

# Building linkages in the horticultural sector

Manual to a strategic thinking workshop

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# Colophon

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# 1. Introduction

Sietze Vellema

The sales of a wide variety of horticultural products show a high potential for future growth in the market in Europe, the United States of America, Japan, and, increasingly, in urban centres in South and Southeast Asia. In these competitive markets for fruits, the capability to assure quality and to guarantee food safety is a key to success. Not only quality or safety standards but also social responsibility and sustainability have become major criteria for good performance in food provision. Private industries, especially international retailers, food manufacturers and processing industries, have made substantial efforts to assure quality and safety through the implementation of HACCP and private grades and standards like EUREP-GAP. The relatively high incidence of pesticide residues exceeding maximum residue levels (MRLs as defined by the Codex Alimentarius) touches upon the issue of food safety as a public good. In response to a number of food safety crises, national governments have developed rigorous food legislation and food authorities carefully watch over risks for consumers. Hence, both the public sector and the private sector have built an array of standards and regulations meant to assure quality and safety in food.

The horticultural industry represents a highly differentiated product market in which grades and standards serve as a strategic instrument of competition. High demands and strict requirements are fundamental drivers for participation in the competitive export markets. Addressing these issues requires strong and responsive partnerships. However, building linkages in competitive and buoyant markets is not an easy venture. Setting up a competitive enterprise or a viable agro-industrial cluster in fresh produce raises crucial questions about the organizational architecture in which private and public parties operate. Can I do it alone? Who are my partners? How do I manage outsourcing of production? What can I expect from the public sector? How do I build a coalition with other stakeholders?

Many small and medium enterprises (SME's) are active in the supply or export chain of horticultural products in the tropics. Most of them are strongly specialized in input supply, fruit or vegetable production, post-harvest handling, packaging, forwarding, certification, wholesale or export. Thus these enterprises need each others' services and support to improve the overall performance of the supply chain. They are highly dependent on each other. And they also have all types of linkages with governments, research or, for example, rural development NGO's. Understanding each others' interests, visions and strategies offers a basis to explore the opportunities and conditions for joint initiatives of chain partners with similar visions. Making the participants skilful in the identification of win/win-solutions (technological or institutional) together with business partners and/or public interest groups is an important target of the strategising process developed in this manual.

A major objective of the strategic thinking process is to raise awareness about the opportunities offered by building new linkages and to initiate a shared strategic thinking



process in the horticultural sector. A robust strategy and a responsive network have to include a variety of partners, active at different levels in the supply chain. Perhaps, you lead a small or medium enterprise (SME) looking for opportunities to improve your competitive position. Or are you involved in policy programs linking rural development and export opportunities. Or your mission is supplying international and national markets with safe and quality fruit from Thailand. The participatory processes in workshop offer a platform for sharing experiences and expertise and for identifying strategic challenges for horticultural sector.

This manual introduces participants in institutional thinking and provides them with procedures for building coalitions functional to marketing and production of horticultural products. Each chapter in the manual builds on case studies, theoretical concepts and hands-on procedures. In chapter 2, different procedures to trace quality are linked to forms of cooperation and levels of transparency. Chapter 3 examines learning processes and management styles in the case of outsourcing production. Chapter 4 explores alternative measures in primary production from the perspective of food safety and quality. The policy debate on possible impacts of food standards on economic development -barrier or catalyst- is introduced in chapter 5. Chapter 6 continues on the issues of standards and regulation by examining different rules of the game in the business of food exports. Chapter 7 introduces a set of procedures helping you to understand and identify partners for sharing visions and setting up joint actions. Finally, chapter 8 elaborates on perhaps the most important and probably first step: understanding competition in your markets.



## 2. Tracing quality: cooperation and transparency in the supply chain

Anneke Polderdijk and Sietze Vellema

### Relevance

Establishing quality and making that quality visible in the market is a major challenge for export-oriented supply chains. This, however, requires fine-tuning cooperation and creating transparency between partners in the chain. This chapter discusses three systems of tracing quality in the markets for fruits and vegetables. Firstly, the upcoming General Food Law demands waterproof traceability of food products and their ingredients. Secondly, Quality-based Tracking and Tracing (QTT) moves beyond the legal requirements and assists actors in the supply chain in handling quality through different stages in the chain. Thirdly, insight in quality also supports the introduction of 'ready to eat' concept in the exotic fruits markets.

The questions raised are what impact the type tracing has on cooperation between supply chain partners and how win-win situation can be achieved. This chapter informs you about both the profits and the difficulties of co-operation in the supply chain between partners belonging to the same supply chain. In addition, it invites you to consider a non-traditional perception on how to 'use' tracing quality in your network.

### Traceability in the General Food Law

The European General Food Law will become operative in 2005. The content of this European legislation is that each link in the supply chain must be able to prove origin and location of food products and their ingredients at all times. The law was made for food safety reasons. Tracking and tracing is an important element in the legislation because it enables recalls in the case of food safety problems. Furthermore, in case of recalls tracing must be possible within a very short time (hours!). The law makes food importers and manufacturers responsible for the safety of the products they ship or sell. This implies that actors downstream in the supply chain will seek assurances from their suppliers about the safety of products. These legal requirements also imply that identity and origin of food products and their ingredients must be registered, which will be a shared responsibility across the chain.

### *Example*

Tests by Dutch authorities on MRL levels (Maximum Residue Levels) on peppers from a specific farm in a southern European country revealed that certain levels were too high. Within a day all relevant lots had to be removed from selling points and end users had to be informed through advertisements in the shops and the papers.



## Quality-based Tracking & Tracing

Quality-based Tracking and Tracing (QTT) means in addition to the registration of identity and origin of products, quality parameters are measured and exchanged as well. These parameters include temperature, time, or specific circumstances like rain during harvest. The collected data can be used or exchanged in the supply chain in order to better control quality or to better distinguish differences in quality between lots, e.g. for the purpose of differentiating between markets. This is especially useful for actors further downstream the chain because it enables them to assess, manage and direct differences in quality or decay of specific shipments. It supports the optimization of logistical processes, the reduction of losses, and the differentiation on quality. As a result, some retailers have shorter lead times and spend fewer resources on keeping quality for a specific product. Box 1 further explains the technical background of measuring quality.

Motives for Quality-based Tracking and Tracing are:

- Arranging responsibilities and identifying mistakes have negatively influenced quality, e.g. storage at too low temperatures;
- Generating insight in the functioning of the chain in order to optimize it;
- Controlling quality;
- Improving stock keeping: 'first expired first out' rather than 'first in first out' ;
- Differentiating according to market demands: introducing tailored lot-market combinations or differentiation based on keeping quality.

### *Example*

Wet circumstances during the harvest of grapes increase the chance on of decay further in the supply chain. Wet conditions negatively affect the keeping quality of grapes. The grapes do not show this shortly after harvest but only later in the supply chain. When a grower/exporter informs the importer about the harvest conditions for a specific lot of grapes, he might be able to take care of a very short lead-time by selecting a retailer that has a very short lead-time for grapes. This might prevent huge losses because of decay.

## Marketing 'Ready to eat' fruit

Common practice in many supply chains is to minimize product loss of exotic fruits by stocking and selling at a quite early (unripe) development stage, which means that consumers have to let the fruit ripen at home for several days before consuming it. However, consumers usually do not appreciate an unripe fruit, which seems to contrast with a strict application of agro-logistics expertise solely focused on minimization of product loss. This contradiction raises the question whether selling fruits at a more ripe stage will generate more profit for both retailer and producer, even when product loss increases.





For this reason, the ‘ready to eat’ concept for fruit has been introduced in European supermarkets. This concept assures customers that the fruit they buy is ready for consumption. Of course, consumers pay higher prices for this assurance, partly because the risk of decay is higher for wholesale or retail. The practice of forced ripening has been common in bananas. The market for ripened fruits is growing for mango, avocado, pear and stone fruits like peach and plum. In these cases a specific company ripens the fruits, for example an importer specialized in ripening or a logistical service provider. In the context of supply chain, such a ‘ready to eat concept’ also entails identifying cost-sharing of promotion expenses, position products in category management and limiting the variation in product quality.

In order to supply the retailer or food service industry with ‘ready to eat’ fruit - at the right time and the right stage of ripeness- a ripening company needs to apply the proper recipe. The speed of ripening very much depends on the ripening temperature and initial stage of ripeness at the start of the ripening procedure (figure 1). The speed of ripening of fruits partly depends on their history as well (e.g. harvest maturity, time temperature in the supply chain). This means that the right ripening recipe depends on information on the history of the fruit lot the ripening company is going to ripen. Therefore, the capacity to trace quality is essential for the success of the ‘ready to eat’ concept.

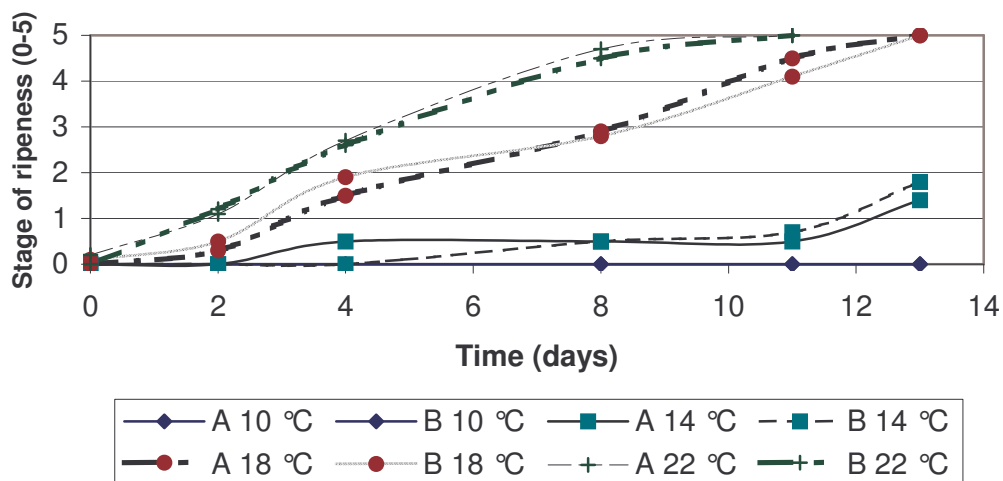


Figure 1 Ripening of a specific lot of mangoes CV Kent at various temperatures (source A&F)

### Example

Finding a ripe avocado is not an easy task for a person rushing into the supermarket right after work. Moreover, European consumers are not so familiar with the qualities and characteristics of tropical fruits. Today, these persons can find a ‘ready to eat’ avocado next to normal avocado and apples on the fruit shelves. Supermarket magazines also promote the consumption of exotic fruits, such as avocado. If someone takes the step to buy and eat an unknown fruit it is important that the fruit is ripe and tasty. The label ‘ready to eat’ gives such assurance, but also requires close coordination and information exchange between different parties in the chain.



### (1) Box 1: Measuring and predicting quality

In order to be able to predict quality development of specific product lots we need insight in the relations between quality development and measurable factors that influence quality development. Ideally, computer models analyzing time and temperature data can serve as input for models calculating loss of keeping quality, which inform decision making throughout the chain. In practice, however, information quality development is exchanged between experts.

Furthermore, it is not possible yet to measure 'all round' quality through one unambiguous measurement. Quality contains many aspects and these aspects may vary from product to product. For strawberries decay is the main limiting quality factor, for cucumber yellowness of the skin or dehydration, for apples firmness of the flesh etc. Therefore we are forced to measure quality-related aspects like time-temperature conditions in the supply chain in order to predict quality and to translate this information into remaining quality for a specific product.

One of the most important factors determining the level of quality of fresh produce received by the end user is the temperature during storage and transportation: the so called sum of time-temperature during the whole supply chain. Figure 2 presents the average relation between temperature and keeping quality of strawberries. Between lots the relation can vary (dotted lines are deviations), because of variation in initial quality. In the figure an example is given of 'limit of acceptance=limit for sale to consumer'. This limit is arbitrary. The best storage temperature for strawberries is 0 °C. At 0 °C the average keeping quality is 10 days. By the way this line cannot be found in the graph.

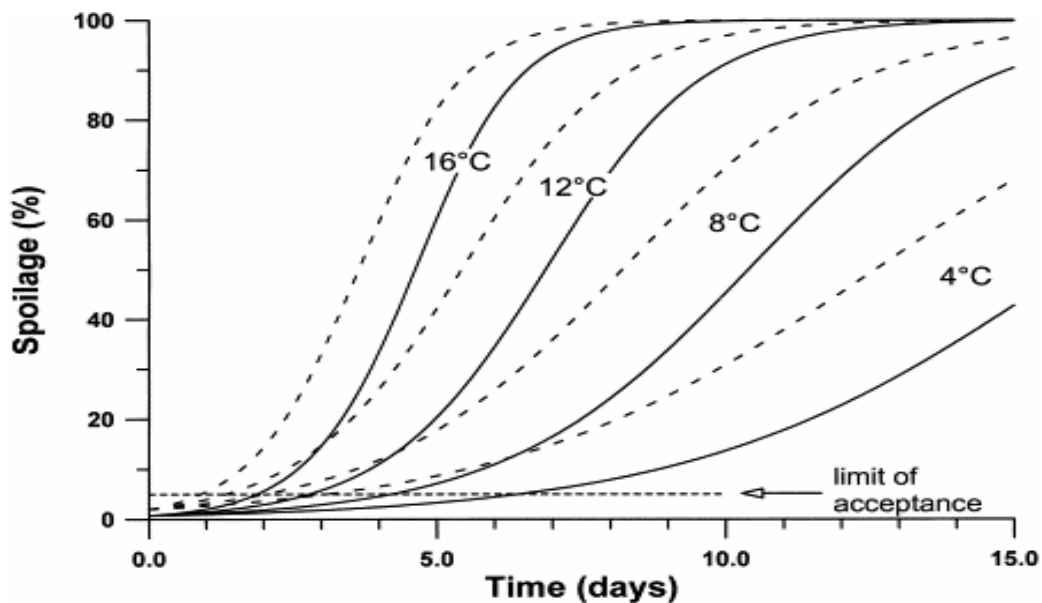


Figure 2 Relation between temperature and keeping quality of strawberries. (source A&F)



## Procedures

We have seen in the above that tracing quality can serve different purposes: (1) compliance with legislation, (2) precise monitoring of quality development for managing supply, and (3) the introduction of a marketing concept. All forms require close coordination and transparent exchange of information. Therefore, providing the right incentives for tracing quality is crucial. Thus, tracing quality is not merely a matter of doing the right things in the right sequence, as is suggested by the usual picture of a supply chain (figure 3). Rather, tracing quality is embedded in the practice of cooperation, coordination and information exchange between various actors in a network. Cooperation and information exchange strongly depend on whether incentives are in place to stimulate cooperation and communication. Hence, win-win situations (short or long term) create a breeding ground for tracing quality, although a compulsory requirements might also force the implementation of a tracing system (cf. General Food Law).

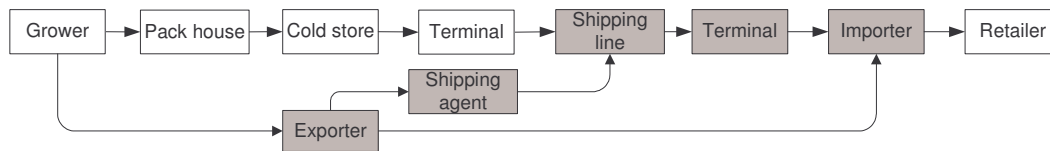


Figure 3 Basic export supply chain fruits and vegetables with mode of transportation by sea (Source A&F)

If we consider win-win situations, it is important to realize that a particular supply chain does not stand by itself but belongs to a network of supply chains that are involved with one another. In figure 4 shows the fruit supply chain network of fruits transported by sea from South Africa to the Netherlands. A particular grower delivers fruit (through a packinghouse, not shown in the figure) to an exporter and often delivers fruit to more than one exporter. The fruit will be shipped with a shipping line from the port of loading to the port of discharge. An exporter usually exports to more than one country and also to more than one importer in a particular country. More than one shipping line is operating between the two harbours. A particular shipping line not only ships fruit to The Netherlands but to other countries as well. At the port of discharge not only fruit from South Africa is unloaded but from other countries as well. After discharge fruit may be delivered to various retailers. The yellow line shows how a particular supply chain belongs to a supply chain network.

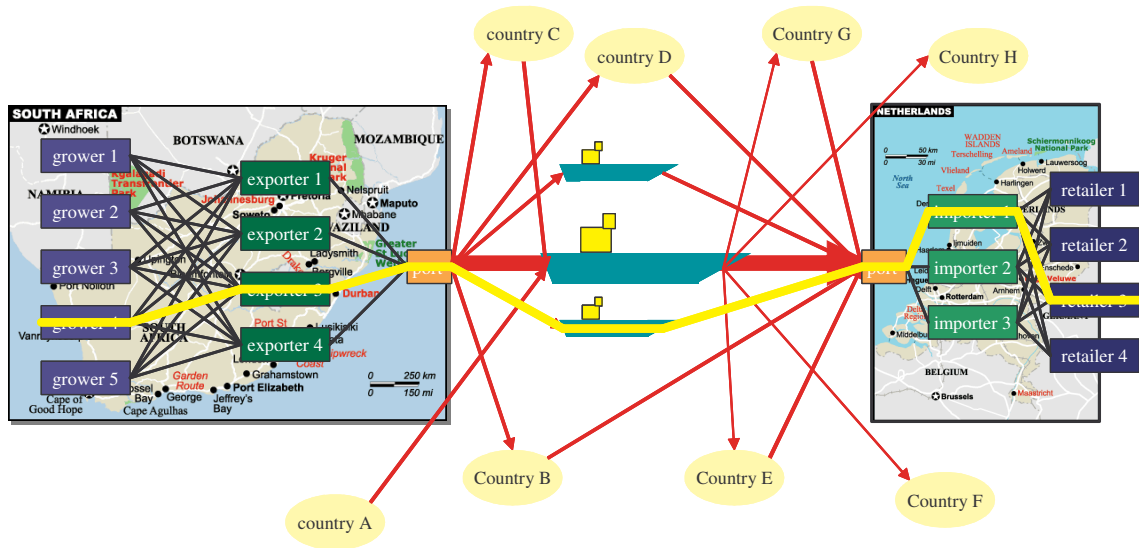


Figure 4 Network of supply chains (Source TNO-inro)

The existence of different networks implies that you can select different partners or configurations for installing a system tracing quality. To assist you in deciding what kind of tracing strategy you prefer the following questions offer a helping hand:

1. What is the incentive for installing a tracing system?
2. Who are the right partners?
3. What kind of network accommodates the interests of these partners?
4. What type of tracing strategy fits the strategic outlook of this network?



