

Food Safety Certification



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Acronyms

B2B	Business to Business
BRC	British Retail Consortium
CAC	Codex Alimentarius Commission
CCP	Critical Control Point
CCvD-HACCP	Dutch National Board of Experts-HACCP
EU	European Union
EUREP	Euro-Retailer Produce Association
FAO	Food and Agriculture Organization of the United Nations
FCD	French Trade and Retail Federation
FMI	Food Marketing Institute
FSIS	United States Food Safety and Inspection Service
GAPs	Good Agricultural Practices
GFSI	Global Food Safety Initiative
GHPs	Good Hygiene Practices (also Good Handling Practices)
GMO	Genetically Modified Organism
GMPs	Good Manufacturing Practices
HACCP	Hazard Analysis Critical Control Point
HDE	German Trade and Retail Federation
IFS	International Food Standard
ILSI	International Life Sciences Institute
ISO	International Organization for Standardization
NASA	United States National Aeronautics and Space Administration
OECD	Organization for Economic Cooperation and Development
SPS	Sanitary and Phytosanitary Measures
SQF	Safe Quality Food Standard
TBT	Technical Barriers to Trade
UK	United Kingdom
USA	United States of America
USDA	United States Department of Agriculture
WHO	World Health Organization
WTO	World Trade Organization

Executive Summary

Food safety management systems generally include three components:

- quality management systems applied to food safety
- Hazard Analysis and Critical Control Point (HACCP) systems
- prerequisite programmes and Good Practices including Good Hygiene Practices (GHPs), Good Manufacturing Practices (GMPs), Good Agriculture Practices (GAPs), etc.

Quality management has been harmonized at the international level through the widespread acceptance of ISO 9001. Yet, although the Codex Alimentarius addresses both HACCP and Good Practices, in particular through its General Principles on Food Hygiene, an international certification programme does not exist for either HACCP or good practices.

Local certification schemes have proliferated to fill this gap, especially in industrialized countries where the major programmes include EurepGAP, the British Retail Consortium (BRC), the International Food Standard (IFS), the Safe Quality Food Standard (SQF) and the Dutch Code. While these standards comply with Codex standards on the whole, their objectives and scope may vary. In fact, some deal with good practices, some with quality management systems that integrate HACCP and others with entire food safety management systems. Likewise, some apply to farm producers, some to manufacturers and others to all food operators. In addition, the geographic scope of these standards is often limited in that they each tend to be recognized by buyers and retailers from specific countries.

These standards have been established by different types of organizations including national standardization organizations, groups of buyers, groups of producers and individual certification bodies. However, the increasing involvement of the retail sector, which has developed its own standards in several industrialized countries and is in an increasingly influential position to dictate and impose these conditions to suppliers, is noticeable.

The proliferation of such independent standards with diverse requirements results in a duplication of time, energy and costs for producers who want to access large markets. This is a burden that small farmers, especially in developing countries, cannot easily bear. Such businesses may thus find themselves excluded from the important centres of economic activity, creating a *de facto* barrier to global trade.

The International Organization for Standardization (ISO) developed ISO 22000 in this context to create an internationally recognized standard that is applicable to all food operators. However, its acceptance by retailers, an important indicator of its success, is not yet apparent since ISO 22000 does not specify prerequisite programmes. Therefore, it is likely that retailers will continue to require other specific standards for such prerequisite programmes.

I. Introduction

The ISO 22000 standard, entitled “Food safety management systems – Requirements for any organization in the food chain”, was published in August 2005. This standard aims to establish an internationally recognized certification programme for food safety management systems in response to the proliferation of private food safety standards that has occurred during the last ten years.

But will ISO 22000 effectively take the place of existing certification programmes? Or will it become an additional one, adding to the confusion? What will be the possible benefits for stakeholders, especially small farmers and producers from developing countries, of such unification of food safety certification programmes?

This document aims to improve the understanding of existing food safety certification programmes with regard to the potential impact on the food global trade. For that purpose, it will present:

- a synopsis of the background on food safety certification addressing the concepts of food safety and certification, the economic context (structure of the private sector) and Codex Alimentarius standards (chapter I)
- an overview of existing certification programmes that distinguishes programmes covering good practices from those that deal with management systems (chapter II)
- a focused discussion and comparison of the major certification programmes (including ISO 22000) and Codex Alimentarius standards (chapter III)
- an analysis of the potential economic impacts of these certification schemes, especially on the global food trade, and the possible way forward considering the recent issuing of ISO 22000 (chapter IV)

The scope of this paper is limited to voluntary third-party food safety certification and thus excludes:

- food standards that do not cover food safety (for instance standards that exclusively establish requirements on organoleptic quality, environment, fair trade, etc.)
- food safety standards that are not the subject of certification programmes (the case for many Good Practice standards), except Codex Alimentarius standards since they are used as internationally recognized references for the food safety certification programmes
- food safety audits led by buyers of their suppliers
- certificates required by regulation (for instance for import/export)

II. Background

II.1. Concepts

II.1.a. Concepts about certification¹

A number of important concepts must be defined in order to better understand food safety certification, including the following:

Standardization

The objective of standardization is to set up a standard for a procedure or a product specification, to which every stakeholder adheres, in order to ease logistical procedures, facilitate trade and possibly improve quality if the requirements of the standard involve an improvement compared to common practices.

Standards

Two types of standards exist: product standards (specifications and criteria for the characteristics of products) and process standards (criteria for the way the products are made). Food safety standards are essentially process standards whose aim is to improve the safety of the end products.

Process standards can be further divided into two categories. On the one hand, performance standards establish verifiable requirements on processes, for instance a ban on pesticide use in farm production. In the food safety field, Good Agricultural Practices and Good Hygiene Practices represent such performance standards. On the other hand, management system standards establish criteria for management procedures such as documentation or monitoring procedures. In the context of food safety, such standards may demand HACCP planning.

A standard can be the subject of a certification programme (like the ISO standards for instance) or not (like the ones of the *Codex Alimentarius*).

Standard-setting body

Standards can be set up by governmental institutions, by the private sector (buyers or suppliers), or even by certification bodies that want to set their own standards, perhaps based on an existing standard.

Certification

Certification is a procedure by which a third party gives written assurance that a product or a process is in conformity with the corresponding standard. Thus, the certificate demonstrates to the buyer that the supplier complies with certain standards, which might be more convincing than if the supplier itself provided the assurance.

Certification programme

A certification programme is the system of rules, procedures and management for carrying out certification, including the standard against which it is being certified.

¹ Source: FAO, 2003

Certification bodies

The certification programme is carried out by a certification body, which does the inspection and delivers the certificate. One certification body may execute several different certification programmes.

The certification body must always be a third party, without any direct interest in the economic relationship between the supplier and buyer. However, it is not always easy to guarantee independence and the absence of conflicts of interest of certification bodies, in so far as certification costs are borne by suppliers. Indeed, certification is increasingly becoming an industry in itself, with growing competition between certification bodies, which must balance the need to retain clients with the stringency of their standards.

Accreditation

A certification body can carry out certification programmes only if it is evaluated and accredited by an authoritative body (a governmental or para-governmental institute), which ensures that the certification body has the capacity for carrying out certification and inspection in compliance with guidelines set by ISO, the European Union or some other entity. In addition, the certification body may require a license from the standard-setting body, especially if it is a private standard-setting body, for the scope of its particular standard.

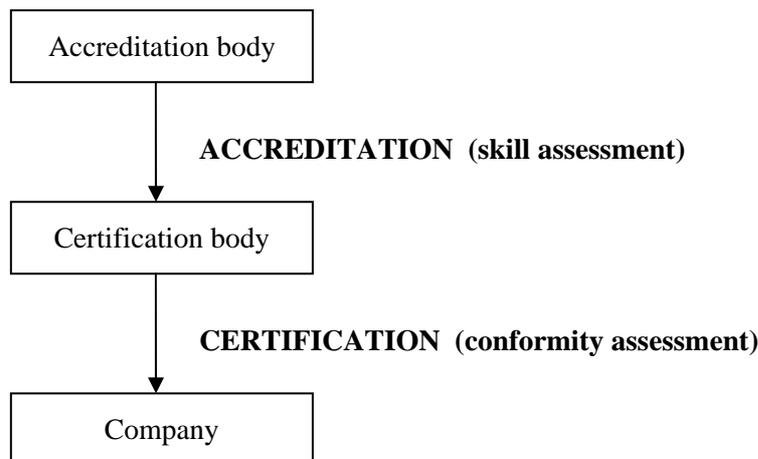
Labels

A certification label is a label or symbol put on the product indicating that the product or the process used to make the product comply with standards, and that this compliance has been certified. Use of the label is usually owned and controlled by the standard-setting body.

While the certificate is a form of communication between seller and buyer, the label is a form of communication with the end consumer.

Most food safety certification programmes are not the subject of a label unlike programmes addressing other quality aspects such as organic agriculture or fair trade. Therefore, they are mostly business to business (B2B) programmes.

Figure 1: Certification process



II.1.b.

Concepts related to food safety management

The proliferation of diverse food safety management standards and practices (including GMPs, GHPs, GAPs, HACCP, quality assurance, etc.) has created a situation that is often characterized by a lack of clarity. The different understanding and use of key concepts has sometimes added to the confusion. For instance, although the BRC Global Standard – Food (see section XXX) asserts that it does not impose any good practices programmes, it actually establishes requirements on good practices. Likewise, the EurepGAP (see chapter III) affirms that it supports the HACCP method, although it does not deal with it.

This section seeks to clarify these concepts and is based on a paper of the International Life Sciences Institute (ILSI 1998).

Good practices

Good practices relate to basic requirements on the company's activities, such as use of appropriate equipment, personnel hygiene, waste management, etc. Standards on good practices can be called Good Agricultural Practices (GAPs), Good Hygiene Practices (GHPs), Good Handling Practices (also called GHPs) or Good Manufacturing Practices (GMPs), according to the aimed profession (primary producer, manufacturer, carrier, etc.). Such standards can also be specific to a product sector (fruit and vegetables, meat products, etc.).

Standards on good practices may have a larger scope than food safety in so far as they address other aspects of quality (e.g. environmental or social issues).

Good practices are often named “prerequisite programmes” within standards with a wider scope, for instance in ISO 22000 or in the annex of the Codex Alimentarius Code of Practice on General Principles of Food Hygiene (CAC/RCP 1).

Quality management system

A “quality management system”, is defined by the International Organization for Standardization (ISO) as the company's structure for managing its processes or activities that transform inputs of resources into a product or service which meets the company's objectives, such as satisfying the customer's quality requirements, complying with regulations, or meeting environmental objectives.

A quality management system within food businesses usually has a wider scope than food safety and covers all quality elements. The system elements can be separated into two different groups:

- quality control, that is operational requirements (product realization, measurements, etc.) which eliminate causes of loss of quality
- quality assurance, that is managerial requirements (management responsibility, resource management, etc.) that provide internal and external confidence in the company's quality management.

The reference for quality management system is the ISO 9000 series, which applies to every type of business.

Hazard Analysis Critical Control Point (HACCP)

The Hazard Analysis Critical Control Point (HACCP) concept was developed in the 1950s by the National Aeronautics and Space Administration (NASA) in order to guarantee that food used in the United States space program would be completely free of microbial pathogens. HACCP was then identified by the United States Department of Agriculture, Food Safety and Inspection Service (FSIS) as a tool to prevent or control microbial safety hazards during meat and poultry production.

The HACCP concept has now become a valuable program for process control of all food safety hazards, not only microbiological ones. It has been legitimised by the Codex Alimentarius

Commission, who incorporated the HACCP guidelines into the food hygiene code (CAC/RCP1) as an annex (see paragraph on Codex Alimentarius below) in 1997.

The HACCP concept is based on seven principles:

1. Conduct a hazard analysis: collect and evaluate information on hazards and conditions leading to their presence to decide which are significant for food safety
2. Determine the Critical Control Points (CCPs): identify for each hazard the steps at which control can be applied and is essential to prevent or eliminate the hazard or reduce it to an acceptable level
3. Establish critical limit(s): establish for each CCP a criterion which separates acceptability from unacceptability
4. Establish a system to monitor control of the CCP: establish a planned sequence of observation or measurements of control parameters to assess whether the CCP is under control
5. Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control: establish the actions to be taken when results of the monitoring of the CCP indicate a loss of control
6. Establish procedures for verification to confirm that the HACCP system is working effectively: establish methods, procedures, tests and other evaluations, in addition to monitoring, to confirm that the HACCP system is effective
7. Establish documentation concerning all procedures and records appropriate to these principles and their application

Thus, the HACCP method allows each company to identify and control the hazards specific to its activities.

Food safety management system

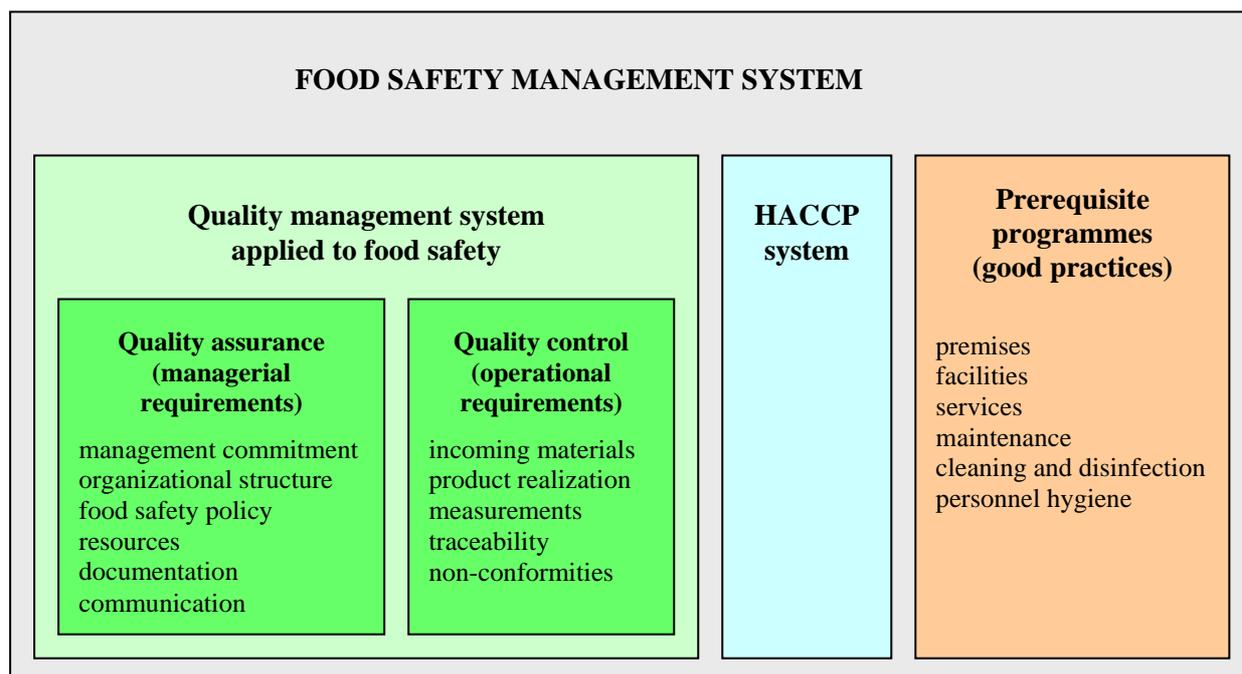
A “food safety management system” is the policy, structure and procedure implemented by the company to express its concern and involvement in food safety. Thus, a food safety management system is the application of a quality management system within the area of food safety.

