countries. In addition, each individual retail company may impose even stricter quality requirements on its suppliers in order to differentiate its products from those of its competitors. Consequently, compliance with GAP and other food safety standards is often problematic for developing countries and especially small-holder farmers.

One particular GAP standard that has become widespread at an international level is the GLOBALGAP standard.[1] This is a private sector standard for GAPs that was developed in 1997 by a group of retailers and producers. Some supermarket chains, especially Europe, require that their suppliers (primary producers) from both Europe and non-European origins are certified to this standard. Meeting these GLOBALGAP standards is difficult for many farmers and developing countries. This is because of the fact that strict regulations and the cost of compliance with private standards from these markets are being

1 This was originally called EurepGAP but was renamed GLOBALGAP in autumn 2007.

passed down to suppliers. FAO consultations in Africa[2] showed that over the past few years exporters of horticultural products have been experiencing increased difficulty in complying with European Union market requirements. This has had a great impact on the businesses of the export companies and on the livelihoods of the smallholder farmers who work with these companies and currently dominate production in the region (FAO, 2008d; FAO, UNCTAD and Kephis, 2007).

Similar conclusions on the effects that private food safety standards have on international trade, especially for developing countries, were reached in response to a questionnaire circulated by the Chairman of the Sanitary and Phytosanitary Committee (SPS) in July 2008 to the members of this committee. In response to this questionnaire a number of respondents stressed that requirements from private standards often exceeded national ones and exporters from developing countries have to incur very high costs, which generally results in market exit or a lack of incentive to penetrate markets (WTO, 2008a).

This is of increasing concern as exports of fruit and vegetables generally receive higher prices than exported staple products such as onions or potatoes. While overall consumption has been stagnant in recent years, imports into the European Union of non-staple and higher value fresh vegetables have continued to grow quite rapidly. Suppliers from developing countries have a large share of this trade, in particular in relation to vegetables, benefiting from the higher price for these products. In the paper, *From challenge to opportunity: Transforming Kenya's fresh vegetable trade in the context of emerging food safety and other standards in Europe*, Jaffee (2003) gave the average unit value of imports into the United Kingdom as US$330/tonne for onions, US$430/tonne for potatoes, and US$1 300/tonne for tomatoes. In contrast, the average import value for green beans and green peas was given as US$2 370/tonne and US$2 760/tonne respectively (Jaffee, 2003).

According to the economic export indicators of the Oficina de Estudio y Planificacion Agricola de Chile (ODEPA), fruit with a European destination presents a greater average FOB[3] price than fruit sent to other traditional Chilean markets such as the United States, Mexico and Brazil, where in many cases certification is not required. In the case of nectarines and apricots the price differential between Europe and other market prices was 34 and 81 percent respectively.[4] Results obtained from interviews with small-scale farmers in Tanzania showed that the export market offered prices for fresh fruit and vegetables (FFV) that were roughly double the price received from the domestic market (Mitemelo, personal communication, 2007).

The objectives of the study were: to draw lessons on the institutional and managerial organization needed at government and farm levels in Chile, Kenya, Malaysia and South Africa, in order to comply with GLOBALGAP standards for the FFV sector; and to identify cost-effective means of investment and training at the farm level to make best use of opportunities to supply FFVs to the export market.

The methodology included the collection and analysis of primary and secondary information, interviews with actors involved in the FFV sectors and a review of bibliographical information. Some specifics about the methodology in each case study are highlighted in the following section.

2 The effect of food safety standards was highlighted at the FAO Regional Workshop in East and Southern Africa and the Stakeholder Consultation in Uganda in 2007.

3 Free on Board – General terms and conditions for export.

4 Chile case study, average 2004 figures.

1.1 CHILE

In Chile, two research projects were carried out to study, diagnose and analyse the technical, cultural and economic impacts caused by the implementation of a GAP standard on farms, using the GLOBALGAP standard as a reference. These two interrelated investigations covered different productive links and geographical areas of Chile's Central Valley and actors of the fruit and vegetable chain. The first case study was on a large 49 ha farm in the process of GLOBALGAP registration and the second case study was carried out in a raspberry growing area, grown primarily by 150 small producers who had been required to incorporate GAP standards into their production processes.[5]

1.2 MALAYSIA

The methodology adopted included research and review of all relevant information and articles, including data from government statistics departments, interviews and discussions with relevant stakeholders, particularly those involved in the FFV industry in Malaysia. Visits and interviews were conducted with farm managers who were implementing the Farm Accreditation Scheme of Malaysia (SALM) and had obtained GLOBALGAP certification.

1.3 KENYA

Key market players were identified and information gathered from identified institutions in the horticulture industry, drawn from public, private, research and non-governmental institutions. This was then followed by field interviews with farmer groups and technical teams. Thirteen farmers were selected from six farmer groups who were affiliated with four different exporters. Samples of farmers were geographically distributed to ensure an unbiased result. Four of the farmer groups had already undergone certification, while the rest were in the process of becoming certified.

1.4 SOUTH AFRICA

In conducting the study in South Africa, personal interviews were carried out with participants at the different levels of the supply chain, including emerging farmers, pack-house managers, pack-house equipment manufacturers, officials of the producers' association, officials of the National Department of Agriculture, Perishable Products Export Control Board (PPECB), South African Pesticide Initiative Programme (SAPIP) and the exporting community. A field survey of growers, pack-house operators, pack-house manufacturers and growers organizations was then conducted.

5 From 2004, raspberry growers were required by the Livestock and Agriculture Service (SAGP) Resolution No. 3410 to be registered growers and follow a set of technical recommendations as dictated by the GAP standards.

2. Good agricultural practices and GAP Programmes

This chapter discusses what GAPs are and their significance in terms of certification. It then discusses food safety standards and their relationship to GAP programmes and institutional development.

2.1 WHAT IS GAP?

It is a difficult task to define "good agricultural practices" at a global level, as the many plant and animal varieties, farming systems, weather patterns and soil types render this task well nigh impossible. What is defined as a good practice in the raspberry growing area of Chile will be very different from that which is considered a good practice in the Mount Kenya region of Kenya. The climate, topology, water quality, animal and plant breeds, and many other factors can all affect which practice is considered "good" or "optimal" in a particular situation.

According to Radam *et al* (2007), farmers started to apply good GAPs in the Cameron Highlands of Malaysia 10 years ago. This was prompted by the growing awareness of food safety issues among the consumers in the export markets, as well as by stiff competition among the farmers to capture overseas markets, where quality was one of the major determinants of competitiveness.

FAO defined GAPs in the paper, *Development of a Framework for Good Agricultural Practices* (2003) as "practices that address environmental, economic and social sustainability for on-farm processes, and result in safe and quality food and nonfood agricultural products". In layman's terms, GAPs can be considered to be common sense practices that contribute to food safety and quality, social and environmental sustainability, and can improve market access. In Chile, the National Commission on Good Agricultural Practices defines GAP as all actions involved in production, procedures and transport of food, agricultural and livestock products, directed to assure the protection of human health and hygiene, and environmentally methods that are ecologically sound, hygienically accepted and economically feasible.

General principles for GAP were outlined at the farm level by FAO. GAP recommendations in ten fields were provided at a global or generic level. These areas can be expanded, but they provide a good basis upon which a GAP programme can be developed. A list of these practices drawn from that paper is listed below. Principles of GAPs were outlined for:

- Soil;
- Water;
- Crop and fodder production;
- Crop protection;
- Animal production;
- Animal health and welfare;
- Harvest and on-farm processing and storage;
- Energy and waste management;
- Human welfare, health and safety;
- Wildlife and landscape.

2.2 GOOD AGRICULTURE PRACTICES VERSUS GAP CERTIFICATION

It is generally accepted that carrying out GAPs on farm provide benefits in terms of improved farm management, documentation and safety of practices, which are sometimes accompanied by an increase in production.

However, in order for these practices to bring tangible market benefits, they increasingly have to be certified to verify that the technical and management practices and on-farm processing were carried out in a certain manner, in line with specified procedures. It is therefore not the GAPs at farm level that are being analysed in this paper, but the cost and benefit of being certified by a GAP programme. The private GAP programme analysed in this paper is that of GLOBALGAP. GLOBALGAP has established over the recent years a number of guidelines on GAP codes, standards and regulations, which were initially developed by a group of retailers and producers in Europe.

It is important to note that compliance with GAP standards is not mandatory. However, before selecting suppliers and placing orders, retailers and importers often request thirdparty certification to make sure that their suppliers use quality management systems (QMS) that assure the integrity, traceability, safety and quality of the food products they buy. Therefore, voluntary standards, including GLOBALGAP, may act as de facto mandatory requirements and, where they play a significant role in the marketplace can have fairly important trade implications (UNCTAD, 2007).

A major difficulty for producers who are supplying international markets lies in the number of certifications, including certification to GAP programmes that must be obtained. Compliance with many importer requirements is expensive and this often makes private standards a new technical barrier to trade, putting an obstacle in the way of developing countries.

These standards and the certification associated with them may mean high costs for farmers and countries. The compliance criteria may discriminate against foreign producers and the need to comply with multiple standards can cause a rise in transaction costs.

However, if compliance is essential for market access or provides a competitive edge to producers or exporters, this can be considered a positive implication of these standards and certification. Although GAP certification usually does not result in price premiums for producers, meeting high quality and food safety standards may provide developing countries with a competitive edge in specific markets and commodities.

2.3 FOOD SAFETY STANDARDS AND GAP PROGRAMMES

In other places, governments, private sector or non-governmental organizations have also established GAP programmes aiming to codify agricultural practices at farm level for a range of commodities. Their purpose varies from fulfilment of trade and government regulatory requirements, in particular with regard to food safety and quality, to more specific requirements of speciality or niche markets. The objective of the various GAP codes, standards and regulations can include to a varying degree:

- Ensuring safety and quality of agricultural produce in the food chain;
- Capturing new market advantages by modifying supply chain governance;
- Improving use of natural resources;
- Improving workers' health and working conditions;
- Creating new market opportunities for farmers and exporters in developing countries.

There are many reasons for the increase in the number of GAP programmes. Following a series of food safety scares in the late 1990s, the European Parliament and the European Council tightened the food safety legislation in the Regulation EC 178/2002, generally referred to as the "General Food Law", which established a common legal basis for the food law in all European member states. Several new regulations and directives were adopted with provisions concerning traceability and hygiene controls. Although these regulations do not have jurisdiction outside the boundary of the European Union, they placed compliance pressure on countries for which Europe is an important market. The United States' Anti-Bioterrorism Act of 2002, food labelling and the rise of consumerism have also significantly influenced policies and direction of global agricultural food trade and, accordingly, have resulted in new criteria in quality standards.

The establishment of GLOBALGAP is a factor that has significantly stimulated development of private and public codes of GAP globally. Although it is a voluntary standard implemented on a business-to-business level, the aim of GLOBALGAP is to establish a standard for GAP applicable around the world (GLOBALGAP, 2008). It is not a "globally accepted" GAP scheme, although it is very well known throughout the world. Many stakeholders have decided to benchmark their national GAP scheme to GLOBALGAP in order to obtain increased recognition and allowed for market access.

GAP programmes in a number of countries have been recognized as the equivalent by GLOBALGAP. As of June 2009 there were 13 fully approved standards. These included the private sector GAP programmes in Chile, Spain, New Zealand and the government GAP programme in Mexico. There are two provisionally approved standards, one of which is the government programme in Japan, JGAP. This is in the process of being recognized as an equivalent as it is undergoing what is called a benchmark process, where each specification in the national programme is compared to the equivalent specification in the GLOBALGAP standard. Table 12 presents examples of GAP programmes developed by the public sector, private sector and regionally, as well as the features common to all of them, such as leadership, ownership and market focus.

At an international level, among the agreements administered by the World Trade Organization (WTO) are the application of SPS measures and the agreement on Technical Barriers to Trade (TBT), which increasingly impact on the international trade in foodstuffs. The increasing attention to food quality and regulations has caused many countries to focus on improving their national rules and regulations to develop or implement GAP programmes.

In April 2008, at a meeting of the SPS Committee of the WTO, the Director-General of the World Organization for Animal Health (OIE) presented a warning about the standards set by the private sector. In particular he mentioned that supermarket chains and the bodies representing them could undermine the science-based and democratically approved standards agreed at intergovernmental level and cause difficulties for developing countries. The OIE presentation recommended the SPS committee "focus on the effects that private standards are having on developing countries' capacities to access markets (WTO, 2008b). The European Commission has decided to create a working group to look into the matter.

2.4 FOOD SAFETY STANDARDS AND INSTITUTIONAL DEVELOPMENT

There is concern that increasingly stringent food safety and environmental requirements, both mandatory government regulations and voluntary private-sector standards in international markets, may reinforce the trend of a growing concentration of agricultural production from a smaller number of producers and the exclusion of many small growers from value chains. This change in farming structure will necessitate a change in the institutions and extension services provided to these producers from the government and the private sector.

An example to address the lack of inclusiveness of smallholders and emergent farmers was given in the Malaysian case study. The Government of Malaysia, through the Ministry of Agriculture, is committed to overcoming smallholder challenges by grouping small farms into mini-estates and encouraging group farming to achieve better economies of scale, improve farm resource management and maintain production sustainability. This should be a key objective of a government in order to encourage living standard improvements for the rural poor and small farmers.

Annex 1 presents an overview of GAP programmes and CoP being developed in both industrialized and developing countries around the world, for a variety of purposes. The annex discusses features common to all GAP programmes, such as leadership, ownership and market focus. A detailed analysis of the particular features of the different GAP programmes developed by the public sector and the private sector is presented. Examples from GAP programmes developed by the public sector comprise Brazil, Malaysia, Thailand, China, Mexico and India. Those led by the private sector include KenyaGAP, ChileGAP, ThaiGAP, New Zealand and Japan. Finally, the Association of South East Asian Nations (ASEAN) is presented as an example of a regional GAP programme.

3. Sectoral contexts in case countries

The fist section of this chapter summarizes the main findings of each country's fruit and vegetable sector in terms of production, farm structures and the main export markets. The next section outlines the policy and institutional environment that enables compliance with food safety standards and GAP implementation.

3.1 PRODUCTION AND FARM STRUCTURE

The countries analysed present a diversity of agricultural and marketing structures – Kenya, South Africa and Chile have had long experience in export markets, while Malaysia has experienced a negative food trade balance and an increase in imports. Only recently Malaysia has developed a National Agricultural Policy with focus on the increase of food production and import substitution.