### 3. Outsourcing production: the choice between management styles

Sietze Vellema

#### Relevance

When you want to start a business in horticulture, you have to manoeuvre in an institutional landscape wherein others perform tasks relevant to your own operations. To avoid complex and numerous interactions, companies may favour integral control over the chain of activities, from production, processing shipping to marketing. Usually, however, the institutional set-up of the horticultural sector has a more complex scenery. Independent growers supply traders with fresh produce. Traders or shippers distribute the agricultural products to national or international market. Distribution centres provide supermarkets and shops with food products, where consumer choose between vegetables or brands presented in the shelves.

In this situation, organizing and managing interrelated tasks are major challenges for the supply chain. For realizing a certain level of quality the skills and expertise of farmers, processing managers and shippers have to be combined. This entails institutional linkages that often cross the boundaries of individual organizations, such as the farm or processing plant. When venturing into the competitive markets for horticultural products, one of the fundamental decisions is about the *level of involvement in primary production*. Outsourcing production, for example by offering contracts to independent landowners, is a widespread tool for organizing production in line with corporate strategies and market demands.

In horticulture, contract farming is a common alternative arrangement for trade through spot-markets. Contract farming serves as a tool to integrate independent farmers into agribusiness complexes, by introducing new crops, creating marketing facilities, and coordinating the farming practices with the harvesting and processing operations. Moreover, growers of exportable fresh produce have to perform complex managerial functions and technological tasks due to regulatory requirements and market demands. Contractual arrangements help to introduce predictability, to motivate performance, to enhance quality control and to allocate financial risks and benefits. However, signing a contract also implies new social relations between rather different parties. Despite possible differences and institutionally remote positions, these parties have to find ways both to manage frequent transactions in the supply of fresh produce and to select technological recipes to solve, for example, quality-related problems in production.



## Example

Japan is by far the largest import market for fresh asparagus in Asia, and it is one of the largest importers of this product in the world. Japanese consumers prefer green asparagus spears. In the 1990s, an American food company succeeded to turn the Philippines into the leading exporter of asparagus to Japan: the country overtook the United States in 1995. Keys to the strategy for green asparagus were *competitive export prices* and *high quality*. In general, competitiveness of the high-value horticultural sector largely rests on low costs of production, particularly labour costs, but it also depends on the extent to which quality can be established as a way of creating dominance in niche markets.

The Japanese market is very strict in its quality requirements. In order to retain its profit margins and market position, the company had to meet strict quality standards. After a couple of years, the company received complaints from its Japanese customers about tip-rot, which could harm the company's position in Japan. So, an instantaneous intervention was required. After the tip-rot problem was solved, the condition of the tip remained a major concern for both company and growers. Quality of the tip was in fact crucial for the company's marketing strategy in Japan. The company's strategy was to promote its label as a guarantee for quality; its principal objective was to remain a reliable supplier and to deliver high quality. Contract growers of the food company produced the majority of the asparagus. Thus, for establishing this quality, the company depended on performance of individual growers. What type of management tools did the company have available to solve these problems? How can a company be sure that quality is established in the fields of contract growers? How can a company monitor and manage performance in the fields of growers?

Initially the company had designed the scheme following its desire to externalize costs and risks as much as possible, but, eventually, was faced with difficulties to maintain its position as a mere buyer of asparagus. Production problems impelled the company to engage itself again in production. This reinforced vertical and hierarchical relations. Simultaneously, however, asparagus farming is innovative and requires close supervision and skilful labour for certain tasks. In realizing satisfactory quality levels, the company heavily relied on close co-operation and co-ordination with growers. This encouraged horizontal and collaborative relations.

In this case, we observed two typical managerial approaches (table 1).<sup>1</sup> On the one hand, we saw a 'neo-classical individualist' approach. A main feature of this approach is the motivational impact of budgets. On the other hand we observed a shift towards a 'classical hierarchical' approach. In this process, the company's behaviour reveals a strong cultural bias towards hierarchical supervision and management accounting based on cost reduction, in combination with cost-efficient technologies.

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<sup>1</sup> Vellema, S. 2002, *Making contract farming work? Society and technology in Philippine transnational agribusiness*. Shaker Publishing: Maastricht.



Table 1 Typical managerial approaches in agribusiness

Hierarchical	Individual/entrepreneurial
Financial management based on cost accounting	Financial management based on motivational impact of budgets
One integrated plan of action for the organization as a whole with centralized co-ordination	Participation in schemes and management –by objectives- encouraging identification with corporate goals
Series of specific coordinated tasks for each segment in the organization.	Effective performance is obtained when tasks are made intrinsically stimulating and rewarding
Vertical control through the line of authority	Control is a behavioural and social problem, not a problem of formal structure
Far-reaching interdependence and resource transfers	Formal and informal bargaining procedures

Source: Vellema 2002

## Concepts

The context for our discussion is a supply chain wherein *agricultural production is outsourced to independent growers*. The challenge for the buying company is to institutionally integrate farmers, with a variety of worldviews or managerial preferences, into an organizational framework functional to a marketing strategy based on quality fresh produce. This is not an easy task because all kinds of social elements of the local communities cross the permeable boundaries of the supply chain. Accordingly, the major problem tackled in this chapter is *how to manage relations* between supply partners in a socially robust way; choosing the *right management style* or *mix of styles* is essential to avoid conflict, to create trust and accommodate divergent perceptions.

Accordingly, companies have to be knowledgeable about how to co-ordinate their activities with the activities and behaviour of others. This is especially relevant when finding solutions to production problems, e.g. declining quality levels or, or when coping with financial or organizational pressures, e.g. rising production costs. In these situations usually more than one party is needed to achieve improvement. This entails careful navigation through the many interactions between the supply chain and its social environment. Signing a production contract is one thing, implementing a contractual arrangement in a specific social context is another.

### *Outsourcing*

The concept of outsourcing brings about a specific, segmented, architecture of the supply chain. Integrating and coordinating the various activities in the chain is a demanding task, especially because one single director or coordinating agent is rarely available. This is further complicated by the fact that growers, whose primary task is to establish quality and to guarantee safety of the product in the field, are often situated outside the boundaries of the chain. Growers belong both to the supply chain and to the local community (figure 1). This raises the question how local communities fit the institutional structure and strategic outlook



of international supply chains. And how supply chains link local communities to competitive consumer markets.

For understanding new forms of collaboration and institutional behaviour resulting from the social and technical integration of independent farmers, this chapter focuses on different styles for managing the configuration between corporate schemes and local communities. It shows that the dynamics of global trade in of fresh produce importantly depends on the specific social and cultural conditions under which companies and producers have to collaborate to secure supply and to achieve quality in a specific market place.

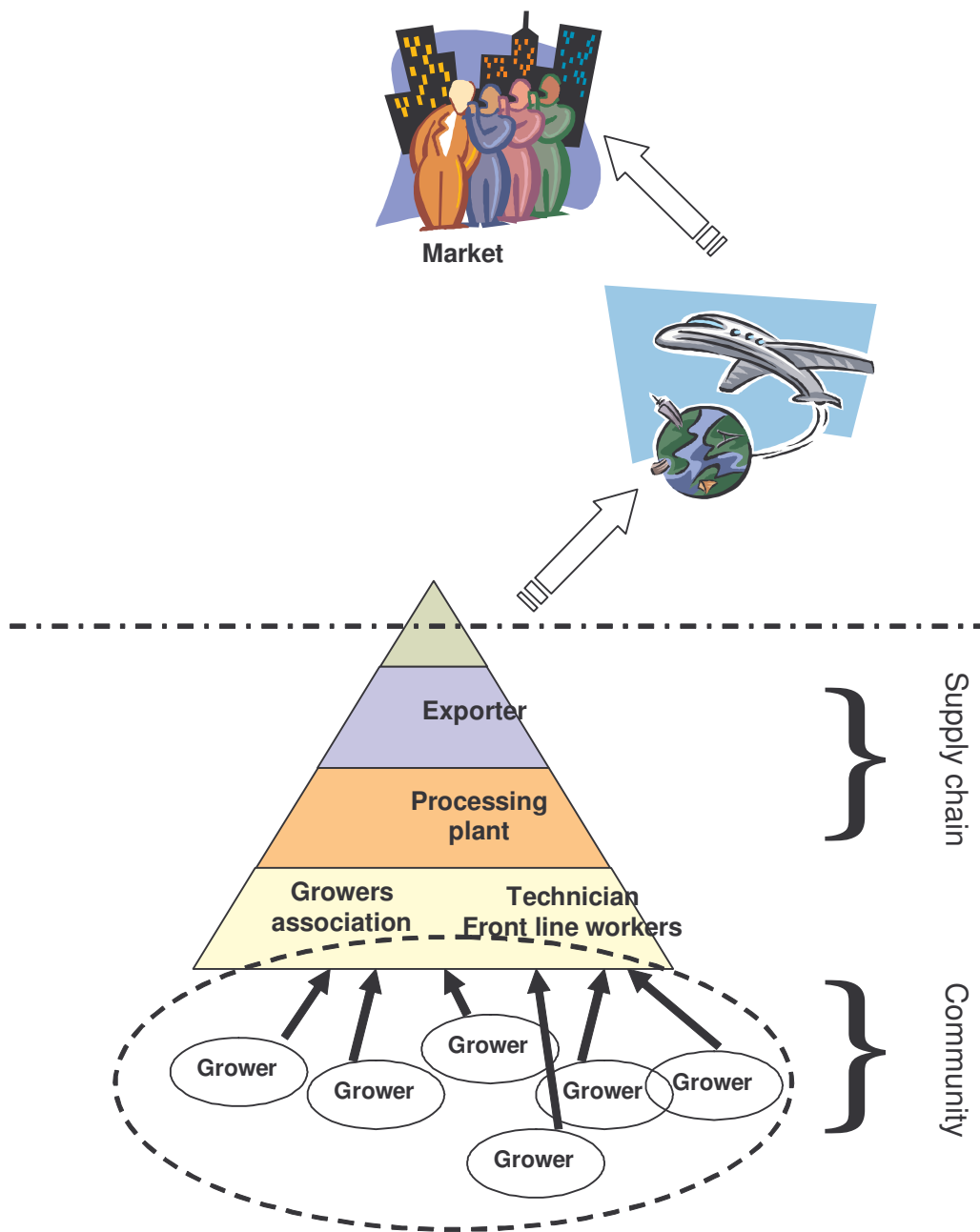


Figure 1 Outsourcing the production of horticultural crops: linking chains and communities





## *Management styles*

The evolution of contract growing schemes is not simply a technical story of coordination or optimization because it involves both different modes of co-operation between people and forms of compliance with rules. Depending on issues such as trust an organization can be stable or unstable. Disappointed or angry individuals or dissident groups can weaken the supply chain. So, the culture or the social robustness of a supply chain may have an immediate impact on its economic and technical performance. Creating trust between socially distinct parties, e.g. an international company, a trained technician, a businessman / landowner, a smallholder farmer, and a farm worker, is a key issue. Solving problems often boils down to people willing to work together. Thus, economic behaviour is embedded in a network of social relations, especially when independent farm-level are key decision-makers.

Institutional thinking helps identifying types of behaviour inside an organization (figure 2). It brings out varying and sometimes contradictory attitudes about who to blame, how to assess risks or how to put matters right. People will act differently when the enterprise flourishes or when financial pressures urge managerial interventions. What we are looking for in this chapter is a framework to categorize different organizational behaviours. For this purpose, the chapter introduces a *typology of management styles*. Management styles respond to the *social involvement* of the different stakeholders: how strongly do they feel part of the group? And, management styles respond to the *imposition of rules*: how strongly is behaviour directed by regulation of social rules?

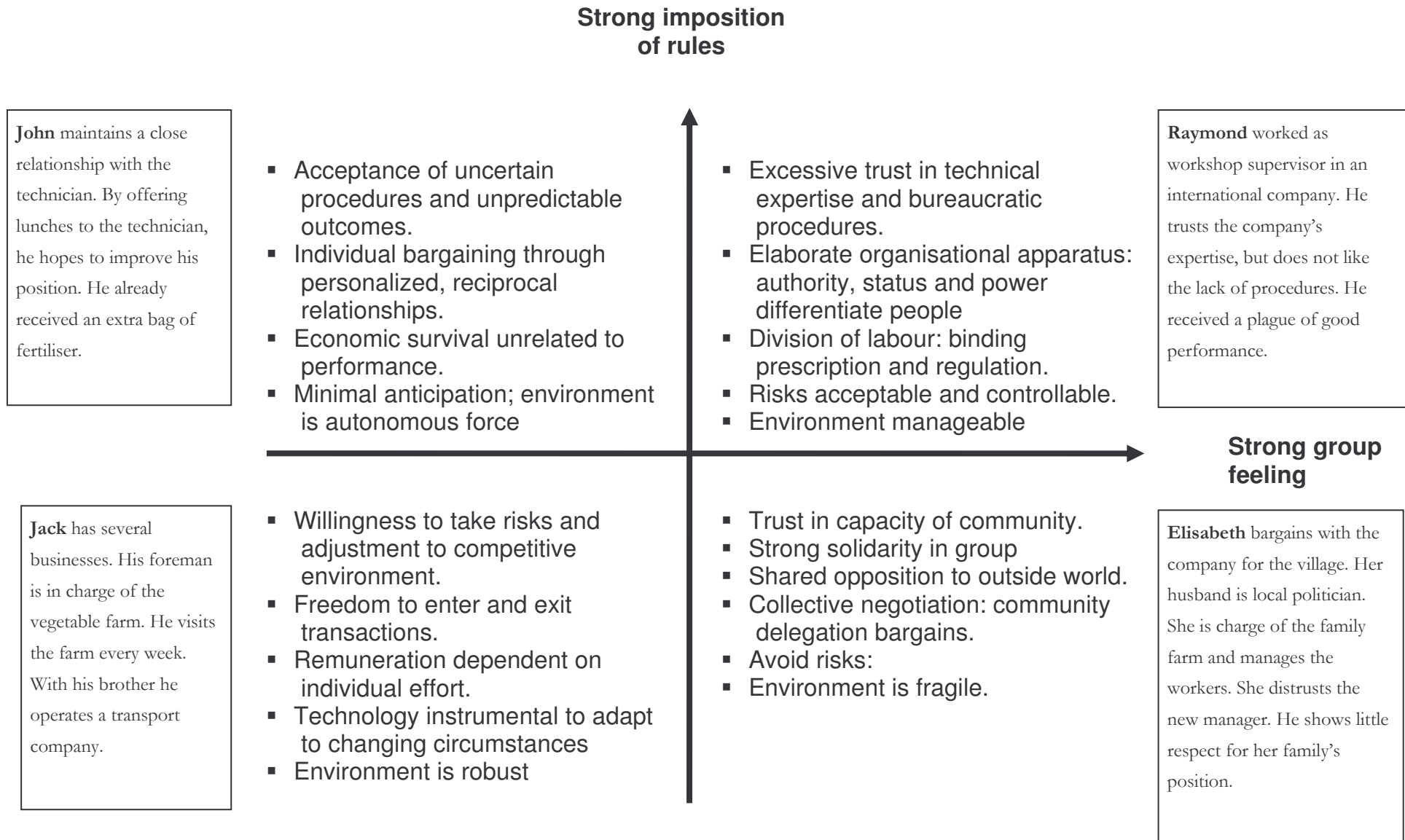
Companies can adopt various organizational tools to shape relationship with growers. In cases of failure, e.g. declining quality levels, management styles can gradually shift from partnership in a business venture and towards intensified bureaucratization accompanied by enforced lines of authority. Disappointment over the capacity of one approach to deliver satisfactory results leads to increasing support for one of the other options. Moreover, in problematic situations management may tend to opt for extreme measures. Then, institutional perspectives of the different actors may appear to be incommensurable. Hence, the acceptance or impact of a solution not only depend its technological features but also on a mutual recognition of the accompanying management style.

The diagram below shows different behaviours present in one organization. John, Jack, Raymond and Elisabeth are all suppliers to an international food company. They represent typical perspectives; you can see them as stereo-types that relate to certain world views and management styles. Real actors can shift from style to another. To make things work, a company or a supply chain has to decide how to deal with these different perspectives, in particular, when participation of all actors is essential for finding solutions to declining quality levels.





Figure 2 Four possible institutional and cultural perspectives present in a supply chain (source: Vellema 2002)





## Procedures

If the chain supplies to a competitive market, where quality and safety requirements are key drivers, the organizational structure has to be robust when problems arise. This is especially the case in the capricious markets for horticultural products. The markets for fruits and vegetables demand an ingenious, responsive and flexible organization, capable to address new demands or unexpected feedback on product quality at a short notice. Making the organization robust requires good communication and cooperation between the different layers in chain, despite distinct interests and different social positions of the actors.