The implementation of good practices (often named “prerequisite programme”) is a minimum requirement of a food safety management system but it is not sufficient in itself. In fact, standards on food safety management systems usually demand the additional implementation of procedures allowing the identification and the control of the hazards specific to the company, most of the time on the basis of the principles of the HACCP.

To summarize (see figure 2), a food safety management system usually includes:

- managerial and operational requirements on the model of the quality management system established by ISO 9001
- the implementation of prerequisite food safety programmes (good practices)
- procedures allowing the identification and the control of the hazards specific to the company, on the basis of the HACCP principles

Figure 2: Components of Food Safety Management System



Food safety management and certification

Businesses may be involved in food safety management at three levels:

- the respect of food regulations, which is mandatory and thus is not the subject of certification programmes
- the respect of voluntary good practices, which are minimal requirements and which can be the subject of certification programmes
- the implementation of a food safety management system, which can also be the subject of certification programmes (with or without specifications on good practices)

This document seeks to distinguish between certification exclusively of good practices and certification of food safety management system. However, the distinction is not always clear since standards on good practices sometimes also cover other components of food safety management systems (particularly quality control requirements such as traceability or control of incoming materials).

II.2. Economic background

II.2.a. Development of private food safety standards in response to consumer expectations

The concern of private operators for their reputation

The assurance of the safety and quality of the food supply is traditionally a prerogative of governments through the development of regulations and inspections. However, following a number of global food safety incidents during the 1990s, consumer confidence in the capacity of regulators to guarantee food safety has declined in many parts of the world including Europe. In response, the private sector has moved to implement more and more specific standards with higher requirements than regulations in order to ensure the quality, safety and traceability of their products and processes.

This concern of private operators for food safety is linked to their responsibility to put safe products on the market, responsibility usually granted by regulatory provisions (for instance by the Regulation (EC) 178/2002 in the European Union). It is also accentuated by economic concerns linked to customer hypersensitivity to food safety as a negative incident can have disastrous economic consequences for both brand producers and retailers.

Although food safety standards can be established by public bodies, such as the USDA *Guidelines to Minimize Microbial Contamination for Fresh Fruits and Vegetables*, most are private standards developed by private operators themselves (see chapter III). Furthermore, most of these standards are business to business standards that seek to demonstrate the safety and quality of products or services produced by a supplier or subcontractor to a buyer, without any communication to consumers (by means of a label for instance).

A particular concern for the retail sector

As the final link in the food chain, which is in direct contact with consumers, retailers are generally the first to be concerned if a food safety incident affects consumers.

This responsibility of retailers is naturally greatest on their private label products, since they are directly responsible for the safety of the products they make. This is all the more true as the market share for private label products is increasing especially in Europe (see paragraph II.2.c on retail sector).

This can explain why retailers are more and more involved in the establishment of food safety standards, especially in Europe and especially concerning their private label products (see chapters III and IV).

II.2.b. Development of third party certification

The verification of supplier implementation of a certain standard can be carried out by the buyer or retailer itself, but third party certification is increasingly used. Third party certification offers certain advantages:

- auditors are supposed to be objective and independent from the interests of the other parties (however, since auditor fees are usually paid by the audited party, the independence of the auditor may not be absolute)
- third party certification allows buyers to save time and money compared to auditing each supplier themselves
- the use of a certificate allows suppliers to demonstrate to a wide range of buyers that they fulfil certain requirements, which saves time and money compared to assuring each buyer individually

- certification clearly defines the responsibilities of each party (supplier, buyer), which is a growing concern for private operators since the food safety crises of the 1990s.

The increasing use of certification, buoyed by the proliferation of standards, especially in the food safety field, has thus created a real industry in itself, with a high level of competition between auditors. At present, according to IQNet, an international network of auditors and experts, there are more than 100 accreditation bodies and over 700 certification bodies around the world, and more than 700 000 management system certificates have been granted, mainly based on ISO 9001².

II.2.c. Increasing power of retailers in industrialized countries

Since the 1990s, the power in the food sector in developed and emerging economies has shifted from manufacturers and producers to retailers (OECD, 2004). This shift is mainly due to two factors:

- increased retail market concentration
- increased market share of private label products

Retail concentration

Retailing is currently carried out by a small number of firms in many countries, especially in industrialized countries, due to numerous mergers and acquisitions during the last twenty years.

Table 1: Sales share of the five largest retailers in selected countries

Country	Concentration ratios (percent)
Austria	60
Belgium/Luxembourg	61
Denmark	56
Finland	68
France	56
Germany	44
Greece	27
Ireland	58
Italy	18
Netherlands	56
Portugal	63
Spain	40
Sweden	78
United Kingdom	63

Source: OECD (2004) from the CIR European Retail Handbook and trade sources

Many retailers have also become multinational, meaning that global food retailing increasingly resembles an international oligopoly composed of a limited number of multinationals.

² IQNet web site (available at: www.iqnet-certification.com).

Table 2: Top 10 global food retailers in 2003

Rank	Name of company	Country of origin	2003 food retail sales (US\$ million)	2003 food retail sales (US\$ million)	Countries of operation
1	Wal-Mart	US	121,566	278,081	Argentina, Brazil, Canada, China, Germany, Mexico, Puerto Rico, S. Korea, UK, US
2	Carrefour	France	77,330	99,872	Argentina, Belgium, Brazil, China, Columbia, Czech Rep., Dominican Rep., Egypt, France, Greece, Indonesia, Italy, Japan, Malaysia, Mexico, Oman, Poland, Portugal, Qatar, Romania, Singapore, Slovakia, Spain, S. Korea, Switzerland, Taiwan, Thailand, Tunisia, Turkey, UAE
3	Ahold	Netherlands	72,414	86,205	Argentina, Brazil, Costa Rica, Czech Rep., Denmark, El Salvador, Estonia, Guatemala, Honduras, Latvia, Lithuania, Netherlands, Nicaragua, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Thailand, Turkey, UK
4	Tesco	UK	40,907	54,807	Czech Rep., Hungary, Japan, Rep. of Ireland, Malaysia, Poland, S. Korea, Slovakia, Taiwan, Thailand, Turkey, UK
5	Kroger	US	39,320	56,024	US
6	Rewe	Germany	36,483	48,246	Austria, Bulgaria, Croatia, Czech Rep., France, Germany, Hungary, Italy, Poland, Romania, Slovakia, Spain, Switzerland, Ukraine
7	Aldi	Germany	36,189	43,277	Australia, Austria, Belgium, Denmark, France, Germany, Luxembourg, Netherlands, Rep. of Ireland, Spain, UK, US
8	Ito-Yokado	Japan	35,812	56,160	Canada, China, Japan, US
9	Metro	Germany	34,700	68,692	Austria, Belgium, Bulgaria, China, Croatia, Czech Rep., Denmark, France, Germany, Greece, Hungary, India, Italy, Japan, Luxembourg, Morocco, Netherlands, Poland, Portugal, Romania, Russia, Slovakia, Spain, Switzerland, Turkey, Ukraine, UK, Vietnam
10	ITM (Intermarché)	France	33,487	43,414	Belgium, France, Germany, Poland, Portugal, Romania, Spain

Source: DFID, 2004

This consolidation in the retail sector means that producers who want to achieve relevant market access, at least in the developed or emerging countries where two thirds of food consumed passes through the retail sector (OECD, 2004), have a limited choice of buyers and retailers.

In such conditions, only the major brand producers (Nestlé, Unilever, Kraft, etc.) can remain powerful. On the contrary, minor brand producers and non-branded producers (such as fresh fruit and vegetable producers) are obliged to comply with the requirements and conditions set by retailers (see chapter V for potential impact on producers).

Importance of private label products

Retailers are not only involved in product distribution but also more and more in manufacturing products (and especially food) under their own brand (which is often called “private label”). Private label products present an upward trend, especially among food products, with an annual growth of approximately 5 percent (ACNielsen, 2003). This trend can be explained by the fact that retailers can control each step of the product (production, marketing and distribution) as well as the distribution of their own competitors, that is the branded products (OECD, 2004).

Table 3: Market share for all private label products (top ten)

Country	Retail brand share (value percent)
Switzerland	38
Great Britain	31
Germany	27
Belgium	24
Spain	23
France	21
Canada	20
Netherlands	19
United States	15
Denmark	13

Source: (AC Nielsen, 2003)

Retailers can impose their own conditions and requirements for private label products to producers, since the latter serve as subcontractors rather than normal suppliers. The increasing importance of private label products therefore strengthens the power of retailers in relation to producers.

II.3. International reference for food safety standards: the Codex Alimentarius

The Codex Alimentarius is a collection of food standards, codes of practice, guidelines and other related texts. Codex standards represent agreements between member countries and are not therefore intended to lead to certification programmes. However, Codex standards have become global reference points for consumers, food industries, national food agencies and the international food trade. It is therefore important to consider the role of the Codex Alimentarius in any discussion of food safety certification programmes.

II.3.a. The Codex Alimentarius

The Codex Alimentarius Commission was created in 1963 by FAO and WHO to develop food standards, guidelines and related texts, such as codes of practice, under the Joint FAO/WHO Food Standards Programme. The main purposes of this Programme are protecting health of consumers and ensuring fair trade practices in food trade, by promoting harmonization of food standards. In 2005, Commission membership comprised 171 countries, representing 98 percent of the world's population (FAO/WHO, 2005).

Codex standards gained particular importance in 1995 with the establishment of the World Trade Organization (WTO) and its Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), which recognizes Codex as the reference in trade disputes in food safety measures.

II.3.b. Normative texts of the Codex Alimentarius on food safety

Codex normative texts fall into three groups (FAO/WHO, 2005):

- the standards, usually related to product characteristics. They can be general standards that apply to all product groups (for instance the maximum residue limits for pesticides or veterinary drugs), or commodity standards that are specific to a certain food (for example, milk or poultry).
- the code of practices, defining the production, processing, manufacturing, transport and storage practices that are considered essential to ensure the safety of food for consumption.
- the guidelines, which can be principles that set out policy in certain key areas, or interpretative guidelines for the understanding of these principles or for the interpretation of the provisions of the Codex general standards.

Many of these texts, which are very numerous (see table 3), deal with food safety. This document aims to provide an overview of the relevant texts, rather than an exhaustive study.

Table 3: The Codex scorecard as of 1 July 2005

Type of text and related topic	Number of adopted texts
Commodity standards	202
Commodity-related guidelines and codes of practice	38
General standards and guidelines on food labelling	7
General codes and guidelines on food hygiene	5
Guidelines on food safety risk assessment	5
Standards, codes and guidelines on contaminant in foods	14
Standards, guidelines and other recommendations on sampling, analysis, inspection and certification procedures	22
Maximum limits for pesticides residues	2579
Food additives provisions	683
Maximum limits for veterinary drugs in foods	377

Source: FAO/WHO, 2005

Some Codex texts are especially relevant for private standards in so far as they establish the general requirements for private operators in terms of food safety management. The most significant one is the Recommended International Code of Practice on General Principles of Food Hygiene, CAC/RCP 1-1969, Rev.(2003), which establishes the general principles that national regulations or Good Hygienic Practices should follow with regard to each step of the food chain .

These general principles concern:

- primary production (environmental hygiene, hygienic production of food sources, handling, storage and transport, cleaning, maintenance and personnel hygiene)
- processing location: design and facilities (location, premises and rooms, equipment, facilities)
- control of operation (control of food hazards, key aspects of hygiene control systems, incoming material requirements, packaging, water, management and supervision, documentation and records, recall procedures)
- processing location: maintenance and sanitation (maintenance and cleaning, cleaning programmes, pest control systems, waste management, monitoring effectiveness)
- processing location: personal hygiene (health status, illness and injuries, personal cleanliness, personal behaviour, visitors)
- transportation (general requirements, use and maintenance)
- product information and consumer awareness (lot identification, product information, labelling, consumer education)

The International Code of Practice on General Principles of Food Hygiene is therefore dedicated to serve as a general scheme for Good Hygienic Practices, but it also establishes requirements for quality control (management of temperature/time, monitoring of incoming materials, product packaging, product identification, product recall) and even for quality assurance (personal training, control of records, definition of responsibilities) (see annex 4).

Among all the advocated procedures for hygiene management, the code recommends more specifically to identify and control the hazards that can occur in each stage of the operator's activities, according to a management system such as HACCP. Although the code of practice only deals with hygiene, and thus with microbiological hazards, it however recommends this HACCP-based approach for all types of hazards.

The annex of the code, “Hazard analysis and critical control point (HACCP) system and guidelines for its application”, specifies the definition of “HACCP principles”, “HACCP system” and “HACCP-based system”. Thus, Codex precisely establishes that a HACCP system requires the implementation of the seven principles plus five other preliminary steps.

Table 4: HACCP system steps

HACCP principles	HACCP system steps
	1. Assemble HACCP team <ul style="list-style-type: none"> – appropriate knowledge and expertise – optimally, a multidisciplinary team – possible outsourcing – identification of the HACCP plan scope
	2. Describe product <ul style="list-style-type: none"> – relevant safety information – possible grouping of products with similar characteristics
	3. Identify intended use <ul style="list-style-type: none"> – expected use for end user or consumer – if appropriate, taking vulnerable populations into account
	4. Construct flow diagram <ul style="list-style-type: none"> – performed by the HACCP team – covering all the steps for a specific product
	5. On-site confirmation of flow diagram <ul style="list-style-type: none"> – performed by persons with sufficient knowledge
1. Conduct a hazard analysis	6. List all potential hazards associated with each step, conduct a hazard analysis, and consider any measures to control identified hazards <ul style="list-style-type: none"> – performed by the HACCP team
2. Determine the Critical Control Points (CCPs)	7. Determine Critical Control Points <ul style="list-style-type: none"> – possible application of a decision tree – modification of the process if no possible control measure for a CCP
3. Establish critical limit(s)	8. Establish critical limits for each CCP <ul style="list-style-type: none"> – specification and validation of critical limits – measurability of the critical limits
4. Establish a system to monitor control of the CCP	9. Establish a monitoring system for each CCP <ul style="list-style-type: none"> – ability to detect loss of control at the CCP – ideally, ability to detect loss of control before violating critical limits – evaluation by a person with knowledge and authority for corrective actions – sufficient frequency of monitoring – physical and chemical measurements rather than microbiological ones – records signed by the person doing the monitoring and by a responsible party
5. Establish the corrective action to be taken when monitoring indicates that a particular CCP is out of control	10. Establish corrective actions <ul style="list-style-type: none"> – so that the CCP can be brought under control – proper disposition of the affected product – procedures documented in the HACCP plan record keeping
6. Establish procedures for verification to confirm that the HACCP system is working effectively	11. Establish verification procedures <ul style="list-style-type: none"> – sufficient frequency of verification – performed by someone other than the one responsible for monitoring and corrective actions
7. Establish documentation concerning all procedures and records appropriate to these principles and their application	12. Establish documentation and record keeping <ul style="list-style-type: none"> – appropriate to the nature and size of the operation – possible integration of record-keeping in existing paperwork

Codex emphasizes three other relevant points:

- I. The company should have in place prerequisite programmes (that is good practices), such as Good Hygienic Practices complying with the provisions of the General Principles of Food Hygiene.
- II. Training of personnel is an essential element.
- III. The implementation of the twelve steps requires appropriate flexibility, especially for small and/or less developed businesses³. However, it is necessary that all the seven HACCP principles are applied so that the management system complies with the HACCP concept. Such a management system is thus referred to as a “HACCP-based system”.