In Chile and South Africa, fruit and vegetable production is characterized by medium-sized commercial farms,[6] with very few large-scale plantations or smallholders. This is because of land tenure conditions. Production patterns elsewhere depend to a large extent on the evolution of land tenure.

In Chile, there are reported to be more than 8 000 producers involved in horticultural activities, with 470 exporting companies and more than 75 species of fruit traded internationally (Araya, 2003). Agriculture is one of the most important export sectors, with approximately 25.9 percent of exports represented by fresh fruit. In 1998 the Chilean share of total exports from the Southern Hemisphere reached 48 percent (FAO, 1998), with products including grapes, apples, kiwi fruit and pears.

In South Africa, it was estimated that approximately 245 000 people were involved in fruit production and 349 000 farmers were involved in vegetable production (Statistics South Africa, 2002).[7] A classification of these farmers throughout the country showed that of all the farmers, commercial farmers make up 1 percent, progressive farmers 8 percent, small-scale farmers make up 28 percent and resource-poor farmers make up over 60 percent. The "emerging farming sector" is composed of the progressive farmers who farm at least 10 ha of land and the small-scale farmers (36 percent) whose holdings are approximately 1–5 ha (Olorunda, 2006). Holdings from the emerging FFV sector constitute around only 5 percent of the total horticultural farms in South Africa.

In Kenya, it is estimated that 50 000 smallholder farmers are involved in the export of vegetables, fruits and flowers. Also, at least two million Kenyan employees earn all or part of their income from horticulture. In the past, smallholders worked in isolation, selling mainly to intermediaries or traders without direct contact with exporting companies or knowledge of the final destination or marketing channel of their produce. These evolved over the years with the development of stronger links to exporters and the final market- place. However, with the changing market the cost of remaining cost–effective has taken its toll

6 Barrientos *et al*, 1999a and b. Estimates of average fruit farm size are: (a) in Chile 14 hectares, but this includes farms producing for the domestic market which are small, and (b) in South Africa approximately 25 hectares.

7 An agricultural census was undertaken in 2007 but the results have not yet been released.

on exporters. Many of them have reduced the number of smallholder groups from which they source their products.

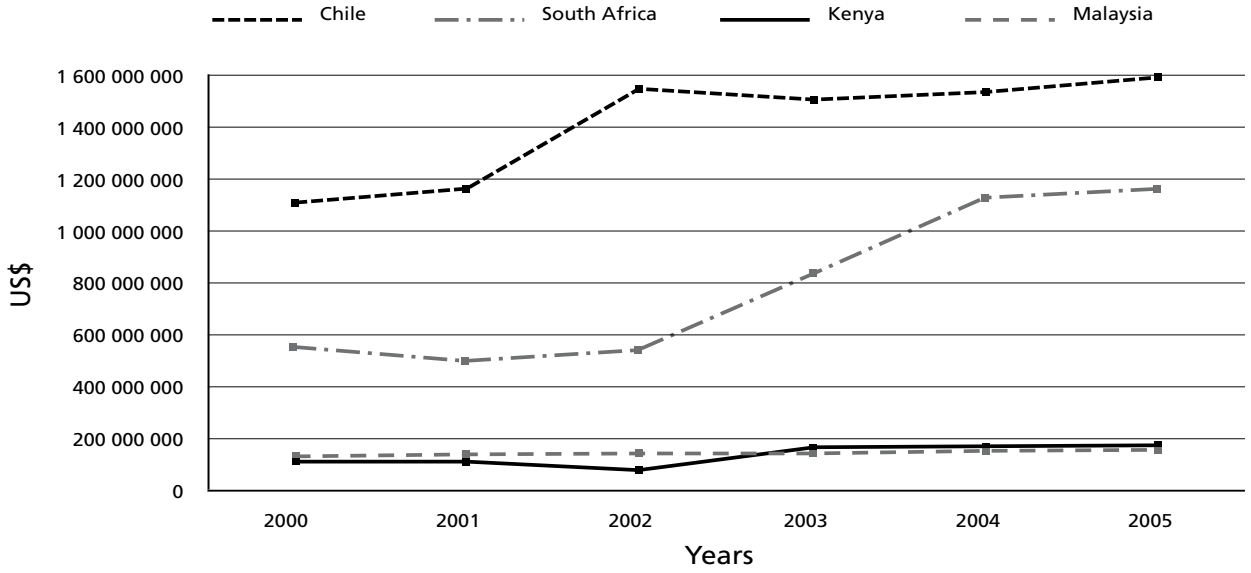
The agriculture sector in Malaysia largely follows traditional cultivation methods with subsistence farming being the norm. There are approximately 5 000 farms involved in fruit and vegetable growing in Malaysia. Most farms are smallholdings cultivated by traditional farmers. Smallholdings are areas less than 40 ha, with an average farm size of between 0.5 and 3.0 ha. They usually practise some form of mixed cropping, oil-palm or rubber inter-cropped with other crops, mostly food crops. In Malaysia, industrial crops use the major portion of the agricultural land, with oil-palm plantations making use of the largest land area. The horticulture industry only utilizes a very small proportion of the total planted area and it is small and fragmented.

3.2 EXPORT MARKETS

Chile and South Africa are very important players in the fruit export markets. Chile is the larger producer and exporter mostly to the United States. It ships a smaller percentage of its fruit to Europe than does South Africa. Both countries export homogeneous fruit varieties, particularly grapes, apples and pears and, once they reach their destination, there is little to differentiate the fruit on a country of origin basis.

The fruit growing subsector in Chile requires special mention, as in the last 20 years it has grown ten times measured by the FOB of exports as well as in volume of exported fruit (FEDEFRUTA, 2005). Chile was ranked number one for sub-tropical fruit exports for grapes, apples, peaches and berries in the southern hemisphere and number one for grapes in the world (Araya, 2003). Chile's exports were worth nearly US$1.6 billion (FAOSTAT, 2005) as shown in Figure 1. This figure denotes a dynamic, competitive and highly specialized sector, which is the second largest national exporting sector after copper. According to estimates by the Federation of Producers and Agro-industries of Chile, the number of exports should double in the next six years, surpassing even the main natural resource export (MINAGRI, 2006). Today,

Figure 1. Export trend of fresh fruits and vegetables



Source: FAOSTAT 2005

Chilean fruit and vegetable and agro-industrial products reach consumers in more than 160 countries around the world. The two main Chilean markets for export are the United States and the European Union markets.

Export of FFVs, including avocado, citrus and mango, is one of South Africa's major assets. Its export value was approximately US$1.2 billion in 2005 as is shown in Figure 1 (FAOSTAT, 2008). Most of the total exported produce goes to the European Community. After the European Union, the Southern African Development Community (SADC) is South Africa's major trading partner. The value of South Africa's agricultural trade has grown by 44 percent over the past six years since the implementation of the free trade agreements with the European Union in 1999 and the formation of the SADC Free Trade Area in 2000 (Thabethe, 2007). In value terms, the most important export products are grapes, oranges, apples and pomelos, in that order. South Africa is the world's top exporter of avocados, tangerines and ostrich products, the second biggest exporter of grapefruit, third biggest exporter of plums and pears, and fourth biggest exporter of table grapes.[8]

The fresh fruit industry in South Africa has grown to be a significant sector of the economy, which earned over US$1 billion (F.O.B) in 2008.[9] However it still faces many challenges in developing capacity to ensure that the emerging FFV sector can maintain market access to the European Union. In the last 15 years the industry has changed considerably with deregulation, increasing global competition and increasing complexity of the industry. The demise of the regulated era has seen the opening up of a global market that offers both challenges and opportunities for producers and exporters of fresh fruit.[10]

In sub-Saharan Africa, Kenya's vegetable export subsector has been hailed as a success, growing from strength to strength in recent years. The industry has had remarkable growth, with exports climbing steadily from approximately 62 million tonnes in 1999 to approximately 200 million tonnes in 2005. The focus in export markets has been on horticulture products including vegetables (French beans, runner beans, peas, Asian and mixed vegetables), fruit (avocados, mangoes, passion fruit) and flowers. The total value of fruit and vegetables exports reached US$212 million in 2005 as seen in Figure 1 (FAOSTAT, 2008).

Kenya's horticulture benefits from its wide geographical spread, which allows year- round production. Historically its main competitors were more restricted because of weather patterns and could not provide a product with consistent quality. However, this supply and produce quality differential is closing, forcing the Kenyan industry to adapt and diversify. Kenya's trade is increasingly supplying "high care chilled vegetable" market segments, which are most demanding in terms of SPS standards required from major retailers. Its future growth will depend upon its ability to maintain those standards and how fast this market segment grows in European markets (Jaffee, 2003)

The horticulture export industry in Malaysia is in its infant stage. In the balance of trade for both fruit and vegetables, imports hugely overshadow the exports. Despite the fact that the country is 100 percent self-sufficient for tropical fruit and 80 percent self-sufficient for vegetables, the value of temperate fruits imported is high and is almost double the surplus in the tropical fruit trade. The total area under FFV has changed slightly since 2001 as a consequence of the increase of new planted areas for fruit and vegetables.

8 http:/www.southafrica.info/business/economy/sectors/agricultural-sector.htm
9 http://www.freshplaza.com/news_detail.asp?id=46880
10 South African Fresh Produce Exporters' Forum, 2008.

The fruit types that are exported include durian, banana, rambutan, pineapple, mango, papaya, guava, among many other product lines (Ministry of Agriculture, 2004).

The export destination for 80 percent of the fruit is ASEAN countries, with Singapore being the major destination and Hong Kong the second. Europe takes 10 percent of fruit exports and the rest goes to a combination of India, China, United States, Japan and others. For vegetables, a major proportion is exported to other ASEAN countries, with a decline in exports, and an increasing dependency on imports since 2001. Singapore was again the most important destination by value, representing nearly 46 percent of total export value, followed by Indonesia (19 percent) and Thailand (nearly 13 percent). The vegetable types include leafy vegetables, root vegetables and other varieties.

3.3 POLICIES AND INSTITUTIONS

In order to support compliance with private food standards a well-functioning legal and institutional framework is necessary. The capacity of a country's public agencies to plan and implement the policy, laws and regulations plays a key role in the competitiveness of its private sector. Effective regulations have proven to result in greater economic incentives for adopting new technologies and management, increased investment, lower prices of inputs, better quality of service, higher penetration of business support services and more rapid innovation in the farming sector.

Likewise, countries require certain structures and services, including bodies that set standards and certify that these standards have been met. In order to do this, sufficient laboratories and analytical services must be present within a country. Ongoing farmer education, supported by technical services from well-informed extension staff is important. Finally the presence of farmer's organizations is another key factor that helps enable small-scale farmer participation in food export markets.

In the following section, an overview is presented of the main policies and institutional framework supporting the horticulture sector in the countries involved in the case study.

Chile

Public and private actors first committed themselves to quality food and clean agriculture in September 2000 during the annual Fruit Growers' Convention. The first cooperative agreement was signed between the exporters, the Chilean Exporters Association (ASOEX) and the Chilean Fruit Growers Federation (FEDEFRUTA) with the aim of starting the national GAP programme. The agreement was also underwritten by the Ministries of Economy, Agriculture and Foreign Relations.

From that time to the present, the institutional commitments have multiplied, turning GAP into one of the pillars of Chilean agriculture. In the public arena, the creation of the National Commission for GAP by the Ministry of Agriculture in March of 2001 has become an important milestone for the dissemination and implementation of GAP in Chile. The commission is a public-private coordination authority that advises the Ministry of Agriculture on policies for incorporating the GAP concept into farm production processes. The commission is chaired by the Deputy Minister of Agriculture and is made up of 21 unionized, technical and academic public and private institutions. Farmers are represented from the fruit and vegetable and the livestock sectors.

Chilean agricultural policy has three key strategies in order to implement GAP in the agrifood context. These are:

1. public-private coordination;
2. design of instruments to foster production;
3. international promotion of Chilean produce as synonymous with quality.

For Chilean agriculture, GAP is the basis for sound and quality agriculture; it incorporates concrete concepts of environmental sustainability, respect for the worker's rights, and the consumer's interests into agricultural policy. In this context, GAP can be defined as "doing things well with guaranteed results".

South Africa

Agriculture has always been an important part of the South African economy because of its contribution to domestic consumption and employment and its contribution to exports. Historically South African agriculture has been heavily regulated and the sector has been significantly influenced by the existence of many statutory boards. During 1996 the South African Government passed legislation to abolish the existing boards as part of a major reform of agriculture. As a result, the industry has been adjusting to the new legislative environment.

The fresh produce industry has gone through many changes after deregulation. The industry has had to restructure to promote itself to the international fruit market and to ensure stable growth of exports. During this restructuring process it was recognized that a body or organization to coordinate the fruit marketing strategy for South Africa should be developed. FRUIT SA was born in 2000 to fulfil this need and to represent the fruit industry of South Africa – the deciduous, citrus and subtropical fruit sectors (SA Fruit Journal, 2008). The development of a "Fruit Industry Plan" was initiated in March 2004, and was completed in 2007. This plan represents a common agricultural perspective to which government and industry would commit their efforts and resources.[11] The development of the Fruit Industry Plan was guided by a Steering Committee that consisted of representatives of the various branches of organized agriculture in the fruit industry.[12]

The overall strategic objective for a future fruit industry strategy was defined as creating a united, non-racial and prosperous fruit industry through:

- Enhancing equitable access and participation;
- Improving global competitiveness and profitability;
- Ensuring sustainable resource management (Fruit SA, 2006).

Kenya

Kenya's export horticulture industry has succeeded over the past decade, largely because of an active private sector industry with government facilitation. The Fresh Produce Exporters' Association of Kenya

11 This strategic plan charts a course for the fruit industry to reach the broad objectives of the Strategic Agricultural Sector Plan (SASP) and the New Partnership for Africa's Development (NEPAD) and the Comprehensive Africa Agriculture Development Plan CAADP).

12 These representatives include the Deciduous Fruit Industry of South Africa (DFPT); Citrus Growers Association (CGA); South African Avocados Growers Association (SAAGA); Fresh Produce Exporters' Forum (FPEF); the National African Farmers Union (NAFU); the National Department of Agriculture (DoA); National Agricultural Marketing Council (NAMC); Department of Trade and Industry (DTI); PPECB and organized labour (Cosatu and the Food and Allied Workers Union (FAWU).