In outsourcing or contract farming, we see that a company's strategy depends on performance in growers' fields and that growers' incomes depend on the appreciation of quality in the market. Therefore, there is common ground for improving farming practices. However, most contract farming schemes are not clear about how to engage actors in providing solutions to production-related problems. Contract farming tends to be hierarchical in nature, while grower participation, commitment and inventiveness can be essential to establish quality, especially in horticulture. Nevertheless, in contract farming, expert institutions are often disengaged from the people actually using the technology.

How to include growers' skills and expertise in dealing with quality problems is an uncharted terrain in the management of supply chains. Achieving this strongly depends on whether the chosen managerial style matches with the institutional preferences of growers. In the case of a factory, an employer can give a foreman large responsibilities and assist in a cooperative manner. The employer can also strictly prescribe the daily activities of the foreman and watching every move made. In contract farming, there are more than two managerial styles because the producers are also part of local communities and thus of cultural outlooks. This implies building managerial competence in the supply chain so that suppliers are encouraged to meet high performance demands and buyers are able to handle numerous individual producers. A responsive and stable organization has found a balance between the different managerial preferences in a scheme. An inflexible and, probably, unstable organization has opted for one organizational recipe that leaves no or little space for alternative modalities.

Do you select only one style or do you think it is best to accommodate different styles at the time? If you accommodate different styles, how effective are you to deal with, for example, sudden problems in quality? The scheme below helps you to identify your managerial style in solving problems; or, to see how a mixture of two or more types composes your style. It shows that there is more to choose than either a hierarchical style or an entrepreneurial style. This is important because good performance entails more than one actor and, subsequently, more than one preference.



Table 2 The social nature of 4 management styles

<p><b>Mutuality</b></p> <ul style="list-style-type: none"><li>○ <b>Emphasize partnership and sustain familiarity</b></li><li>○ <b>Reward local brokers for commitment</b></li><li>○ <b>Use reciprocity as solution to management problems</b></li><li>○ <b>Maintain unpredictable patterns of decision-making and supervision</b></li></ul>	<p><b>Hierarchy</b></p> <ul style="list-style-type: none"><li>○ <b>Strengthen monitoring and bring supervision in line with the ladder of authority.</b></li><li>○ <b>Command action and prescribe farming practices</b></li><li>○ <b>Integrate activities in own organization</b></li><li>○ <b>Use formal power to pronounce on disputes or complaints</b></li></ul>
<p><b>Competition</b></p> <ul style="list-style-type: none"><li>○ <b>Make growers responsive to reward</b></li><li>○ <b>Introduce individualised performance review.</b></li><li>○ <b>Outsource all activities and reduce involvement in productive activities</b></li></ul>	<p><b>Brokerage</b></p> <ul style="list-style-type: none"><li>○ <b>Broker social compromise and negotiate with collective</b></li><li>○ <b>Rely on group to check behaviour of individuals</b></li><li>○ <b>Exclude dissident groups from scheme and elude negotiator</b></li></ul>







## 4. Variety in primary production: choices in establishing food quality and safety

Leo van Overbeek

### Relevance

Producers of fresh tropical vegetables and fruits for export are facing a pallet of international rules and regulations specifying food quality and safety. These specifications are usually conceptualized and formulated at a large distance, geographically and institutionally, from the farms and fields. Yet, establishing the safety and quality of food products begins in the fields of producers, at the level of primary production. Although standards and regulations only reveal limited flexibility, producers may have different ways to comply or to meet requirements. Despite the tendency towards uniformity for different traits, like taste, ripeness or colour, there still are multiple ways to produce these traits. This chapter introduces a framework to map the technological choices or alternatives available to primary producers.

Primary production in tropical agriculture is notoriously variable. Due to the variation in primary production, producers may end up with products unacceptable for profitable but competitive export markets. However, variation in production is hard to control. Therefore, it does not seem feasible nor desirable to let uniformity be a guiding principle. The reasons for product variation are divers but are usually related to production conditions. For instance, fertility of land is restrictive for primary production in most tropical countries. Also, access to water may restrict production. The production conditions for fresh fruits and vegetables are not always a free choice. Sometimes a producers or exporter can select a totally new area, perfectly suitable to the requirements of a crop. More often, producers or exporters cannot choose the land freely. Consequently, they have to learn to work with the conditions present in a certain locality. Production circumstances can not easily be changed. Therefore, regulating and managing natural processes in a specific agro-ecological environment is one of the major tasks in primary production.

So, what can producers in the tropics do to match primary production with market demands? Alternatives may be created by the choice of crops varieties and agronomic measures. A blue print for appropriate choices during primary production can not be given as every commodity will have its own standards for international trade and each production area will have its own specific restrictions for optimal crop growth. Although variation in production can be reduced, unexpected events may always occur and therefore farmers still meet a chance to encounter bad harvests. Therefore, experimentation and hand-on learning will to an optimized set of measures, aimed to manage and control variation in primary production under local circumstances. This chapter focuses on directed measures to reduce product



variation at the level of primary production. The aim of this chapter is to demonstrate that a certain level of liberty in choices exists in primary production.

### Example

Countries importing fresh or dried products will check the presence of chemical residues and mycotoxins. These compounds are health compromising, invisible and only traceable by high-technology assisted analyses. Mycotoxins are produced by fungi, which infest crops before harvest. Different fungal species, most commonly *Aspergillus* and *Fusarium* spp., produce mycotoxins, and different horticultural products are target for their contaminating compounds. Dried and stored products are also vulnerable to contamination with mycotoxins. Horticultural products with mycotoxin levels above maximal allowable concentrations will be rejected by the customer of an importing country and all further incoming products of that producer or exporter will either be banned or subjected to stringent control. The use of fungicide can prevent contamination with mycotoxins. However, fungicide levels in export products must also remain below maximal residue levels stated by local jurisdiction. In addition, some fungicides are prohibited, either by legislation of the importing country or by production requirements set by involved stakeholders.

There are a number of factors and agricultural measures affecting mycotoxin contamination. Firstly, plant stress caused by drought will increase contamination of plants with mycotoxin-producing fungi. Plant stress prevention and field survey on visible fungal contamination may thus reduce mycotoxin incidences. Secondly, in some horticultural farming systems measures like Integrated Pest Management (IPM) minimize pesticide usage, in others, like in organic agriculture, the use of pesticides, is even banned. Thirdly, invasive pathogens can be controlled by selecting resistant cultivars, giving soil treatments and suppressing pathogen population build up, e.g. by removal or destruction of crop remnants.

The mycotoxin example indicates that different measures taken by farmers at primary production will control mycotoxin production, e.g. by usage of fungicides or prevention of plant stress. The choice for each measure resides on product requirements (legislation, product label) and the production environment, e.g. accessibility of fresh water sources. Even more directed measures may be thinkable to tackle problems with mycotoxins e.g. by selection of *Aspergillus*- or *Fusarium*- resistant cultivars and improvement of soil structure by amendment of organic matter. However, crops and products derived from ecologically sustainable production systems, like organic farming, may face increased risks by mycotoxin contaminations. It has never been demonstrated that organically farmed products carries higher mycotoxin levels. It is, however, important to realize that even production systems carrying the perception of healthy food production may still bear their own intrinsic risks.





## Concepts

Variability in horticultural production occurs by a combined effect of plant genotype (variety) and production environment. The concept of phenotype (P) resulting from genotype (G) x environment (E) ( $G \times E = P$ ) will stand as model for horticultural production in this chapter.

Because we use this formula in the context of food quality and safety we have to make some adaptations to the concepts (Figure 1). 'Phenotype (P)' is reverred to as 'Product Standards', because in this context the phenotype of the products have to comply with (have to *be*) the product standards. 'Environment' is replaced by the more specific 'Agronomic measures', because unlike e.g. climate, agronomic measures are part of the environmental concept where changes and adaptations can be made in the production process. The three concepts are described in greater detail below.

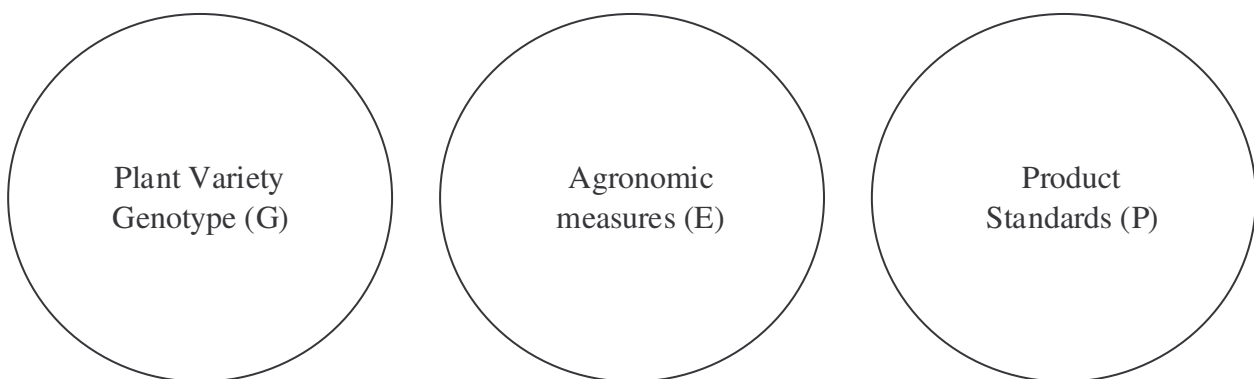


Figure 1 The independent concepts G, E and P in the context of food quality and food safety

### *Plant Variety Genotype (G)*

Most world leading crops have been cultured for centuries and were continuously subject to directed breeding. Historically, breeding programs primarily aimed to select economically important traits and less to include secondary processes, like those enabling plants to adapt to environmental fluctuations. Secondary traits important for plant defence and nutrient acquisition seem to have perished in modern varieties. It is therefore important to realize that for optimal performance of modern varieties, optimal production circumstances are required. Growth under sub-optimal conditions will in general result in plant stress, which makes plants more vulnerable to deterioration and spoilage. Modern varieties largely depend on application of fertilizer and pesticide treatments for optimal crop growth and yield.

Contemporary breeding programs increasingly utilize genetic diversity for construction of new stress-resistant varieties. However, it may take a long time before breeding programs result in improved cultivars. Genetic modification is a possible tool to overcome time-consuming breeding programs. Through genetic modification, new constructs are developed by the incorporation of single genetic traits into the plant genome. However, addition of



single traits like resistance to one particular pathogen will not drastically increase genetic diversity. Moreover, in the short run it seems that existing varieties still will be used as basis for breeding or genetic modification.

Genetic variation in crops can be found in old or local varieties. Some of these varieties may demonstrate better adaptation to local production circumstances. Certain growth and yield parameters may be superior in varieties produced by major seed companies. However, lower yield values in local varieties may be compensated by reduced plant stress during growth and improved product quality like uniformity, taste, or ripening time. Local production circumstances thus determine which variety may be optimal for crop production.

### *Agronomic measures*

Soils subjected to permanent horticulture will be threatened by erosion, depletion of nutrients and accumulation of soil-borne pathogens. Horticultural fields must therefore be compensated for loss of fertility and increased pathogen pressure in order to guarantee crop production over longer periods in time. Soils have the intrinsic capacity to balance against nutrient and pathogen fluctuations. The basis for buffering capacity of soils may be microbial diversity. However, our understanding of the precise mechanisms behind soil buffering capacity still has to be improved. This makes predictions about the effectiveness of agronomic measures difficult to make and thus empirical experimentation and hands-on learning will be required for local optimization.

Buffering capacities of soils will differ depending on soil characteristics (e.g. texture and structure) and land use. Agronomic measures will have different effects on soil buffering capacity. Organic amendments will change soil structure and thus buffering capacity. Usage of fertilizer on the contrary will decrease buffering capacity. It is important to realize different aspects of each treatment impact on the buffering capacity of soils (table 1 identifies the effects of a selection of agronomic measures). For instance, disease suppression will be stimulated by certain compost types, whereas other compost types may have the contrary effect, i.e. they will stimulate disease-causing populations. As a second example, loss of buffering capacity may be strongly reduced by precise application of fertilizer in time and dose.

Thus, different agronomic measures will have different and even opposite effects on soil buffering capacity. What can a farmer do with this information? For each production system it should be evaluated which measure prevails for optimization of local production and crop yield. As blue prints for optimal production do not exist, producers are challenged to explore different measures for optimization of production. Different varieties in combination with different agronomic measures will even lead to further exploration of alternative measures in agriculture. However, the number of alternatives will be reduced when producers opt for certain production systems or labelled end products. Then, not all agronomic measures and varieties will be acceptable for production.



Measure	Proposed effect on soils
Tillage	Decrease in buffering capacity Risk for erosion
Pre-cropping and crop rotation	Increase in buffering capacity Improvement of nutrient balance when plants are used which live in symbiosis with nitrogen-fixing micro-organisms
Organic amendments	Increase in buffering capacity Odd effects on disease incidence
Chemical fertilizer	Decrease in buffering capacity
Soil disinfections	Decrease in buffering capacity

Table 1 Proposed effects of agronomic measures on soils

### *Product Standards (P)*

Regulations, certificates or labels for certain products pose strict rules for primary production processes. In other words they demand certain *phenotypes* of products. How the crop looks like, the *phenotype*, significantly depends on the interaction between plant variety and agronomic measures. Thus, farm management affects the appreciation of a product in the end-use market. When sustainability is also part of the product standard, the usage of agrochemicals, like pesticides and fertilizer, also affect the appreciation due to their toxicity and environmental impact. In organic farming, usage of chemicals and genetically modified (GM) plants are not accepted. Therefore, certified organic production may limit flexibility in choices made in primary production but, on the other hand, may reveal better opportunities for marketing product in specific, rewarding niches. To create stability in primary production, intervention with different measures will be required. Awareness about alternative measures and their consequences is therefore important. Producers can explore alternatives in primary production by selection of different varieties or/ and agronomic measures (figure 2 illustrates the different consequences of pest control measures for market access).



### Box 1: Micro-organisms, plant variety and agronomic measures

How can the genotype and production environment influence the outcome of primary production? Plant growth is controlled by biotic (pathogens, predators, mutualists) and a-biotic (sunlight, nutrients, water) factors. The effect of a-biotic factors on plant growth is often obvious which does not always count for the microbial (biotic) environment of plants. Most micro-organisms do not have an obvious effect on plants and behave 'neutrally' with respect to plant growth and development. Certain micro-organisms have negative effects (pathogens) whereas others improve plant growth and development (symbionts and mutualists).

Micro-organisms supporting plant growth are important in horticulture to increase nutrient availability and plant disease suppression. Most commonly, these micro-organisms are present in soil and soil amendments (e.g. manure, compost). Microbial diversity in soils will be increased by *agronomic measures* like crop rotation or intercropping. The plant, however, must 'recognize' and communicate with beneficial micro-organisms. Therefore, *genetic constitution of the plant (variety)* and *agronomic measures* are equally important.

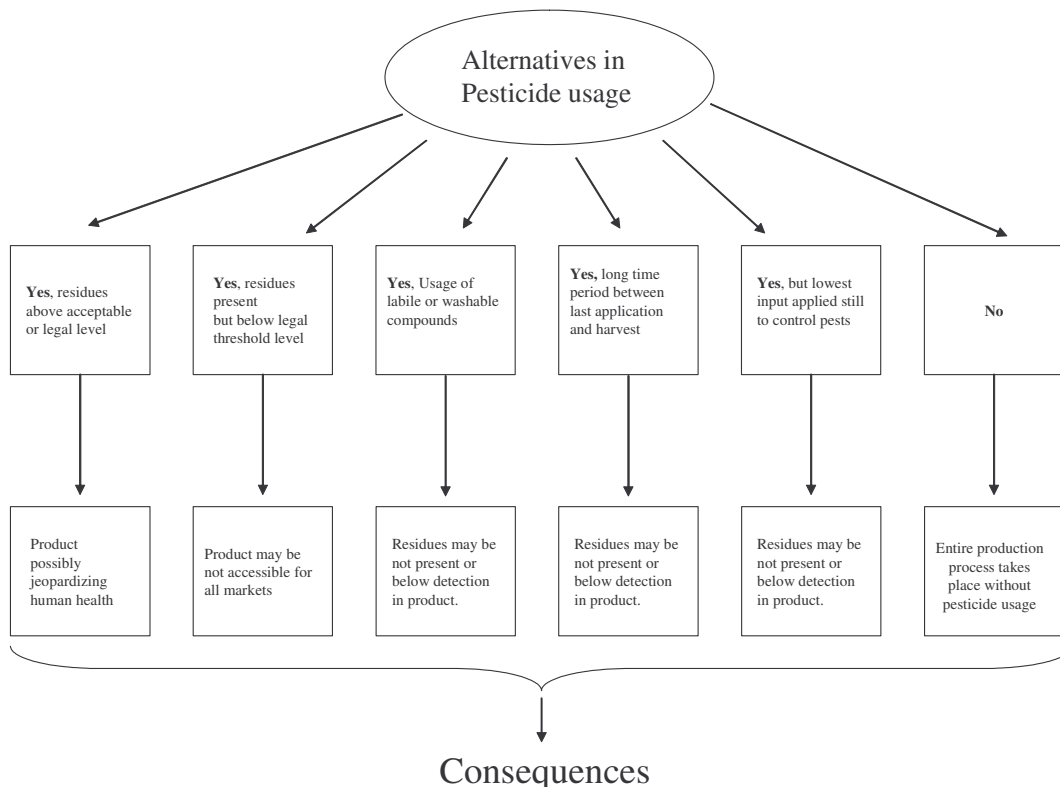


Figure 2 Consequence of pest control measures on market access



## Procedures

Now that the concepts are described we can focus on how they interact (Figure 3) and where a farmer can be situated. The sections where the circles of Plant variety/ Genotype, Agronomic measures and product standards overlap is where interaction in the primary production takes place. These are the intersections where choices are available.