Several other Codex texts emphasize the importance of HACCP system implementation within food businesses. For instance, the Guidelines for the design, operation, assessment and accreditation of food import and export inspection and certification (CAC/GL 26-1997) recommend that member countries “require or encourage the use of HACCP approach by food establishments. Official inspectors should be trained in the assessment of the application of HACCP principles”.

³ FAO and WHO are in the process of developing a guidance document to assist small and less developed businesses (SLDBs) in the implementation of HACCP, planned for release in mid 2006.

III. Overview of existing certification programmes on food safety

III.1. Overview of the certification programmes proliferation

An increasing number of certification programmes exist for food safety, related to both good practices and management systems, most of which refer to Codex Alimentarius standards. These programmes have been set up by various types of national and/or global groups including government institutions, national standardization organizations (mostly private associations mandated by government), private certification bodies and the private sector (buyers, retailers and producers).

In some cases, several groups of buyers and retailers realized that they had the same requirements for food safety and developed joint standards accompanied with certification programmes. Although price or product quality (organoleptic quality, freshness, etc.) are competitive issues for businesses, food safety is not. On the contrary, food safety seems to be a “pro-competitive” issue since it is so complex and at the same time so essential to the survival of any business that it can only be effectively dealt with in a collaborative fashion (OECD, 2004).

Similarly, some groups of producers, generally an association or cooperative, have set up standards and certification programmes together in order to demonstrate to a wide range of buyers that they fulfil certain requirements for food safety. However, such initiatives from producers are far less numerous in food safety than in other quality fields (organic agriculture, fair-trade, etc.).

III.1.a. Certification programmes for good practices

This section presents standards that establish requirements for good practices (GAPs, GHPs, GMPs, etc.). In some cases, these standards can also include some requirements for quality control (traceability, management of incoming materials, etc.) or quality assurance (e.g. documentation), which are other components of a food safety management system (see section II.1.b on concepts on food safety management).

In general, certification programmes concern farmers and more generally primary producers (i.e. including fresh product washing and packing activities). In fact, good practices for the farm sector cover more issues than only food safety. For instance, such standards often address environmental (appropriate use of fertilizers, soil conservation, etc.) or ethical issues (e.g. animal welfare). On the contrary, the scope for manufacturers is necessarily less wide and, as national mandatory regulations on hygiene for manufacturers and transporters are usually already strict and precise, additional standards that only provide requirements for GMPs or GHPs are often of no use to them. This is why standards targeting manufacturers instead focus their attention on quality management and HACCP systems (see paragraph III.1.b. below).

Standards for primary producers, which may address environmental, animal welfare or worker welfare issues, are often also wider in scope than food safety.

Table 5 : Examples of GAP/GHP-based certification programmes for primary producers

Country	Standard	Commodity sector	Standard-setting body	Status of the standard-setting body
Australia	Freshcare	fruit and vegetables	Freshcare Ltd	private association owned by producer companies
France	Agriconfiance (NF V 01-005)	all	Association Française de Normalisation	national standardization organization (private non-profit association mandated by government)
Germany	Qualität und Sicherheit	all	QS GmbH	private association owned by the food chain
Netherlands	IKB	meat	Dutch Meat Board	professional association
Singapore	GAP-VF	fruit and vegetables	Agri – Food&Vetrinary Authority of Singapore	governmental institution
Spain	UNE 155000	fruit and vegetables	Asociación Española de Normalización y Certificación	national standardization organization (private non-profit association mandated by government)
UK	Farm assurance standards associated with the “Little Red Tractor” logo	pigs, cattle, sheep, chickens, dairy, fruit, vegetables, harvestable crops	Assured Food Standards	private association owned by the food chain
UK	Nature’s choice	all	Tesco	food retailer
Uruguay	Certified Natural Meat Program	meat	Instituto Nacional de Carnes	professional association
USA	USDA Federal-State Audit Program based on the <i>Guidelines to Minimize Microbial Contamination for Fresh Fruits and Vegetables</i>	fruit and vegetables	Food and Drug Administration and US Department of Agriculture	governmental bodies
USA	ProSafe	fresh fruit and vegetables	David Fresh Technologies, basing itself on the FDA/USDA <i>Guidelines to Minimize Microbial Contamination for Fresh Fruits and Vegetables</i>	private certification body
Europe	EurepGap	1. fruit and vegetables 2. all farm sectors 3. aquaculture 4. coffee	EUREP	food retailers association

Source: Web sites of relevant bodies (listed in References)

III.1.b.

Certification programmes for quality management and HACCP systems

The standards presented in this section deal with quality management systems and HACCP systems, without establishing specific requirements for good practices. They demand only that the company implements relevant good practices programmes (usually called “prerequisite programmes”), whatever they are (though reference is often made to Codex standards).

Certification programmes for quality management and HACCP systems have multiplied during recent years. This proliferation of initiatives is due to the current lack of an international certification programme on quality management systems specific to food businesses. Indeed, the ISO 9001:2000 standard concerns the quality management of the supply chain of any industry and consequently does not take into account the specificities of food safety management. This inadequacy should be alleviated by the adoption of the ISO 22000 standard.

In addition, several countries (including the Netherlands, Denmark and Greece) have decided to set up national standards and certification programmes for products in their national market.

Table 6: Examples of certification programmes for quality management and HACCP systems

Country	Standard	Standard-setting body	Status of the standard-setting body
Argentina	IRAM 14104	Instituto Argentino de Normalización y Certificación	national standardization organization (private non-profit association mandated by government)
Columbia	ICONTEC 0104-0027	Instituto Colombiano de Normas Técnicas y Certificación	national standardization organization (private non-profit association mandated by government)
Denmark	DS 3027	Danish Standards Association	national standardization organization (private non-profit association mandated by government)
Greece	ELOT 1416	Hellenic Organization for Standardization	national standardization organization (state-owned association)
Ireland	IS 343	National Standards Authority of Ireland	national standardization organization (governmental institution)
Italy	UNI 10 854	Italian National Standards Body	national standardization organization (private non-profit association mandated by government)
Netherlands	Dutch HACCP Code (CCvD-HACCP)	National Board of Experts HACCP	board composed by representatives of the Government and of the private sector
Russia	GOST R 51705	Federal Agency on Technical Regulating and Metrology	national standardization organization (governmental institution)
UK	EFSIS HACCP Standard	European Food Safety Inspection Service	private certification body
USA	HACCP-9000	NSF International	non-profit non-governmental organization
USA/Australia	SQF	Food Market Institute	association of private retailers
International	ISO 22000	International Organization for Standardization	international network of national standardization organizations

Source: Relevant internet sites

Most of these standards demand or establish a system based on HACCP in accordance with the seven principles of HACCP contained in the Codex guidelines. Most are focused on food manufacturers rather than primary producers.

III.1.c. Certification programmes for complete food safety management systems

Some certification programmes establish requirements for quality management systems (including a HACCP system), as well as specific requirements for good practices (Good Agricultural Practices or Good Manufacturing Practices). As such these programmes are the most complete. However, they usually apply to a specific step of the food chain (primary producers or manufacturers).

Table 7: Examples of certification programmes for complete food safety management systems

Country	Standard	Target	Standard-setting body	Status of the standard-setting body
Germany / France	International Food Standard	food manufacturers	Hauptverband des Deutschen Einzelhandels / Fédération des entreprises du Commerce et de la Distribution	association of food retailers
New Zealand	Approved Supplier Programme	fruit and vegetable producers	Vegetable & Potato Growers' Federation / New Zealand Fruitgrowers Federation	association of primary producers
UK	BRC Global Standard - Food	food manufacturers	British Retail Consortium (BRC)	association of food retailers
USA	CertiClean	food manufacturers	Scientific Certification Systems	private certification body

Source: Internet

III.2. Benchmarking by the Global Food Safety Initiative (GFSI)

The Global Food Safety Initiative (GFSI) was launched by food retailers as a means to respond to the proliferation of diverse standards.

III.2.a. The Global Food Safety Initiative

GFSI is a food retail initiative created in May 2000 by the Global Food Business Forum (CIES), a network of 175 retailers and 175 suppliers in over 150 countries, representing 65 percent of global food retail revenue. GFSI aims to ensure that existing worldwide food safety standards are pertinent and reliable. Specifically it implements and maintains a scheme to benchmark food safety standards (for private label products) as well as farm assurance standards, by facilitating mutual recognition between standard owners and by ensuring worldwide integrity in the quality and the accreditation of food safety auditors⁴.

The GFSI Guidance Document (GFSI, 2004a) establishes a Benchmark Model to serve as an “equivalency framework”. It outlines key elements that a food safety standard should contain:

- good agricultural or manufacturing practices;
- a quality management system applied to food safety (e.g. based on the ISO 9000 series);
- a HACCP-based system in accordance with, or equivalent to, the Codex standard.

The requirements of this Benchmark Model are flexible given the variations within the standards (discussed in chapter IV). For instance, EurepGAP does not require a HACCP system, while neither SQF nor the Dutch HACCP Code establish specified good practices. Nevertheless, a standard approved by GFSI should theoretically be recognized by all retailers around the world.

III.2.b. Benchmarked standards

With regard to the previous version of the GFSI Guidance Document, which applied only to manufacturers, GFSI had approved:

- BRC Global Standard – Food (version 3)
- Dutch HACCP Code (also called CCvD HACCP)
- EFSIS Standard (but EFSIS withdrew its standard from the approval procedure)
- IFS (version 3)
- SQF 2000

With regard to the current fourth version of the guidance document, which also applies to primary producers, GFSI has approved SQF 1000 and is currently benchmarking or re-benchmarking BRC (version 4), IFS (version 4), Dutch HACCP (version 3), SQF 2000, EurepGap Fruit and Vegetables and the New Zealand Fresh Produce Approved Supplier Programme. The China Retailers Standard will likely also be included in this list in the near future.

Despite GFSI approval, these standards are not always mutually recognized. For instance, British retailers continue to demand BRC certification even if the supplier is IFS certified, and even if the two standards are very similar (see chapter IV).

⁴ Source: Global Food Business Forum (CIES) web site (available at: www.ciesnet.com)

IV. Major certification programmes on food safety

The major initiatives discussed here have all been benchmarked or are currently being benchmarked by GFSI. The EFSIS Standard is not include here as it withdrew its standard from the approval procedure.

IV.1.Fact sheets

The following information will be reported for each programme:

- the standard-setting body (status, range, etc.)
- the scope of the programme (targeted operator, objectives for the standard setting body, etc.)
- the terms of the programme implementation (compliance requirements, different levels of certification if any, lenient terms for producer groups if any, etc.)
- the provisions of the standard (requirements, comparison with the Codex Alimentarius standards, especially with the “General Principles of Food Hygiene” for the provisions about good practices or quality control)
- the market penetration of the programme (number of retailers demanding the certificate, number of certified producers, etc.)

IV.1.a. BRC Global standard – Food

Standard-setting body

The British Retail Consortium (BRC)⁵ is the leading trade association for UK retailing. There are three types of members:

- retail members (including Tesco, Marks & Spencer and Sainsbury's), who represent the majority of retailers (approx 80-90 percent) in the UK
- trade association members
- associate members (that is services to the retail industry including accountants, consultants or financial services) who do not participate in the decision-making process.

The BRC set up the food standard in 1998 in response to industry needs. In view of the success and widespread acceptance of this standard, the BRC also published a packaging standard in 2003, a non-food product safety standard in 2003, and then a non-genetically modified food assurance in collaboration with the British Food and Drink Federation.

Scope and objectives

The BRC Global standard – Food is a food safety and quality management protocol based on HACCP and designed for manufacturers of all types of food products. Primary producers (including farmers)

⁵ Source: BRC web site (available at: www.brc.org.uk).

are not concerned since a company with primary product preparation activities, such as fruit washing and pre-packing, must exclude these activities from the scope of the certification programme. Furthermore, the standard does not apply to wholesale, importation, distribution and storage activities.

The standard was originally developed by retailers and dedicated to the manufacturing suppliers for their private label products, but is now more widely accepted among retailers and branded producers (see paragraph below on market penetration), and is used for all types of manufacturers (branded food manufacturers, sub-contracting manufacturers for branded food companies, etc.).

The BRC standard deals with quality management systems and HACCP, but also establishes general good manufacturing practices for food safety.

Certification programme

The fourth version of the BRC normative document, published in January 2005, has been in effect since July 2005.

After initial certification, suppliers are re-audited, usually once a year or more, often depending on the type and number of non-conformities (the determination of audit frequency is included in the normative document).

The programme formerly provided a two level certification (Foundation Level and Higher Level), but the fourth and more recent edition establishes only one status level.

The standard establishes 50 general requirements named “statements of intent”, each statement being possibly accompanied with specific requirements. Each clause in the standard must be fulfilled. However, the protocol establishes a double gradation:

- among the 50 statements of intent, 10 are qualified as fundamental
- non-conformity to each requirement can be minor, major or critical

The different types of corrective actions to implement and demonstrate compliance thus allow more flexibility in the implementation of certification. For instance, a minor non-conformity with a non-fundamental requirement does not demand a revisit; the presentation of a corrective actions plan is sufficient.

The number and status of non-conformities found during the first evaluation establishes the re-evaluation frequency (either one or two per year).

Provisions of the standard

The standard is divided into 6 chapters:

- HACCP system
- quality management system
- factory environment standards
- product control
- process control
- personnel

The first chapter demands implementation of a HACCP system. The requirements are entirely compatible with the seven HACCP principles defined by the Codex Alimentarius. However, the BRC standard does not require all of the five preliminary steps defined by Codex. Notably, BRC demands the creation of a HACCP team but not the formal description of the product and its use, nor the construction of an on-site confirmed flow diagram.

The second chapter addresses quality management systems. The focus is on quality assurance (management commitment and responsibility, internal audit, resource management, etc.) but some

quality control issues (traceability, purchasing, management of non-conformities) are sometimes included.

The remaining four chapters establish operational requirements for quality control, as well as general GMPs. However, implementation of these general GMPs does not exempt the company from implementation of a specific and formal GMP plan as required in the first chapter.

Although the requirements of the BRC standard generally comply with the Codex Code of Practice on General Principles of Food Hygiene (see Annex 2), there are some key differences:

- concerning cleaning and maintenance, BRC asks only for adequate procedures whereas Codex recommendations explicitly establish what these procedures should be
- BRC does not explicitly require certain facilities (adequate facilities for cleaning food, utensils and equipment, temperature control facilities, storage facilities, adequate drainage, containers used to hold dangerous substances, etc.)
- BRC explicitly demands only the elaboration and implementation of a HACCP plan but does not specifically require control systems for temperature, cross-contamination, or water use

On the other hand, the BRC standard establishes some requirements that are outside the scope of the Codex Code of Practice on General Principles of Food Hygiene. Specifically, these include those dealing with quality control issues (handling of non-conforming products, management of the monitoring system, traceability, management of allergens, quantity control, etc.), but also some on food safety good practices (maintenance of external areas, etc.) (see also annex 4).