(FPEAK) has been successful in driving the revision of their CoP, which was developed in partnership with public and private stakeholders. This CoP, originated from one which had been developed by a technical multistakeholder National Food Safety Committee, under the aegis of the Kenya Bureau of Standards (KEBS), called the KS 1758 National Horticulture Code of Practice. This evolved into the Kenya GAP code, which has undergone benchmarking to GLOBALGAP thanks to donor support. Over the last decade, there has been huge donor interest and investment in the Kenyan horticulture industry, especially in supporting smallholder certification for export. Despite the rapidly changing regulatory environment globally, which has been requiring compliance as a way of maintaining existing markets or gaining better markets, Kenya has been working to competitively maintain its key European market share over the years.

Kenya has had a large number of programmes and initiatives to increase food quality and safety awareness over recent years especially for the export market. It includes training from the Ministry of Agriculture (MOA) and the Horticultural Crops Development Authority (HCDA) on European Union Regulations and GLOBALGAP, and many activities supported by external partners on the topic.[13] The Kenyan Plant Health Inspectorate Services (KEPHIS) is the regulatory agency for quality control of agricultural input and produce in Kenya and its director heads the National Task Force on Horticulture.[14]

Malaysia

The horticulture industry, particularly the FFV sector, has been given prominence in the efforts to make Malaysia self-sufficient and a net exporter by 2010. There had been a continuing trend of an increasing negative trade balance in food, which in 2001 stood at US$2.6 billion. Coupled with the failure to achieve self-sufficiency in some commodities, especially vegetables, meant that Malaysia could not take financial advantage of export opportunities.

A GAP initiative that is taking place on a national scale is driven by the government to improve the safety and quality of FFV produce and improve the balance of trade. The implementation of GAP standards started in Malaysia with the introduction of SALM. SALM is a national programme developed and administered by the Department of Agriculture (DoA), which aims at recognizing and certifying commercial fruit and vegetable farms that adopt agricultural practices. SALM is considered a diluted version of the GLOBALGAP standard. In 2007 the benchmarking procedure to GLOBALGAP was launched.

Through the present 5-year economic plan, the government has provided various investment incentives to the private sector to venture into primary fruit and vegetable production and processing in order to increase local fruit and vegetable production to meet domestic and export demand. Tax incentives for commercial fruit production include pioneer status, investment taxation allowance, re-investment allowance and agricultural allowance. Priority will be given to the promotion of large-scale fruit and vegetable cultivation.

3.4 REGULATION AND OVERSIGHT SERVICES

To support the policy and institutional framework a wide number of support services need to be present within the country. These include "Regulation and Oversight Services", for example organizations

13 Including DFID, USAID, GZ, COLEoleACP-PIP, ICIPE JICA and others.

14 Other public bodies indirectly involved include the Ministry of Trade and Industry, Ministry of Agriculture, Kenya Agricultural Research Institute (KARI), Kenya Accreditation Service (KENAS) and the Pest Control Product Board (PCPB).

involved in developing standards, accrediting laboratories and carrying out on-farm and pack house certification.

Standard development, accreditation and certification

In Chile the National Standards Institute (INN) promotes the use of standardization, accreditation and measurement systems. It administers the national accreditation system and evaluates the competence of inspection and certification organization, agencies and laboratories in accordance with internationally established criteria. Currently most technical training organizations, certifiers and labs carrying out activities related to the GLOBALGAP standard are being accredited by INN through internationally recognized standards. The private GAP certification programme ChileGAP® standard is benchmarked to GLOBALGAP and is certified by independent, accredited certification bodies that have received the International Organization for Standardization (ISO) guide 65/EN45011 accreditation. Various international certification bodies operate in Chile including BCS Öko Garantie GmbH, CMi (Checkmate International) and CERES (Certification of Environmental Standards GmbH), among many others.

In South Africa, the South African Bureau of Standards (SABS) offers a full spectrum of standards development, information and conformity assessment services. It participates in the development of international standards and as an established standards body in a developing region. SABS plays an important role in the development of a Standards, Quality Assurance, Accreditation and Metrology (SQAM) infrastructure in SADC, and provides standardization products and services within South Africa and internationally (ISO, 2008).[15] The South African National Accreditation Service (SANAS) is responsible for accreditation. The PPECP is South Africa's certification agency that carries out third party audits and grants certificates for sustainable agricultural methods including GLOBALGAP.

In Kenya, KEBS is a government body that aims to ensure that technical standards are not barriers to trade, and that information on standards is made available to all. It also carries out certification to ISO standards, Hazard Analysis and Critical Control Points (HACCP), capacity building and metrology. A number of certification and inspection bodies are present in Kenya, and these include Africert Kenya Ltd, the local Kenyan certification body (CB). International CBs include Bureau VERITAS International, SGS International, Checkmate International (CMi), and Food Cert (Nak Agro). It is planned that the development of the Kenya Accreditation Service (KENAS) will eventually be responsible for accreditation. This is currently still under the remit of KEBS.

In Malaysia the Department of Standards Malaysia (DSM) is the sole accreditation body in the country, under whose authority Malaysian standards are developed. This standard development role is contracted out to a subsidiary called SIRIM Bhd. Another subsidiary body, SIRIM QAS is accredited by DSM to provide certification services for various national and international standards (including ISO 9000, 14000 and HACCP).

SIRIM QAS International Bhd is the national certification body, which is a wholly owned subsidiary of SIRIM Bhd and provides a comprehensive range of certification, inspection and testing services that conform to international standards and guides. In addition to the national certification body, other CBs are local representative bodies for international certifiers like Société Générale de Surveillance (SGS) and Lloyds.

15 SABS hosts the secretariat of the regional standard coordination forum, the South African Development Community for Cooperation in Standardization (SADCSTAN), and the legal metrology group, Southern African Development Community Cooperation in Legal Metrology (SADCMEL).

Table 1. Summary of regulation and oversight services

Country	Standard development	Accreditation	Certification	Laboratory
Chile	INN	INN	International CBs	Public, Private
South Africa	SABS	SANAS	various	SABS, MAP, DoA, others
Kenya	KEBS	KEBS (future KENAS)	Africert, International CBs	KEPHIS, Public, Private
Malaysia	DSM	DSM	SIRIM QAS, International CBs	DoA

Source: authors

Laboratory services

All the countries involved in the case studies have laboratory facilities of varied proficiencies, provided by either the public or private sector, some of which were ISO 17025 accredited. As an example, in Malaysia the DoA provides analytical services for soil and water, as well as chemical and heavy metal residue in produce. The DoA has only one facility to conduct tests and has plans to develop three more laboratories to cope with the anticipated increase in volume of work. Farmers are currently not charged and the DoA bears all the costs.

3.5 TECHNICAL AND BUSINESS SUPPORT SERVICES

There are many organizations and support services that farmers, packers and exporters require in order to carry out their business. These "Technical and business support services" include extension, marketing, research and development services as well as input suppliers. Table 2 summarizes the type of services that support implementation of GAP programmes in order to comply with market standard requirements.

Extension services

The Chilean horticulture industry has strong government support for trade building activities. The government supports promotion offices in each major market, and an export body in Santiago shares information with exporters and works on competitiveness issues (Horticulture Australia Limited, 2008). The National Training and Employment Service (SENCE)[16] offers two main programmes applicable to GAP in the agriculture sector. They are tax exemptions and a training fund. Otherwise the governmental Agricultural Development Institute (INDAP), promotes working conditions, develops skills and supports all actions that facilitate the development of tenable agricultural production for family farms and their organizations.

In South Africa, advisory and technical assistance programmes are provided by a number of actors. The DoA provides platforms for meetings and is also responsible for registration of crop protection products and product regulations. The donor organization, SAPIP, creates sustainable conditions for FFV growers in South Africa. It disseminates information on maximum residue limits (MRLs) and provides farmers

16 SENCE is a technical organization belonging to the Ministry of Labour and Social Security that promotes competitiveness.

Table 2. Summary of technical and business support services

Country	Extension	Marketing	R&D	Input supply
Chile	SENCE, INDAP	CORFO	FIA	various
South Africa	DoA, SAPIP	DTI	ARC	
Kenya	DoA, Donors	HCDA	ICIPE	
Malaysia	MoA, DoA	FAMA	MARDI, MARDITECH	

Source: authors

with pesticide usage training. Growers' association activities are funded by members and improve the economical viability of production, packaging and marketing of FFV through promoting adaptive research, providing extension services and promoting exports.

In Kenya, as well as the extension services provided by the DoA and donor organizations, there are also a number of consultancy and training firms that provide this service including Real IPM, Farm to Fork and Millennium Consultants. The HCDA is involved in training farmer groups on a number of issues, including GLOBALGAP requirements. It is also involved in a number of other areas including quality transport of exported produce, and their partners include input suppliers.

In Malaysia, the MoA and Agro-Based Industry and the DoA provide extension services through their agencies with dissemination of information on GAP, implementing and managing GAP. The main assistance provided to farmers is the testing of sample produce on farms, advising on best agronomic practices and basic bookkeeping. Training and awareness courses are conducted for farmers on a regular basis. The Federal Agricultural Marketing Authority (FAMA) is a subsidiary body to the DoA and its roles include improving the marketing of agriculture for import and export. It has built collection centres at farm level, distributes seeds and trains farmers on how to sort, clean, grade and package their product. It has a contract farming programme and also manages the branding of "Malaysia Best" for fruit produce to communicate quality. Only SALM-certified farms can use the Malaysia Best logo.

Research and development services

Several institutions provide support in terms of research, technological development and innovation. In Chile the Foundation for Agricultural Innovation (FIA), an institution in the Ministry of Agriculture, promotes innovation in different agricultural activities towards modernizing and strengthening national agriculture. The Fundación para el Desarrollo Frutícola (FDF)[17] developed the design and implementation of the ChileGAP® Programme.

In South Africa, research institutes and universities provide services for regulation components and training required in capacity building. The Agricultural Research Council (ARC) of Pretoria is the premier science institution in South Africa that conducts fundamental and applied agricultural research.

In Malaysia the Malaysian Agricultural Research and Development Institute (MARDI) carries out research to generate innovative technologies for food and agriculture industries. A commercial business

17 FDF is an institution that aims to promote, develop and coordinate scientific research and technology, which permits it to provide technical solutions in the areas of production, post-harvest, quality, distribution and services.

arm of MARDI, called MARDITECH, was incorporated in 1992 to exploit the latter's technology and expertise. It provides a link between science and industry by technology development, transfer and commercialization.

In Kenya, the research and development (R&D) services are carried out by the International Centre of Insect Physiology and Ecology (ICIPE) whose research activities mostly concentrate on pest control strategies. Economic research concentrates on the economic impact of biological control strategies, the economic and health impact of pesticide use as well as of production standards, the scope of IPM and biological control in attaining standards and GAPs as well as the impact of training in these strategies. They have also carried out a number of projects on GLOBALGAP implementation on Kenyan farms.

Input suppliers

In all the countries involved in the case studies, input suppliers exist to provide services to farmers and are regulated by oversight facilities. These include agrochemical (pesticides, herbicides, fungicides and insecticides) and fertilizer companies, certified seed companies, farm machinery and equipment firms and irrigation services. In Malaysia, nearly 80 percent of the seeds of the F1 hybrid variety are imported from Taiwan and neighbouring countries, as local seed production for selected fruits is confined locally to MARDI because it falls short of requirements. In South Africa input supply services include agro-chemical suppliers, fertilizer suppliers for example hydrotech, suppliers of nursery and planting material, technological services, water boards or irrigation system facility providers and pack house equipment suppliers.

3.6 ORGANIZATIONAL STRUCTURE

This final "Organizational structures" section describes the farming and export organizations present in each country that organize their farmers and FFV export sectors. These are the farming, export and donor organizations.

Farming and export organizations

In Chile, FEDEFRUTA is a unionized organization founded in 1985, representing fruit growers nationally. It brings together more than 1 000 growers and 20 cooperatives throughout the country and signed the first cooperative agreement with ASOEX in 2000 that initiated the national GAP Programme. It contributes to the training of agricultural workers in the national fruit growing sector, has developed courses on food quality and GAP, and organizations belonging to it have developed projects related to the use of the GLOBALGAP standard. ASOEX is a private unionized agency that represents the Chilean FFV exporters. To facilitate exports and promote the fruit trade and foster new market openings, it created a foundation in 1992 through a group of 30 exporters and fruit growers to develop fruit growing – the FDF.

In South Africa the Fresh Produce Exporters' Forum (FPEF) was registered in 1998 as a non-profit industry organization. Its membership is voluntary and open to all companies that export fresh fruit from South Africa. It was established primarily to provide leadership and services to its members and the international buying community. Their members include the various fruit sector organizations, and associate members include the PPECB, the National Ports authorities and commercial cold storage companies.

In Kenya, FPEAK is a public-private sector initiative. FPEAK developed a Kenyan CoP or set of requirements for FFVs in partnership with public sector players in 1997, to standardize production practices. This was further developed by FPEAK and in 2002 they launched KenyaGAP, which is customized to local conditions and owned by FPEAK. KenyaGAP was benchmarked to GLOBALGAP in 2007.

The Malaysia Fruit Exporters Association is a private sector initiative, which aims to assist commercial fruit farms in marketing their produce, by providing advisory services to farmers implementing SALM on farm, increasing market access and negotiating trade issues with relevant authorities. At the time of the study, it had 18 members who had approximately 1 400 ha of agriculture land, with farm sizes ranging from 20 to 125 ha. The association members accounted for nearly 75 percent of the total quantity of fruits exported from Malaysia.

Donor organizations

Donor organizations are particularly relevant in Kenya and South Africa. For example, the Kenyan Horticultural Development Programme (KHDP), which is funded by the United States Agency for International Development (USAID), provides small holders with technology and market information to increase yields and income. The Business Services Market Development Project (BSMDP) is funded by the Department for International Development (DFID) of the United Kingdom and also works to assist smallscale farmers achieve GLOBALGAP certification. Other donors present in Kenya include the Japan International Cooperation Agency (JICA); COLEACP-PIP; International Fund for Agricultural Development (IFAD); GTZ, Care and DIPO. In South Africa, SAPIP creates sustainable conditions for FFV growers in South Africa by disseminating information on MRLs and providing farmers with pesticide usage training. UN projects and activities are also ongoing in Chile and Malaysia.