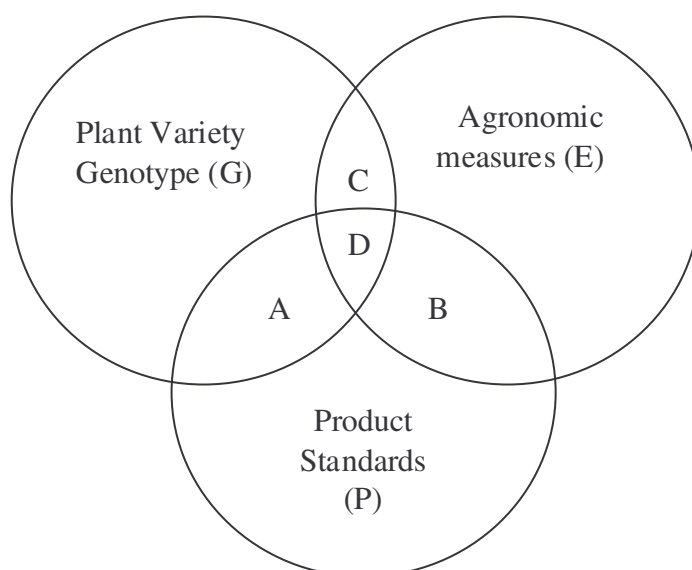
Intercept **A** and **B** are so called 'clash zones'. **A** represents primary production, in which the genotypes meet the required product standards but the agronomic measures do not. **B** represents primary production in which the agronomic measures meet the required standards and the genotypes do not. These 'clash zones' are most challenging for exploring innovations in primary production.

Intercept **C** is considered to be the zone of intervention, i.e. farmers are encouraged to experiment with or combine different varieties and measures. There is already a positive interaction between the Genotype and Agronomic measure, but they have not resulted yet in a Phenotype that lives up to the required standards.

Intercept **D** is the zone where there is positive interaction between Phenotype and Agronomic measures and where the product standards *are* met.

Eventually, the aim is to operate in intersect **D** because here a good interaction between agronomic measures and plant variety enable a producers to meet the required product standards.

Figure 3 The fields of interaction between genotype, environment and phenotype



What can a producer do to go from intersect **A** to  $\rightarrow$  **D**?



He/she can decide to change the agronomic measures. Measures with a positive impact on final product quality are probably those leading to reduction in pathogens, although if that would imply using chemicals. The presence of measurable amounts of chemicals may have a negative impact on product requirements.

What can a producer do to go from intersect **B** to  $\rightarrow$  **D**?

Changes need to be made with regard to plant variety/ genotype. Choices in plant varieties may have a positive impact on product quality when they reveal resistance to pathogens or tolerance to stress. However, negative qualifications may be the presence of toxic metabolites or deviation from standard taste. The impact of choices in varieties may further be related to requirements for processing or shipping of the product

What can a producer do to go from intersect **C** to  $\rightarrow$  **D**?

A farmer can either choose to continue to experiment with the genotypes and agronomic measure until the product standards are met. Or he/she can decide to find a market with a different set of product standards.

Definitions for 'varieties' and 'agronomical measures' are not always strict and must be regarded as every thinkable intervention during primary production. Ancient varieties or local customs thus can be very relevant for local primary production. Local production circumstances like climate, latitude, water supply, soil, but also infrastructure, economy, political structure and availability of skilled labour determine feasibility of innovations in primary production.

New combinations of varieties and agronomical measures can be evaluated to meet required product standards (intercept **D**, fig. 3). Most common standards are those for local or foreign markets, legislation (especially for export), product specifications (e.g. uniformity, taste, colour, ripeness) and required production standards, labels (e.g. those for fair trade or organic farming). Intervention between plant varieties and agronomic measures will lead to new opportunities in horticulture. Each intervention must be evaluated for required product standards by local experimentation prior to further exploration.



## 5. Food Standards: Catalysts or Barriers?

Monika Sopov (composition)

### Debate: introduction

The role of standards in the international trade of agricultural and food products are a hot topic for many debates. Not only in an inter-governmental forum a like the World Trade Organization (WTO) but also in the board rooms of companies or in farmers organizations. The controversy is often typified by referring to food standards as either catalysts or barriers of economic growth and development.

In this debate we would like to explore both sides of the coin a bit further. For that purpose, we ask two groups to present the arguments supporting one of the extreme positions: catalyst or barrier. The objective of this exercise is to explore the contradictory views on the effect of food standards. Doing so enables you to appreciate the complexity of the issue, and to apply learned ideas in your own settings. It is NOT necessary that you believe in the view point you have to defend. Your task is to look for arguments in the provided material that support the view point you have to defend. You are welcome to add your own arguments if they support the group view. Otherwise, please, do not bring it in the presentation.

The summary of a paper by Steven Jaffee and Spencer Henson may help you to find the different arguments.

### Standards and Agro-Food Exports from Developing Countries: Rebalancing the Debate

Steven Jaffee and Spencer Henson

(Available at: [http://econ.worldbank.org/files/36684\\_wps3348.pdf](http://econ.worldbank.org/files/36684_wps3348.pdf))

The proliferation and increased stringency of food safety and agricultural health standards is a source of concern among many developing countries. These standards are perceived as a barrier to the continued success of their exports of high-value agro-food products (including fish, horticultural, and other products), either because these countries lack the technical and administrative capacities needed for compliance or because these standards can be applied in a discriminatory or protectionist manner.



The picture for developing countries as a whole is not necessarily problematic and certainly is less pessimistic than the mainstream ‘standards-as-barriers’ perspective. Indeed, rising standards serve to accentuate underlying supply chain strengths and weaknesses and thus impact differently on the competitive position of individual countries and distinct market participants. Some countries and/or industries are even using high quality and safety standards to successfully (re-)position themselves in competitive global markets. The key question for developing countries is how to exploit their strengths and overcome their weaknesses such that they are gainers rather than losers in the emerging commercial and regulatory context.

From this perspective, many of the emerging public and private standards are viewed as a necessary bridge between increasingly demanding consumer requirements and the participation of distant (and international) suppliers. Many of these standards provide a common language within the supply chain and promote the confidence for consumers in food product safety. Without that confidence, the market for these products cannot be maintained, let alone increased, in turn jeopardizing international trade. From this ‘standards-as-catalyst’ perspective, the challenge inherent in compliance with food safety and agricultural health standards may well provide a powerful incentive for the modernization of developing country export supply chains and give greater clarity to the necessary and appropriate management functions of government.

Further, via increased attention to the spread and adoption of ‘good practices’ in agriculture and food manufacture, there may be a spill over into domestic food safety and agricultural health, to the benefit of the local population and domestic producers. Part of the costs of compliance could be considered necessary investments, while an array of foreseeable and unforeseeable benefits might arise from the adoption of different technologies or management systems. Rather than degrading the comparative advantage of developing countries, enhancement of capacity to meet stricter standards could, potentially, create new forms of competitive advantage. Hence, the process of standards compliance could conceivably provide the basis for a more sustainable and profitable trade over the long-term, albeit with some particular winners and losers.

A frequent presumption when discussing the marginalization of particular suppliers is that standards compliance is a ‘do or die’ scenario. In reality, however, there is rarely a single market for particular products, such that suppliers do have other options. In turn, they must orient themselves to those markets (as well as market segments) where they have advantages rather than disadvantages. For example, there may be opportunities in domestic or regional markets for the same or similar products, where lower prices are offset by the avoidance of compliance challenges and costs. Directing attention towards these markets may be one way of avoiding marginalization.





### *Kenya -Fish*

Kenya provides an example of longer term efforts to comply with the European Union's food safety requirements, overlaid with the necessity to overcome restrictions on trade relating to immediate food safety concerns. The major export of fish from Kenya is Nile perch derived from Lake Victoria. By the mid-1990s Nile perch accounted for over 90 percent of Kenya's exports of fish and fishery products, with a value of around \$44 million in 1996. The majority of these exports were destined for the European Union. Through the 1980s there was significant investment in industrialized fish processing facilities and by the mid-1990s 15 facilities were in operation.

Although food safety requirements in their major export markets were evolving, most notably in the European Union, most processors made little or no attempt to up-grade their facilities and systems of procurement, processing and marketing. Likewise, the legislative framework of food safety controls remained largely unchanged, despite the fact that the structure and focus of the supply chain had shifted to exports. The overall picture was of a supply chain that had not been upgraded in line with the growth in exports and was unable to implement effective controls within the context of rapidly evolving standards overseas. Thus, both the public authorities and exporters were in a continuous position of problem-solving.

In recent years exporters of Nile perch in Kenya (as well as Tanzania and Uganda) have faced a catalogue of restrictions on trade with the European Union. In 1996, Salmonella was detected in a number of consignments of Nile perch from Kenya, Tanzania and Uganda at the Spanish border and Spain immediately prohibited imports. In March 1999, a suspected case of fish poisoning with pesticide was identified in Uganda. The European Union subsequently imposed a ban on exports of Nile perch in April 1999 which, in the case of Kenya, was not lifted until December 2000. In each case, the impact on the Nile perch sector was immediate. Exports declined, although over time these were partially offset by increased sales to other markets. Fish processing plants, most of which were already operating at less than 50 percent capacity, reduced their production and some closed. In turn, the landed price of Nile perch fell.

In response to the 'crisis' created by the European Union's actions, both the government and private sector attempted to up-grade food safety controls. Initially, responsibility for regulatory controls was split between the Ministry of Health and the Fisheries Department of the Ministry of Agriculture and Rural Development. This created significant coordination problems and poor delineation of responsibilities, delaying necessary reforms to 28 regulatory systems. Subsequently, however, the Fisheries Department was made the sole 'Competent Authority' and legislation was quickly revised in line with the EU's requirements.

Simultaneously, fish processing plants up-graded their facilities and implemented HACCP. The total cost of these improvements is estimated to be \$557,000, with an average cost per plant of around \$40,000. Whilst this may not seem a huge investment, particularly relative to the value of exports, it is evident that the costs were prohibitive for a number of processing



facilities and they closed. Thus, in view of prevailing levels of excess capacity, the European Union's requirements have induced rationalization of the processing sector. Simultaneously, fish processing companies began to cooperative with one another in order to present a united voice to the Kenyan Government and European Commission. In 2000, the Kenya Fish Processors and Exporters Association (AFIPEK) was formed. The association developed a code of Good Manufacturing Practice for the sector, which is adopted on a voluntary basis by its members.

Yet, a remaining weakness in the Nile perch supply chain is standards of hygiene at landing beaches. Over time, most attempts by the government to implement effective management of the fishery resource and marketing arrangements have failed. In many cases, only recently have most efforts been made to provide toilets, paved and fenced landing areas, portable water and covered markets. This is undoubtedly the biggest compliance issue facing the sector in the short to medium-term if access to EU markets for fish and fishery products is to be maintained.

It is evident that the efforts of the Kenyan Government and private sector eventually paid off. In December 2003, the European Commission recognized the controls in place as equivalent to those in the European Union. However, this case illustrates the very significant impact that stricter food safety requirements can have on a supply chain that is almost entirely export oriented and largely dependent on a single market. It also demonstrates how such requirements can exacerbate existing pressures for restructuring and reform, whilst prevailing supply and capacity issues constrain the manner in which the various levels of the chain is able to respond. The restrictions on exports through the period 1997-2000, have had profound effects on the Nile perch sector in Kenya and its course of evolution. Whereas the export supply chain developed with a central focus on European Union markets, today most exporters have diversified their export base and have major markets in (amongst others) Australia, Japan and the United States. However, ironically, compliance with European Union requirements has better enabled Kenyan exporters to access and maintain these markets.

The Kenyan case illustrates the great inter-dependencies between the various levels of the supply chain, and between the public and private sectors, in meeting food safety requirements in export markets. It also demonstrates the importance of responding to emerging food safety and agricultural health standards in both a proactive and offensive manner.



## 6. Rules of the game: standards and regulations in global food chains

Linda Admiraal

### Relevance

Consumers, government and industry have raised numerous demands and concerns about food. Increasingly, they require food to be of high quality, to be safe, to be produced in a sustainable way, and to be produced fair. Companies and organizations active in the provision of food have responded to these demands and concerns by setting up systems capable of guaranteeing buyers that a product is produced in accordance with the requirements, e.g. safe or sustainable. More and more, companies communicate to consumers and the public assuring that their operations and products are safe and sound. Initiatives in the field of Corporate Social Responsibility (CSR) represent this trend to be accountable and transparent about operations and production systems.

The incorporation of public demands and concerns by the food industry is accompanied by all sorts of standards and regulations at international or national levels. This ruling and regulating can be seen as a form of **governance** of production and processing in food provision. Governance can be defined as non-market co-ordination of economic activity and the question of governance arises when some firms in a supply chain work according to parameters set by *others*.<sup>2</sup> Consequently, the precise mode of governance will depend on who *the others* in the food chain are and what type of standards or rules they promote and how they perceive the control of compliance. Standards can be imposed on producers and entrepreneurs by public law, they can be voluntary or self-regulatory codes related to a sustainability strategy of an enterprise, or they can be voluntary in order to diverge yourself from the mainstream market, for example, by a label.

Well-known public standards governing food chains are the sanitary and phyto-sanitary standards (SPS) created by the EU under auspices of the WTO. SPS aims to ensure both a high level of safety in relation to public, animal and plant health in the EU and safe conditions for the trade in animal and plant products. SPS is part of the European General Food Law. Producers who do not produce according to SPS standards are not allowed to enter the European market. A well-known private standard is EurepGAP, referring to Good Agricultural Practices. EurepGAP sets minimum standards *-must and should-* for producers willing to sell their produce to largest European retailers.

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<sup>2</sup> Gereffi G., Kaplinsky R. (2001). The Value of Value chains; spreading the gains of globalisation, Institute of Development Studies



When comparing SPS and EurepGAP one can imagine that the way they govern a food chain will be quite different. A law will intervene differently than a standard that is imposed by a retailer. Again different will be the forms of governance in a fair trade food chain, since they focus on equality and well-being of workers rather than on the safety aspects of agricultural production methods.

It is important to be aware of the impact of chain governance, because it sets the rules of the game for your business. The aim of this chapter is to create more understanding for producers and entrepreneurs about how food chains are governed. And to find ways to deal with the standards and regulations present in food chains. This chapter is about learning how to play the game in an environment that is increasingly governed by standards and rules. The ultimate aim, however, is to be able to compete in the market that lies behind the rules and regulations; the markets behind EurepGAP, Organic, European Food Law, Fair Trade.

## Examples

So, we see a business world wherein an increasing number of rules set the rules of the game. The question is how to go about it? You can react to the rules crossing your way. In contrast, you can also try to respond pro-actively to the setting of rules in business. Here we present two examples of pro-active strategies. You can experience standards and regulations as a burden, as a problem, but you can also use it to your own benefit, if you learn how to play the game.

### *Associations encouraging sustainable fish farming in the Netherlands*

Fish farmers in the Netherlands have to comply with a whole set of standards enforced by the government, varying from standards on documentation, food safety, safety for workers, rules for animal treatments, etc. In the context of several food scandals in the animal husbandry sector, various fish farmers became worried about their sector. They wanted to make it more visible to potential buyers *and* consumers that there is an *absence* of food safety problems in fish culture and that their production method is environmentally friendly. The way they wanted to achieve this was by introducing a certificate. There is a large number of certificates and related standards existent. In order to find the certificate that best suited them The Dutch Association of Fish Farmers, representing a large number of (mostly small-scale) fish farmers, initiated a research. Rather than waiting for retail to demand some sort of certificate they took pro-active action to find a certificate that matched their goals.

### *UK supermarkets promoting local foods*

In the United Kingdom, a variety of actors assembled to implement a different strategy with regard to the certification of food products and the anticipation of consumers wishes. An alliance of organizations, e.g. World Wildlife Fund and the Soil Association, and some of the largest UK retailer companies, Sainsbury, Safeway, Marks and Spencers, started an initiative



with the aim to let supermarkets contribute to - rather than detract from - local farming communities and food economy. Supermarkets tried to find a way to include local producers in their system of suppliers. For this purpose, supermarkets needed to modify the logistic system and to change the relationship with their suppliers. Furthermore, they needed to find a system to communicate clearly to the customers what is so special about the products in the store.

In order to make this work, the initiative began to develop a code of practice for identifying the origin of the product. By doing so, it becomes easier to set up sales promotions and it becomes easier for supermarkets to control/govern the suppliers. A third party might be needed to keep an eye on the authenticity and the compliance with the code of practice. So, to achieve their goal, the initiative had to make various decisions about how to cooperate with local producers and how to promote the products to consumers (with a label).

## Concepts

In order to get more insight in the differences between modes of governance in food chains, this section focuses on five elements on which the rules of the game of various standards and regulations frequently differ: rationale, market access, market entry, added value and distribution of gains, monitoring.<sup>3</sup> We will use insights from the trade in organic products and the retail trade governed by EurepGAP to illustrate these elements.

### *Rationale*

Food safety and sustainable production –usually composed by a people (social), planet (environmental) and profit (economic) dimension - are important concepts for the design of food-standards. Food safety is enforced by law in order to ‘protect’ consumers, whilst sustainable production is promoted out of necessity or from an ideological point of view. Whether based on a law, necessity or ideology, the standards will most certainly influence the strategic choices made by chain members.

For example in Fair-trade, the philosophy is that the terms of trade should be fairer than they are. Producers should have decent working conditions and should receive a larger share of the price that consumers pay. Consequently actors in a Fair-trade chain have to design their business in such a way that it suits that main goal. Exporters have to deal with poorly organized small scale producers, which will most likely imply a different organizational structure when dealing with large scale farmers. Furthermore, the agreements operational in Fair trade encourage direct trade relationships between actors. But may most important is the strategy to use a label, assuring the ‘fairness’ of the trade, for which consumers are prepared to pay a higher price.