Market penetration

The BRC Global Standard - Food was originally developed by British retailers and dedicated to their manufacturing suppliers for their private label products in order to ensure food safety at all levels of the manufacturing supply chain for their private label goods.

However, the standard is increasingly being considered as a benchmark for best practices, many retailers now demand BRC certification from manufacturers of branded products as well as own-brand products. In addition, some other operators, including some global brand owners now require BRC certification from their sub-contracting suppliers.

According to the BRC web site, the majority of British and Scandinavian retailers do business only with suppliers who have gained certification to the BRC Global Standard.

Table 8: Diffusion of the BRC Global standard - Food

Number of retail members within the BRC	BRC members (including Tesco, Marks & Spencer and Sainsbury's), who represent approximately 80-90 percent of the UK retail sector
Number of BRC licensed certification bodies	100 in 23 different countries (Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Holland, Ireland, Italy, New Zealand, Norway, Poland, Portugal, South Africa, Spain, Sweden, Switzerland, Thailand, Uruguay, UK and USA) plus 9 currently in process to receive license (especially in Argentina and Latvia)
Number of BRC certified suppliers	Not available

Source: BRC web site (available at: www.brc.org.uk), August 2005.

IV.1.b.

International Food Standard (IFS)

Standard-setting body

The International Food Standard (IFS)⁶ was set up in 2002 by HDE (Hauptverband des Deutschen Einzelhandels), the German retail association. In 2003, French retailers and wholesalers from the FCD (Fédération des entreprises du Commerce et de la Distribution) joined the IFS Working Group and contributed to the development of the current version of the normative document.

Scope and objectives

The IFS is a food safety and quality management protocol based on HACCP that is designed for producers of all types of food products.

This standard was set up specifically in view of retailers' needs. In fact, it is dedicated to the manufacturing suppliers for private label products, in order to ensure food safety at all levels of the manufacturing supply chain of the products under retailers' responsibility (that is their private label goods). Like the BRC Global Standard-Food, the IFS is not dedicated to primary producers (for instance fresh fruit and vegetable producers): it comes into force when the product is handled.

As with the BRC standard, IFS deals with quality management system and HACCP, but also establishes general good manufacturing practices related to food safety.

Certification programme

The fourth edition of the IFS normative document was issued in January 2004.

The IFS programme allows for two levels of certification:

- the "foundation level" is considered as the minimum requirements for the international food industry
- the "higher level" is considered as a superior standard in the food industry

This division into steps allows suppliers to implement the standard with more flexibility and to demonstrate continuous improvement.

The criteria are split into two different levels corresponding to two different certifications: the "foundation level criteria" includes 230 items, whereas the "higher level criteria" include 60 additional criteria. Furthermore, 46 recommendations are formulated for companies who wish to demonstrate "best practices" in the sector. For each criterion of the standard, a certain number of points is assigned according to the compliance and to the criterion level. The certificate (foundation or higher level) is delivered for a certain amount of gained points. The system allows flexibility, since companies are not forced to prove effective compliance with every clause of the standard (they only have to present a corrective actions plan for the remaining non-conformities).

The certification is site-specific; that is, the audit scope is limited to the site where the audit takes place, but all types of products produced in this site must be taken into account.

The re-evaluation frequency is once a year (once every 18 months for "higher level" certifications that have already been confirmed twice and that do not concern seasonal products).

The certification costs vary by certification body, but average € 000 for 1.5 days of on-site audit.

⁶ Source: www.food-care.info

Provisions of the standard

The requirements of the IFS cover five topics:

- management of the quality system (HACCP system, quality handbook, etc.)
- management responsibility (inspection of quality and production systems, etc.)
- resource management (human resources, hygiene, social facilities, etc.)
- production processes (product development, factory facilities, traceability, etc.)
- measurements, analyses, improvements (controls, product recalls, etc.)

The first two topics clearly deal with HACCP and quality assurance. The implementation of a HACCP-based system is required, and an explicit mention is made to the Codex HACCP principles. However, the requirements for the “Foundation Level” completely comply with the seven Codex HACCP principles, but not totally with the 12 Codex HACCP steps, since the on-site confirmation of the flow-diagram is required only for the “Higher Level” certification. On the other hand, the “Higher Level” totally complies with the 12 Codex HACCP steps.

The final three topics establish general good manufacturing practices as well as quality management requirements (especially quality control requirements).

These requirements comply on the whole with the Codex Code of Practice on General Principles of Food Hygiene (see annex 3). However, there are some differences:

- concerning cleaning and maintenance, IFS (like the BRC standard) only asks for adequate procedures, whereas Codex recommendations explicitly establish what these procedures should be;
- IFS does not explicitly require certain facilities (adequate facilities for cleaning food, utensils and equipment, temperature control facilities, storage facilities, containers used to hold dangerous substances, etc.).

Like the BRC standard, IFS establishes a certain number of requirements that are not in the Codex Code of Practice on General Principles of Food Hygiene, with regard to quality control (handling of non-conforming products, management of the monitoring system, traceability, management of allergens, etc.) and food safety good practices (maintenance of external areas) (see also annex 4).

Market penetration

According to IFS, almost all German and French retailers (including some of the global players like Metro, Carrefour and Auchan) ask for an IFS certification. However, some major retailers do not support IFS (for instance Leclerc, which is not an FCD member). Among the supporting retailers, some (e.g. Metro) ask all their subsidiaries around the world for IFS. Retailers in several other countries (e.g. Austria, Poland, Switzerland, Italy, etc.) also request IFS certification.

At present, retailers demand IFS certification only from the producers of their private label food products, and do not require it from branded product suppliers. However, according to the IFS, it appears that many branded product companies perform an IFS audit of their own companies and ask their subcontractors and suppliers to do the same.

Table 9: Application of the IFS

Number of retailers supporting the IFS programme	All German and Swiss retailers who take part in the HDE – Committee for Food Law and Quality Assurance (Metro, Rewe, Aldi, Lidl, Spar, COOP, etc.) All French retailers who participate in the FCD – Quality Committee (Carrefour, Auchan, Casino, Monoprix, Cora, Système U, etc.) HDE and FCD are seeking to spread the IFS standard to retailers based in other European countries (Poland, Austria, Belgium, Netherlands, UK and Italy)
Number of IFS- licensed certification bodies	44 from 10 different European countries (Austria, Belgium, France, Germany, Greece, Italy, Netherlands, Spain, Switzerland and UK) Some have international offices
Number of IFS certified suppliers	3000 audits performed since May 2003, mostly in Europe

Source: Internet (www.food-care.info), August 2005

IV.1.c. SQF Codes⁷

Standard-setting body

The Safe Quality Food (SQF) standards were originally established by the Western Australian Department of Agriculture in 1996, in response to the demands of the farming and small food manufacturing sectors for a quality assurance system that enabled their businesses to meet regulatory food safety and commercial food quality criteria. As no suitable system could be identified, the Western Australia government established the SQF Quality Code.

After its creation, the SQF standard caught the attention of the Food Marketing Institute (FMI), an American retail association, and worldwide ownership of the standards was transferred to the FMI in 2003. The SQF Institute, a division established by the FMI, now manages the SQF Programme.

The FMI comprises 1,500 United States (US) or international member companies (both food retailers and wholesalers). The US members (in particular Wal-Mart and Kroger) operate approximately 26,000 retail food stores with a combined annual sales volume of \$340 billion, that is three-quarters of all food retail sales in the United States. The international membership includes 200 companies (in particular Carrefour, Ahold and Tesco) from 50 countries.

Scope and objectives

The SQF programme is intended to deal with complete food safety management systems; however, in comparison to the BRC or IFS standards, it only specifies requirements on quality management systems and does not specify good practices nor HACCP plans (though it demands them). It is

⁷ Source: Safe Quality Food web site (available at: www.sqfi.com).

designed for all types of food products and for all types of suppliers (the SQF 1000 Code for primary producers, the SQF 2000 Code for food industries).

Certification programmes

Two certification programmes have been established for different types of food product suppliers:

- **SQF 1000:** this standard, currently in its third version, is specific to primary producers and to issues of concern to them (pre-farm gate production, harvesting, preparation of primary products).
- **SQF 2000:** this standard, currently in its fourth version, is specific to food industries and to issues of concern to them (raw materials and ingredients, processed or prepared foods, beverage or services).

There is no obligation for a supplier who would like to be certified SQF 2000 to receive raw materials from a certified SQF 1000 primary producer.

Each programme allows for three levels of certification, which more or less correspond to the number of food safety system components (see paragraph II.1.b. on the food safety management concepts) that are implemented by the business:

- **Level 1 (Food Safety Fundamentals):** this certificate assures that the company implements prerequisite programmes (Good Agricultural or Manufacturing Practices), whatever they are, and fundamental food safety controls.
- **Level 2 (Accredited HACCP Food Safety Plans):** this certificate assures that the company implements prerequisite programmes and a food safety plan in accordance with the HACCP method.
- **Level 3 (Comprehensive Food Safety and Quality Management Systems Development):** this certificate assures that the company implements prerequisite programmes and a food safety plan, which is based on the principles of HACCP and which prevents the incidence of poor quality.

SQF requirements (for SQF 1000 as for SQF 2000) are divided into three levels, corresponding to the three different certifications. To implement level 2, producers must comply with level 1 plus additional requirements. Likewise to implement level 3, producers must comply with level 2 plus additional requirements.

For each level, compliance with the provisions is obligatory without any tolerance margin.

Only a “SQF Expert” (a member of the company or an external consultant who has been qualified by the SQFI) can implement SQF programmes within the company.

Provisions of the standard

As the SQF standards mainly deal with quality management systems, they essentially require adequate management procedures. Interestingly, most of the provisions of the SQF codes only require that the company provide appropriate procedure documentation and do not explicitly require that the company implements such procedures (see table 10).

Table 10: Provisions of the SQF codes

Topic	SQF Code	Requirement
Commitment		
Management Policy	1000 / 2000	Documentation (a Policy Statement)
Policy Manual	1000 / 2000	Documentation (a Policy Manual)
Organizational Structure	1000 / 2000	Documentation
Training	1000 / 2000	Implementation
Specifications		
Supplier Specifications	1000 / 2000	Documentation
Incoming Goods and Services	1000 / 2000	Implementation
Finished Product Specifications	1000 / 2000	Documentation
Control of Production		
Process Control	1000 / 2000	Procedure documentation (a Food Safety / Quality Plan)
Corrective and Preventive Action	1000 / 2000	Procedure documentation
Non-Conforming Product	2000	Procedure documentation (except level 3: implementation)
Food Legislation (Regulation)	1000 / 2000	Implementation
Verification		
Calibration	1000 / 2000	Implementation
Internal Audits	1000 / 2000	Procedure documentation
System Review	1000 / 2000	Procedure documentation (except level 3: implementation)
Customer Complaints	1000 / 2000	Procedure documentation (except level 3: implementation)
Finished Product Inspection and Analysis	1000 / 2000	Implementation
Product Release	2000	Implementation
Document Control and Records		
Document Control	1000 / 2000	Implementation
Records	1000 / 2000	Implementation
Product Identification, Tracing and Recall		
Product Identification	1000 / 2000	Implementation
Product Tracing	1000 / 2000	Implementation
Product Recall	1000 / 2000	Procedure documentation

The SQF 1000 and SQF 2000 provisions are very similar since they both establish identical requirements for most of the provisions. However, there are some differences between the two codes, notably:

- the mentioned prerequisite programmes are obviously GAPs in the SQF 1000 Code and GMPs in the SQF 2000 Code.
- in the SQF 2000 Code, the company shall also define procedures for non-conforming products
- in the SQF 2000 Code, the company shall also define procedures for product release

Concerning good practices, both codes require the implementation of “prerequisite programmes” but they do not define such practices. No reference is made to the relevant Codex Alimentarius standards, such as the Code of Practice on General Principles of Food Hygiene.

Concerning quality control, the SQF Codes do not address several important issues mentioned by the Codex Code of Practice on General Principles of Food Hygiene (management of temperature/time, product packaging) (see also annex 4).

Concerning HACCP, both codes require the establishment of a Food Safety Plan based on the principles of the HACCP method, but only for levels 2 and 3 certification. An explicit reference to the Codex document is made (the seven HACCP principles and the 5 preliminary steps are detailed in the annex of the codes).

Market penetration

Most American retailers and several global retailers (Wal-Mart, Kroger, Carrefour, Ahold, Tesco, etc.) support the SQF standard. However, it is not clear whether “support” means “recognize” or “require”, particularly since certain retailers support other standards (for instance, Carrefour demanding IFS certification from its suppliers, at least in France and Germany).

Table 11: Market penetration of the SQF standards

SQF standard	SQF 1000	SQF 2000
Number of retail members within the FMI	1,500 companies (food retailers and wholesalers) including major global retailers (Wal-Mart, Kroger, Carrefour, Ahold, Tesco, etc).	
Number of SQF licensed certification bodies	7 (Australia, Switzerland, USA)	
Number of SQF certified suppliers	900 primary producers, most of them in Australia or the USA	1,600 food industries, most of them in Australia or the USA but also a certain number in the Netherlands, Thailand, Korea, Saudi Arabia, India and China

Source: Internet (www.sqfi.com), August 2005

IV.1.d. Dutch HACCP Code⁸

Standard-setting body

The standard, also called CCvD-HACCP Code, was set up in 1996 by the Dutch National Board of Experts-HACCP (CCvD-HACCP), a board composed by representatives of all parties involved in the food chain (i.e. National Bureau for the Provision Trades, certification bodies, consumer associations, food production and industry).

Scope and objectives

The standard focuses on all operators along the food chain (concerned with preparation, processing, manufacturing, packaging, storage, transportation, distribution, handling, offering for sale or supply), but not on suppliers or service companies to food business (e.g. suppliers of packaging materials, food equipment, industrial cleaning services). Primary producers are neither explicitly included in, nor excluded from, the scope of the standard.

⁸ Source: www.foodsafetymanagement.info

It establishes requirements on quality management systems and HACCP systems, but not on good practices.

Certification programme

The third version of the normative document (Requirements for a HACCP- based Food Safety System) was published in September 2002.

For three years after the initial certification, surveillance is semi-annual. After these three years, a total reassessment is conducted; if there are no open non-conformities and no new non-conformities are revealed with the entire reassessment, then the surveillance can be annual.

Provisions of the standard

The architecture of the requirements within the normative document is close to the structure of the HACCP steps as described by the *Codex Alimentarius*:

- management responsibility (policy, scope, responsibilities, HACCP team, etc.)
- product information (product characteristics, intended use, etc.)
- process information (flow diagrams, layout, etc.)
- pre-requisite programme(s)
- hazard analysis
- control measures
- parameters and critical limits
- monitoring and measuring
- corrective actions
- validation
- documentation and records
- verification

In terms of good practices, the Dutch Code requires implementation of “prerequisite programmes” but (as with the SQF Codes) does not define what such practices should be. However, the Codex Code of Practice on General Principles of Food Hygiene are explicitly described as “a firm foundation for ensuring food safety and suitability” and the provisions of this Codex Code of Practice are detailed in an annex.