4. Investment and capacity building in the fresh fruit and vegetable export sector

This chapter makes a comparative analysis of the investments that are required to comply with GAP requirements at the farm level across the different case study countries. It then highlights three main issues arising from the investment needs analysis across these countries that are relevant for small-scale farmers: initial investment, economies of scale and group certification. The third section of the chapter analyses the capacity building that was identified as important at farm and country level.

4.1 INVESTMENTS REQUIRED AT FARMER LEVEL

The investments that are required at farmer level can be classified as investments in fixed assets and investments or costs of on-going processes to maintain compliance with a standard. At the farm level, investment in fixed assets includes items such as fertilizer stores, toilet and hand-washing facilities, covered areas for packing and storage of produce or water treatment, and chemicals. The investments in on-going processes include items such as farm management and training. At country level, the investments that are required tend to be at the process level, in terms of accreditation and certification, business development services (BDS), input supply services, maintenance of laboratory analysis and record-keeping, and documentation services.

Calculating investments required at farm level

There are many challenges to calculating the cost of investment needed to comply with GAP standards at farm level. According to the Chilean case study, the costs were classified into three categories: implementation (initial investment), maintenance and transaction costs. The breakdown of these costs included:

1. Implementation costs, which include investment in infrastructure, equipment and management, needed in order to generate the conditions that allow certification;
2. Maintenance costs, which include the costs incurred during each agricultural season to maintain valid certification;
3. Transaction costs, which are defined as those that allow certification to be obtained once the technical and administrative requirements are met.

In another FAO commissioned study in 2007 (Nyagah and Watene, 2007), a generic cost structure was given, allowing the three categories of costs as defined by the Chilean study above, to be further elaborated into the five sections in Table 3 below.

Comparing investment costs across countries

In the current study, various items that require investment were compared across the Chile, Kenya, Malaysia and South Africa case studies. For ease of analysis they were divided into investment costs – which referred on the whole to solid fixed structures that were needed on farm. These costs mainly refer

Table 3. Generic cost structure for GLOBALGAP implementation and compliance

1. Implementation costs

a) **Infrastructure:** investments on farm, in physical and technological infrastructure. These include: safe storage for crop protection products, waste chemical disposal, toilet and hand-washing facilities, personal protective equipment/clothing and knapsack sprayer. Post-harvest handling facilities/infrastructure, i.e. grading, sorting and packing sheds, and cool storage for produce are also required.

2. Maintenance costs

b) **Capacity building:** capacity building and training on food safety and hygiene, pesticide handling, personal safety. Training provided for three categories of personnel, i.e. managers, technicians and workers.

c) **Operational or management:**
- Organizational management: farmer organization, legal and administrative issues, internal/self-auditing;
- Farm resources management, e.g. tracking of water used for irrigation. This also includes record-keeping and traceability documentation, which entails cost of stationery, salaries to clerks, paper work, communication, research and administration.

d) **Analysis:** this includes risk analysis, QMS development, MRLs, plant, soil, irrigation water laboratory tests, microbiological tests. (at local/external laboratories).

3. Transaction costs

e) **Certification:** certification and verification (farm visits and inspection, pre-audit visit, certification and inspection fees, scheme registration and re-registration fees).

Table 4. Investment and recurrent costs

Item	**Country**							
	Malaysia		**S. Africa**		**Chile**		**Kenya**	
Investment costs	**US$**	**%**	**US$**	**%**	**US$**	**%**	**US$**	**%**
Basic pesticide/fertilizer store	1 350	67	1 350	69	1 500	39	60	13
Toilet and hand-wash facilities	400	20	600	31	2 010	53	180	37
Covered packaging storage	260	13	ND**	–	310	8	240	50
Total investment costs	2 010	100	1 950	100	3 820	100	480	100
Recurrent costs	**US$**	**%**	**US$**	**%**	**US$**	**%**	**US$**	**%**
Lab analysis	350	15	300	18	300	16	600	40
Certification	1 800	78	1 400	82	1 140	60	750*	50
Training	160	7	ND	–	450	24	150*	10
Total recurrent costs	2 310	100	1 700	100	1 890	100	1 500	100

**group data*

*** ND = No data*

to point a) in the table above. The recurrent costs referred to maintenance costs and transaction costs, which correspond to points b), c), d) and e) in the table above. Each of these costs are spelled out in Table 4 below.

An analysis of the investment items across the four countries indicated that the highest initial costs were for fixed structures. These fixed structures related to pesticide and fertilizer storage both in the case of Malaysia and South Africa, accounting respectively for 67 and 69 percent of all investment costs. In Kenya the most expensive investment costs were for the packing house at 50 percent, while the toilet and hand-wash facilities were the highest capital cost in Chile at 53 percent. These differences depend on the quality of building materials and transport costs in the countries and if the costs were shared or carried out by each individual farmer. The cost of the toilets and hand-washing facilities were the highest in Chile because a) commercial farmers were being surveyed in the study and b) the toilets were of a very high quality and were fixed concrete structures. The use of portable toilet and hand-washing facilities is also used to fulfil GLOBALGAP requirements and this is much more economical than building fixed structures. This is reflected in the cheaper washing facilities costs in Malaysia and South Africa at 20 and 31 percent respectively.

The lowest investments costs were in Kenya at US$480 .This was because almost all the farmers surveyed were in groups, which ranged from 15 to 35 members. This fact hugely reduced each individual investment. For these Kenyan farmers, building a shared packing shed was the biggest of all the investment costs at 50 percent. The highest total investment costs were in Chile, US$3 820, where the quality of the building materials and labour costs were also the highest.

The highest recurring cost was the certification, where the figure differs for all countries from 50 to 80 percent of the total. The cost of laboratory analysis in Malaysia, South Africa and Chile was broadly similar, because similar laboratory procedures have a standard average cost if the proper facilities and support staff are in place. Kenya had a high cost for the analysis at 40 percent of total recurring costs, explained by the fact that some groups or exporters use laboratories outside the country, which increases the costs and time involved.

However, even with the differences in percentages, the pattern for Chile, Malaysia and South Africa is the same from 50 to 82 percent of the total, with certification the highest recurring cost, followed by lab analysis ranging from 15 to 40 percent and lastly training ranging from 7 to 24 percent. The cost of training varies considerably between the various countries and this is clearly because the source and type of training can vary considerably within a country. Training can be carried out or funded by government extension workers, technical assistants provided by exporters, private extension agents or a donor funded training programme. Range and intensity of capacity building varies considerably and therefore estimated costs also vary considerably. Chile shows the highest percentage share of recurring costs allocated to training between all countries.

4.2 MAIN ISSUES IN COMPARING INVESTMENT NEEDS AT NATIONAL LEVEL

There are many different estimations of investment costs needed for small-scale farmers to comply with a standard and achieve GAP certification. The cost of GAP implementation, improvement in production practices and cost of certification depend on the state of development of the agriculture sector, and in this particular case the FFV sector and production level in the country in question. These costs may vary widely between countries, depending on many factors, such as the initial existing infrastructure and skills, if technical and BDSs are available, if local laboratories for analysis and local or regional certification

bodies are available, if certification is individual or by group, and if investments are individual or communal (Santacoloma and Casey, 2008).

Investment needs will vary depending on the initial level of investment at farm level and the level of commercialization of the farmers. In addition, the degree of commitment and understanding of the certification process of the farmers involved is also a factor affecting the total investment needs. These are issues to be analysed in more detail in the following sections.

The initial investment plays a role

The Chilean case study estimated the effect of GAP implementation on business profitability, in two scenarios. The first Scenario was the actual situation, when there had been previous investment to comply with the GAP standard on the farm, and the second Scenario was when there had not been previous investment on the farm. The requirements in infrastructure, equipment, information systems, estate management and qualification for the implementation and maintenance of GAP protocols were identified, and their costs evaluated, taking the technical specifications of the GLOBALGAP standard as a base.

It was found that the economic cost for incorporating GAP into the net production costs for both scenarios was quite considerable, at a total annual cost of US$7 547 or 10.8 percent for Scenario 1, where there had been previous investment on farm, and total annual cost of US$12 770 or 18.3 percent for Scenario 2, where there had been no previous investment. Although these values cannot be generalized for fruit growers in Chile overall, they can be a useful reference to facilitate decision-making.

In the Chilean case analysed, the investment to incorporate GAP into the production system was the correct decision as it allowed access to markets with better prices. The challenge therefore exists for those who choose to invest in order to achieve certification, to obtain access to markets that justify the greater investment and production cost.

Economy of scale matters

When analysing the data in a more disaggregated way, it is clear that the needs of commercial farmers are identical in different countries, while they clearly differ between better-off and emerging or small-scale farmers, even in the same country. Herewith investment needs and recurrent costs of surveyed commercial farmers in Chile and South Africa and emerging farmers from Malaysia and South Africa are compared in Tables 5 and 6. Kenyan farmers were all in large groups and were analysed in a slightly different manner, as is reflected in Table 7 below.

The investment needs in equipment or material showed that items considered essential for the smaller, poorer farmers in Malaysia and South Africa were water treatment and chemicals, hand-washing and toilet facilities for their workers and packaging and storage areas. These were the same in Chile, and could be considered the essential items that were needed for a farm to become GLOBALGAP certified. However the list of items considered necessary for commercial farms are more expensive and were not considered necessary by the poorer farmers. These include high quality seed and propagation materials, protective equipment for workers, information signboards, calibration scales and farm vehicles. An important point to note is that personal protective equipment was not considered essential in poorer farms. These investment needs are identical for commercial farmers in South Africa and Chile. Commercial farmers in South Africa and Chile can be considered to be at the same stage in terms of development.

Workers are necessary on both types of farms, but the work is more manual on the smaller farms, while on more commercial farms, items such as machinery start to become important to maintain their output. An item that was considered necessary on the larger farms was cottages for farm workers while the only structure mentioned on resource poor farms was a pesticide or fertilizer store. Another difference was that the more commercial farmers considered farm vehicles such as tractors and trucks as necessary, while the needs of the poorer farmers only extended to harvesting equipment such as picking gloves, clippers and boxes for their workers.

In Table 5, a comparison of the recurrent investment needs among Chile, South Africa and Malaysia showed that needs common to all of them and that could be considered basic necessities for running a business were record-keeping, laboratory analysis and farm management. The recurrent investments mentioned on more commercial farms include analysis of chemical records in crops and training of the workers on a wide range of areas.

A comparison of the needs of emerging or small-scale farmers in Malaysia and South Africa in Table 6 showed that these two groups had very similar needs, as they both required laboratory analysis, including soil, leaf and MRL analysis. Record-keeping and documentation was considered necessary in both places. However, emerging South African farmers considered that training of workers was also an essential investment item, which was not mentioned in the Malaysian case study.

Involvement in group certification

The farmers' socio-economic characteristics and degree of involvement in group certification are factors that are also important in cost estimation. Table 7 analyses the data supplied in the Kenyan case study, where some farmers (Groups A and B) were quite heavily involved in their groups, while others (Farmers C and D) were quite autonomous. The difference in farmer characteristics was clearly seen as Groups A and B had a generally lower average farm size and higher family size than Farmer C and it can be assumed these groups are less affluent. This information was not available for farmer D, but he is assumed to be equal to farmer C.

An obvious difference between the groups of farmers was the decision regarding farming for which market. Groups A and B grew a significant number of crops to support their families and sell on the domestic market with only one or two crops grown for the export market. Farmers C and D grew the majority of their crops for the export market. The groups could be considered to be not as specialized as Farmers C and D, as they do not have the resources to fully focus their attentions solely on the export market. They are spreading their risk at this time.

All the farmers, both weak and strong, had undertaken similar investments in basic construction, for example, toilet and waste disposal. The larger and better farmers had also invested in more advanced equipment, such as charcoal coolers and grading sheds. This not only reflects better investment capabilities, but also a greater level of expertise of these farmers. The list of requirements that the farmers were unable to complete is quite extensive for the weaker groups and included basic items such as bathrooms and disposal pits. The better off farmers mentioned requirements such as soil and water sampling, which reflects the more advanced stage in achieving certification that they had reached. A very interesting point is that the technical decisions in all cases were made or strongly influenced by the technical assistants working for the exporters. All the groups and farmers are closely linked to and supported by the exporter and this is reflected by the organizational structures within the groups.

Table 5. Investments required along the supply chain for FFV

Chile: commercial farmers	Malaysia: small-scale farmers	South Africa: commercial farmers	South Africa: emerging farmers
Procurement of quality seed/propagation material		Procurement of quality seed/ propagation material	Nursery/improved planting material and root stock for local and export markets
Fertilizer and machinery for fertilizer application		Fertilizer and machinery	Fertilizer
Irrigation/fertigation methods		Irrigation/fertigation methods	
Water provision for irrigation and bathrooms	Water treatment and chemicals	Water provision for irrigation and bathrooms	Irrigation water
Protective equipment/ clothing and changing facilities		Crop protection products and equipment for application	Agro-chemicals and other plant protection products
Crop protection products and equipment for application		Lock-up storage area for chemical, pesticides, fertilizers	Lock-up stores for chemical storage
Lock-up storage area for chemical, pesticides, fertilizers	Covered area for packing and product storage	Calibrated scales (electronic)	
Information signboard		Signboard for information	
Calibrated scales (electronic)		Facilities for hand-washing for workers	Facilities for hand- washing for workers – to ensure hygiene procedures for workers
Facilities for hand-washing for workers	Hand-washing facilities for workers	Protective equipment/ clothing and changing facilities	Protective clothing
Toilet facilities for workers	Toilets facilities for workers	Provision and maintenance of farm vehicles (tractors, trucks)	Harvesting equipment – picking gloves, clippers, holders, boxes
Provision and maintenance of farm vehicles (tractors, trucks)		Farm cottages for workers	
Farm cottages for workers	Basic pesticide/ fertilizer store	Fertilizer and machinery	Fertilizer

Source: Authors' compilation

When a more detailed analysis was carried out within Groups A and B, it was found that all the members within the group were not at the same level. There was a lack of knowledge between farmers within the groups, as the level of understanding of the certification process was not the same between the stronger and the weaker farmers. The strongest farmers in Group A were very happy with GLOBALGAP implementation as the system was helping to lift the health standards of the community. The weakest member of this group said that some of the requirements were a nuisance and if they were not assisted they would never carry them out.