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<sup>3</sup>The article by Humphrey and Schmitz provided a very useful basis for this section. Humphrey J., Schmitz H, 2001, Governance in global value chains, IDS Bulletin: The value of value chains: spreading the gains from globalisation, Volume 32, Issue 3, P. 19-29



The Fair trade philosophy is totally different from the rationale behind the standards of EurepGAP. EurepGAP aims to ensure integrity, transparency and harmonization of food production in order to supply safe food to the consumer. EurepGAP is meant to be used in business to business transactions. This implies that all large retailers in Europe only want to buy food certified by EurepGAP, but the consumer will neither see nor pay for a certificate.

### *Market Access*

Market access is considered as a threshold that needs to be crossed before market entry is possible. Market access is determined by the legal and administrative conditions (like trade barriers) imposed by the importing countries under internationally agreed trade rules. These conditions and exigencies are conceptualized and phrased beyond the usual sphere of influence of entrepreneurs, producers or exporters in developing countries.

The European General Food Law sets the bottom line for food exports to the European Union. The General Food Law is designed to ensure that food within the EU is wholesome and safe and to guarantee the free movement of food in the member countries. Thus in order to export to the EU, an enterprise has to meet the basic requirements or minimal standards specified in the European Food Law. This type of governance is neither commercial nor suggestible for enterprises who want to export. The standards are also not owned by any company and therefore not promoted like private labels, such as EurepGAP or Fair trade. It is simply a minimal standard to enhance food safety and one either decides to comply with (and export) or not.

### *Market Entry*

So, even in the context of deregulation in the international trade policies, compliance with numerous requirements, e.g. in the fields of food safety and sustainability, is still essential to achieve access to markets. The ability to *enter markets* complements the above: *market entry* refers to building own strengths and strategies rather than responding to conditions set by external partners. In order to use the achieved access to markets, individual (or groups of) entrepreneurs have to actively develop and use their capabilities to enhance competitiveness and to negotiate good business deals. Thus, accessing markets, or crossing the threshold, is the prerequisite for market entry and therefore market access alone would never be enough.<sup>4</sup> Governments and exporters from developing countries need to go beyond market access concerns and also focus upon the conditions governing actual market entry.

Market entry is conditioned by the parameters exporting firms in developing countries have to meet in order to enter distribution networks for goods and services in the market of

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<sup>4</sup> UNCTAD, 2003, Market entry conditions affecting competitiveness and export of goods and services of developing countries: large distribution networks, taking into account the special needs of LDC's, TD/B/COM.1/EM.23/2



developed countries.<sup>5</sup> Many authors acknowledge that small-scale farmers risk being excluded from the market when lead-firms (a firm who sets the standards) introduce a set of standards that all actors in the chain should comply with.<sup>6 7 8</sup> Small-scale producers are often not able to invest in new production methods or new management tools in order to produce a high quality product in such a way that is acceptable for the lead-firm. Small-scale farmers are often poorly organized, resulting in lead-firms giving preference to include larger farmers in their supply chain rather than to struggle with organizing smallholders.

In the context of EurepGAP, it seems that most suppliers with a EurepGAP certificate are large scale producers. Apparently, these suppliers have proven to be better equipped to fulfil the demands on administration, to implement tracking and tracing, to acquire knowledge to improve production practices, and to access financial resources for the necessary investments. Food-safety and traceability are the most important to the retailers dealing with EurepGAP, therefore the most stringent standards are on the documentation system, while the environmental and social standards appear to be less demanding.

Despite the constraints of small-scale producers, Boselie et al. argue that for specific markets small-scale farmers *will* have an advantage over commercial growers.<sup>7</sup> For example in organic agriculture when crops are produced with labour intensive techniques or need special commitment. In this case, small-scale farmers can outperform commercial growers and have the necessary assets to enter the market.

#### *Added value and distribution of gains*

The creation of value and the distribution of gains are essential for the functioning of value chains, because in the end of the day everybody wants to know what their costs of compliance or their gains are going to be. The level of transparency about price setting partly depends on rules and regulations in a chain. In spot market transactions there is generally little openness on how much value is added and where and how gains are distributed. Firms and traders often argue that transparency about the way prices are fixed harms competition strategies. Still, suppliers and buyers want to see how compliance with certain standards or regulations brings gains or benefits. Gains might be related to money, but it might also include other type of gains like the establishment of a long term contract, transfer of technology, pre-financing, or special privileges etc.

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<sup>5</sup> UNCTAD, 2003, Market entry conditions affecting competitiveness and export of goods and services of developing countries: large distribution networks, taking into account the special needs of LDC's, TD/B/COM.1/EM.23/2

<sup>6</sup> Hobbs J. E., 2003, Incentives for the adoption of Good Agricultural Practices (GAPs), University of Saskatchewan, FAO background paper

<sup>7</sup> Boselie D., Henson S., Weatherspoon D., 2003, Supermarket Procurement Practices in Developing Countries: Redefining the Roles of the Public and Private Sectors, unpublished

<sup>8</sup> Dolan C., Humphrey J., 2000, Governance and Trade in Fresh Vegetables: The impact of UK Supermarkets on the African Horticultural, Journal of Development Studies, Vol. 37, Issue 2, P. 147-176



Organically produced products are accompanied by a label. This label is a form of communication between seller and buyer, but it also guarantees the consumer that the product is produced according to organic standards. Because of the certificate it is possible to ask a higher price, because consumer can see they pay for an *added value*. In order to get a certificate a producer or firm has to comply with organic standards but, in addition, also needs to adapt its operational management to include a certification body. Apart from the gains through the premium price most organic farmers receive, the prospect of long-term relationships can be considered an advantage. What also happens is that organic producers have easy access to the fair-trade market, offering them a additional premium to the organic premium they already receive.

European retailers have chosen *not* to communicate EurepGAP standards to consumers through a label on the packaging since their major aim is to direct and control business to business transactions. Consequently, producers do not receive a premium price but they can usually count on an improvement of their business relationship. This can be in terms of ensuring a market or building a long-term relationship.

### *Monitoring*

If the chain is governed according to certain standards and guidelines, there must also be a way to make sure that actors in the chain comply with the rules of the game. Monitoring provides the evidence for proving compliance or non-compliance. Different rules and regulations have different ways of monitoring.

Monitoring in an organic supply chain serves to ensure other actors in the chain and the consumer that what they buy is really produced as is promised by the label. Organic inspections usually occur on a yearly basis. An accredited third party takes care of monitoring and but it is also possible to work with Internal Control Systems, as long as these are approved by an acknowledged certifier. All actors in the chain make a commitment and their compliance with organic standards is confirmed with certificate. The certificate is proof for the compliance with organic standards. EurepGAP works with similar principles: a combination of third party certification and internal control systems.

In case of the European General Food Law, the Food and Veterinary Organization (FVO) of the EU is responsible for monitoring compliance with rules on food safety. The FVO mainly carries out inspections in Member States and in third countries exporting to the EU. The FVO makes recommendations to the country's competent authority to deal with any shortcomings revealed during the inspections. The competent authority is requested to present an action plan to the FVO on how it intends to address any shortcomings. Together





with other Commission services, the FVO evaluates this action plan and monitors its implementation through a number of follow-up activities.<sup>9 10</sup>

The difference between production standards like organic and a law like the European General Food Law is that the organic standards integrate and intervene with the chain (table 1). They are almost part of a chain, whilst the Food Law remains external, they are just the minimum quality standard one has to comply with in order to export to the EU.

	<b>Organic</b>	<b>EurepGAP</b>
Background/ Philosophy	Since 1924, no use of chemicals and with a respectful and sustainable use of the agro-ecosystem  Business to business to consumer communication through label	Operative since 2001, triggered by consumer concerns about health. Set up by the European Retail Group;  Business to business communication
Market Access	Determined by importing country legislation, identical for both	
Market Entry	Determined by compliance with IFOAM standards	Determined by EurepGAP standards
Added value & Distribution of gains	Premium price, long term contracts	Preferred suppliers system
Monitoring & Arbitrage	Third party certification and Internal Control Systems.	

Table 1 Comparison between modes of governance: organic and EurepGAP

<sup>9</sup> [http://www.europa.eu.int/comm/food/fvo/index\\_en.htm](http://www.europa.eu.int/comm/food/fvo/index_en.htm)

<sup>10</sup> <http://www.foodlaw.rdg.ac.uk/eu/doc-47.htm>





beforehand which sports were there to choose from and what it would entail to play them, you might have picked *takraw* because you felt it best fitted you or you understand the rules. By finding a game that fits your capacities and preferences you may become a winner.

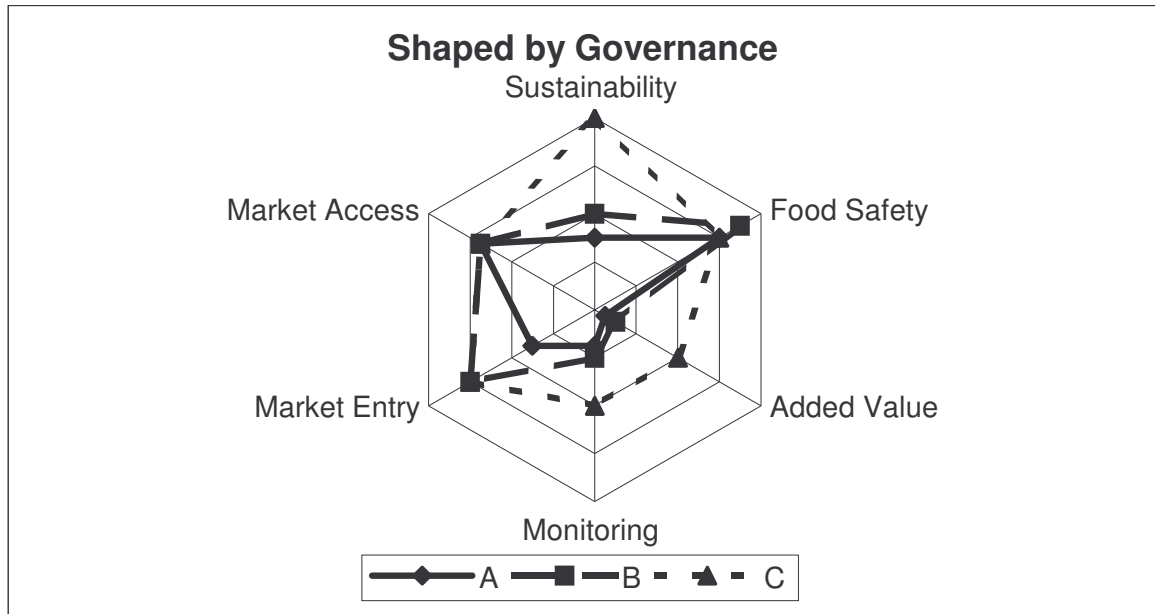
### *The rules of the governance game*

The above mentioned example of sports can be used to identify different rules of the game in the food sector. Just as with the various sports, if you learn the rules of the game, you can anticipate and decide what suits you best. Like in the example about fish culture where the fish farmers tried to figure out which game, which standards, fitted them best instead of waiting to be told to play say volleyball. There are a number of aspects on which the rules of the game fundamentally differ. In this chapter, we focused on rationale, market access, market entry, distribution of gains and added value, and monitoring.

Figure 1 gives an idea how different the different arena's based on these aspects may look like. The larger the surface of the shape, the larger the level of governance in that specific domain or in general. The data are an indication, they are not absolute. From centre to border the points indicate low to high priority.



Figure 1 A comparison of three types of governance: public legislation (A), business to business (B), and standards based on ideology (C)



A= standards based on public legislation  
 B= standards based on a business to business relation  
 C= standards based on ideology

Questions to fill in the figure with regard to the concepts:

**Rationale:** Food safety and sustainability (social, economic and environmental) both fall under “rationale”. How is food safety regulated? How is sustainability integrated in the rules of the game?  
 The more important the further away from the centre you position your mark.  
 Compare A,B,C amongst another and compare where you position a mark on the axis of Food Safety.

**Market Access:** This is very dependent on the location of the market you want to produce for. Thus, what are the laws and regulations in the market you want to export to? Unless there are different market locations, B and C will be on the same level as A.

**Market Entry:** Here, you can compare the level of difficulty to comply with the rules -other than law- coming from firms or organisations. What capabilities and assets do you need to compete in the market? What capabilities and assets do you need to comply with the rules and requirements in the market? What opportunities will it create for you?

**Added value:** How and where is value added?  
 What value does compliance with standards add to your product?  
 How are gains and value distributed in the chain?

**Monitoring:** What is the purpose of monitoring? What are the procedures for monitoring? Who is responsible for monitoring performance? Who defines the criteria for monitoring performance? What are the procedures for arbitrage, in case of conflict?



## Case studies

This section presents three case studies of regulation and standards in food provision. When reading the case studies you can use the five concepts - rationale, market access, market entry, added value and monitoring - to describe the different rules of the game. You can use the case studies to map the rules of the game in which you yourself operate.

### *Case 1: Organic fresh vegetables for local supermarkets in El Salvador*

Source: Dankers 2003<sup>11</sup>, based on the report by Damiani, 2001

In the late 1990s, two North American NGOs identified opportunities for the supply of organic vegetables to local supermarkets in El Salvador. Based on this perspective, the NGOs stimulated the creation of three farmer cooperatives. In total, 66 farmers participated. One of their most important incentives to adopt organic methods was a shared concern for possible health problems associated with conventional chemical inputs. Farmers formerly grew on a two-season basis, with irrigated vegetables in the dry season and maize in the rainy season. The farmers sold their conventional vegetables through middle agents, who sold them at the market “La Tiendona” in the capital San Salvador.

With the project, farmers began to sell their produce directly to some of the main supermarket chains in El Salvador. The study indicated that prices paid by the supermarkets were higher than in the market La Tiendona, and that there was also a premium for being organic.

The transition to organic production, led to a change in the production system. Due to the higher labour demand, farmers reduced their total cultivated area. After the transition to organic, farmers reported falling yields in the first two or three years, but the yields recovered and stabilized slightly below the yields from conventional methods.

The transition to organic also involved an investment in irrigation infrastructure, because the supermarkets required a constant and reliable supply of quality vegetables. Furthermore, some specific investments had to be made, especially the building of terraces and contour planting for soil conservation. Both NGOs helped the groups to obtain funds for constructing the collective packing facilities and a greenhouse to produce lettuce plantlets. The groups had to be able to program their production so that they could harvest every week, carefully forecast harvest and distribute harvesting quotas to individual farmers. The supermarkets also demanded a higher quality than traditional markets, which was reflected in a demand for uniformity in colour, size and taste.

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<sup>11</sup> Dankers, Cora, 2003, ‘Environmental and Social Standards, certification and labelling of cash crops’, *FAO Commodities and Trade Technical Paper*, no. 2. FAO: Rome.



## Case 2: EurepGAP certified pineapples from Ghana

Source Dankers 2003<sup>10</sup>, Based on the report by Foli Gogoe, 2003

In Ghana, 60 registered companies export pineapples, of which 9 supply about 72 percent of total exports. Of total exports, 45 percent is obtained from smallholder farms, either out growers, individuals or group associations (mostly grouped for training rather than collective marketing). Domestic financing has always been a constraint. In 2001, domestic annual interest rates varied between 50 and 60 percent, coupled with double-digit inflation.

When the EurepGAP protocol was launched, a Ghanaian exporting company was one of the first processors-*cum*-exporters in a developing country to take it up, in order to maintain its current market share in the United Kingdom. Growers aspire to sell to this company because it offers the best price, pays weekly, and gives training. The company paid three different prices, depending on consistency of supplies, quality and negotiation skills of the supplier. Although not directly related to farm size, a certain correlation between size and price was present. One indirect effect of the EurepGAP certification was the average increase in field size, because certified farmers were guaranteed a market and therefore planted more. Disadvantages of supplying to this company were high percentages of rejects, less transparency in weighing and no preferential access to loans or credit.

The EurepGAP protocol has 250 control points, half of the criteria referring to the correct use of chemicals during crop production and post-harvest treatment. The EurepGAP checklist had to be adapted to be relevant for the Ghanaian context, of which the necessary authorities were informed. As a result of EurepGAP, the use of herbicide (less toxic) and quantities was standardized by the export company. It even tried to stop the use of *Ethephon* altogether, but this led to higher rejects because farmers were less able to determine the correct time for harvesting.

For the EurepGAP certification process, the export company operates as a Produce Marketing Organization (PMO). Over a two-year period, an agronomic team of the company, themselves trained by a foreign consultant in implementing the EurepGAP protocol, trained farmers. Some growers faced high initial investments in constructing and upgrading structures such as toilets and baths, chemical stores, shelters and offices. About one-fifth of the growers managed to obtain bank loans to meet the initial investments costs, and as a result the interest and repayments on loans increased as part of the fixed costs. In special cases, the export company increased the orders from growers to improve their financial position to enable them to meet these infrastructure costs.

Farmers faced extra costs for the removal of the mother plant immediately after its useful life, before leaving the land fallow to prevent disease build up on the field. Potential benefits from this would be only experienced in subsequent years, which could lead to reduced pesticide costs. Labour costs increased due to provision of pension schemes and better medical care.



Other costs related to EurepGAP implementation were borne by the export company, such as training, soil, water and blood analysis, and the certification and inspection costs.

For the 80 percent of the farmers who did not keep records before, the necessary bookkeeping was valued as of immense benefit of the implementation of EurepGAP. Additional effects of EurepGAP was that farmers and workers spent more time in the farm, made possible by shade, potable water and sanitary provisions, which lead to better supervision. Farmers were proud that their farm looked clean and farmers, especially smallholders, and workers gained knowledge about agrochemical handling. Agrochemicals were now stored properly and protective clothing was used, all reducing health risks related to agrochemical use.