Concerning quality control, the Dutch HACCP Code does not address several important issues mentioned by the Codex Code of Practice on General Principles of Food Hygiene, notably monitoring of incoming materials, management of temperature/time, product packaging (see also annex 4).

Concerning HACCP, the Dutch Code totally complies with the 12 Codex HACCP steps.

Market penetration

The Dutch HACCP Code was the first HACCP-based certification programme, but it has a weaker penetration than the previous standards. It only concerns the Dutch market as it is mainly supported by Dutch retailers. Information on the identity of these retailers is not available. Similarly, it is not known whether these retailers only recognize the standard or if they ask all their suppliers for it.

Eleven certification bodies are licensed to deliver certificates conforming to the Code at present, but the current number of certified businesses is not available.

IV.1.e.

EurepGAP⁹

Standard-setting body

The Euro-Retail Produce Association (EUREP) was created in 1997 by large European retail chains; and was subsequently joined by large fresh produce suppliers and producers. There are also associate members from the input and service side of agriculture (mainly suppliers of agrochemicals, certification bodies and consultancy firms), who can participate in meetings but are not part of the decision-making process.

Each certification programme is developed by a specific committee, all of them having 50 percent retailer and 50 percent producer representation. The secretariat of the certification programmes is hosted by FoodPLUS, a professional non-profit organization, which is also the legal owner of the normative documents.

Scope and objectives

The EUREP has developed different certification programmes, named EUREP Good Agriculture Practices (EurepGAP), to promote good agricultural practices and regain consumer confidence in food safety, animal welfare, environmental protection and worker welfare.

In contrast to other international food safety standards, EurepGAP standards are specific to fresh products and therefore concern farm companies directly. However, these standards, which encourage minimal use of agrochemical and medicinal inputs, have a larger scope than food safety in so far as they also take into account worker safety and health, as well as environmental and animal welfare issues (although the latter aspects have been criticized for being rather vague).

Certification programme

Five different certification programmes have been established, corresponding to five commodity sectors:

- **EurepGAP Fruit and Vegetables:** this standard, specific to fruit and vegetable farms, was the first one set up and is currently the most operational. The other EurepGap standards have been developed more recently.
- **EurepGAP Integrated Farm Assurance:** this standard generalizes the Fruit and Vegetables standard to several types of farm activities and products (crops, fruit and vegetable, poultry, pig, cattle and sheep, dairy).
- **EurepGAP Integrated Aquaculture Assurance:** this standard is equivalent to the previous one for aquaculture activities. It is intended to address various fish species but currently concerns only salmonids.
- **EurepGAP Coffee:** this standard, very similar to the one on fruit and vegetables, focuses on coffee production.
- **EurepGAP Flowers and Ornamentals:** this standard will not be studied since it does not concern the food sector.

⁹ Source: Euro-Retail Produce Association web site (available at: www.eurep.org)

An individual producer can be certified, but also a producer group, in which case this group must have a quality system (including a written control and procedure manual implementing the EurepGAP standard), and internal audit procedures (that establish at least an annual inspection of each producer). The certification body then takes charge of an annual inspection of the quality control and quality management of the collective structure, as well as an annual inspection of a random sample of individual producers in the group. Detected non-compliance of one farmer in the group may result in the certificate's withdrawal from the whole group.

Certification agreements between certification bodies and producers can cover a period of three years, but they must be reviewed annually. In addition to the fees payable to the certification body, certified producers have to pay an annual fee of €5 plus €20 per inspection. There is no product label associated with EurepGAP certification.

To facilitate the harmonization of standards, producer organizations that have already implemented an existing farm assurance scheme with third-party verification are allowed to obtain recognition of equivalence with the EurepGAP standards through a benchmarking system.

A grower may request EurepGAP certification for some specific products (e.g. carrots). If a grower registers a certain product, all aspects of production for this product must comply with EurepGAP, even if some parts of this production are not related to EurepGAP - requiring buyers.

Each of the four certification programmes include a certain number of control points for which required compliance can be "major", "minor" or "recommended". To obtain certification, a producer must comply with all the applicable major control points (if an obligation is not applicable to the producer, it must be justified) and with 90 percent of the applicable minor control points (95 percent for the fruit and vegetable sector). Once certified, if the producer fails to meet these requirements, sanctions are introduced (warning, suspension, cancellation).

Table 12: Requirements within the EurepGAP standards

EurepGAP Standard	Fruit and Vegetables	Integrated Farm Assurance	Integrated Aquaculture Assurance	Coffee
Current version of the normative documents	Version 2.1 (Jan 2004)	Version 2.0 (March 2005)	Version 2.1 (June 2005)	Version 1.0 (Sept 2004)
Commodity sector	fruit and vegetables	combinable crops and/or fruit and vegetables and/or poultry and/or pig and/or cattle and sheep and/or dairy	currently only salmonids, but the standard covers various fish species	coffee
Number of control points	210 (47 major requirements, 98 minor requirements, 65 recommendations)	around 300, depending on the activity (from 203 for combinable crops to 373 for poultry)	240 (128 major requirements, 81 minor requirements, 31 recommendations)	195 (46 major requirements, 104 minor requirements, 45 recommendations)
Number of compliance points required to obtain certification	100% of all applicable major requirements 95% of all applicable minor requirements	100% of all applicable major requirements 90% of all applicable minor requirements (95% for fruit and vegetables activities)	100% of all applicable major requirements 90% of all applicable minor requirements	100% of all applicable major requirements 90% of all applicable minor requirements

Source: Internet (www.eurep.org), August 2005

The Fruit and Vegetables standard appears more demanding than the others since 95 percent of all applicable major requirements need to be fulfilled (rather than 90 percent). This is true when this standard is compared to the Coffee standard, but not necessarily when it is compared to the Integrated

Farm Assurance standard which includes many more control points with major (and therefore obligatory) compliance.

Provisions of the standard

Control points are very similar from one standard to another, at least on common activities (traceability, site management, worker health, environmental issues, etc.). It is worth noting that these standards mainly establish requirements for good practices, but some other provisions are typical of quality management (for instance traceability, record keeping, etc.).

Table 13: Requirements within the EurepGAP standards

Fruit and Vegetables	Integrated Farm Assurance	Integrated Aquaculture Assurance	Coffee
-traceability -record keeping -varieties and rootstocks -site management -soil and substrate -fertiliser use -irrigation/fertigation -crop protection -harvesting -produce handling -waste and pollution -worker health -environmental issues -complaint form	For all the commodity sectors : -record keeping -site management -machinery and equipment -worker health -waste and pollution -environmental issues -complaint form Plus specific requirements for corresponding commodity sector	For all the fish species : -record keeping -complaint form -staff -legislative framework -site management -fish welfare -machinery and equipment -environmental issues -fresh water -sea water Plus specific requirements for corresponding species (currently only salmonids)	-traceability -record keeping -varieties and rootstocks -site management -soil and substrate -fertiliser use -irrigation/fertigation -crop protection -harvesting -produce handling -waste and pollution -worker health -environmental issues -complaint form

Source: Internet (www.eurep.org), August 2005

Analysis of compliance with the Codex Code of Practice on General Principles of Food Hygiene has been carried out only for The “Fruit and vegetables” standards (see annex 3), which is by far the most widespread EurepGAP standard (see paragraph “Market penetration” below).

The EurepGAP Fruit and Vegetables standard complies on the whole with Codex recommendations for primary production (contamination control, plant health control, food sources protection from faecal contamination, appropriate storage of harmful substances). However, EurepGAP does not require the implementation of a HACCP system as recommended by Codex, though it explicitly requires:

- a risk assessment of different inputs (organic fertilizer, irrigation),
- a risk assessment at different identified stages (harvesting, transport, produce handling), accompanied with the implementation of corresponding control procedures

On the other hand, the EurepGAP Fruit and Vegetables standard, which is intended to be wider in scope than only food safety, establishes a great number of requirements that do not appear in the Codex Code of Practice, especially concerning soil and substrate, worker health and environmental issues.

Market penetration

The Fruit and Vegetables standards is the most commonly used among all the EurepGAP standards (see table below), likely because it was established prior to the others.

Several large European retailers support these standards. But it is not clear if they actually demand them at present from all their suppliers in every country. In 2003, the EurepGAP website indicated: “Some retailers are saying that all their suppliers must be EurepGap certified by 2004. Others do not have a deadline, but will in time question why preferred suppliers are not EurepGap certified and perhaps review their decision to do business with them” (FAO, 2003). Updated information on this is not available.

Table 14: Diffusion of the EurepGAP certification programmes

EurepGAP Standard	Fruit and Vegetables	Integrated Farm Assurance	Integrated Aquaculture Assurance	Coffee
Number of retail members	30 (in particular Metro, Tesco and Ahold)	10 (in particular Metro and Ahold)	8 (in particular Metro and Ahold)	6 (in particular Metro and Ahold)
Number of members among producer organizations	105	13	5	3
Number of licensed certification bodies	68 (plus 18 currently in process to receive license)	9 (plus 14 currently in process to receive license)	6 currently in process to receive license	7 currently in process to receive license
Number of farm assurance schemes recognized as equivalent to EurepGAP standards	3 (plus 9 on approval)	1 on approval	0	1
Number of certified producers according to EurepGAP standard or to approved equivalent schemes	18,000 in more than 50 countries (June 2004) Currently, this number is rapidly increasing thanks to the equivalence approval of many farm assurance schemes.	Not available The first certificates were delivered in October 2004	Not available The certification programme has been in place since December 2004	Not available The certification programme has been in place since December 2004

Source: Internet (www.eurep.org), August 2005

IV.1.f.

ISO 22000

While the standards developed by the food retail sector demonstrate a certain degree of harmonization of food safety management systems standards, several different standards, each supported by different global retailers, continue to exist.

The objective of the ISO 22000 is precisely to establish a single internationally- recognized standard for food safety management systems.

Standard-setting body

The International Organization for Standardization (ISO) is a network of 146 national standards bodies, one per member country, coordinated by a Central Secretariat in Geneva, Switzerland. ISO is a non-governmental organization but occupies a special position between the public and private sectors. Many of its members are national governmental institutions or institutions mandated by a government, while other members (such as national industry associations) have their roots in the private sector. Therefore, although it is not an intergovernmental organization, the WTO Agreement on Technical Barriers to Trade (TBT) explicitly recognizes ISO as providing internationally accepted standards.

Between 1947 and the present, ISO published more than 15 000 international standards.

Scope and objectives

ISO has established standards on quality management systems, the ISO 9000 series, that become an international reference for quality management requirements in business-to-business dealings. More than half a million organizations in more 149 countries are implementing the ISO 9000 series. However, this standard is not specific to the food industry and does not take into account food process specificities, especially in regard to food safety issues. In this context, ISO recently developed the ISO 22000 standard (“Food safety management systems – Requirements for any organization in the food chain”) specifically for food safety management systems. However, the ISO 22000 standard only specifies requirements on quality management systems and HACCP systems, and not on good practices.

ISO 22000 applies to all food operators (feed producers, primary producers, manufacturers, transport and storage operators, retail and food service outlets and related organizations such as producers of equipment, packaging material, cleaning agents, additives or ingredients, etc.). Thus, primary producers are included in the scope of the standard.

Certification programme

ISO 22000 can be applied with or without third-party certification of compliance. An ISO Technical Specification (ISO/TS 22003) that explains the applicable certification requirements when third-party certification is used will be published in due course. The current draft of this document specifies that the non-conformities with each criterion shall be classified as “critical”, “major” or “minor” according to their potential effect on food safety, leading to different types of corrective actions to obtain certification. Moreover, the time interval between two audits shall not exceed three years. A multi-site certification is possible if all the sites have similar activities and operate under the same management system. In such a case, all the sites are audited for the first certification, and then all of them must be audited at least every five years.

The normative document of ISO 22000 will be complemented by another ISO Technical Specification (ISO/TS 22004), which will give guidance on the implementation of the standard with a particular emphasis on small and medium-sized enterprises.

Provisions of the standard

The architecture of ISO 22000 resembles ISO 9001:2000 in order to enhance compatibility between the two standards and allow their joint implementation.

The requirements are divided into six chapters:

- Food safety management system (general requirements, documentation)
- Management responsibility (management commitment, policy, management system planning, responsibility and authority, team leader, communication, emergency preparedness and response, management review)
- Resource management (provisions of resources, human resources, infrastructure, work environment)
- Planning and realization of safe products (prerequisite programmes, preliminary steps to enable hazard analysis, hazard analysis, establishing the operational prerequisite programmes, establishing the HACCP plan, updating, verification planning, traceability system, control of non-conformity)
- Validation, verification and improvement (validation of control measure combinations, control of monitoring and measuring, management system verification, improvement)

ISO 22000 does not provide requirements for good practices. Indeed, ISO maintains that it can not establish such requirements since the standard is intended to be applicable to all types of organizations in the food chain (by comparison IFS and BRC concern manufacturers). It does, however, require that the company implements adequate good practices programmes (as “prerequisite programmes”) and makes an explicit reference to the Codex principles and codes of practices (relevant Codex documents, especially the Codex Code of Practice on General Principles of Food Hygiene, are listed in the annex of the normative document). ISO 22000 describes the various aspects that such programmes should address (construction and lay-out of buildings, waste and sewage disposal, cleaning, maintenance, pest control, personnel hygiene, etc.), similar to the different topics of the Codex Code of Practice on General Principles of Food Hygiene.

In terms of quality control, ISO 22000 (like the Dutch HACCP Code or the SQF codes) does not cover several important issues mentioned by the Code of Practice on General Principles of Food Hygiene such as monitoring of incoming materials, management of temperature/time, finished product identification (see also annex 4).

Concerning HACCP, ISO 22000 establishes requirements that comply with the seven Codex principles and the 12 Codex steps. However, ISO 22000 adds another step between hazard analysis and identification of the Critical Control Points (CCP). Indeed, ISO 22000 considers that the hazard analysis allows the identification of necessary control measures. Either such necessary control measure concerns a CCP and then is managed by subsequent HACCP classic steps, or it is not and then shall be managed by prerequisite programmes, in such case named “operational prerequisite programmes”, which must be documented more specifically.

Market penetration

The standard was released on 30 August 2005 and so its use cannot yet be evaluated at the time of writing this document.

IV.2.Comparison

IV.2.a. Summary chart of the programmes' characteristics

Four characteristics are especially relevant to compare the major certification programmes previously described:

- the range of the programme: is it limited to a specific country? which one?
- the intended operators: is the programme limited to primary producers? to manufacturers? to private label product manufacturers?
- the scope of the standard provisions: does it deal with quality management systems? with HACCP systems? with good practices?
- the requirements of certification: do the retailers require certification of their suppliers? do they merely favour certified suppliers?

These elements are summarized up in the chart below.