Table 6. Recurrent costs required along the supply chain for FFV

Chile: commercial farmers	Malaysia: small-scale farmers	South Africa: commercial farmers	South Africa: emerging farmers
Soil capability survey, analysis, leaf analysis	Laboratory Analysis	Soil capability survey, soil analysis, leaf analysis	Soil and leaf analysis – to determine appropriate fertilizer application rates
Numbering of orchards for traceability		Numbering of orchards for traceability	
Analysis of chemical residues in crops		Analysis of chemical residues in crops	MRL analysis
Record system for inventory, including computer system	Record-keeping and documentation systems	Record system for inventory, including computer system	Record-keeping and documentation systems
Paperwork for filing spray orders by spray operators	Farm management	Paperwork for filing spray orders by spray operators	
Training of workers on: • Dangerous/complex equipment; • GAP and GHP; • Safe handling and use of pesticides; • Waste and pollution management; • Environmental issues • Workers health, safety, welfare		Training of workers on: • Dangerous/complex equipment; • GAP and GHP; • Safe handling and use of pesticides; • Waste and pollution management; • Environmental issues • Workers health, safety, welfare	Training of workers on: • Produce handling; • MRL training for holding period before harvest and packing
	Accreditation/certification		
	Business development services		General issues: • Lack of good agricultural land; • Farm input
	Input supply services		Rural infrastructure
Soil capability survey, analysis, leaf analysis	Laboratory analysis		Investment policies

Source: Authors' compilation

The two individual farmers C and D also had similarities and differences. They were stronger than most of the individual group members, as they tended to have larger farms and a smaller family size to support. Farmer C was supplying as part of a group, but was aiming for certification under Option 1 to seek his own markets independently. However, although Farmer C was in a stronger position than most of the farmers in the groups, there were still some requirements that he could not complete alone, including soil, MRL and water analysis. Farmer D was the strongest of all surveyed as there were no requirements that he was unable to complete. He also received a premium from his exporter upon achieving certification. This type of reward on certification can be seen as an added incentive to produce under GAP conditions, as there is no specific price premium for GAP produce in the final marketplace.

From the analysis, it was seen that the investment needs of the commercial farmers were similar in different countries, for example those from commercial farmers in South Africa and the commercial farmers in

Table 7. Investment analysis of farm groups and individual farmers in Kenya

Description	Group A	Group B	Farmer C	Farmer D
Date group formed	**2004**	**2005**	**2004**	**1998**
No. of members	16	15	35	17
Average farm size (acres)	2.8	2	7	n/a
Average family size	6.4	7.3	2	n/a
Average family standard	Mid/low	Low/mid	Mid	n/a
GLOBALGAP crops grown	Snow peas, garden peas	French beans	French beans, snow peas, garden peas, courgettes, baby corn	Fine beans,baby corn, courgettes, butternuts
Other crops grown (for own consumption or domestic market)	Tomatoes, potatoes, cabbage, onions,ordinary/ local beans, Maize	Maize, potatoes,bananas, pawpaw, sorghum,tomatoes	Maize, beans, potatoes	Karella, okra,bitter
Constructions undertaken	Toilet, waste and chemical disposal pits, Personal Protective Equipment (PPE), water reservoir.Better farmers: charcoal cooler grading shed		Toilet, bathroom, compost pits,centralized chemical shed, group grading shed, charcoal cooler	
Requirements farmer is unable to complete	Chemical stores, PPE, calibrated knapsack, approved chemicals, soil and water sampling, toilets, bathrooms, disposal pits	Completion of group construction units	Group chemical shed, PPE, soil sampling, MRL testing, water sampling	None
Who makes technical decisions?	Exporter Technical Assistants in all cases			

Source: Authors' compilation

Chile were identical. The needs of the farmers across the board tended to differ depending on their scale. For example South African commercial farmers defined irrigation or fertigation methods required as a necessary investment need, while the emerging farmers defined the supply of water for irrigation as the basic need. This was also found to be the case in Kenya as differences in investment needs reflected the size and expertise of the farmers. All the farmers had undertaken investments in basic construction, for example, toilet and waste disposal. However the larger and better farmers invested in more advanced equipment such as charcoal coolers and grading sheds, reflecting not only better investment capabilities, but also a greater level of expertise.

4.3 CAPACITY BUILDING REQUIRED AT FARMER AND NATIONAL LEVEL

Capacity is defined as "the ability of people, organizations and society as a whole to manage their affairs successfully". Capacity building or development is "the process of unleashing, strengthening and maintaining of such capacity" (FAO, 2008). Capacity building is facilitated through the provision of technical support activities, including coaching, training, specific technical assistance and resource

networking (The Californian Wellness Foundation, 2001). However, capacity building is much more than training and includes:

- **Human resource development**: equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively. Agricultural education is an essential part of human resource development;
- **Organizational development**: the elaboration of management structures, processes and procedures, not only within organizations, but also the management of relationships between the different organizations and sectors (public, private and community);
- **Institutional and legal framework development**: making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their capacities (Global Development Research Centre, 2008).

The capacity building requirements across the four countries studied were analysed on three levels: at farm, at supply chain and at country level. It was found that the issues and challenges that faced each farmer or supply chain and country, were very similar in terms of the human resource, organizational and institutional and legal framework development. Differences occurred depending on the state of development of the country or the individual situation of the farmer or farmer group.

Capacity building required at the farm level

At the farm level, capacity building was strongly focused on **human resource development** to improve agricultural practices on farm, specifically technical assistance and training. However these cannot be improved in isolation and the need to improve hygiene and management practices at each link of the agricultural supply chain, by the handlers, packers and exporters, was clearly highlighted.

As elaborated in Malaysia at farm level, the most difficult challenge is convincing farmers to change their habits and attitudes towards environmentally sustainable and responsible farming without providing the necessary incentives. The traditional use of various agrochemicals is often unscientific or indiscriminate.

Another difficult task has been for farmers to adopt record-keeping practice, such as registering the application of fertilizer and crop protection products, stock inventory and keeping receipts of input purchases and sales. Increasing awareness and attitudes about safety and hygiene has been a difficult process, as they tend to rely on traditional practice and are slow to change. The basic problems could be summarized as:

- Low literacy level to adopt record-keeping and accounting;
- Lack of knowledge of basic food hygiene, field hygiene and sanitation;
- Lack of knowledge of basic agronomic and environmental friendly practices;
- Lack of safety, including protective equipment.

In order to address these problems there is a need for human resource development. The areas where training was mentioned as necessary, in all the case studies were:

- Pesticide management;
- Traceability and record-keeping;
- Farm management and business skills;
- Environmental and socially sound practices;

- Basic food hygiene and sanitation;
- Packaging and post-harvest management;
- Certification procedures.

Extension and training covering all these areas was provided in all the case studies surveyed, but from a number of different actors. For instance, the donor programme SAPIP was strong in South Africa, while a mixture of donors, government and export organizations provided them in Kenya. In Malaysia, most of the training is provided by government extension agents and in Chile by a mixture of government and private extension agents. The situation of the farmer and country determines the extent and type of these services and hence the improvement in capacity building that is needed to ensure that supply of these services and subjects meets specific requirements.

Capacity building required along the supply chain

All the actors involved in the supply chain need to be trained on a wide range of issues. This includes those in production, harvesting, packing and exporting produce. It also includes those actors who are involved in training, auditing or facilitating the supply chain.

Table 8 below gathered together the information related to capacity building needs that were identified in the different country case studies and defined them as High (H), Medium (M) or Low (L) priority.

The capacity building needs that were defined at farm level were very focused on improving the agricultural practices on farm in terms of pesticide management, record- keeping and traceability procedures among others.

It was noted that each actor had their own speciality, and it was only really necessary for them to have a high level of expertise in their own work area, for example, laboratory analysis. It was only considered necessary for other actors to have a general understanding of this area, not an in-depth specialist knowledge. Another point to note is that along the chain (or going from left to right in Table 8) the actors who deal directly with each other (for example farmer level, harvest level, pack house level) have similar, but not identical, requirements in capacity building. This is because the technical knowledge and capacity building needs at each individual link of the supply chain are slightly different.

Extension agents require the highest level of capacity in all areas. This clearly demonstrates the fact that provision of training from only one government agent or department to service the whole supply chain is not realistic. This emphasizes the need for a wide range of business service providers to provide services and expertise at all levels of the supply chain.

There is a complimentarity between the capacity building needs of public and private actors along the supply chain. The needs of the actors in the supply chain have to be understood by those supporting and facilitating the supply chain. Table 8 shows that it was considered very important for supporting and government staff to have a good understanding of GAP, IPM, packing and post-harvest technologies and requirements for export markets.

Capacity building required at national level

At the national level, while there is still an element of human resource development required, capacity building requirements are more focused on the organizational, institutional and legal framework development.

Table 8. Capacity building at farm and national level needed for those involved in and facilitating the supply chain

	Involved in supply chain				Facilitating supply chain			
Capacity building needed	**Farm level**	**Harvest level**	**Pack house**	**Exporter**	**Extension agent**	**Auditor**	**Lab**	**Government agencies**
Farm level								
Safe use of agro-chemicals/ pesticide management	H	M	M	M	H	L	L	L
On-farm record-keeping	H	M	M	M	H	M	L	M
Traceability procedures	H	H	H	H	H	M	M	M
Farm business management skills	H	M	M	M	H	L	L	L
Environmental and socially sound practices	H	H	M	M	H	M	L	M
Basic food hygiene and sanitation	H	H	H	H	H	M	M	M
National level								
GAP basic principles	H	H	M	M	H	L	L	M
IPM & integrated crop management	H	M	L	M	H	M	L	M
EU/US/Japan food regulation and market requirements for exports and knowledge of SPS/ TBT agreements	H	M	M	H	H	M	H	M/H
Packaging and post-harvest technologies	M	H	H	M	H	M	L	M
Laboratory practices/ methodologies/sampling	L	L	L	L	L	M	H	L/M

Key: High (H), Medium (M) or Low (L) capacity building priority.
Source: Authors' compilation

In terms of **Human Resource Development**, the training needed at national level is similar to that needed at farm level, but includes training of actors at all stages of the food chain beyond the farmgate. This capacity building includes training on basic GAP principles, IPM and integrated crop management, knowledge of the export market and international requirements (for example Japan, European Union or United States requirements), and packaging and post-harvest harvest technologies.

The main challenges of capacity building needed at the country level were on the organizational development and the institutional and legal framework development. Two elements to highlight in terms **of institutional and legal framework development** are the strengthening of the food control system through a well-established QAS and having qualified trainers and auditors. Capacity building for **organizational development** includes:

Strengthening the QAS

A QAS or QMS can be defined as a set of polices, processes or procedures required for the planning and execution of the core business area of an operation. A QMS integrates the various internal processes within the operation and intends to provide a process approach for project execution. It enables the operators (who could be a farmer, farmer group or country) to identify, control and improve the various processes (for example, primary production, laboratory analysis, training programmes) that will ultimately lead to improved performance.

Oversight facilities such as certification bodies and laboratory facilities are part of a QAS. Certification bodies and auditing services to provide proof of compliance and laboratories to provide analysis services, are all essential to ensure that smallholder farmers can gain access to modern markets. In each of the case study countries, a QAS existed to a greater or lesser degree. It was seen that this is an area that requires ongoing attention, capacity building and development.

Qualifying trainers and auditors

At national level, the trainers and auditors who operate within a country must have a thorough knowledge of all the elements of the GAP standard and a consistent interpretation of the requirements. They must be instructed in a standard procedure in conducting audits that must be rigorously followed. This will ensure consistency of audits and contribute greatly to the national and international credibility of certification. Furthermore, knowledge and experience in agriculture must be an important pre-requisite for auditors.

The auditors in the case of Malaysia are trained personnel from DoA headquarters, who are located in the various states, carry out audits of the farms and submit these reports to the Farm Accreditation Committee for approval. They also provide advisory and technical assistance to the farms. The problem in Malaysia is that the pool of auditors in the DoA have other tasks and responsibilities, and are often unable to find the time for audit activities. In Malaysia, the principal agency for implementing training courses in farms for all levels is currently under the DoA, which has offices and personnel throughout the country, while other agencies (FAMA, MARDI and FOA) provide support services of expertise, e.g. seeds, planting material, research and development, and business management.

The problem of quality and consistency was also mentioned in Kenya, with regard to GAP trainers. A large problem mentioned was that there is not a common criteria in Kenya of what defines a GLOBALGAP trainer. At the time of the survey there were only five registered GLOBALGAP trainers in Kenya who had undergone the GLOBALGAP online training course. It is important to have a good standard of training so as not to confuse the farmers and not to have conflicting information on GAP and GAP standards.

Setting up traceability systems and procedures

Another area of critical importance in the FFV sector of the case study countries that required capacity building was traceability systems and procedures. The quality of these systems varied from quite weak in government developed GAP programmes, such as Malaysia, to very strong in exporter led programmes in Kenya and Chile.

Around the world, demands and innovations that require enhanced traceability and quality verification approaches are steadily increasing in the agriculture and food sector. Traceability systems help firms

isolate the source and extent of safety or quality control problems. This helps reduce the production and distribution of unsafe or poor-quality products, which in turn reduces the potential for bad publicity, liability and recalls. The better and more precise the tracing system, the faster a producer can identify and resolve food safety or quality problems.

For agriculture, a traceability system can be either paper or electronic. Taking the example of the horticulture sector, the establishment of traceability starts by identifying the individual farm and orchard in order to certificate produce origin. For this purpose each farm or orchard must obtain identification with either the local ministry of agriculture, organization or exporter with whom it operates. Farmers then have to have identification for every orchard. Each orchard is then divided into blocks and each block is segmented into plots. Plots are planted areas normally bounded by internal roads or borders. At the farming stage, traceability is implemented by each block, which is defined as a group of plots, with the same cultivar and similar handling or management. Farmers must register in a "field log book" all the activities implemented in a farm such as hygiene, pesticides, fertilization, irrigation.

A similar system is also applied to the packing process. Each field packing or packing house needs to be registered with its appropriate ministry or exporter. The packing log book is used to record all the process controls carried out in the packing facilities. In some cases, for example ASOEX have developed standard labelling. The information labelled on cases includes variety, quality, size, pack date, name of grower and packer, lot number and box number, and all of this information facilitates logistics and traceability management. Exporters can also use their own system with identification and unique number bar codes for pallet management.

Setting up market information systems

Another factor agreed by all the case study countries is that market information systems are necessary to provide producers and retailers with current information on product availability, product attributes, prices, efficiency and cost production processes in order to facilitate market access. One of the critical factors that constrains market access is the lack of affordable market information and understanding of key factors that influence the market environment.