### *Case 3: Shrimps export from Bangladesh*

Source: Cato and Subasinge 2003<sup>12</sup>

By the end of the 1970s Bangladesh seafood processing industry had expanded rapidly, but sanitary facilities, technological adaptation and adequate training did not keep pace. In the early 1980s, both the potential as the problems for the Bangladesh shrimp industry were recognized. FAO helped the Bangladesh government to develop product standards, regulations and fish inspection schemes in order to improve the safety and quality standards of the product. In 1996, FAO assisted again in introducing HACCP procedures (Hazard Analysis Critical Control Points). Trainings were provided, the government was informed about new regulations and export was promoted. Still, shrimp exporters continued to suffer from safety and quality problems.

In 1997, the European Union (EU) was the major importer of shrimps from Bangladesh, accounting for 34-50% of Bangladesh exports. In this year, the EU banned imports of fishery products from Bangladesh, which was a result of EU inspections of Bangladesh' seafood processing plants. Inspectors found serious deficiencies in the infrastructure and hygiene in processing establishments and insufficient guarantees of quality control by Bangladeshi government inspectors. This leads to the conclusion that the only way Bangladesh can enhance its exports position in the shrimp market is to improve the safety and quality of exports. The ban imposed by the EU resulted in a commitment from industry and government to raise product quality to international standards. Both exporters and government were willing to invest in plant infrastructure and training of personnel. Subsequently some plants made large improvements and the EU ban was lifted for six plants by the end of 1997.

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<sup>12</sup> Cato J.C., S. Subasinge, 2003, 'Case study: the shrimp export industry in Bangladesh (brief 9)'. In: Laurian Unnevehr (ed.) *Food safety in food security and food trade*, 2020 Focus 10, International Food Policy Institute: Washington DC.



Due to collective efforts out of the 65 plants licensed for export by the government, 48 plants received EU approval. In addition to the safety and quality aspects, one of the challenges in the sector is to ensure the sustainability of shrimp production and to become more diversified in term of products and markets.





## 7. Understanding your partners: stakeholder perception analysis

Jan Buurma

### Relevance

A supply chain implies co-operation between the actors involved. The development of a sustainable supply chain requires commitment of the various stakeholders like growers, traders and supermarkets. An important condition or even pre-requisite for commitment is mutual understanding and benefit. Supply chain partners are people or parties each having their own perceptions, interests, motives and drives. The perceptions, interests, motives and drives concerned are often different and sometimes conflicting. Obviously, people and parties are reasoning from their own livelihood or expertise. When realizing this it seems important to understand more about the interests and practice of potential partners. How do you get to know them and how can you get to understand where they come from and why they position themselves in the supply chain the way they do are key questions addressed in this chapter.

In an ideal situation, the supply chain provides win/win solutions for all partners involved. In addition, public concerns and consumer demands increasingly demand an integral approach to sustainability from food providers. Corporate Social Responsibility (CSR) requests care for people and planet in the process of doing business. Therefore, these elements will return in the way partners want to do business. Hence, supply chains have to assemble the different perspectives on people, planet and profit. If not, your supply chain will most likely lose its coherence and effectiveness sooner or later. Consequently it is of strategic importance to select your supply chain partners carefully and deliberately. They should all have the perception that the supply chain accommodates their interest, motives and drives.

Obviously you face a strategic selection problem when you want to establish or consolidate a supply chain. The key question is: “Who are the right partners for my supply chain?”, and, more practically: “How can I get understanding of the perceptions of potential partners?” and “How can I sort out the different interests, motives and drives?” The selection process provides you with a basis for establishing or consolidating your coalitions: “Through which parties can I bring my strategic objectives within reach?” and “which promises and measures are needed to keep coalition partners and public opinion well-disposed?”

The “take-home lesson” of this module is that each stakeholder in a supply chain is reasoning from his own livelihood or expertise. Each stakeholder lives in his own economic or cultural reality. A good understanding of the respective economic or cultural realities provides the key



for supply chain development. It helps you in creating win/win solutions in order to establish or consolidate a sustainable supply chain. The tools presented in this module -value triangle and perception diagram - are useful starting point for creating an inspiring network of stakeholders. Disclosing values and arranging strategic tracks provide the basis for supply chain development.

## Example

In 1999 a Dutch supermarket holding commissioned researchers from Wageningen UR to advise on streamlining the supplier network of fresh products of their supermarkets in Thailand. During the process, the researchers, acting as intermediaries, were also asked to facilitate access to government organizations involved in the regulation of food trade. The reasons for streamlining were:

- Reducing the transaction costs of the distribution centre
- Improving the food safety status of the fresh products

The transactions costs of the distribution centre were high, owing to a wide variety of suppliers each delivering small quantities of product. Moreover the supply was irregular in both time and quality. Food safety was considered as a specific bottleneck in product quality. Compliance with Maximum Residue Limits (MRLs) of pesticides required much attention.

The key question was to find the right supply chain partners for the Thai supermarket considering both supply capacity (volumes), regularity in supply (service level) and food safety (MRL's). Asking high performance levels from suppliers might result in limited supply levels and consequently higher cost prices for the buying department. So, conflicting interests between supply chain partners lay in wait.

In a first step the Thai supermarket management focused on the producers who already applied the concepts of “intelligent pesticide management” developed by international agro-chemical industries. This group of producers was heading for a save product and had enough critical mass to generate a regular supply. In a second step, the positions of the various stakeholders in the supply chain for vegetables and fruits were assessed with regard to certification of good agricultural practices. The assessment included in-depth interviews in order to get understanding of the stakeholders’ perceptions, interests, motives and drives. A perception diagram (this tool will be explained later in this module) is one way to translate the results of the assessment. As an example the perception diagram of a *consumer interest group* is demonstrated in figure 1.



Figure 1 Perception diagram of a consumer interest group

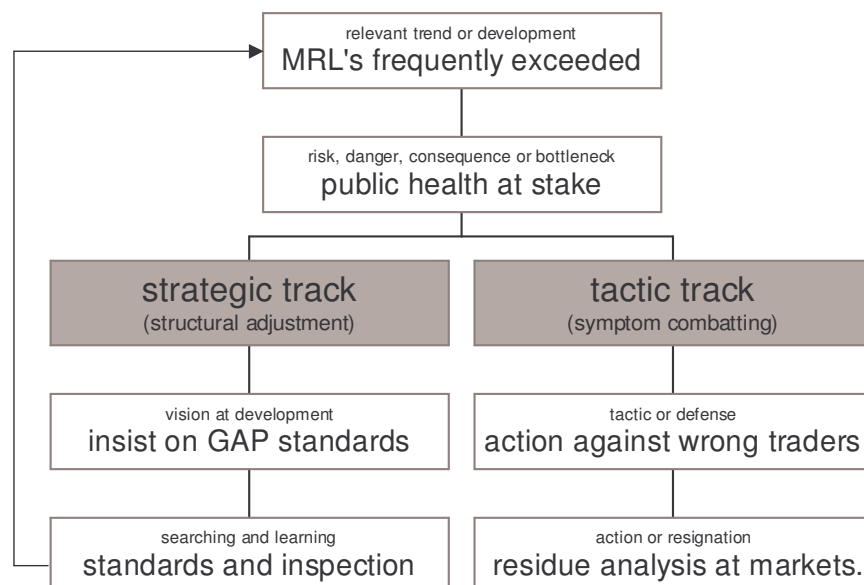


Figure 1 shows why the consumer interest group supports standard setting and certification with regard to good agricultural practices (public health is at stake) and what they already do to put the supply chain under pressure (residue analysis at markets). It also shows the strategic (long term) and the tactic (short term) actions of the consumer interest group with regard to standard setting and certification. The thoughts of the other stakeholders have also been summarized in perception diagrams. The opinions on standard setting and certification are presented in table 1.

Table 1 Opinions of supply chain partners on standard setting and certification with regard to good agricultural practices in vegetables in Thailand

Stakeholder-category	Opinion on standard setting and certification
Crop Protection Associations	Positive
Pesticide Companies	Conditionally positive
Seed Companies	Conditionally positive
Vegetable Growers	Conditionally positive
Vegetable Brokers	Negative
Buying Department	Negative
Retail / Wholesale	Positive
Consumer Interest Groups	Positive
Inspection Bodies	Conditionally positive
Dept of Agriculture	Conditionally positive



Table 1 show that the majority of the stakeholders was (conditionally) positive on standard setting and certification. Negative signals were obtained from brokers and buying departments. They appeared to have diverging interests, motives or drives. Finally the certification system of the Department of Agriculture became a “license to deliver” for the vegetable growers in the supplier network of the distribution centre of Thai supermarkets. By doing so the negative sentiments of brokers and buying department were bypassed by the supermarket management.

## Concepts

The previous example shows the variation in opinions of different chain actors. Of course, one can never expect all chain actors to share the same opinion. Nevertheless, it is very likely that there are a number of issues which are of utmost importance for you and you want to find out whether your perspective is shared by potential partners. Or, you want at least to know the other actors’ opinion to be able to understand them. Therefore we present two tools for the selection of the right partners for supply chains or other coalitions: (1) value triangle and (2) perception diagram.<sup>13</sup>

### *Value triangle*

The value triangle can be used to gain insight in what actors value most. Their position in the triangle depends on what they value. Ultimately the triangle gives you a clear overview of the actors in the chain, but also of their key values. To discover the perspectives of different actors, researchers presented respondents with a gross list of values. They were asked to select the five values which they found most valuable for the continuity of their business (based on People Planet Profit) in the next 25 years. The results showed striking differences in the values selected by primary producers, suppliers/buyers and researchers/advisers. The results are presented in table 2.

Table 2 Frequencies of values selected in interviews with ten visionary persons in Dutch agriculture (plant production) specified to respondent group and value category

	Primary producers	Suppliers/Buyers	Research/Advice	Total
People	5	2	7	14
Profit	8	11	3	22
Planet	2	7	5	14
Total	15	20	15	50

<sup>13</sup> The concepts were developed in a research program supported by the Netherlands Ministry of Agriculture, Nature and Food Quality with the objective to speed-up innovation processes in agricultural production.



Table 2 shows primary producers scoring high at people and profit, suppliers/buyers scoring high at profit and planet and researchers/advisors scoring high at people and planet. Apparently each category has its own blind spot: primary producers at planet, suppliers/buyers at people and researchers/advisors at profit. Consequently the respondent groups need co-operation to get the necessary balance between people, planet and profit which is needed for sustainable development. Based on these findings a value triangle was composed (figure 2).

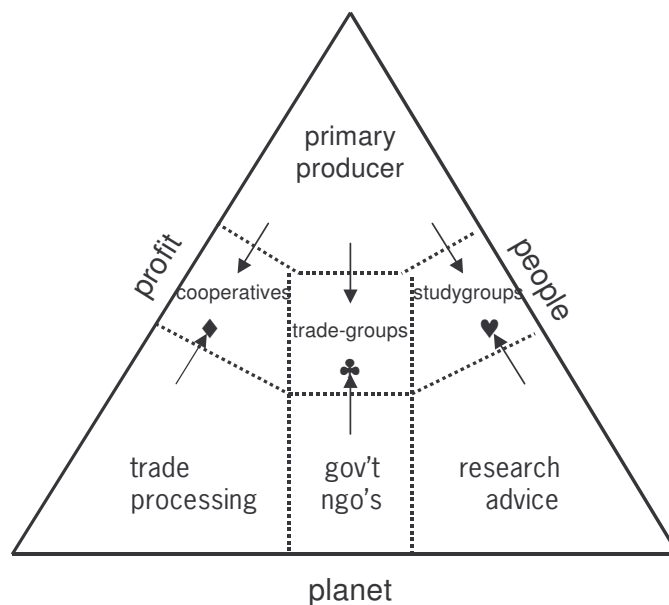


Figure 2 Positions of various stakeholders between people, planet and profit

Besides primary producers, supplier/buyers and research/advice, several intermediary groups take active positions in development processes, like governments, NGOs, co-operatives, trade groups and study groups. They are all playing their own roles towards primary producers. The message of the value triangle is, that sustainable development needs active involvement or at least acceptance of several parties. This leads to a workable combination of partners, and thus of values. If this is not the case, the development process may lose its vigour or be incomplete. In addition, a wide representation of stakeholders may be helpful to neutralize divergent opinions of individual stakeholders. The value triangle can be complemented with a style triangle. Values are related to how people behave (see chapter 3). The institutional position of actors may result in certain styles, such as competition, cooperation or control (figure 3). In a coherent and responsive supply chain, the both world views and the behavioural styles of the different partners match or complement each other.

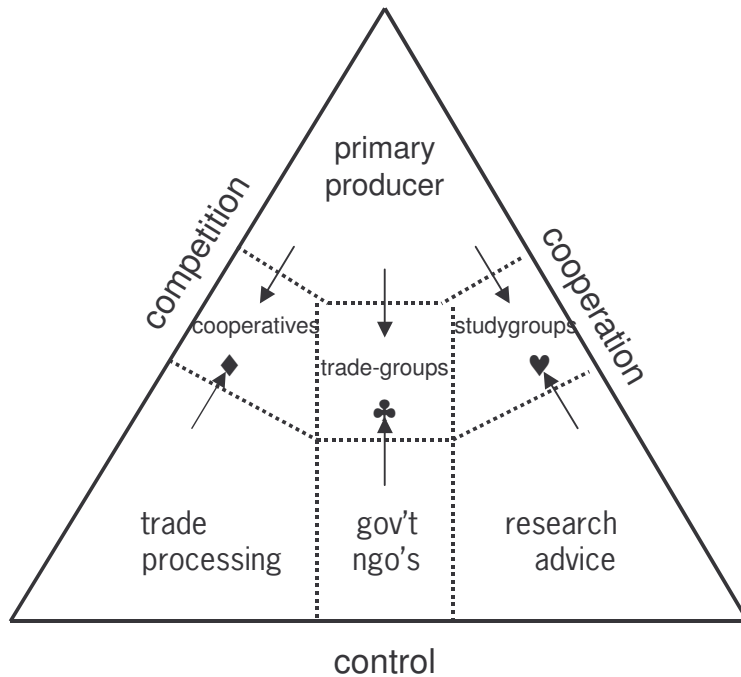


Figure 3 Positions of various stakeholders between competition, cooperation and control

### *Perception diagram*

A second useful tool is the perception diagram. The perception diagram gives you a better understanding of the different time horizons under which actors may operate. On the one hand there is a so called tactic track, representing decisions made for the survival at the short term, potentially at the cost of other parties and interests. On the other hand there is a strategic track with a long term vision representing the implementation of new solutions and experimentation. In many cases the strategic track and the tactic track are at odds with each other. The paradox is actually representing the difference between fighting and learning.

By using the perception diagram Burma (1996) found remarkable patterns in the behaviour of tulip growers in relation to fungicide use for disease control in tulips. On the one hand, growers were complaining on strict regulations and high yield risks. They tried to create the impression that reduction of fungicide use was completely impossible. On the other hand the same growers made big efforts to find less susceptible cultivars and more environmental friendly fungicides to reduce disease risks. Apparently the tulip growers walked on two tracks: the tactic track of complaining on regulations and risks and the strategic track of searching for better cultivars and fungicides.



The concept with strategic track and tactic track (both induced by the one and the same problem perception) is depicted in Figure 4. The framework in Figure 4 represents the train of thought of a stakeholder. The train starts with a relevant trend or development implying a risk, danger, consequence or bottleneck for the stakeholder. Triggered by this “problem perception” the stakeholder develops a strategic track, including the development of a vision on the future and the initiation of searching and learning activities. These searching and learning activities should provide a structural answer to the trend or development which is disquieting the stakeholder.

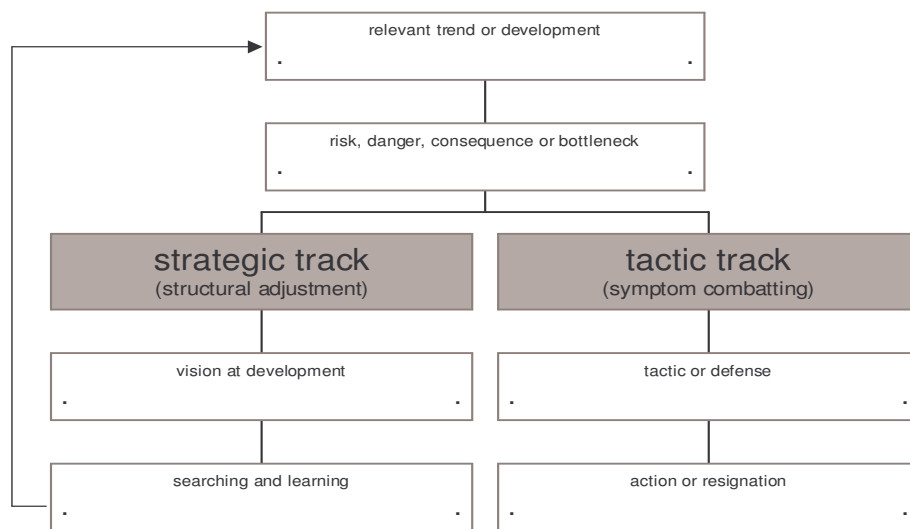


Figure 4 Perception diagram with strategic track and tactic track

Implementation of structural adjustments mostly takes quite some time. Consequently the stakeholder has to bridge the time through the tactic track of symptom combatting. The tactic track includes deployment of tactical or defensive means, resulting in actions or in resignation. Knowing the perception diagrams of your partners makes it easier to judge the possibilities and opportunities for co-operation. Especially the strategic tracks provide good starting-points for that purpose.



## Procedures

How do you get to understand your partners or how do you recognize new suitable partners? The tools in the previous section were presented theoretically, in this section the value triangle and the perception diagram are explained in a more practical sense.