Table 15: Major certification programmes for food safety

	BRC Global Standard - Food	IFS	SQF	Dutch HACCP Code	EurepGAP	ISO 22000
Geographical range	British market (and Scandinavian market to a less extent)	essentially German and French market	American and Australian market	Dutch market	European market	international
Intended operators	food manufacturers (originally for private label products, but increasingly also for branded products)	food manufacturers (originally for private label products, but increasingly also for branded products)	SQF1000: food primary producers SQF 2000: food industries	all operators handling food (but primary producers are not explicitly mentioned)	primary producers	all operators handling food (including primary producers)
Provisions scope	quality management system + HACCP system + general good manufacturing practices	quality management system + HACCP system + general good manufacturing practices s	exclusively quality management system	quality management system +HACCP system	general good agricultural practices (including environmental issues)	quality management system +HACCP system
Requirements	the majority of UK retailers require BRC certification from all their suppliers for their private label products	the majority of French and German retailers require IFS certification from all their suppliers for their private label products	numerous American and Australian retailers recognize SQF certification, but they do not seem to require it systematically	Not available	some European retailers seem to require EurepGAP certification from all their suppliers, at least for fresh fruit and vegetables	acceptance by retailers and producers cannot yet be assessed

Although some standards are identified as global or international in name (notably the BRC standard or the IFS), they may in fact be geographically limited in use (the BRC standard is mainly used by the British market, the IFS by the German and French market) and not necessarily recognized by retailers worldwide. They are therefore “international” in so far as suppliers around the world have to comply with them to penetrate the British, German or French market.

IV.2.b. Comparison of the programmes not specific to farm activities

The previously discussed certification programmes therefore have varying scopes and objectives. In particular, the EurepGAP standards are distinctive in terms of: i) being specific to the commodity sector; and ii) establishing good agricultural practices with an emphasis on environmental issues and worker welfare but few requirements related to quality management systems or the hygienic handling of products, and no requirements on HACCP. Because of this, EurepGAP standards will not be compared further with the other programmes.

The BRC, IFS, SQF, Dutch HACCP and ISO 22000 have been compared in relation to the Codex General Principles of Food Hygiene (see complete table in annex 4). This comparison concerns the standards’ provisions and not the protocols. The differences and similarities are exposed with regard to provisions about:

- good manufacturing and handling practices (often named “prerequisite programmes”)
- quality control
- quality assurance
- HACCP

Comparison with regard to good practices provisions (“prerequisite programmes”)

The IFS and the BRC Global Standard-Food establish specific requirements on good practices and these requirements are very similar from one standard to another (see annex 4). However, several issues that the Codex General Principles of Food Hygiene emphasize are not explicitly covered (management of working surfaces, equipment for temperature control, storage facilities, measures for prevention of cross contamination).

ISO 22000, as well as the SQF codes and the Dutch HACCP code, require the establishment of prerequisite programmes, but without specifying them. However, the ISO 22000 normative document presents in annex a list of relevant Codex standards (including the General Principles of Food Hygiene), and the Dutch HACCP code mentions the General Principles of Food Hygiene as “a firm foundation”.

Moreover, ISO 22000 draws up a short list of issues that should be covered by such prerequisite programmes (layout of facilities, supply of utilities, cleaning, personnel hygiene, etc.) but this non-exhaustive list does not mention some issues covered by the Codex General Principles of Food Hygiene (for instance site location, equipment maintenance, medical screening of the personnel, etc.).

It is also worth noting a new concept about prerequisite programmes that ISO 22000 introduces: the operational prerequisite programmes, that is prerequisite programmes managing control points that are not critical and thus that are not covered by the HACCP system. ISO 22000 establishes specific requirements for such operational prerequisite programmes (mainly a more complete documentation).

Comparison with regard to quality control provisions

Concerning quality control provisions, the five standards establish some common requirements about traceability or management of non-conformities, these items being not (or not completely) covered by

the Codex General Principles on Food Hygiene. However, it is worth noting that the Dutch HACCP Code requirement on management of non-conformities only concerns the CCPs non-conformities, in contrast to the other standards which apply to all types of non-conformities. Otherwise, each standard shows a specific combination of requirements.

On the whole, both the IFS and BRC are far more demanding than the SQF, Dutch or ISO standards, especially with regard to the requirements on product realization. Indeed, both IFS and BRC establish requirements on management of temperature/time, metal or foreign body detection, quantity control, management of allergens or stock rotation, which the other standards do not.

Furthermore, both the IFS and BRC standard are more demanding than the Codex General Principles of Food Hygiene on several issues (for instance metal or foreign body detection, management of allergens, and calibrating of monitoring and measuring devices), although certain issues mentioned by the Codex General Principles of Food Hygiene (identification of finished product) are not explicitly covered by either standard.

However, the IFS and BRC still present several differences. Indeed, the BRC standard establishes specific requirements (in particular on the management of specific product status such as organic products, or the monitoring of incoming materials) that the IFS does not. Likewise, the IFS establishes certain other requirements (e.g. subcontractor monitoring, management of GMOs, etc.).

Comparison with regard to quality assurance provisions

The five standards (IFS, BRC, SQF, Dutch HACCP and ISO 22000) establish requirements on quality assurance that cover more or less the same issues (management responsibility, food safety policy, resource management, documentation and document control, verification of the management system in particular with internal audits, etc.). Nevertheless, these requirements can be different from one standard to another. For instance, ISO 22000 is the only one to specifically emphasize communication (external and internal communication). On the contrary, only the IFS, BRC and SQF demand a complaint handling procedure.

Another specificity of the SQF codes is that most of its requirements concerning quality assurance consist of defining documented procedures without explicitly demanding their implementation. This underlines a typical criticism made of quality standards; notably that they demand quality manuals from companies without requiring their effective implementation.

Comparison with regard to HACCP provisions

The five standards require the establishment of a HACCP system (except for the SQF codes for Level 1 certification), each one more or less complying with the system detailed in the annex of the Codex General Principles on Food Hygiene. However, they do not present the same level of detail concerning the requirements (see annex 4):

- the SQF codes require a system based on the principles of the HACCP method and make reference to the Codex document
- the IFS and the BRC standard require the implementation of (scarcely detailed) tasks that comply with the seven Codex principles (for the BRC standard and for IFS “Foundation Level” certification) or with the 12 Codex steps (for IFS “Higher Level” certification)
- the Dutch HACCP Code and ISO 22000 establish more detailed requirements that comply with the 12 Codex steps

Conclusion of the comparison

The standards examined each have their own specific set of requirements, which makes each one particular. However, it is possible to distinguish several common characteristics:

- the EurepGAP standard, which is targeted at farm producers and is very specific to on- farm activities, makes specific requirements on food safety good practices and environmental and ethical issues, but has very few requirements on quality management and no requirements on HACCP
- the ISO 22000, the SQF codes and the Dutch HACCP Code make detailed requirements on quality assurance and on HACCP (except SQF), but have few requirements on quality control and none on good practices as they address all food operators. Within this group, ISO 22000 is on the whole the more complete and the SQF codes the least demanding.
- the IFS and the BRC standard make detailed requirements on quality assurance, quality control, HACCP and good manufacturing practices. They are thus more complete and demanding than the previous group, but are dedicated only to food manufacturers. The IFS and the BRC standard are very similar, but not identical. The GFSI compared all the provisions of the current version of IFS and the previous version of the BRC standard on good practices and management systems and found that (GFSI, 2004b):
 - 53 percent of the IFS criteria were common with BRC
 - 27 percent of the IFS criteria were partly different from BRC
 - 20 percent of the IFS criteria were not present in the BRC

V. Analysis of potential impact

V.1. Economic impact

V.1.a. Impact on producers

Affect of certification programmes on competitiveness of smallholders from developing countries

The implementation of a certification programme represents costs for producers. They include both compliance costs (investments required for the implementation of the standard) as well as certification costs (fees of the certification body plus a possible amount to the standard owner).

These costs obviously affect the production cost of products. In terms of food safety management systems, the greatest impact is on smallholders. Fixed costs (e.g. documentation preparation, HACCP planning, etc.) that are independent of the number of products produced are proportionately greater for smallholders, given their smaller production. However, variable costs (e.g. product monitoring) can also be proportionately greater for small-scale producers because of their lack of possible economies of scale.

Compliance and certification costs may be greater for remote producers, especially those from developing countries:

- The implementation of some requirements can be more expensive for producers in developing countries. For instance, some standards (e.g. IFS, BRC or EurepGAP) require the submission of analyses to accredited laboratories, which can sometimes be difficult (lack of such laboratories, insufficient capacity of laboratories, laboratories far away, etc.).
- Certification costs can be greater for remote producers because of travel time or hotel costs, which can increase fees of the certification bodies. This is especially true in many developing countries, where there is a lack of a local certification body and where operators have to turn to foreign certification bodies, resulting in higher costs. Indeed, third party certification requires the intervention of an accredited certification body licensed by the standard owner, and such bodies are present only in some countries (see fact sheets on major programmes in chapter IV).

The implementation of certification programmes consequently increases the production costs of small farmers' products, especially those from developing countries, which thus become less competitive on the market.

Affect of retail certification requirements on market access for smallholders

Certification programmes on organic agriculture, fair-trade, etc. are generally exceptions, rather than the rule within markets. In such cases, producers who cannot afford to bear the cost of compliance and certification can remain in the conventional network.

On the contrary, food safety certification programmes seem to be destined to become the rule for most major retailers in industrialized countries (at least in Europe). Since these retailers have the power to dictate their conditions (see chapter II), producers that seek to supply these retailers will most likely have to be certified and bear the associated costs. It is thus highly likely that suppliers, particularly small-scale and poor producers from developing countries, who cannot afford to implement certification programmes will have very limited access to markets in industrialized countries.

Proliferation of different certification programmes

The proliferation of standards with different requirements further limits market access by small farmers, in view of the accumulation of certification and compliance costs.

Producers that supply several countries (or sometimes even several retailers in the same country) are often confronted with many different product specifications, which are sometimes conflicting, with duplication of documentation and record keeping, and with many redundant audits per year.

In this context, the major certification programmes (see chapter IV) that refer to and comply with the Codex General Principles on Food Hygiene, including its annex on the HACCP method, appear compatible. However, in spite of the GFSI attempt to establish mutual recognition between these standards, retailers continue to prefer certification against their own standard. Thus, suppliers to European retailers still need BRC certification for the UK market, IFS certification for the German and French markets, and the Dutch HACCP certification for the Dutch market.

Accordingly, the development of a single international standard, which is the aim of the ISO 22000, could be a step towards enhancing the competitiveness (or at least minimizing the loss of competitiveness) of small farmers. However, acceptance of ISO 22000 could still present problems (see paragraph V.2. regarding the way forward).

V.1.b. Impact on global trade

The WTO seeks to reduce or remove tariffs and technical or sanitary trade barriers to enhance market access for producers globally, including those from developing countries, as a means to promote economic development through trade. However, as discussed above (see previous paragraph- V.1.a.), private standards imposed by retailers from industrialized countries represent a *de facto* barrier to global trade. Small farmers from developing countries generally cannot afford the costs to implement standards and certification demanded by retailers from industrialized countries.

The use of private standards as a global trade barrier has been raised within the WTO. For instance, at the SPS committee meeting from 29 to 30 June 2005, St Vincent and the Grenadines, supported by Jamaica, Peru, Ecuador, and Argentina, made a complaint that the requirements of EurepGAP are higher than national requirements. In fact, the requirements of most of private standards, like those of EurepGAP (see chapter IV), are more stringent than those of the Codex Alimentarius, which is recognized by the SPS Agreement as an acceptable reference point for food standards and sanitary measures. This is because private operators prefer to increase their requirements as a means to ensure a greater margin of safety.

The outcome of this debate on the stringency of private standards is not yet clear. On the one hand, the SPS Agreement and the TBT Agreement concern government regulations and not private standards. However, on the other hand, these agreements grant a certain responsibility to member countries concerning private standards. Indeed, article 13 of the SPS Agreement says that WTO Members “*shall take such reasonable measures as may be available to them to ensure that non-governmental entities within their territories, as well as regional bodies in which relevant entities within their territories are members, comply with the relevant provisions of this Agreement.*” Likewise, according to the TBT Agreement (articles 7 and 8), WTO Members are required to take “*reasonable measures as may be available to them to ensure that local government and non-governmental standardizing bodies within their territories*” accept and comply with the TBT Code of Good Practice for the Preparation, Adoption and Application of Standards.

However, in response to the complaint about EurepGAP, the EU retorted that it is not in a position to intervene because private sector organizations are reflecting consumer demand.

V.1.c. Impact on food safety governance

A cartel-like governance

It appears that retailers are less concerned with compliance with the SPS Agreement than with anti-trust regulations (OECD, 2004). In fact, the formation of private operators' groups (such as EUREP, BRC, IFS-board, etc.), which hold power within the supply chain and dictate their conditions and requirements through certification development, can be seen as a cartel and thus as an anti-trust violation.

This concern could explain the reluctance of retailers to merge their various certification standards (e.g. BRC and IFS) since such a merger would probably accentuate the dominant position of the retail sector.

A private governance on food safety

Another concern is the progressive shift from public sector governance towards private governance concerning food safety policies (OECD, 2004). This shift is not necessarily negative in itself, since it illustrates that private operators are taking a greater interest in, and are more responsive towards, food safety. However, it raises the question of the role of the government's policies and their adequacy with respect to private initiatives.

V.2. The way forward: towards standards harmonization?

As discussed in chapter III, the proliferation of certification programmes in the food sector means that producers who wish to access industrialized country markets face several challenges, in particular a large number of different product specifications and audits each year.

The retail sector has attempted to regulate food safety requirements by setting up specific standards based on their own expectations. However, this has added to the confusion, since several standards have been created, each one specific to the market of a certain country (BRC Global standard – Food for Great Britain, IFS for Germany and France, SQF for the USA and Australia, etc.), and each one with specificities but with also overlaps (see chapter IV). Furthermore, all the major suppliers in these countries do not systematically support the corresponding standard (for instance, the French retailer Leclerc does not support IFS). GFSI is currently attempting to harmonize these retail standards (see paragraph III.2), but in practice retailers continue to demand their own standard.

In response to the clear lack of a recognized food safety certification programme on the international level, ISO 22000 was developed to fill this void. The main advantage of ISO 22000 is that it applies to all stakeholders along the food supply chain, including primary producers and manufacturers, so that it may be used throughout the entire chain.

The acceptance of ISO 22000 by relevant stakeholders, especially retailers, is obviously a condition of its success. If ISO 22000 is recognized as a valuable management system requirement, the large overlap between standards and certification assessments will disappear. A positive indicator of possible acceptance was the interest displayed by retailers and producers during the development of the ISO 22000. However, it is not clear if retailers are ready to abandon their own standards.

In fact, ISO 22000 does not provide a detailed list of requirements for good practices and for quality control, in part because of the difficulties of drawing up such a list that covers requirements for all types of organizations. Each company may thus use its own GMPs or GHPs, of which reliability can be not easily judged by retailers, since these GMPs or GHPs will not appear in the ISO certification report. On the contrary, BRC and IFS both ensure the implementation of GMPs and GHPs, adapted to the needs of retailers.

Furthermore, given the nature of the ISO, the procedure to improve and update the ISO 22000 is likely to be time consuming. In contrast, retailers may modify their standards more quickly. For instance, ISO 9000 is in its third version since its initial publication in 1987, whereas IFS is in its fourth version since 2002 and BRC has been modified three times since 1998.