A research project in South Africa entitled Commercialisation of Emerging Vegetable Producers in the Western Cape Province of South Africa (Moloi, 2007) showed that emerging farmers need to receive accurate and timely market information in a simplified manner. This can be done by providing market trend analysis trainings and provision of market requirements material to the agricultural development officers or extension officers on a continuous basis. This information must be available to the farmers in a language that they can understand.

Farmer associations or organizations can be used as a means of distributing and making market information easily accessible to the farmers. Emerging farmers can be encouraged to work together to access the support from the government and other institutions that may offer marketing support.

5. GAP programme development and compliance with food safety standards

This section outlines the critical factors in GAP programme development including private public partnership, stakeholder roles, the importance of GAP programme ownership, benchmarking options and the main distinctions between public and private standards.

5.1 CRITICAL FACTORS IN GAP PROGRAMME DEVELOPMENT

The previous sections analysed the country responses in terms of institutional organization, capacity building and investment to comply with the GLOBALGAP standard. A common characteristic from all of them has been the establishment of GAP programmes to better coordinate and focus institutional and financial resources. Similarly those GAP programmes have also been set up in various countries as is explained in Annex 1. This section discusses the commonalities of all of these GAP schemes. These include the importance of defined roles for specific stakeholders involved in the process, the importance of public-private sector partnership, the owner or driver of the GAP programme and value of benchmarking a national GAP programme to an internationally widespread GAP programme.

Private and public sector partnership

The importance of partnerships cannot be emphasized strongly enough. At a regional workshop on GAP, Kenya, March 2007 (FAO, 2008b), it was appreciated that in the majority of countries in this region, GAP programmes were driven primarily by the private sector and they were dependant and focused on the export market. Governments in a number of the participant countries had mandated the private sector to take the lead and responsibility in managing the GAP programme, as for example in Zambia and Uganda. Many more participants acknowledged that the private sector is the largest driving force for GAP implementation, for example Ethiopia and Ghana. However, all participants highlighted the fact that while the process may be private-sector driven, the interdependence on governments and donors to provide services and assistance is vital.

A good example of how a GAP programme can work well through partnership is that of ChileGAP. ChileGAP has been designed to help all Chilean growers whose produce is intended for export. Costs during the development of ChileGAP were borne by the private sector and government agencies. The private sector assumed about 60 percent of the costs, mainly the salaries of experts working on the process and their participation in international forum. The other 40 percent, including training, guideline preparation, dissemination of information, and promotion nationally and internationally was covered by government agencies. The government has taken a proactive role in maintaining up-to-date information for growers, for example making a faster registration process for crop protection products available on the internet. The Ministry of Agriculture, which has established the Chilean Commission for GAP with the participation of the private sector, seeks to extend participation in ChileGAP mainly by smallholders. The Government also plays a role in the promotion of ChileGAP in foreign markets (UNCTAD, 2007).

Another example of a nationally developed GAP programme is Integrated Fruit Production (PIF), the Brazilian national quality assurance programme. This was initiated in 1999 as a public-private collaboration

Table 9. Possible lead actor responsibilities in GAP programme development and implementation

Area	Private sector	Public sector
Policy formulation	X	X
Training and sensitization	X	X
Monitoring and evaluation		X
Testing & inspection services	X	
Market development	X	
Certification	X	
Record-keeping	X	
Standards development	X	X

Source: Authors' compilation from Uganda's workshop 2007.

after apple producers, through the Brazilian Association of Apple Producers (ABPM) approached the Ministry of Agriculture, Livestock and Food Supply (MAPA). Because of the changing global market and international market pressures, Brazil needed an instrument to provide guidance on GAPs to producers and to put in place a production system based on local and international market requirements in order to create credibility and confidence. A Fruit Production Development Plan was put in place, and MAPA requested EMBRAPA (the Brazilian Agricultural Research Company) to elaborate the first PIF protocols.

Stakeholders' roles

To illustrate the perception of the stakeholders' role in the development of national GAP, the case of Uganda is presented in Table 9. In Uganda, FAO facilitated the development of a national GAP programme in 2007, following on from UNCTAD (2005) and FAO (2008c) studies in 2005 and 2006. A National Working Meeting on Good Agricultural Practices[18] was held with the purpose to bring key stakeholders of the horticulture sector together to review the development and potential of GAP in Uganda, to revise an annotated strategy for the implementation of a national GAP programme and to make recommendations for its further development.

At the workshop, participants analysed the strengths and weaknesses of the various private and public stakeholders in order to allocate potential roles and areas of responsibilities to each sector for the development and implementation of a GAP programme. These possible lead sector responsibilities were then classified into table format. The simple classification in Table 9 shows very clearly the appreciation and understanding of all workshop participants that true ownership and implementation of a national GAP programme had to be a joint effort from both the public and private sectors. The private sector was considered to have a greater responsibility in the areas of record-keeping, market and standards development, while the public sector was seen as lead actor in monitoring and evaluation.. Both sectors are seen as crucial in implementing training and sensitization.

GAP programme ownership

As can be seen in Chile, the GAP topic is deeply rooted in the institutions that have designed or adopted

18 HPOU, FAO & MAAIF, 2007. The workshop was held in Kampala, Uganda from 23 - 24 January 2007, and a high level policy meeting on 25 January 2007. It was organized jointly by the Horticulture Promotion Organization of Uganda (HPOU) and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) with technical and financial assistance from FAO.

programmes and incentives for incorporating the use of GAP at farm level. In Kenya, the KenyaGAP standard is owned by FPEAK, which played a central role in its development and further benchmarking to GLOBALGAP. When deciding the ownership and progress of a standard within a country, the politics of ownership will be central both in ensuring the success of development and inclusion of those actors who may not have been as intrinsically involved in the process.

Benchmarking as an option

Another critical factor in GAP programme development is the approach that many stakeholders take to "benchmarking" their national GAP scheme to GLOBALGAP. Benchmarking means that country-developed GAP programmes go through an extensive process to compare their GAP programmes to the control points and compliance criteria and the rules and regulations of GLOBALGAP, in order to ensure that they are equivalent. The GLOBALGAP website, June 2009, shows that 13 GAP schemes are fully benchmarked to GLOBALGAP. These include the private sector GAP programmes in Chile, Spain, New Zealand and the government GAP programme in Mexico. Two schemes are provisionally approved, namely the Japanese JGAP and a Swedish standard. There are eight applicant schemes, including ChinaGAP and ThaiGAP. KenyaGAP, which had already been fully benchmarked to GLOBALGAP, is currently classified as an applicant scheme as it has to undergo a re-benchmarking process against the more up-to-date version of GLOBALGAP Version 3.0.

When benchmarking is achieved, it means that producers in a country with a benchmarked scheme have four choices in achieving GAP certification.[19] Using the example of the benchmarked KenyaGAP scheme, there are two choices for individual producers, where a producer can choose certification against Option 1 (GLOBALGAP) or Option 3 (KenyaGAP, now equivalent to GLOBALGAP). Option 1 and 3 are usually chosen by larger producers in developing countries. Two choices also exist for groups of farmers, who can benchmark against Option 2 (GLOBALGAP group certification) or Option 4 (KenyaGAP Group Certification). In practice, the various schemes choose to become benchmarked against only a limited number of options.

Countries become involved in this exercise with the hope of achieving benefits, including the possibility of certifying products under a single standard, which has international buyer recognition. They also hope to decrease the number of private GAP standards their producers and exporters have to meet. Benchmarking to an international standard also tends to win local stakeholder support. The process of benchmarking to GLOBALGAP allows interpretation of the GLOBALGAP criteria to fit local regulatory, agronomic or social conditions.

It is important to note that benchmarking a national GAP scheme to GLOBALGAP is only one of a number of options open to a country. It may not be suitable to all countries. A recent UNCTAD study has shown that benchmarking works best where there is an existing strong, cohesive force within a reasonably mature production industry; as opposed to an embryonic or fragmented export sector. It also requires a coordinated, multistakeholder approach that necessitates both public and private sector participation.

The opportunities that standards and certification offer to a country also depend on the number of farmers and exporters that they affect. Being voluntary in nature means that there is a certain number, or

19 Producers in a country that does not have a benchmarked scheme could in principle choose to become certified against another country's approved benchmarked scheme. For example, Irish farmers could choose to become certified against the KenyaGAP scheme, in practice however this does not happen

Table 10. Advantages and challenges of the GAP benchmarking option

Advantages	Challenges
International recognition	Requires a mature production industry
Decreased number of private standards	Requires coordinated multi-stakeholder approach
Local stakeholders' support	Need of critical mass of producers and exporters
Fits to local natural and institutional conditions	

"critical mass" of interested producers that is necessary to effectively support the cost of development and promotion among producers (UNCTAD, 2007) and to justify institutional change and development. An example was given at a workshop on GAP in East and Southern Africa on GAP policies and practices (FAO, UNCTAD and KEPHIS, 2007), where there were discussions on the development of a national GAP scheme in Burundi. Only one major exporter of cut flowers operates in Burundi and as an obvious consequence no national CoP has been developed. There must be a sufficient number of producers or exporters, in order to benefit from the development of a national GAP programme.

5.2 MAIN DISTINCTIONS BETWEEN PUBLIC AND PRIVATE STANDARDS

Confusion between public and private standards can often affect the way institutions develop and organize themselves to meet the challenges posed by private standards. This was seen in Uganda in 2003, when a National Taskforce on GLOBALGAP was initiated by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) when stakeholders from the private and public sectors were nominated to the taskforce. The initiative was a government response in anticipation of the increasingly strict requirements for export to European markets to comply with food safety and quality conditions. The confusion came about because the private sector standard GLOBALGAP was being confused with the new Food Law being introduced by the European Union.

A different example is given below. The following Table 11 outlines the main distinctions between publicly developed standards – the SPS standards developed by the member countries of the WTO and the private sector developed standard of GLOBALGAP as comparable examples.

It can be seen that the publicly developed standards are controlled by the member countries themselves with the aim of protecting health and the environment and they have processes in place to solve disputes and ensure transparency of the processes. These standards are recognized by the WTO, and although agreement on the standards is a rather lengthy process, it is carried out in a democratic manner. The GLOBALGAP standard is a private standard, initially developed by a group of retailers and producers in Europe in 1997 and is a voluntary standard implemented on a business-to-business level. It must obey the laws of the countries in which they operate, but the standard owners themselves can dictate the process and transparency to whatever extent that the members agree to share with the public.

The prevalence of private voluntary standards such as GLOBALGAP is currently in discussion by the WTO committee as they fall outside the bounds of the WTO SPS agreements. The challenge poised by GLOBALGAP standards was first raised at the SPS Committee of June 2005, by Saint Vincent and the Grenadines, supported by Argentina, Ecuador, Jamaica and Peru. These cited the challenges of GLOBALGAP requirements for exporting bananas and other products to European supermarkets. Article 13 of the SPS agreement states that "members shall take such reasonable measures as to be available to them to ensure that non-governmental entities within their territories … comply with the relevant provisions of this Agreement". The debate continues as to what specific "reasonable measures" can apply

Table 11. Comparison of the properties of public (SPS) and private (GLOBALGAP) developed standards

Subject	Public (SPS)	Private (GLOBALGAP)
Who controls the process	Member countries	Retailer association
Who creates the norms and measures	Technical committee from member countries	Technical committee appointed by GLOBALGAP
Is there a dispute settlement process?	Yes	No
System in place to ensure transparency of process	Yes	Partial
Are the standards recognized by WTO?	Yes	Depends
Incentives to protect health and environment requirements	Yes, public benefit	?

Source: Hruska, 2006

to private standards such as GLOBALGAP.

Recognizing the role of international standards, government and private standards, clarifying the public and private sector responsibilities, and promoting stakeholder dialogue will help to shed light on the strategic objectives and practical strategies for all countries to better deal with GAP standards.

6. Lessons learned and recommended best practices

To respond to the challenges of complying with food safety standards such as GLOBALGAP, countries have implemented diverse strategies including establishing GAP programmes. For these programmes to be effective, there must be certain minimum mechanisms and services present within a country. In this chapter, the lessons learned from the review of the case studies and other papers and secondary information are summarized.

These lessons are clustered into five main subjects, which include:

- The importance of government support to upgrade the food safety control systems;
- The relevance of public-private alliances and partnerships;
- The need for coordinated supply chains and proactive marketing strategies;
- Effective extension and training;
- Reduced investment costs.

Best practices are recommended for each lesson in order for a country to better comply with food safety standards and be competitive in accessing lucrative markets.

6.1 GOVERNMENT SUPPORT TO UPGRADE FOOD SAFETY CONTROL SYSTEMS

There is a need for governments to implement effective policies and consider the creation and updating of institutions to address the challenges of food quality and safety.

The Chilean government in 2000 undersigned an agreement to start a national GAP programme, first signed by the private sector. Malaysia demonstrated its public support in 2002 to improve food safety and quality by developing the Farm Accreditation Scheme of Malaysia (SALM).

Recommended best practices:

- The marketing of produce to national consumers and high-value (often export) markets requires an **effective national food safety control system** with appropriate food safety laws and regulations. Governments must have the correct legal framework in place to encourage GAP practices nationally and to allow country exporters to meet international market requirements and regulations on international trade in food. These include the Codex Alimentarius, European Food Law or other international agreements such as SPS and agreement on TBT. This is essential in order to provide assurance of the quality and safety of commodities entering international trade, to protect the health and safety of domestic and foreign consumers and to ensure that imported food conforms to national requirements.
- **Certification bodies and auditing services** are required to provide proof of compliance and **laboratories** to provide analysis services. These are all essential components needed to ensure that

farmers can implement GAP with adequate reassurance of good practices on farm and down the supply chain in order to have access to modern markets.
- For successful participation in GAP implementation programmes and high value markets there is a need for **good quality physical infrastructure**, for example, pack houses, rural markets, cold stores, rural roads, transportation, storage, water supply or electricity. Financial mechanisms must be adequate for the development of the rural economy and evenly distributed, in order that all areas with agricultural potential have the required access.
- The presence of an enabling business environment is very important to improve efficiency at the production, processing, marketing and export stage. The policy environment should encourage entrepreneurship and the provision of necessary services such as product grading, market linkages, quality assurance, access to good quality inputs and appropriate technology.

6.2 PUBLIC-PRIVATE ALLIANCES AND PARTNERSHIPS

Strengthening public-private alliances is much needed to facilitate the changing control of the food chain from public to private institutions. The private sector and state could develop public-private agreements, design new instruments for generating quality and support strategies for the commercial differentiation of produce based on high standards of quality.