### *Value triangle*

The first step in supply chain development concerns the identification of potential partners. Somehow you have to cover the three dimensions of sustainability, i.e. people, planet and profit. The value triangle in the previous section made clear that different parties take different positions between people, planet and profit. For that reason you should select your partners purposively from different segments of your (future) working environment. The value triangle with empty “name boxes” for each part of the triangle is quite useful for that purpose. Figure 5 shows the triangle concerned.

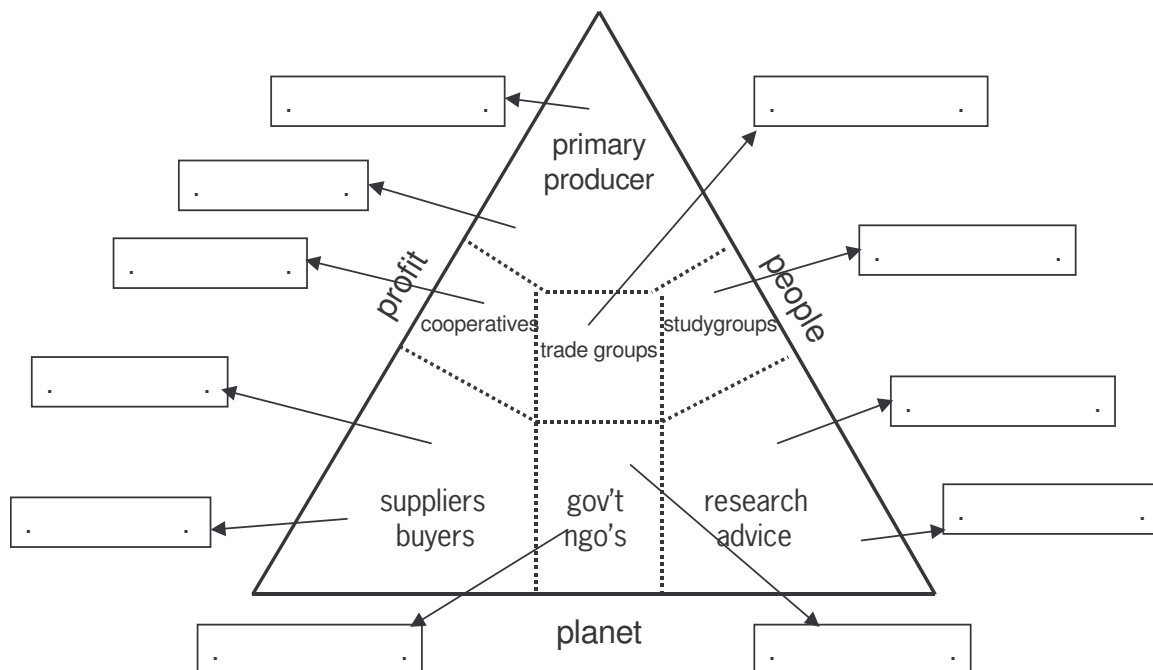


Figure 5 Value triangle as a tool to compose a balanced group of potential partners

Figure 5 shows the “domains” where you should try to name potential partners. The triangle was developed for the Dutch situation. The level of organization is quite high in the Dutch agricultural sector with many good functioning co-operatives, trade groups and study groups. In another institutional setting, you may have to identify less formal organizations like growers





associations, advocacy groups, NGOs, or advanced growers leading neighbouring farmers.. A first selection of some ten potential partners is a good starting-point. Later you can expand or update your selection based on recommendations of your firstly selected partners. Depending on the objectives and targets of your development efforts you may adjust the numbers of partners in the various “domains” over the triangle.

You can get a very useful first impression of the motives and drives of your potential chain partners by asking what they find the five most important values to stay in business for the next 25 years. In a questionnaire for experts on plant production and marketing a list of some fifty values was presented and they were asked to select the five most important ones. Table 3 gives you an impression of the values selected. To our experience these values provide a good preliminary indication of the respondents’ positions in the innovation landscape. Knowing the values of a stakeholder gives you an indication of his major attention-points in decision-making.

Table 3 Values regarding people, profit and planet selected in a survey among experts on plant production and marketing in the Netherlands

<b>People</b>	<b>Profit</b>	<b>Planet</b>
Motivation	Food security	Care for the earth
Entrepreneurship	Transparency	Care for people
Flexibility	Food quality	Viable countryside
Innovation	Internationalization	Regional diversity
Knowledge	Production efficiency	Valuation
Spirituality	Economics of scale	Cooperation
	Uniformity	
	Competition	

### *The perception diagram*

The perception diagram (figure 6) is a tool to get a clearer picture of the strategic and tactic decisions of (potential) chain actors. For a more detailed understanding of your partners’ perceptions, motives and drives, deeper interviews or conversations are needed. The subjects presented in table 4 can serve as a good guidance for such an exchange of views and ideas.



Table 4 Guidance for questions on perceptions, motives and drives of potential supply chain partners

Personal position / involvement in supply chain
Objective or wish-dream with regard to supply chain
Your priority values (see previous section)
Existing situation with regard to supply chain
Your definition of a supply chain
Crucial elements for improvement
Relevant trends or developments
Concerns or risks resulting from trends and developments
Short term solutions / measures
Long term solutions / development routes
Actions to be undertaken / resources needed

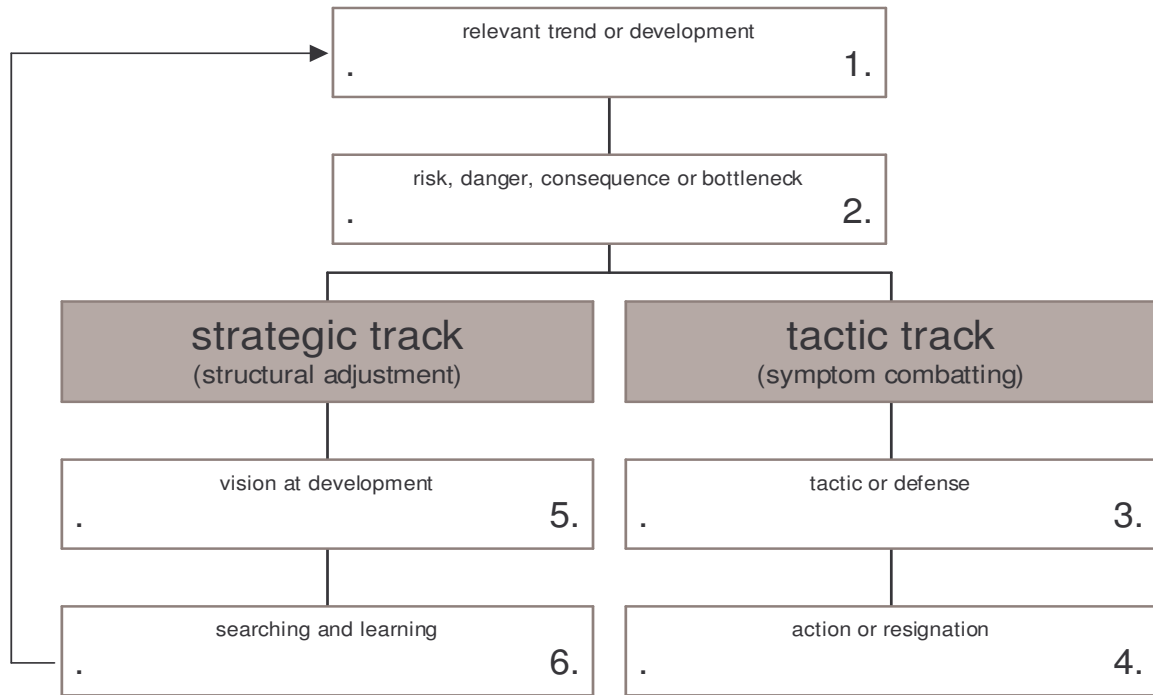
Summarizing an interview report in a perception diagram requires answering the following questions (the question numbers correspond to the numbers in the respective boxes of the diagram in figure 6):

1. Which trend or development in the horticultural sector makes you concerned about the future of your personal business or responsibility in the sector?
2. Which harmful effects in particular do you expect for your personal business or responsibility, when the alarming trend or development (question 1) is not curbed.
3. What type of reaction do you have in mind to limit the damage of the harmful effects (question 2) for your personal business or responsibility?
4. Which specific actions or decisions do you have in mind to avert or defer the harmful effects (question 2) for your personal business or responsibility?
5. What technical or organizational adjustments in your personal business or institution do you have in mind to anticipate the alarming trend or development (question 1)?
6. Which purposive efforts or experiments do you have in mind to make your personal business or institution ready for the challenges of the alarming trend or development (question 1)?

For using this procedure for a better understanding of your potential partners, you have to compose a plausible reconstruction of the person's perceptions, motives and drives, which analyzing has quite some similarities with solving a crime.



Figure 6 Perception diagram for personal mindsets of individual participants







## 8. Coping with competition in new markets

Xiaoyong Zhang, Michiel van Galen and Linda Admiraal

### Relevance

What can producers do to be competitive? They can look for new markets, they can develop new technologies, they can choose for product diversification. This chapter is about markets and about how you can assess your own strengths and capacities when entering new competitive markets. If it is a new market you would like to know whether there will be a demand for your product. Or, after being settled in the new market, you may want to know how many other new and competing entrants you can expect. In an established market, you may wish to find out how you can position yourself towards to existing players in the chain. Are there chances for you to produce higher quality than the others? Or is the quality already really high and could you only compete if you manage to produce cheaper than the rest? These questions primarily focus on market demand and competition. Therefore, it is our goal in this section to introduce a simple tool for companies finding their ways in the markets for horticultural products. The tool helps to assess the nature and strength of competition.

### Example

In the Thai fruit sector there are a large numbers of small scale producers producing the same fruits, such as durian, mangosteen, longan, etc. These fruits are quite popular on the Thai market and in neighbouring countries and they are only available during specific periods. The small scale producers are, however, the problem of seasonal over supply during harvesting months. Due to the seasonality of supply, fruit prices drop and producers are suffering from low incomes.

Some producers try to find a technical solution to this problem. They manipulate the growing season of the fruit trees in order to be able to bring their fruits to market out of season, which may result in higher prices. Other producers try to find their way in alternative markets, and, for example, are more interested to export to the European market.

The producers looking for new markets will be dealing with different regulations and competitors. For new entrants to the EU market, it is important to evaluate whether this market is a good option for them and how they can become competitive in it. For them it is relevant to understand the consequences of the on-going reform of the EU's Common Agricultural Policy (CAP). The recent expansion of the European Union with 10 Eastern European countries has been pressing for the reform of CAP. And, in the current WTO



negotiations the EU expressed political will to reform its agricultural policies and is ready to remove all export subsidies if other trader partners are proactive in the new Doha round negotiations. Furthermore, the traditional trade barriers, such as import tariff and quota system, are gradually reducing in EU. So, the producers trying to find a solution to the low prices in seasonally over supplied markets have ample opportunity in the EU market.

However, they will not be the only ones trying to enter this market. Also other suppliers actively seek access to new markets. Sometimes, these suppliers are also supported by programmes of national governments. In the case of vegetables, Vietnam became the world's largest pepper exporter in 2003. The main export destination of Vietnamese peppers was Japan, but they might be able to expand to the European market. Also, Chinese suppliers of mushrooms are expanding their markets. In March 2004, the EU's Agricultural Commissioner was in China to promote the concept 'Taste EU'. He was holding talks with his counterpart on enlarging the garlic and mushroom import quota from China to the European Union. Consequently, the Chinese mushroom industry was eager to know major producers and traders in EU and to find market outlets.

These examples indicate that there might be good opportunities to enter new market, but this also implies competition. This chapter tries to give you a helping hand in discovering the competitive playing field you are trying to enter.

## Concepts

Entrepreneurs entering new markets and suppliers of horticultural products ask themselves a couple of straightforward questions: how can my products be competitive in the market I am focussing on, how do I find suitable importers, what is the demand for my products, who are my major competitors, what are my competitive advantages. These questions can be conceptualised in the industrial competition model developed by Porter (1980).<sup>14</sup> This chapter introduces the five forces composing this model. Understanding these five forces helps to unravel the questions of entrepreneurs when they are on the edge of entering new market.

Figure 7 presents Porter's industrial competition model. Porter examines the strength of competition in a sub-sector by looking at five forces: the intensity of rivalry, threat of new entrants, and threat of substitute products, supply conditions and demand conditions. We take these forces as a starting point and translate them to the situation in the horticultural sector.

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<sup>14</sup> Porter, Michael E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.

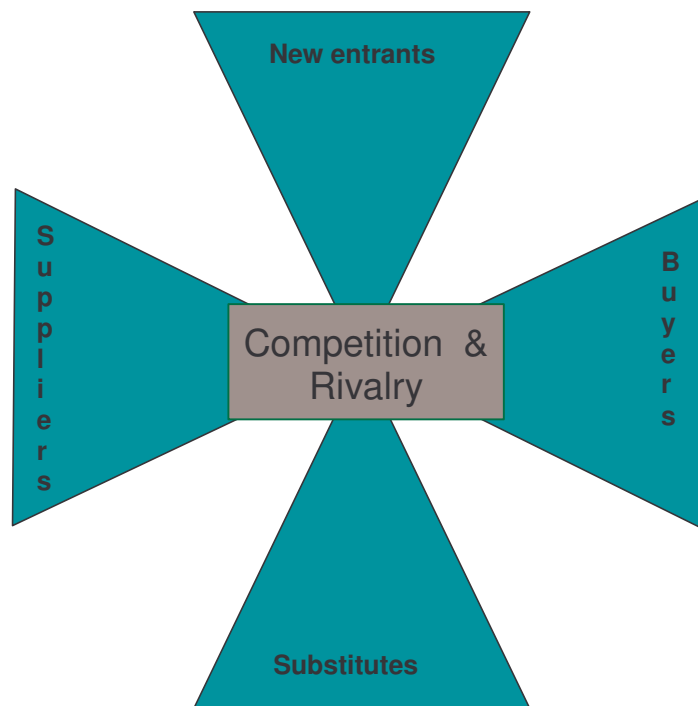


Figure 7 “Five Forces Industrial Competition Model (Porter, 1980)”

### 1. Degree of rivalry

The 'Degree of rivalry' is determined by two factors: firstly *the numbers of competitors*. When there are numerous firms within an industry, it is generally believed that the individualist behaviour dominates. On the other hand, when an industry is highly concentrated, the leaders will impose discipline and play a coordinative role.

Secondly the degree of rivalry is determined by *product differentiation*. When products are homogeneous, the purchase will be made based on prices and services. However, if product differentiation exists, the existing preferences and loyalties of a buyer may lead to long-term relationships and interdependencies between actors.

A typical characteristic for the horticultural sector in developing countries is the presence of many small scale producers, which implies that producers face large numbers of competitors. These small scale farmers usually do not spend much time and effort on product differentiation. The competition between producers therefore is commonly driven by the relation between price and quality.



## *2. Threat of a new entrant*

Newcomers in a market bring new capacity and often substantial resources to obtain market share. The ability to realise economies of scale may strengthen the competitive position of a new entrant. However, existing firms may have absolute cost advantage over entrants, due to proprietary product technology, favourable access to raw materials, favourable locations, government subsidies, and learning or experience curve. Also, if buyers have strong brand identification and customer loyalties, new entrants have to spend heavily on switch costs. Existing firms can also impede entrants by hampering their access to distribution channels.

At the level of primary production the situation may be different, where, in developing countries, entry barriers are very low. There is less brand identity of agricultural products, compared to manufactured items. However, recent developments in the fruit sector indicate a growing demand for agricultural products with specific qualities *and* to show compliance with standards, certificates and labels. There seem to be growing markets for those suppliers who are able to comply with public and private standards. For these suppliers, often preferred by retail buyers, the threat of new entrants able to enter their market will be less. A new entrant will have to gather information on the production standards, to build a network and alliances, and to earn credibility and trust. In comparison with a less demanding spot market, the entry barriers in markets governed by standards are a lot higher.

## *3. Threat of substitute products*

'Threat of substitute products' can be summarised as the industry's overall elasticity of demand. It includes product functional similarity, price performance trend, and product identity. Firms can face enormous competition if there are many other products showing similar performance or having the same function as their product. To some extent, the production of tropical fruits is unique and it is hard to find a substitute product, primarily because production of tropical fruits is confined to a specific climate, soil, and longitude. Yet, despite this uniqueness, seasonal overproduction of tropical fruit is a common feature in Southern countries. This can be related to seasonality of the fruit, the large number of competitors in the region and the relatively small market that demands this unique tropical fruit. A well-known saying in the food industry summarizes the above: 'competing for a little space in a limited stomach'.

## *4. Supply conditions*

'Supply Conditions' is the degree to which the (industrial) suppliers are able to control prices or reduce services. It is a function of supplier concentration, number of buyers, and switching costs. If there are many suppliers and buyers, the market resembles Perfect Competition and there are not much entry barriers for newcomers. If there are only few suppliers/buyers, the market is characterised as 'Oligopsony', and newcomers will have great difficulty to enter the market and to access distribution channels.





The production of tropical fruit involves large numbers of small scale farmers. They are usually not or poorly organised and it is usually difficult to deliver a uniform product to an exporter. Therefore, exporters or importers prefer to work with large scale producers who can guarantee a continuous supply of consistent quality, partly because they have the capacity to make investments and to negotiate profitable business deals.

### *5. Demand conditions*

The composition of domestic demand, demand size, pattern of demand growth, and product price sensitivity influence the conditions of demand. Domestic demand includes elements of demand segmentation, sophisticated buyers and anticipatory buyer needs. Product price sensitivity will pay attention to brand identity, and product differences. In the food sector of the Western countries, there is a strong demand for compliance with safe standards and buyers require that products can be traced back to the origin. With the growing globalisation of food markets, consumers increasingly perceive food consumption as a style, identify certain consumption habits as their sub-culture and look for healthy food. These developments enable national brands and even global brands to gain strong positions in the market. Many local suppliers are seeking niche markets.