Therefore, it seems unlikely that ISO 22000 will take the place of either the IFS or the BRC standard. It is obviously impossible that it will replace the EurepGAP standards, as they do not have the same scope at all.

On the other hand, standards like the SQF codes or the Dutch HACCP Code that do not establish GMPs or GHPs may perhaps become less used since their requirements are more or less completely covered by ISO 22000. Similarly, the food industry is likely to lose interest in ISO 9001 since most of its quality management provisions are detailed in ISO 22000.

To conclude, it would be advantageous to see a merger of the IFS and BRC in the coming years given their similarities and the convergence of their requirements during their evolution. However, the likelihood of such a merger is doubted by some analysts in view of the possible consequences in terms of anti-trust (see paragraph V.1.c. above).

Conclusion

To summarize, food safety certification programmes display three main characteristics:

- overall compatibility with Codex Alimentarius standards, especially the Codex General Principles on Food Safety, although the requirements are often more stringent;
- private standards are becoming increasingly mandatory in that retailers require them more and more systematically;
- standards with varying requirements have proliferated over the last ten years, reflecting the demands of specific national markets, however mutual recognition remains rare. In spite of the attempts of the GFSI to harmonize the major food safety certification programmes, an internationally accepted standard still does not exist. Although some certification schemes present themselves as international (IFS or BRC Global standard – Food), they actually have a geographically limited range (mainly Europe). While ISO 22000 was developed to fill this gap, its focus on all operators along the food chain means that it does not specify prerequisite programmes. As a result, it is likely that retailers will continue to demand their own standards to provide these prerequisite programmes and that the IFS and BRC standard will continue to be used.

These trends tend to negatively impact small farmers, especially those in developing countries. Given their limited capacity to meet the challenges posed by the proliferation of standards, they tend to face barriers to enter industrialized country markets or to maintain their market share.

The discussion has also revealed two issues of concern, which could be the subject of further investigation. Firstly, it is well known that strict food safety requirements and completely free access to the global market are not easily compatible. However, the SPS and TBT Agreements, which are the usual mechanisms to ensure that governments base their decisions on an appropriate balance between food safety and free trade, are less useful for certification programmes, given that such programmes tend to be private initiatives rather than government ones.

Secondly, the current asymmetrical relationship between retailers and producers enables global retailers to dictate their conditions to suppliers (except for the major branded food manufacturers). As a result, the retail sector is increasingly responsible for food safety governance within the food chain, what raises questions about the adequacy of public policies. At present, major private standards are on the whole compatible with those established in the Codex Alimentarius, which are intergovernmental agreements.

Finally, taken together, these two issues raise two important questions. What tools and mechanisms could be used to curb over-stringent requirements on producers made by retailers? How can private standards be brought more into line with the recommendations of the Codex Alimentarius?

These are important questions for policymakers in all countries, in both public and private entities, to consider, especially in working to assist small farm producers throughout the world, while at the same time, working to ensure the safe production of food.

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Normative documents

Codex Alimentarius

- CAC/RCP 1-1969, Rev.4 (2003): *General principles of food hygiene*
Annex: *Hazard Analysis and Critical Control Point (HACCP) system and guidelines for its application*
See: www.codexalimentarius.net/download/standards/23/CXC_001_2003e.pdf
- CAC/GL 26-1997: *Guidelines for the design, operation, assessment and accreditation of food import and export inspection and certification*
See: www.codexalimentarius.net/download/standards/354/CXG_026e.pdf

BRC

BRC Global Standard – Food. Issue 4. January 2005

IFS

International Food Standard. Version 4. January 2004

SQF (available at www.sqfi.com)

SQF 1000 Code, a HACCP based supplier assurance code for the primary producer. 3rd edition – February 2005

SQF 2000 Code, a HACCP based supplier assurance code for the food industry. 4th edition – February 2005

Dutch HACCP Code

Requirements for a HACCP based food safety system. 3rd Version. September 2002

EurepGap (available at www.eurep.org)

General Regulations, Fruit and Vegetables. Version 2.1 – January 2004.

Control Points and Compliance Criteria, Fruit and Vegetables. Version 2.1 – January 2004.

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ISO 22000

ISO/FDIS 22000. Food safety management systems – Requirements for any organization in the food chain. Final Draft. May 2005.

ISO/PDTS 22003. Food safety management systems – Requirements for bodies providing audit and certification of food safety management systems. Draft. August 2005.

Annexes

Annex 1: Compliance of the BRC Global standard-Food with Codex

BRC Global Standard – Food (section)	Codex Code of Practice on General Principles of Food Hygiene (section)	Compliance	Comment
1 HACCP System	5.1. Control of food hazards 5.6. Management and supervision Annex	total compliance with the 7 Codex HACCP principles	BRC standard does not require all of the five preliminary steps defined by Codex (BRC does not demand the formal description of the product and of its use, nor the construction of an on-site confirmed flow diagram)
2 Quality Management System 2.1 Quality Management System – General Requirements 2.2 Quality Policy Statement 2.3 Quality Manual 2.4 Organizational Structure, Responsibility and Management Authority 12 2.5 Management Commitment 2.6 Customer Focus 2.7 Management Review 2.8 Resource Management 2.9 Internal Audit 2.10 Purchasing 2.10.1 Supplier Approval and Performance Monitoring	-	-	
2.11 General Documentation Requirements 16 2.11.1 Documentation Control 2.11.2 Specifications 2.11.3 Procedures 2.11.4 Record Keeping	5.7. Documentation and records	total compliance	
2.12 Corrective Action 2.13 Traceability	-	-	
2.14 Management of Incidents, Product Withdrawal and Product Recall	5.8. Recall procedures	general compliance	BRC is less explicit than Codex recommendations, which specify: – that products similar to the withdrawn one should be evaluated – the withdrawn product future (destruction, use not for human consumption, reprocess)
2.15 Complaint Handling 3 Factory Environment Standards 3.1 External Environment Standards	-	-	
3.1.1 Location	4.1.1. Establishments 4.1.2. Equipment	general compliance	BRC is far less explicit than Codex recommendations, which specify: – the areas the establishments should be located away from – the way the equipment should be located

3.1.2 Perimeter and Grounds	4.4.2. Drainage and waste disposal	total compliance	total compliance on drainage issues
3.2 Internal Environment Standards	-	-	
3.2.1 Layout, Product Flow and Segregation	4.2.1. Design and layout	total compliance	
3.2.2 Fabrication – Raw Material Handling, Preparation, Processing, Packing and Storage Areas	-	-	
3.2.2.1 Walls 3.2.2.2 Floors 3.2.2.3 Ceilings /Overheads 3.2.2.4 Windows 3.2.2.5 Doors	4.2.2. Internal structures and fittings	general compliance	BRC is less explicit than Codex recommendations, which specify: – the materials the surfaces of walls, partitions and floors should be made of – the way the windows should be constructed – requirements on working surfaces
3.2.2.6 Lighting	4.4.7. Lighting	general compliance	BRC does not specify that the resulting colour should not be misleading
3.2.2.7 Air Conditioning/Ventilation	4.4.6. Air quality and ventilation	general compliance	BRC is not explicit that ventilation should also control odours and ambient temperature, nor that air does not flow from contaminated areas to clean areas
3.3 Services	4.4.1. Water supply	total compliance	
3.4 Equipment	4.3. Equipment	general compliance	BRC is far less explicit than Codex recommendations, which specify: – the way the equipment should be designed and constructed in order to facilitate maintenance – the way the equipments especially used to cook, heat treat, cool, store or freeze food should be designed in order to allow monitoring and controlling, especially in HACCP perspective
3.5 Maintenance	-	-	
3.6 Staff Facilities	4.4.4. Personnel hygiene facilities and toilets	general compliance	BRC does not specify requirements on drying hands machines, nor on appropriate hygienic lavatories design
3.7 Physical and Chemical Product Contamination Risk	5.2.5. Physical and chemical contamination	total compliance	
3.8 Housekeeping and Hygiene	6.1. Maintenance and cleaning 6.2. Cleaning programmes 6.5. Monitoring effectiveness	inadequate compliance?	BRC only asks for adequate procedures, whereas Codex recommendations explicitly – specify what cleaning should ensure – give examples of basic procedures – specify requirements for cleaning programmes, and especially the need to be adapted to reflect changed circumstances
-	4.4.3. Cleaning	no compliance?	BRC does not explicitly require adequate facilities for cleaning food, utensils and equipment
3.9 Waste/Waste Disposal	4.3.3. Containers for waste and inedible substances 4.4.2. Drainage and waste disposal 6.4. Waste management	inadequate compliance?	BRC does not settle requirements on containers used to hold dangerous substances

3.10 Pest Control	6.3. Pest control systems	general compliance	BRC is far less explicit than Codex recommendations, which specify: <ul style="list-style-type: none"> – preventing pest access requirements – food storage requirements – eradication treatment requirements
3.11 Transport	8. Transportation	general compliance	Codex is more explicit on certain requirements (separation of food and non-food if necessary...)
-	4.4.5. Temperature control	no compliance	BRC does not settle any requirements on temperature control facilities if appropriate
-	4.4.8. Storage	no compliance	BRC does not settle any requirements on storage facilities
4. Product Control			
-	5.2.1. Time and temperature control 5.2.4. Microbiological cross-contaminations 5.5. Water	no compliance	BRC explicitly demands only the elaboration and implementation of an HACCP plan, but does not require specifically control systems for temperature, cross-contamination, water use
4.1 Product Design/Development	-	-	
4.2 Handling Requirements for Specific Materials	5.3. Incoming material requirements	general compliance	Codex recommendations apply to microbiological or toxic risk, unlike BRC.
4.3 Metal Detection/Foreign Body Detection	5.2.5. Physical and chemical contamination	total compliance	
4.4 Product Packaging	5.4. Packaging	general compliance	BRC does not explicitly require adequate product protection thanks to packaging, nor to use only safe materials or gases
4.5 Product Inspection and Analysis	5.3. Incoming material requirements	general compliance	BRC does not specify raw material control requirements
4.6 Stock Rotation 4.7 Product Release 4.8 Control of Non-conforming Product	-	-	
5 Process Control			
5.1 Control of Operations 5.2 Quantity Control 5.3 Calibration and Control of Measuring and Monitoring Devices			
6 Personnel			
6.1 Training – Raw Material Handling, Preparation, Processing, Packing and Storage Areas	10. Training	general compliance	BRC is less explicit than Codex which gives mandatory items for hygiene training.
6.2 Personal Hygiene – Raw Material Handling, Preparation, Processing, Packing and Storage Areas	7.3. Personal cleanliness 7.4. Personal behaviour 7.5. Visitors	general compliance	BRC is less explicit than Codex which gives examples of: <ul style="list-style-type: none"> – tasks after which people must always wash their hands – unsafe behaviour (spitting...)
6.3 Medical Screening	7.1. Health status 7.2. Illness and injuries	general compliance	BRC is less explicit than Codex which: <ul style="list-style-type: none"> – recommends that ill persons should not be allowed in any food handling area – giving examples of relevant symptoms
6.4 Protective Clothing – Food Handlers And Others Working In or Visiting Food-handling Areas	7.3. Personal cleanliness 7.5. Visitors	total compliance	

Annex 2: Compliance of the IFS with Codex

FL = Foundation Level

HL = Higher Level

IFS	Codex Code of Practice on General Principles of Food Hygiene	Compliance	Comment
1. Management of the quality system 1.1 Quality management system			
1.2 HACCP 1.2.1 HACCP system 1.2.2 HACCP team 1.2.3 HACCP analysis	5.1. Control of food hazards 5.6. Management and supervision Annex	FL : total compliance with the 7 Codex HACCP principles HL : total compliance with the 12 Codex HACCP steps	An explicit mention is made to the Codex HACCP principles FL does not require the fifth Codex HACCP step (on-site confirmation of the flow-diagram)
1.3 General quality manual 1.4 Procedures			
1.5 Documentation requirements 1.6 Record control	5.7. Documentation and records	total compliance	
2. Management responsibilities 2.1 Management responsibilities 2.2 Management commitment 2.3 Management review 2.4 Customer focus 3. Resource management 3.1 Resource management 3.2 Personnel			
3.2.1 Protective clothing – Food handling personnel, personnel working in production areas and visitors	7.3. Personal cleanliness 7.5. Visitors	total compliance	
3.2.2 Personnel hygiene, raw material preparation, processing, packing and storage areas	7.3. Personal cleanliness 7.4. Personal behaviour 7.5. Visitors	general compliance	BRC is less explicit than Codex which gives examples of: – tasks after which people must always wash their hands – unsafe behaviour (spitting...)
3.2.3 Medical screening	7.1. Health status 7.2. Illness and injuries	inadequate compliance?	IFS does not explicitly forbids that ill persons should not be allowed to any food handling area
3.2.4 Training and internal communication	10. Training	general compliance	IFS is less explicit than Codex which gives mandatory items for hygiene training:
3.3 Staff facilities	4.4.4. Personnel hygiene facilities and toilets	general compliance	IFS does not specify requirements on hand drying machines, nor on appropriate hygienic lavatory design

4. Product realisation 4.1 Contract review 4.2 Product schedule of conditions 4.3 Product design and development			
4.4 Purchases	5.3. Incoming material requirements	general compliance	IFS does not explicitly specify what kind of hazards make raw materials unacceptable
4.5 Product packing	5.4. Packaging	general compliance	IFS does not explicitly require adequate product protection thanks to packaging, nor to use only safe materials or gases
4.6 Organization results monitoring 4.7 Specific handling 4.8 Fabrication environment 4.8.1 Perimeter and ground			
4.8.2 Location	4.1.1. Establishments 4.1.2. Equipment	general compliance	IFS is less explicit than Codex recommendations, which specify: – the areas the establishments should be located away from – the way the equipment should be laid out
4.8.3 Establishment and product flow	4.2.1. Design and layout 5.2.4. Microbiological cross-contaminations	general compliance	
4.8.4 Fabrication (raw materials handling, preparation, processing, packing and storage) 4.8.4.2 Walls 4.8.4.3 Floors 4.8.4.4 Ceilings/Suspended ceilings/Suspensions 4.8.4.5 Windows 4.8.4.6 Doors	4.2.2. Internal structures and fittings	general compliance	IFS is less explicit than Codex recommendations, which specify: – the materials the surfaces of walls, partitions, floors and doors should be made of – the way the windows should be constructed – requirements on working surfaces
4.8.4.7 Lighting	4.4.7. Lighting	general compliance	BRC does not specify that the resulting colour should not be misleading
4.8.4.8 Air conditioning/ventilation	4.4.6. Air quality and ventilation	inadequate compliance?	IFS does not require that ventilation should minimize air-borne contamination or should control humidity, odours and ambient temperature, nor that air does not flow from contaminated areas to clean areas
4.8.4.9 Potable water supply	4.4.1. Water supply 5.5. Water	general compliance	IFS is less explicit than Codex recommendations
4.9 Housekeeping and hygiene	6.1. Maintenance and cleaning 6.2. Cleaning programmes 6.5. Monitoring effectiveness	inadequate compliance?	IFS only asks for adequate procedures, whereas Codex recommendations explicitly – specify what cleaning should ensure – give examples of basic procedures – specify requirements for cleaning programmes, and especially the need to be adapted to reflect changed circumstances
-	4.4.3. Cleaning	no compliance?	IFS does not explicitly require adequate facilities for cleaning food, utensils and equipment