An example of this is the public-private coordination authority that is the National Commission for Good Agricultural Practices in Chile. ChileGAP has been designed to help all Chilean growers whose produce is intended for export. Costs during the development of ChileGAP were borne by the private sector and government agencies. The private sector assumed about 60 percent of the costs, mainly the salaries of experts working on the process and participation in international forum. The other 40 percent, including training, guideline preparation, dissemination of information and promotion nationally and internationally, was covered by government agencies.

Recommended best practices:

- As a partner to the private sector, the government has a **complementary role** to play. There is a need for the government to correct specific market failures in the chain, but not to protect the chain itself (Narrod *et al.*, 2009).
- The **integral participation** of the public sector, agro-industries, producers, intermediaries and retailers is necessary so that all of their opinions are considered when formulating policies and programmes to foster production in the context of quality assurance and GAP.
- A **knowledge management infrastructure** should provide up-to-date and appropriate information. Business development strategies that integrate with the private sector and institutional frameworks and are small-producer friendly will allow the effective functioning of the whole FFV supply chain.

6.3 SUPPLY CHAIN COORDINATION AND PROACTIVE MARKETING STRATEGIES

Private standards offer a market opportunity to sell certified products at dynamic and lucrative markets. Real development opportunities for developing countries exist if supply chains are coordinated and proactive marketing strategies are developed.

Recommended best practices:

- There is the need to improve the **organization and coordination of the food chain actors** to achieve the benefits of participating in these markets. This will encourage improvements in traceability, QMSs and on-farm and effective management throughout the entire supply chain. These incentives can serve as a catalyst to modernize some agricultural sectors and enable market access.
- It is increasingly important to establish **collaborative relationships between different partners** in the supply chain, for example supermarkets and their suppliers. Retailers need a steady supply of produce, especially in the more specialized food categories, such as pre-prepared vegetables. This is especially relevant when they have invested in their suppliers and they are not willing to lose that investment. There is an increasing drive towards corporate social responsibility and the consumer demand for a "story" behind many food products, a good marketing strategy that preserves the identity of the product and its producer.

6.4 EFFECTIVE EXTENSION AND TRAINING

Effective training and extension services at the appropriate level can help improve managerial skills and create capability within a population. In some countries, for example Kenya, donors and various BDSs have supported smallholder farmers to face the challenge of meeting private sector standards. This support must be given correctly, to ensure sustainability of the groups helped, and that the capacity built will remain after donor projects finish.

The source of information plays a key role in the effectiveness of extension and training. Major sources of information include personal communication with local agricultural extension agencies, exchange visits to overseas farms, neighbouring farmers, relatives, friends and input suppliers. Among the sources, exchange visits to other farms were reported to be the most useful to help farmers understand various new farming strategies, technologies and food quality and safety issues.[20]

Recommended best practices:

- Countries must have good delivery mechanisms to provide necessary information, education and advice to stakeholders along the entire supply chain. Countries with a high participation of smallholder farmers in GAP programmes and high-value produce markets are characterized by having **intensive and extensive farmer training**, which is repeatedly reinforced. This training can be provided by a variety of sources including private extension agents, export firms or a coordinated and extensive government service.
- Constant training, practical applications, provision of basic facilities and promotion of their use are critical elements in ensuring that farmer and farm workers change their attitude towards GAP.

6.5 REDUCED INVESTMENT COSTS

The cost of GAP implementation, improvement in production practices and cost of certification depends on the state of production and development of the agriculture sector and the country in question. These costs

20 Impact of Producing Malaysia-GAP Certified Tomatoes on Farming Practices: A Case Study in the Cameron Highlands, Malaysia.

vary widely between countries, depending on the initial existing farm infrastructure and farmer skills. Cost savings also depend on the availability of technical and business development services (BDS), if certification and investments are individual or communal, and if local laboratories for analysis and local or regional certification bodies are available (Santacoloma and Casey, 2008).

Group certification is seen as advantageous in reducing investment costs. To take advantage of this a practical QMS must exist within the group. It should also include the development and maintenance of market orientated, common interest groups, including strategies for sanctioning members who breech group bylaws and contractual obligations with buyers. The Western GAP Cluster in Malaysia provides a good example of group participation. Members of the cluster include exporters, collectors, farmers and farmer group leaders, and they are organized and focused on the export market.

Recommended best practices:

- In order for farmers to take advantage of opportunities to supply the export market with FFVs, the most important requirement is to do so in a competitive manner. There are a number of ways in which they can increase their competitiveness through cost sharing mechanisms and strengthening market linkages. These strategies were explored by Nyagah and Watene (2007) and include:
  - **Cost-sharing mechanisms**, which can refer to any type of joint investment in infrastructure, for auditing or training programmes.
  - **Strengthened market linkages**, which in reality means better relations with the buyer or exporter who provide extension services, a guaranteed market, synchronized production schedules and supervised production to ensure top quality production with better returns.

These two basic areas of decreasing cost of compliance can be achieved at a number of levels through:

- **Group production and certification** – Reducing costs by economies of scale and promoting internal control systems in groups. The major benefit of GAP implementation to small producers is the better organization and enhanced awareness of opportunities to increase efficiency and income. Group certification is often seen as the most appropriate route for small-scale farmers to benefit from GAP certification.
- **Effective business service providers** – Reducing cost by providing professional services in a more efficient manner. These services could include technical advice, QMS support, record-keeping, spraying, harvesting and post-harvest handling.
- **Local extension, laboratory and certification services** – Establishing, strengthening and making use of local training, laboratory and certification institutions will reduce the cost of hiring external trainers, sending samples abroad for analysis or importing auditing services.
- **Government extension** – Strengthening government institutions to provide infrastructure, extension services and technical assistance will reduce operational costs for farmers. A measure of public support, often with private partnerships, for example, contract farming or semi-private extension is needed to ensure an efficient and affordable participation of both small- and medium-sized farmers and rural enterprises (Giovannucci and Purcell, 2008).
- **National GAP standards benchmarked to GLOBALGAP** – This is a hotly contested subject, and in some cases has had a cost-reduction effect on certification, which also brings national policies and legislation in line with global legislation. However, as discussed above in the ownership of

GAP standards section, this may not be suitable to all countries everywhere. A UNCTAD study has shown that benchmarking works best where there is an existing strong, cohesive force within a reasonably mature production industry, as opposed to an embryonic or fragmented export sector. It also requires a coordinated, multi-stakeholder approach that necessitates both pubic- and private-sector participation.

- **Finance** – Motivating banks through donor or government guarantees to give loans to farmers to subsidize the very expensive initial cost of investments. There are issues relating to long-term sustainability and the distorting effect of a strong donor presence to the export industry.

7. Concluding remarks

The analysed countries have implemented diverse institutional responses to the changing global and international market pressures on food quality. Kenya, Chile and Malaysia have set up GAP programmes as an instrument to provide guidance on good agricultural practices to producers. This has helped put in place a production system based on local and international market requirements in order to create credibility and confidence.

The cost of GLOBALGAP implementation, improvement in production practices and cost of certification depend on the state of development of the agriculture sector and in this particular case the FFV sector and production level in the country in question.

The investment needs in equipment and material showed that items considered essential for the smaller, poorer farmers in Kenya, Malaysia and South Africa were water treatment and chemicals, hand-washing and toilet facilities, and packaging and storage areas. These were the same in Chile, and could be considered the essential items needed for a farm to become GLOBALGAP certified.

The investment costs range from nearly US$480 in Kenya to US$3 820 in Chile. These cost differences between countries are explained mainly because of the quality of building materials used, the transport and labour costs, and whether the infrastructure outlay is shared communally or undertaken by each individual farmer.

The recurrent costs include the maintenance incurred each agricultural season to maintain valid certification and the transaction costs, which are defined as those that allow certification to be obtained once the technical and administrative requirements are met. The recurrent expenditure varies from US$1 500 in Kenya to US$2 310 in Malaysia. Certification accounts for 50 to 80 percent of the total recurrent cost. Other recurrent costs, such as those for laboratory analysis and training, vary between countries depending on the existence of laboratory infrastructure and skills and the presence of government, donor or private sector training programmes.

In terms of capacity building, the farmers must improve and diversify their technical and managerial skills to integrate knowledge on safe agro-pesticide management, record-keeping and traceability procedures, farm business management, market understanding, and food hygiene and sanitation.

At the supply chain level, there are necessary requirements to strengthen the QASs, to educate qualified trainers and auditors, set up traceability systems and procedures, and establish marketing information systems.

The results illustrate there is a need for better organizational management within countries. This is required at all levels: governmental, private sector bodies, laboratory facilities and research institutions. More focused and coordinated training or capacity building is required from a wide range of service providers within a country.

The main mechanisms identified to reduce expenditure included cost-sharing mechanisms and strengthened market linkages. Cost-sharing mechanisms refer to any type of joint investment in infrastructure, for auditing or training programmes. Strengthened market linkages will ensure better relations with the buyers or exporters who provide extension services, a guaranteed market, synchronized production schedules and supervised production to quarantee top quality production with better returns.

The real opportunities that standards and certification offer to a country also depend on the "critical mass" of interested producers and exporters who are necessary to effectively support the cost of development and promotion among producers and to justify institutional change and development. The well-developed fruit supply chains comprising a large number of producers in South Africa and Chile exemplify this.

Annex 1. Overview of GAP programmes and GAP programme development

1.1 OVERVIEW OF GAP PROGRAMMES

Many GAP programmes and CoP are being developed in both developed and developing countries around the world, for a variety of purposes, as outlined in the previous chapter. This Annex discusses features common to all GAP programmes, such as leadership, ownership and market focus, summarized in Table 12.[21] The table gives examples of programmes developed by the public sector, private sector and regionally, and these features are expanded in the next section. A number of critical factors in GAP programme development are then discussed, namely stakeholders' roles, private and public sector partnerships, GAP programme ownership and the use of benchmarking as a strategic option for stakeholders.

Each programme is led or driven by a certain organization, either within a country or region. The "Leader or Driver" organization has been classified for each country, which is either the public sector, a government or government designated body, or the private sector. The pubic sector actor is usually the Ministry of Agriculture in each country with contributions from various other stakeholders. In India the Ministry of Agriculture and Consumer Affairs, Food and Public Distribution, and the Ministry of Commerce are both involved in the national GAP programme development. The amount of involvement from other stakeholders varies from country to country, depending on the politics and relationships between the various actors in the country.

Various private sectors have driven GAP scheme development: for example FPEAK, in Kenya, FDF in Chile and the Thai Chamber of Commerce for ThaiGAP in Thailand. These tend to have lower government involvement, or government involvement only in specific stages of development. A unique regional example is given by ASEAN, where stakeholders from a number of countries in this region gathered together to develop the generic ASEANGAP standard. This generic standard has the potential to be used as a reference for development of a GAP programme, or to benchmark national GAP programmes that already exist within each country in the region.

The "Ownership" column is closely related to the "Leader or Driver" column as it is clear that whoever develops, or is the key driver behind the GAP programme hugely influences the characteristics of the programme and the way in which it is certified – or not. The next column "Certification by" outlines who carries out the certification. Private GAP programmes are certified by private certification bodies assuring, as much as possible, independence. Programmes developed by government tend to be audited by a state, or semi-state agency. Most countries that operate certification in this way have a separation of functions, for example, the government section that trains or prepares farmers for audit is not the same government section that audits and certifies them. However, questions have still been raised on the transparency of this type of certification, for example in the case of the Thailand government, Q GAP scheme.

The "Market focus" column gives an indication of the target market for each GAP programme. As mentioned earlier, the development of GAP programmes has a variety of motivations, from domestic

21 Some annex information is drawn from FAO, 2007.

food safety and quality improvement, to increased export market attractiveness. This motivation can vary from assuring food quality and safety for the good of the national consumer to increasing market access to regional or international export markets. The importance of each market is also ranked by order so if the regional market has a greater importance to a country, it is mentioned first. This is a difficult subject to define concretely because many programmes have multiple objectives. This is especially seen with government driven programmes that may aim to improve the national baseline standard of agricultural production, while aiming to achieve export market access in the future, when this access may not yet exist. An example of this is the case of the Indian GAP programme, which is currently being developed.

The "Tiered" column shows which GAP programmes have a two- or three-tiered scheme. The rational for a tiered programme is that if farmers can be integrated into a national GAP scheme, they can be initially encouraged to improve basic agricultural practices and can then develop and improve in a stepwise manner to access other markets, or become GLOBALGAP certified. At this moment only the Thailand Government developed programme has three tiers and the Chinese government developed programme has two, in order to try to reach all levels of farmers.

The "Programme status" column gives an indication of the recognition of each GAP scheme in international markets. As mentioned, many GAP programmes are starting the benchmarking process to GLOBALGAP in the hope of wider market recognition. Some other programmes, for example the ASEANGAP scheme, work in a similar way, as each country can choose to benchmark their national GAP scheme to this regionally accepted generic programme in order to obtain acceptance within the ASEAN region and so facilitate regional trade.

The "Commodity" column indicates if the GAP programme has been developed for a particular product, range of products or at a more generic farm level. Most GAP programmes in the paper are focused on FFVs, but some GAP programmes are developed to apply to all farm products. The programmes that apply to all farms tend to be government developed, for example India, to try and encourage improvement of all agricultural practices, irrespective of commodity. Both Mexico and Brazil have developed GAP standards for a range of commodities. Quite a number of countries have developed FFV schemes that indicate the importance of this commodity to their export markets.

The final "Label" column indicates whether a label or logo is present at the final point of sale to the consumer. Labels are developed and used to differentiate one product from another. Most GAP programmes developed by government tend to have a logo for increased consumer awareness, for example the Malaysia SALM or Thailand Q GAP programme. Most private GAP schemes tend to have Business to Business (B2B) logos. This is because the GLOBALGAP private GAP standard is intended to provide Business to Business assurance and not Business to Consumer (B2C) assurance. For this reason, there is no logo on the final product sold to consumers. Programmes that are benchmarked to GLOBALGAP must obey this regulation.

1.2 GAP PROGRAMME DEVELOPMENT

This section provides an analytical overview of a number of GAP programmes developed or in development.