In addition to these changing demands in the market, the access to distribution channels depends on the relationships and arrangements between buyers and suppliers. Particular conditions may be required in order to fit in the supply chain, such as minimal volume, yearly around supply, quality standards, maximum residue limits (pesticides) and timing delivery. Government regulations, such as domestic subsidies and licenses to produce/trade, could be another hurdle. It is possible that the relationships in new market channels you are targeting are very different from the ones in your home country. A characteristic of the EU retailer market is the domination of supermarkets. In most countries, several top supermarket chains account for the majority of the total retailer market share. Real prices in the food sector are continuously falling in the EU. However, at the same time consumers are becoming more interested in branded products or quality certifications.

### **Procedures**

Suppose a European importer has shown interest in your business. The importer underlines the importance of three keywords with regard to competition and current developments in the sector: “Fresh, Processed and Organic”. Based on these keywords, the importer builds different relations, links, markets and strategies. This raises a couple of questions for you, as a potential supplier: which of these keywords fit your business strategy, your capabilities and competencies best? What do these keywords entail? What do these markets look like and in which would you be most competitive? The five forces discussed in the previous section, offer a systematic way to assess the level and nature of competition in new markets. By looking at the five forces, you can create a view on what is the best potential market for you.



Table 5 presents an example how one could quickly assess the competition level for their targeted markets, based on sufficient knowledge and information. Based on your knowledge and information, a rank from '1' to '5' can be given to each factor. The scale runs from 1: strongly favourable, 2: favourable, 3: average, 4: not favourable 5: very unfavourable. High scores mean large difficulties, whilst low scores indicate a favourable situation for you. In the end, the average score of the total points will indicate the competition level of each force. It is important to realise that the purpose of this procedure is to inform your own strategic discussion, which will include many more sources of information and assessments of the situation in the market. Interpreting the table still needs your own qualitative assessment as well as a selection and weighing of the different factors. The tool essentially assists in making a quick scan of the new markets.

Forces	Scores for checking points	
<b>1: Degree of Rivalry</b>	Score for force 1	
Number of competitors	4	$(4+3)/2= 3.5$
Product differentiation	3	
<b>2: Threat of new entrants</b>	Score for force 2	
Degree of brand identification and customer loyalties	3	$(3+1)/2= 2$
Position in the supply chain (production level or further downstream)	1	
<b>3: Threat of substitute product</b>	Score for force 3	
Functional similarity of product	1	$(1+2+2)/3= 1.7$
Price performance trend	2	
Product identity	2	
<b>4: Supply Conditions</b>	Score for force 4	
Number and scale of suppliers	3	$(3+1)/2=2$
Import quantity vs. domestic produced	1	
<b>5: Market Demand/Entry barriers</b>	Score for force 5	
Market size	3	$(3+2+3+2+3)/5=2.6$
Price sensitivity/brand identity	2	
Consistency and continuity of supply	3	
Delivery requirement (volume & timing)	2	
Public & private standards	3	

Table 5 An example of quantifying the level of market competition



In the example in table 5, the newcomer will face strong competition from existing suppliers (high score) who have established a strong market position. The market demand (force 5) is modest in general, but there is a potential if the new supplier could provide high quality products. The threat of new entrants is low and so is threat that the product is easily replaced. In addition the supply conditions are good. In summary, this is a promising market. The products could have a good chance to export successful into the market. The areas needing more attention are on the supply side. How to compete with the existing suppliers should be the focus point in future strategic development.

Going back to the three keywords the importer mentioned: “fresh, processed and organic”, all three business propositions may reveal different scores of strong and weak forces. Studying the market and filling in the table will give you more insight in the possibilities in the market and will help you to match your strategy with the importers’. The example below, introducing the case of Chinese mushrooms, explains in more detail how you can use the suggested procedure and adjust it to your own inquiries..

## **Case: Market Competition Assessment and Entry Strategy for Chinese Mushrooms**<sup>15</sup>

### **Part 1: Relevant Questions**

China is the largest producer of mushroom in the world. FAOSTAT indicates that the world mushroom production in 2003 is over 3.2 million tons and China accounts for 41% of the world total production. One character of the Chinese mushroom industry is its richness of varieties. In the Chinese markets there are around 40 domesticated mushroom varieties. In the EU markets one variety dominates. Currently, Chinese mushroom export accounts for less than 5% of its domestic production; more than half of which goes to the Japanese markets. In this case, we try to discover what the chances are for Chinese producers to enter European markets. Before trying to enter the European markets, the producers and suppliers of Chinese mushrooms may ask themselves a couple of relevant questions:

- Who are the major players in the EU mushroom markets?
- How does food safety control system work in EU?
- How is the mushroom distribution system organised in EU?
- What are the demand for and the level of consumption of mushroom in EU markets?
- What are potential marketing strategies for entering these markets?

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<sup>15</sup> Based on: Galen, M. van, J. Hammerstein, M. Stallen, B. Kamphuis (2004) ‘The Dutch Mushroom Sector: Small Mushroom –Big Business’, *LEI project report*. And, Hu, Dinghuan. (2004) ‘Mushroom industry in China: small mushroom and big business’ *LEI project report*.



## Part 2: Quick Scan of the EU mushroom market

### 1. Supply conditions

After a quick review of the mushroom trade data at FAOstat, it is not difficult to discover that the Netherlands, Poland and Ireland are the major players in the mushroom supply markets. The biggest import markets are Germany, United Kingdom and France. Figure 8 depicts imports and exports of fresh mushrooms for Europe's biggest mushroom trading countries. The Netherlands is Europe's most important mushroom exporting nation. Ireland is the Netherlands' biggest competitor in the UK market, and Poland is its biggest competitor in the German market. A striking character in the EU markets is the domination of button mushroom (*agaricus*). More than 95% of mushroom production and trade are dealing with this population variety.

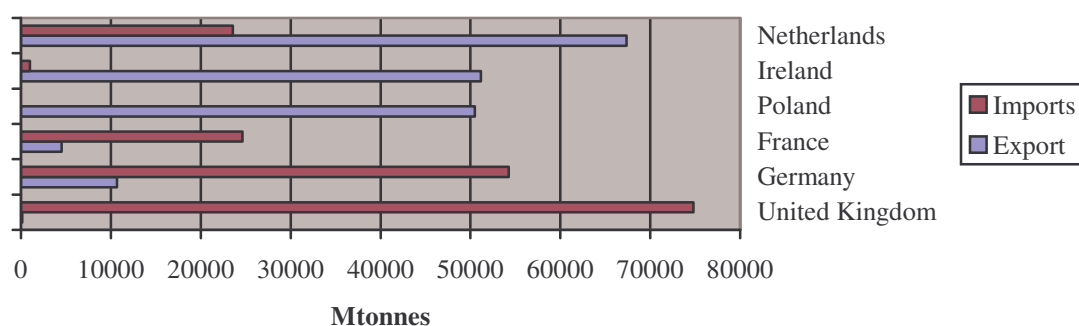


Figure 8 International fresh mushroom trade in several European countries, 2002 (in tonnes). Source: Faostat

Since 1990, average Dutch button mushroom farm has almost doubled in size, from 1,232 square metres to 2,255. At the same time the number of farms has decreased from 790 to 400. About 300 of these are specialized professional firms. The others produce mushrooms as side activity. During the last decade the use of full-grown compost has increased from 27 to almost 100 percent (Table 6). Full-grown or phase III compost is produced on an industrial basis.

Table 6 Market structure of Dutch mushroom farms

	1990	1995	2000	2003
Number of mushroom farms	790	670	520	400
Area under cultivation (ha)	105	109	95	90
Average farm size (m <sup>2</sup> )	1,232	1,547	1,838	2,255
Use of full-grown compost (%)	27	75	95	98

Source: CBS Statline, LEI 2004



The high degree of full-grown compost users indicates a strong integration along the Dutch mushroom supply chain. Mushroom growers are closely collaborating with compost producers about their production planning, such as when do they need compost and how much etc. Furthermore, several big compost producers in the Netherlands are extending their business to production, processing and trade as well. So a fully integrated supply chain is well presented here.

## *2. Market Demand*

The United Kingdom is the largest market for fresh mushroom consumption with annual imports of 75,000 tons, followed by Germany 54,000 tons. Germany is also the largest importer for preserved or prepared mushroom at 176,000 tons annually. The fresh mushroom consumption is 1.17 kg per household annually while the prepared one is about 2.55 kg. The trend for fresh mushrooms is going up in Germany while there is downward development for preserved mushroom consumption. The consumption of fresh button mushroom is 2.28 kg per household in 2002 in the Netherlands. This number is significantly high when compared with their German neighbours.

The distribution channels for mushrooms are quite short: specialized traders have a dominant intermediary position between producers and retailers. These mushroom traders are closely linked with domestic producers as well as functioning as importers and exporters. Supermarkets are the major market outlets, accounting for more than 85% of market share while other retailers include vegetable shops and open markets. The conception open market in EU is different from one often sees in developing countries. The open markets in EU are a kind of affair markets which only open once or twice a week in special locations.

There is no seasonality problem for mushroom production in EU since all production activities are carried out in a computerized and controlled environment. EU consumers are highly sensitive to product quality and environmental issues. Furthermore EU consumers are generally speaking quite conservative in food consumption.

## *3. Entry Barriers*

The real threat for entering the EU markets is the tariff and quota system. In practice, a combination of different duty rates and tariff quota (contingents) is used. These contingents do not involve actual fixed limits of imports. They merely set the borders for application of the lower quota tariff regime. Imports above the contingent are subject to the normal tariff rate or import duty. In some cases, however, these normal tariffs are so high that they actually prevent more imports altogether. The restrictions only apply to certain specified groups of fresh, preserved and processed mushrooms, mainly button mushrooms. On a bilateral or multilateral basis some preferential trade agreements apply to certain countries.



Import tariffs must be paid at the EU border over the customs value of the shipment. In order to apply for special treatment under preferences or contingent arrangements, traders must first register the products with the institution that administers the quota in the specific EU country. In the Netherlands, administration of the quota for vegetables and fruit is delegated to the Product Board for Horticulture (*Productschap Tuinbouw*, PT). Tariff quotas apply to processed –canned- and provisionally preserved (salted) mushrooms of the species *agaricus bisporus*. Frozen mushrooms other than the *genus agaricus* variety, also fall in the contingent regime. However, frozen *agaricus* mushrooms and mushrooms preserved by vinegar do not. License share-out occurs in two steps: the first on January 1, the second around July. The volumes are being distributed among importers in accordance with past imports (a rule of thumb is that importers receive a license to import the volume equal to the average of the last three years). For the Dutch processor “Lutèce” this means a yearly quota of about 1,400 tonnes of imports. Increasing the quota is difficult, but can occur in the second share-out, if other importers choose to import less. If a granted volume is not actually imported, traders must pay (large) fines. New importers can apply for small volumes. In effect these volumes are so limited that it is very difficult to enter the market.

An example will give some more insight into the different trade regimes listed in table 7. With regard to mushrooms under CN-code 2003103000 – provisionally preserved, prepared or preserved otherwise than by vinegar or acetic acid and completely cooked – the following tariffs and provisions are in place: within the quota a tariff of 23 percent of the value is charged for import into the EU. When the contingent (granted to an importing party) is fully exploited, special tariff rates apply to different countries, on the basis of bilateral or multilateral trade agreements. Normally, the EU would charge 18.4% plus 222 euro per 100 kilogram net weight. However, Poland has a special preference of 0% and Chinese exporters pay 14.9% plus 191 euro per 100 kilogram net weight. Note that this tariff actually raises the price per kilogram with more than 100 percent. Therefore the quota tariffs actually functions as a fixed import quota. Contingents are also country specific. After EU accession of Poland, Hungary and other countries in May 2004, all imports from these countries are tariff free. Several market participants estimate that the actual traded volumes are much higher than the official figures, as parties evade custom duties.



Table 7 EU trade restrictions applying mushroom imports, April 2004

Product code	Product name	Third country duty	K*	S**	Poland pref.***	China Pref.
0709510010	Fresh or chilled mushrooms of genus agaricus.	12.8%				9.3%
0709510090						
0709591000	Fresh or chilled chantarelles.	3.2%				0%
0709593000	Fresh or chilled flap mushrooms.	5.6%				2.1%
0709599010	Fresh or chilled edible mushrooms, other.	6.4%				2.9%
0709599090						
0710806100	Frozen mushrooms of the genus agaricus.	14.4%				10.9%
0710806910	Frozen mushrooms of species of the species Auricularia polytricha, steamed or boiled, for the manufacture of prepared meals.	14.4%	0%			10.9%
0710806990	Idem, other mushrooms.	14.4%				
0711510000	Mushrooms of the genus agaricus, provisionally preserved.	9.6% + 191 EUR/ 100kg/E	12%		0%	6.1% + 191 EUR/100kg/E
07115900..	Mushrooms and truffles, provisionally preserved, other.	9.6%		0%	0%	6.1%
071231- ..39	Dried mushrooms.	12.8%				9.3%
2001905010	Mushrooms, prepared or preserved by vinegar or acetic acid, not containing added sugar.	16%				12.5%
2001905090	Mushrooms, prepared or preserved by vinegar or acetic acid, other than not containing added sugar.	16%				12.5%
2003102000	Mushrooms prepared or preserved otherwise than by vinegar or acetic acid, of the genus agaricus, provisionally preserved, completely cooked.	18.4% + 191 EUR/ 100 kg/E	23%		0%	14.9% + 191 EUR/100 kg/E
<b>2003103000</b>	Mushrooms prepared or preserved otherwise than by vinegar or acetic acid, of the genus agaricus, other than provisionally preserved, completely cooked.	18.4% + 222 EUR/ 100 kg/E	23%		0%	14.9% + 191 EUR/100 kg/E
2003108000	Mushrooms, idem, not of the genus agaricus.	18.4 %				

\*K: Tariff applying to shipments within the quota

\*\*S: Tariff Suspension (erga omnes)

\*\*\*Until May 2004

The figures presented in this table are just indicative. Trade regimes can change, regulations only apply to certain periods of time, and special provisions apply to many countries. Information on tariffs, quota can be found on:

Source: [http://www.europa.eu.int/comm/taxation\\_customs/databases/database.htm](http://www.europa.eu.int/comm/taxation_customs/databases/database.htm)



The EU quality standards for mushrooms are put down in EU regulation 982/2002 by the commission of June 7, 2002. Button mushrooms are separated into three classes, (i) Extra, (ii) Class I and (iii) Class II. Minimum standards apply to all classes. The mushrooms must be (Official Journal EC 8.6.2002):

- intact; cut mushrooms complying with the definition are regarded as intact;
- sound, produce affected by rotting, severe browning in the stalk or deterioration such as to make it unfit for consumption is excluded;
- clean, practically free of any visible foreign matter, other than casing material;
- fresh in appearance, account should be taken of the typical gill colour of the strain and/or commercial type;
- practically free from pests;
- free of abnormal external moisture;
- free of any foreign smell and /or taste.

The development and condition of the mushrooms must be such as to enable them:

- to withstand transport and handling;
- to arrive in satisfactory condition at the place of destination.

Mushrooms of the Extra quality Class must be of superb quality, free from defects with the exception of very slight superficial defects that not affect the general appearance of the product, nor the quality, keeping quality and presentation in the package. Furthermore, mushrooms with cut stalk must be practically free from casing material. For Class I and II mushrooms the quality standards are more relaxed. The regulation also specifies the minimum requirements for each size class – small, medium and large –, for packaging and marking.

Mushrooms destined for the processing and canning industry are free from the marketing norms, provided that they carry a so-called *industry-certificate*. Mushrooms of sorts other than ‘agaricus’ do not have to comply to specific norms. Of course, all food products need to be of certain minimum quality under the Food Act provisions. They cannot contain more than critical residue levels, must be free of diseases and must not be harmful to consumer health in any way.





#### 4. Competition Assessment

For assessing the competition level in the EU markets, we selected three dimensions: supply conditions, market demand and entry barriers, presented in table 8. Obviously, these scores may vary due to subjective and dependence on personal perceptions and judgement.

The final score for the EU mushroom markets is above average: around 3. This indicates that the EU markets have relatively good supply potential, encouraging demand and reasonable entrance barriers. It is a challenging market, but worthwhile to give a try.

Then where is it the entry point? Looking at all the scores, product differentiation seems to be the most attractive entry point. If Chinese traders are trying to enter the EU markets, the strategy should be focusing on different products other than the popular button mushrooms. Therefore, product innovation is very important here, including different colour, different shape and different taste of mushrooms. This approach can be approached in combination with accessing different distribution channels. Closer alliances or joint ventures should be efficient options to acquire local distribution channels.

Table 8 Evaluation Form of the Competition Level at the EU mushroom markets

Factor 1: Supply Conditions	Comments	Scores
Number and scale of suppliers	Large scale but relatively small numbers	3
Degree of backward integration	Strong integration	4
Import quantity vs. domestic produced	Big quantity of import	2
Product differentiation	Only one dominant variety	1
Factor 2: Market Demand		
Market size	Quite substantial, specially UK and Germany	2
Type of market channels	Short and simple	3
Price sensitivity/brand identity	No major mushroom brands yet	2
seasonality	No seasonality	4
Consumer quality consciousness	High demand	4
Factor 3: Entry Barriers		
Access to distribution	Rather difficulty	4
Delivery requirement (volume & timing)	No data in this area	
Government policy (e.g. subsidies)	Strong tariff and quota for button mushroom, but not other varieties	3
Quality standard (packaging, labelling, MRL etc).	More specific for button mushroom, general for others	3
Average Scores		3