4.10 Waste/Waste disposal	4.3.3. Containers for waste and inedible substances 4.4.2. Drainage and waste disposal	inadequate compliance?	IFS does not require specific precautions for containers used to hold dangerous substances
4.11 Pest control	6.3. Pest control systems	general compliance	BRC is less explicit than Codex recommendations, which specify: <ul style="list-style-type: none"> - preventing pest access requirements - food storage requirements - eradication treatment requirements
4.12 Stock rotation			
4.13 Transport	8. Transportation	general compliance	Codex is more explicit on certain requirements (separation of food and non-food if necessary...)
4.14 Maintenance			
4.15 Equipment	4.3. Equipment	general compliance	IFS is far less explicit than Codex recommendations, which specify: <ul style="list-style-type: none"> - the way equipment should be designed and constructed in order to facilitate maintenance - the way equipment, especially that used to cook, heat treat, cool, store or freeze food should be designed in order to allow monitoring and controlling, especially in respect to HACCP
4.16 Equipment and process validation 4.17 Calibration, control of measuring and monitoring devices 4.18 General traceability 4.19 GMOs 4.20 Allergens	-	-	
-	4.4.5. Temperature control	no compliance	IFS does not specify any requirements on temperature control facilities
-	4.4.8. Storage	no compliance	IFS does not indicate any requirements on storage facilities
5. Measurements, analyses and improvements 5.1 Internal audit			
5.2 Process/temperature/time control	5.2.1. Time and temperature control	general compliance	IFS is less explicit than Codex recommendations which specify issues that temperature control systems should take into account
5.3 Quantitative controls			
5.4 Physical and chemical product contamination risk	5.2.5. Physical and chemical contamination	total compliance	
5.5 Metal detection/foreign body detection	5.2.5. Physical and chemical contamination	total compliance	
5.6 Product Release 5.7 Product analysis 5.8 Customer complaint management	-		

5.9 Product recall	5.8. Recall procedures	general compliance	IFS is less explicit than Codex recommendations, which specify: <ul style="list-style-type: none"> – that products similar to the withdrawn one should be evaluated – the withdrawn product future (destruction, use not for human consumption, reprocess)
5.10 Control of non-conforming products 5.11 Corrective actions	-		

Annex 3: Compliance of the EurepGAP “Fruit and Vegetables” with Codex

EurepGAP	Codex Code of Practice on General Principles of Food Hygiene	Compliance	Comment
1. Traceability 2. Record keeping and internal self-inspection 3. Varieties and Rootstocks 3.1 Choice of variety of Rootstock 3.2 Seed/Rootstock Quality 3.3 Pest and Disease Resistance 3.4 Seed Treatments and Dressings 3.5 Propagation Material 3.6 Genetically Modified Organisms 4. Site History and Site Management	-		
4.1 Site History	3.1 Environmental Hygiene	total compliance	
4.2 Site Management	-		
5. Soil and Substrate Management 5.1 Soil Mapping 5.2 Cultivation 5.3 Soil erosion 5.4 Soil Fumigation 5.5 Substrates 6. Fertiliser Use 6.1 Advice on Quantity and Type of Fertilizer 6.2 Records of application 6.3 Application Machinery 6.4 Fertiliser Storage 6.5 Organic Fertilizer 6.6 Inorganic Fertilizer 7. Irrigation/Fertigation 7.1 Predicting Irrigation Requirements 7.2 Irrigation/Fertigation Method 7.3 Quality of Irrigation Water 7.4 Supply of Irrigation/Fertigation Water 8. Crop Protection 8.1 Basic Elements of Crop Protection 8.2 Choice of Chemicals 8.3 Records of application 8.4 Pre-harvest Intervals 8.5 Application Equipment 8.6 Disposal of Surplus Application Mix 8.7 Crop Protection Product Residue Analysis	3.2 Hygienic Production of Food Sources	general compliance	<p>EurepGAP Fruit and Vegetables totally complies with specified Codex recommendations (contamination control, plant health control, food sources protection from faecal contamination, appropriate storage of harmful substances).</p> <p>EurepGAP does not require the implementation of a HACCP plan as recommended by Codex. However, it explicitly requires a risk assessment of different inputs (organic fertilizer, irrigation), but it does not require the implementation of corresponding control procedures.</p>

8.8 Crop Protection Product Storage and Handling 8.9 Empty Crop Protection Product Containers 8.10 Obsolete Crop Protection Products			
9. Harvesting 9.1 Hygiene 9.2 Packaging/Harvesting Containers on Farm 9.3 Produce packed at point of Harvest 10. Produce Handling 10.1 Hygiene 10.2 Post-harvest washing 10.3 Post-harvest Treatments 10.4 On Farm Facilities for Produce Handling and/or Storage	3.2 Hygienic Production of Food Sources 3.3 Handling, Storage and Transport 3.4 Cleaning, maintenance and personnel hygiene at primary production	general compliance	EurepGAP does not require the implementation of a HACCP plan as recommended by Codex. However, it explicitly requires a risk analysis at different identified stages (harvesting, transport, produce handling,), <u>and</u> it requires the implementation of corresponding control procedures EurepGAP does not explicitly require appropriate procedures to prevent deterioration and spoilage (temperature/humidity control...)
11. Waste and Pollution Management, Recycling and Re-use 11.1 Identification of Waste and Pollutants 11.2 Waste and Pollution Action Plan 12. Worker Health, Safety and Welfare 12.1 Risk Assessments 12.2 Training 12.3 Facilities, Equipment and Accident Procedures 12.4 Crop Protection Handling 12.5 Protective Clothing/Equipment 12.6 Welfare 12.7 Visitors Safety 13. Environmental Issues 13.1 Impact of Farming on the Environment 13.2 Wildlife and Conservation Policy 13.3 Unproductive Sites 14. Complaint Form	-		

Annex 4: Comparison of the major standards dealing with Food Safety Management Systems

Legend: companies shall establish a programme that is more or less specified by the standard

companies shall establish an unspecified appropriate programme

number indicates the relevant section of that standard

bold italic : procedure documentation is required, but implementation is not explicitly required

Topic	Codex General Principles of Food Hygiene	BRC Global Standard – Food	IFS	SQF codes	Dutch HACCP Code	ISO 22000
MANAGERIAL REQUIREMENTS (QUALITY ASSURANCE)						
GENERAL						
Establishment and implementation of a FSMS		2.1	1.1	4.3.1		4.1
Procedures for realization of safe products		2.11.3	1.4			7.1
Procedures for emergency preparedness						5.7
Establishment and implementation of HACCP system		1	1.2.1	4.3.1 (only for levels 2 and 3)	5.1.2	7.1
Establishment and implementation of prerequisite programmes (PRPs)		1.5		4.3.1	5.4	7.2.1 7.2.2
Validation of the FSMS					5.10	
Verification of the procedures' effectiveness by the food safety team					5.11	7.8 8.4.2 8.4.3
Internal audits		2.9	5.1	4.4.2	5.11	8.4.1
Customer satisfaction		2.6	2.4 4.1			5.2
Complaint handling		2.15	5.8	4.4.4		
External communication						5.6.1
Internal communication						5.6.2
TOP MANAGEMENT RESPONSIBILITY						
Food safety commitment		2.5	2.2		5.1	5.1
Definition of a food safety policy		2.2	2.1	4.1.1	5.1.1	5.2
Planning of the FSMS			2.1			5.3
Definition of responsibilities and authorities	5.6	2.4	2.1	4.1.3	5.1.3	5.4
Designation of a food safety team					5.1.4	5.5 7.3.2
FSMS review		2.7	2.3	4.4.3	5.1.6 5.11	5.8
FSMS improvement		2.1	2.3			8.5.1
Updating of FSMS		2.1	2.3			8.5.2
RESOURCE MANAGEMENT						
Resources for the FSMS		2.8	2.2		5.1.5	6.1
Human resources for the FSMS			3.1.1			6.2.1
Personal training	10	6.1	3.2.4	4.1.4	5.6.2	6.2.2
Resources for infrastructure			3.1.2			6.3
Resources for work environment			3.1.3			6.4

DOCUMENTATION						
FSMS documentation	5.7	2.11	1.5		5.12.1	4.2.1
Food safety manual		2.3	1.3	4.1.2		
Control of documents		2.11.1	1.5	4.5.1	5.12.1	4.2.2
Control of records	5.7	2.11.4	1.6	4.5.2	5.12.2	4.2.3

Topic	Codex General Principles of Food Hygiene	BRC Global Standard – Food	IFS	SQF codes	Dutch HACCP Code	ISO 22000
OPERATIONAL REQUIREMENTS (QUALITY CONTROL)						
MANUFACTURE OF THE PRODUCT						
Finished product specifications		2.11.2	4.2	4.2.3	5.2.1	
Evaluation of product shelf life		4.1	4.3			
Management of purchased materials						7.2.3.f)
Specifications for purchased materials	5.3	2.11.2	4.2	4.2.1	5.6.2	
Control of purchasing processes		2.10	4.4		5.6.2	
Supplier monitoring		2.10.1	4.6	4.2.2		
Subcontractor monitoring			4.6			
Monitoring of incoming materials	5.3	4.5.1		4.2.2		
Validation of process plan		4.1 5.1	4.3 4.16			
Validation of equipment			4.16			
Management of temperature/time	5.2.1	5.1	5.2			
Metal / foreign body detection		4.3	5.5			
Quantity control		5.2	5.3			
Traceability system		2.13	4.18	4.6.2	5.2.1	7.9
Management of GMOs			4.19			
Management of allergens		4.2	4.20			
Management of specific product status (e.g. organic)		4.2				
Stock rotation	5.3	4.6	4.12			
Monitoring system		5.1	4.17			8.1 8.2
Control and calibrating of monitoring and measuring devices		5.3	4.17	4.4.1		8.3
Management of analyses		4.5	5.7	4.2.2 4.4.5		
Product packaging	5.4	4.4	4.5 4.7			7.2.3.f)
Finished product inspection				4.4.5		
Compliance of the finished product with food legislation				4.3.3 (SQF1000) 4.3.4 (SQF2000)		
Finished product identification	9			4.6.1	5.2.2	
Product release		4.8	5.6	4.4.6 (only SQF 2000)		7.10.3.1 7.10.3.2

MANAGEMENT OF NON CONFORMITIES						
Management of incidents		2.14				7.10.1
Handling of non- acceptable products		4.8	5.10	4.3.3 (only SQF 2000)	5.9 (only for CCPs incidents)	7.10.3.3
Product withdrawal and product recall	5.8	2.14	5.9	4.6.3	5.9 (only for CCPs incidents)	7.10.4
Corrective action to eliminate cause of nonconformity		2.12	5.11	4.3.2	5. 5.9 (only for CCPs incidents) ⁹	7.10.2

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HACCP SYSTEM						
GENERAL						
Collection of all relevant information						7.3.1
Definition of the HACCP system scope					5.1.2	
HACCP team	Step 1	1.1 1.2 1.3 1.4	1.2.2		5.1.4	7.3.2
DESCRIPTION OF THE PRODUCT						
Description of raw materials and product-contact materials					5.2.1	7.3.3.1
Description of finished products	Step 2		1.2.3.4		5.2.1	7.3.3.2
Description of intended use of the end product	Step 3		1.2.3.5		5.2.2	7.3.4
DESCRIPTION OF THE PRODUCT MANUFACTURE						
Flow diagrams	Step 4		1.2.3.6		5.3.1	7.3.5.1
On-site confirmation of the flow diagrams	Step 5		1.2.3.14 (Higher Level cert.)		5.3.3	7.3.5.1
Description of process steps and control measures						7.3.5.2
Description of layout					5.3.2	
HAZARD ANALYSIS						
Hazard analysis implementation	Step 6	1.6.1 1.7	1.2.3.7.1 1.2.3.7.2		5.5.1 5.5.2	7.4.1 7.4.2 7.4.3 7.4.4
MANAGEMENT OF THE CRITICAL CONTROL POINTS (CCPs)						
Identification of critical control points (CCPs)	Step 7	1.6.2	1.2.3.7.3		5.6 5.6.1 5.7.1	7.6.2
Determination of critical limits for CCPs	Step 8	1.6.3	1.2.3.7.4		5.7.2	7.6.3
System for the monitoring of CCPs	Step 9	1.6.4	1.2.3.7.5		5.8	7.6.4
Actions when CCP monitoring results exceed critical limits	Step 10	1.6.5	1.2.3.7.6		5.9	7.6.5
MANAGEMENT OF THE HACCP SYSTEM						
Validation of the HACCP plan					5.10	
Verification of the HACCP system	Step 11	1.6.6	1.2.3.7.7		5.11	
Documentation of procedures and records	Step 12	1.6.7	1.2.3.7.8		5.12	4.2.1
Updating of the HACCP system		1.8	1.2.3.9			7.7

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“PREREQUISITE PROGRAMMES” (PRPs) = GOOD PRACTICES						
GENERAL						
Identification of the PRPs controlling relevant hazards at steps that are not covered by the CCPs management					5.6	7.4.4 7.5
General control measures for PRPs					5.6.2	
Updating of the PRPs						7.7
PRODUCTION ENVIRONMENT						
Site location	4.1.1	3.1.1	4.8.2			
Perimeter and grounds maintenance		3.1.2	4.8.1			
Design and layout of installations and product flow	4.2.1	3.2.1	4.8.3			7.2.2 a) 7.2.2 b)
Walls	4.2.2	3.2.2.1	4.8.4.2			
Floors	4.2.2	3.2.2.2	4.8.4.3			
Ceilings/overheads	4.2.2	3.2.2.3	4.8.4.4			
Windows	4.2.2	3.2.2.4	4.8.4.5			
Doors	4.2.2	3.2.2.5	4.8.4.6			
Working surfaces	4.2.2					
Lighting	4.4.7	3.2.2.6	4.8.4.7			
Air conditioning/Ventilation	4.4.6	3.2.2.7	4.8.4.8			7.2.2 c)
Supply of water	4.4.1 5.5	3.3	4.8.4.9			7.2.2 c)
Supply of energy						7.2.2 c)
Suitability of equipment	4.1.2 4.3.1	3.4	4.15			7.2.2 e)
Equipment for the temperature control	4.3.2 4.4.5					
Equipment maintenance	6.1	3.5	4.14			
Employee facilities	4.4.4	3.6	3.3			7.2.2 b)
Waste and sewage disposal	4.3.3 4.4.2 6.4	3.9	4.10			7.2.2 d)
Transport facilities	8	3.11	4.13			7.2.3.f)
Storage facilities	4.4.8					7.2.3.f)
Measures for prevention of cross contamination	5.2.4					7.2.3.g)
Measures for prevention of physical and chemical contamination	5.2.5	3.7	5.4			
Housekeeping and cleaning	4.4.3 6.1 6.2	3.8	4.9		5.6.2	7.2.3 h)
Pest control	6.3	3.10	4.11			7.2.3 i)
Verification of sanitation systems	6.5					
PERSONNAL						
Personal hygiene	7	6.2	3.2.2		5.6.2	7.2.3 j)
Medical screening	7.1	6.3	3.2.3			
Protective clothing	7.3	6.4	3.2.1			