Many countries are considering, or have already developed a national GAP programme. Groups such as exporters, government agencies or a combination of these can own locally developed GAP programmes. The development of a national GAP allows locally applicable solutions to a particular set of conditions

Table 12. GLOBALGAP programme analysis

Country	Leader/driver	Ownership	Certification by	Market focus	Tiered	Programme status	Commodity	Label
Public sector led								
Malaysia – SALM	Government leadership	Government	Government	Asian/EU/domestic	No	Initiated benchmarking to GLOBALGAP	Fresh fruit and vegetables	Yes sometimes
Brazil	Government scheme	Government	Government	Domestic/US/EU	No	National scheme	A range of fruit	Yes
Thailand – Q GAP	Government scheme	Government	Government	Asian/EU/domestic	Yes	Bilateral recognition with trading partners	Fresh fruit and vegetables	Yes
China – ChinaGAP	Government scheme	Government	Private	Domestic/regional	Yes	Developed, initiated benchmarking to GLOBALGAP	All farms	No
China – Green food label	Government scheme	Government	Government and private	Domestic	Yes	Developed	All farms	Yes
Mexico	Public sector	Government	Private	US/EU	No	GLOBALGAP benchmarked	A range of commodities	Yes
India	Government scheme	Government	Government	Domestic/export	No	In development	All farms	Yes, when adopted
Private sector led								
Kenya	KenyaGAP private sector Government support	Private sector initiative	Private	EU	No	GLOBALGAP benchmarked	Fresh fruit and vegetables	No
Chile	ChileGAP Private sector Government support	Private sector initiative	Private	US/EU	No	GLOBALGAP benchmarked	Fresh fruit and vegetables	No
Thailand –ThaiGAP	Private sector – Government support	Private sector	Private	Export	Yes	Initiated benchmarking to GLOBALGAP	Fresh fruit and vegetables	Yes
New Zealand	Private sector	Private sector initiative	Private	Domestic/ international	No	Benchmarked to GLOBALGAP (and others)	Fresh fruit and vegetables	Yes (on package not display)
Japan	Private Sector – Government adopting	Private sector initiative	Private	Domestic/regional	No	Benchmarked to GLOBALGAP	All farms	No
Regional GAP programmes								
ASEAN	Member countries (ASEAN) Secretariat	ASEAN Secretariat	Government –national authorities	Regional/ international	No	Members' GAP programmes can benchmark to ASEANGAP	Fresh fruit and vegetables	No

within a country, as the local politics, legislation and particularities of the fresh fruit export sector can be considered. It can also allow for a review of other country programmes, international legislation, and requirements of importing countries, in order to best structure the standard. A national programme offers an opportunity for branding and advertising in the national or international marketplace.

Public sector led

The GAP programmes are ordered from most to least developed.

Brazil PIF scheme

Brazil PIF is an example of a government GAP programme developed to assure product safety and quality for the national market.

Brazil has a nationally owned, government-developed programme: PIF. It targets the national market almost entirely and has legal documents drawn up for 17 different fruit species. PIF is a voluntary scheme related to fruit certification and labelling of fruit production process (TBT, 2003). Components of PIF include standards, conformity assessment, accreditation and third party monitoring. The PIF standard includes most of the food safety, social and environmental aspects of the GLOBALGAP standard but is not generic as GLOBALGAP is, but crop specific. This poses multiple-certification problems for some farmers and it is argued by some that the PIF may be too comprehensive and stringent, demanding enormous effort from producers but lacking international market recognition by the market. The Brazilian Government offers subsidies to small- and medium-sized producers for applying PIF (Hoffmann, 2007).

MexicoGAP

This is an example of a government-owned GAP programme that has a label and is benchmarked to GLOBALGAP for both consumer recognition and international market access.

The Mexican Government-owned programme, "Mexico Supreme Quality" (2008), has been benchmarked to GLOBALGAP. The Mexico Supreme Quality scheme has a seal or label for fresh fruits and vegetables, honey, beef, pork, and coffee, and other products, which means the growers, packers and shippers of those products have met a strict set of rigorous international standards for GAPs, safety and sanitation. Specific norms and guidelines for each product, regarding GAPs, Good Manufacturing Practicess (GMP) and safety, are regulated by the National Service for Food Safety, Sanitation & Quality (SENASICA), part of Mexico's Ministry of Agriculture (SAGARPA). The Mexico Supreme Quality national programme plans to incorporate standards for natural resource conservation and for good working conditions for labourers.

The Mexico Supreme Quality seal guarantees the quality and safety of certified products, based on adherence to strict conditions supported by independent and international recognized certification organizations. Current certifiers are Normex and Société Généralé de Surveillance; other certifiers will be added, including Primus Labs, Scientific Certification Systems and Bureau Veritas. Each of these organizations has been accredited by the Mexican accreditation entity and has complied with the ISO Guide-65 regulations required by the International Accreditation Forum (IAF).

Malaysia SALM

This is an example of a government-led GAP programme developed to assure that agriculture practices are socially and environmentally friendly, produce safe and quality products, and facilitate regional market access.

Malaysia has developed a number of quality assurance programmes for primary producers with several voluntary farm certification schemes for the FFV sector, livestock sector, fisheries, aquaculture and organic sectors. As mentioned earlier, the implementation of GAP standards in Malaysia started with the introduction of SALM in 2002 by the DoA. SALM is a programme designed to accredit farms that adopt GAPs, are operated in a sustainable and environmentally friendly way, and yield quality products that are safe for consumption. SALM-registered farms are eligible to qualify for the "Malaysia Best" logo, a branding exercise administered by FAMA. On the export front, through a bilateral agreement with Singapore, consignments receive preferential treatment. The SALM scheme has not received recognition of equivalence with other country standards or private standards, although benchmarking to GLOBALGAP was initiated in September 2007.

Thailand Q GAP

This is an example of a GAP programme developed by the government to assure food quality and safety for both domestic and export markets.

In response to quality and safety requirements of both export and domestic markets, Thailand has made significant steps towards the introduction, development and implementation of quality and safety "Q" certification programmes. A Q scheme has been developed to certify each step of food production safety with a Q logo used for all agricultural products (crops, livestock and fisheries). The DoA grants several certificates including Q GAP, Q Packing House and Q Shop. A "Quality Management System: Good Agricultural Practice (GAP) for on-farm production" was developed by modifying concepts of international standards with three levels of certification. Level 1 is pesticide-residue safe; Level 2 is pesticide-residue safe and pest free, and Level 3 is pesticide-safe, pest free and with premium quality.

The scheme is voluntary and managed by the government. The National Bureau of Agricultural Commodity and Food Standards (ACFS) is the accreditation body, while the DoA provides certification and implementation functions. In effect this means the scheme is both audited and certified by the DoA, although there is a separation of functions between departments. Another GAP programme that is being developed within country is the "ThaiGAP" scheme being developed by the private sector with public sector support. The Thai Chamber of Commerce and the Thai Government initiated work in 2007 on developing a separate ThaiGAP scheme to be benchmarked to GLOBALGAP. This will be owned and certified by the private sector.

ChinaGAP

This is an example of a government-developed, tiered GAP scheme that was designed to introduce certification to farming and reduce risks linked to food safety.

China has established a state agro-product and food certification system in the food chain and has developed ChinaGAP to introduce certification in farming. The ChinaGAP standard is intended to stimulate agriculture, reduce the risks linked to food safety, coordinate various sectors of the supply chain

of agricultural products, and stimulate the adoption of international GAPs and relevant certification and accreditation activities.

The ChinaGAP certification will take a 2-tier approach. The Second Class certification farmers need only to comply with the most important requirements within the GAP programme – so-called "major musts" requirements based on the GLOBALGAP system. The higher tier or First Class certification will be completely equivalent to the GLOBALGAP, as it requires compliance to all the major and minor musts. Major musts are requirements that are essential to be met, for example food safety requirements such as the recording of all crop product applications. Minor musts are still important but could be considered less essential requirements, for example that application equipment be kept in good condition or field cultivation techniques are used that reduce the possibility of soil erosion.

The requirements for First Class certification are very high, only a limited number of Chinese farmers will thus be able to become certified. ChinaGAP certification still lacks international recognition, although ChinaGAP is now an "applicant scheme" to become benchmarked to GLOBALGAP.

Green Food Label

In parallel, the Chinese Government has also developed a Green Food Label to promote GAPs among Chinese farmers and processors producing food for the national market. It has a label for domestic consumer recognition.

IndiaGAP

IndiaGAP is an example of a GAP programme being developed by government to improve agricultural practices and competitiveness.

The Ministry of Agriculture and Consumer Affairs, Food and Public Distribution is initiating a national GAP programme. The government parastatal, the Agricultural and Processed Food Products Export Development Authority (APEDA) under the Ministry of Commerce, has prepared the document IndiaGAP based on GLOBALGAP, Codex guidelines on GAP[22] and Indian conditions (Government of India, 2007).

The document provides procedure for farm certification, guidelines for certification of grower groups, accreditation criteria and accreditation procedure. The major benefits of certification include a uniform approach to good practices, development of farm infrastructure, improvement in environment and soil fertility, availability of safe and healthy food, employment generation, increased competitiveness (value addition, credibility) and better returns to farmers.

The steps envisaged for the implementation of the India GAP national programme involve initial acceptance of the IndiaGAP document and notification in an Act. This will be followed by identification of an implementing agency and then training of officers on IndiaGAP certification and organization of awareness programmes. The IndiaGAP certification programme will be promoted and publicized through the development of a number of model India GAP farms, where best practices can be explained on a number of open farms.

22 These standards are currently only defined in the area of the use of pesticides. For example Codex states that pesticide should be applied in a manner that leaves a residue that is the smallest amount practicable.

Private sector led

The GAP programmes are ordered from most to least developed.

New Zealand GAP

This is an example of a country GAP programme developed by the private sector to assure food safety and quality and improve market access both at home and abroad.

New Zealand GAP has been developed to ensure that produce meets food safety and quality assurance standards in a safe and sustainable way. It was developed by New Zealand growers and launched in 1999. After merging with other organizations in 2005 it is now owned by Horticulture NZ, which represents 7 000 commercial fruit and vegetable growers. The New Zealand GAP is based on GAP and the seven principles of HACCP, and requirements of ISO 9001:2000. It is benchmarked against international quality assurance programmes including GLOBALGAP, the Global Food Safety Initiative (GFSI) and is approved by the New Zealand Food Safety Authority.

The New Zealand GAP is supported by the major fresh produce retailers and wholesalers in New Zealand. It can be used for access to the New Zealand domestic market access as well as many international markets.

ChileGAP

This is an example of a GAP programme developed by the private sector to meet main markets requirements and later endorsed by government.

ChileGAP is a private GAP certification programme developed by the Fundación para el Desarrollo Frutícola (FDF), as mandated by the Chilean export produce industry. It was later endorsed by the government without a major focus on the specific conditions and concerns of small producers. This national scheme aims at the export market and it blends the European Union with United States market access requirements and so avoids multiple certifications. This way the national growers can promote GAP on their farms in order to gain access to the main markets at a minimum cost. Independent certification bodies have received ISO Guide 65/EN45011 accreditation to certify the ChileGAP standard (ChileGAP, 2005).

KenyaGAP

This GAP Programme is an example of one developed by the private sector, with a focus on the export market, with some government involvement.

It is a public-private sector initiative customized to Kenyan conditions, which is owned by FPEAK. It was first developed from a CoP (or set of requirements) by FPEAK in partnership with public and private sector players in 1997, to standardize production practices. In developing it, they applied a participatory risk assessment approach and used regional mapping. It is important to note that some requirements are not necessarily GAP principles but legal requirements that should be adhered to within Kenya, and so inclusion of the public sector is crucial to ensure that legal requirements are adequately covered. It achieved benchmarking to GLOBALGAP in August 2007. There do, however, remain many issues and challenges with smallholder farmer certification, either individually or in groups.

Japan JGAP (FAO, 2007)

This is an example of a country GAP programme developed by the private sector and later adopted by the government with the purpose of harmonizing GAP requirements for the domestic market.

The Japan Good Agricultural Initiative (JGAI) was formed by a group of producers in April 2005, to establish a system that ensures the safety of agricultural produce by establishing one common standard of GAPs in Japan – JGAP. The Ministry of Agriculture announced in June 2006 that JGAP would become the national standard, meaning that several private retailers and the current ministry GAP scheme will come under the same umbrella. The JGAP is being benchmarked to GLOBALGAP with a new Approved Modified Check List (AMCL) benchmarking procedure, where only the Critical Control Check Points are being benchmarked, in order to strengthen the recognition of the scheme by retailers within the country and internationally. This benchmarking procedure was completed in August 2007. Certification is carried out by qualified third-party private sector auditors.

JGAP provides opportunities to Japanese farmers because it reflects the specific features of Japanese agriculture in terms of the scale of farming, environmental and legal issues, institutions and language. The challenges of JGAP lie in implementing the GAP among small farmers at lower cost, organizing the farmers and harmonizing individual retailer GAP schemes.

Regionally developed

ASEAN GAP

This is an example of a regionally developed GAP scheme to enhance fruit and vegetable safety, natural resources sustainability, facilitate trade and allow member countries to benchmark their country GAP programmes to achieve harmonization.

ASEAN GAP is a voluntary standard for good agricultural practice during the production, harvesting and post-harvest handling of FFVs in the ASEAN region, which was launched in 2006.

It was developed by a working group with representatives from each ASEAN member country with the support of their Australian partners. The purpose of ASEAN GAP is to enhance the harmonization of national GAP programmes within the region, enhance fruit and vegetable safety for consumers, promote sustainability of natural resources and facilitate trade both within and outside the ASEAN region. More developed member countries, which have already developed a country GAP programme, can benchmark their own programme against it to achieve harmonization. For less developed countries it can be used as a benchmark in developing a national GAP programme, as the ASEAN GAP includes implementation guidelines and training materials as well as a code of recommended practices. National authorities in each of the ASEAN countries will carry out certification.

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AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE OCCASIONAL PAPER 26

Investment and capacity building for GAP standards

Case information from Kenya, Chile, Malaysia and South Africa

This study stresses that, for farmers and other actors in the supply chain, implementing protocols of good agricultural practices (GAPs) is a basic requirement to meet market demands for food safety standards. In order to support the implementation of these protocols, many countries have established GAP programmes as a mechanism to focus resources and establish coordination between public and private bodies to deal with market challenges and opportunities.

This study also examines the costs and benefits of being certified to a GAP programme such as GLOBALGAP and discusses the relationship between market standards and the increase in number of GAP programmes around the world.

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