Project "Exploring the impact of local alternative food quality dynamics on small scale farmers' access to markets"

Funded by the National Agricultural Marketing Council

Literature review on quality trends internationally and nationally

Estelle Biénabe[1], Cerkia Bramley[2], Hester Vermeulen[3], Emma Kambewa[4]

CIRAD
University of Pretoria

November 2009
Pretoria

[1] Project Coordinator, Department of Agricultural Economics, Extension and Rural Development, University of Pretoria E mail: Estelle.bienabe@up.ac.za Tel: (+27-12) 420 5773 Fax: (+27-12) 420 4958

[2] Contractual researcher in the Department of Agricultural Economics, Extension and Rural Development, University of Pretoria E mail: Cerkia.Bramley@up.ac.za Tel: (+27-12) 420 3251 Fax: (+27-12) 420 4958

[3] Contractual researcher in the Department of Agricultural Economics, Extension and Rural Development, University of Pretoria E mail: Hester.vermeulen@up.ac.za Tel: (+27-12) 420 3251 Fax: (+27-12) 420 4958

4 Post doctoral fellow at the Department of Agricultural Economics, Extension and Rural Development, University of Pretoria Research Economist - Fisheries Economics and Marketing WorldFish Center P.O. Box 229, Zomba MALAWI Tel + 265 888 830850 mobile Tel + 265 1 536 274/ 536 313 Fax + 265 1 536 274

A. Insights into food quality trends internationally

1. Introduction to food quality and food quality trends

It is a well established fact that the agro-food system has been evolving in many parts of the world in the last decades based on the industrialization of agriculture and agro-food processing. This has resulted in an increased offering of standardized products and a commoditization of food products, which have been underlying the development of the mass consumption model. However, food markets around the world are characterised by market saturation for food products with commodity traits and a consequent movement towards products addressing consumers' demand for food products with more advanced alternative quality attributes (Ponte & Gibbon, 2005:2; Krystallis et al, 2005:65). Recent developments in food science and technology have supported the growing offer of convenience food by adding services to the products as well as of functional food that integrates dedicated health services. These developments together with the spreading and extension of alternative food quality movements has given rise to a turn from the mass consumption model where purchasing decision were mainly motivated by prices toward an increasing qualitative differentiation of products and demand with different attributes becoming significant (Allaire, 2002). These current changes in the features of food demand and consumption - "the immaterialisation of food and institutionalisation of quality" (Allaire, 2003) that underline product proliferation and differentiation has been referred to by Allaire (2003) as the 'quality turn'. It has been driven by food crises and related food safety awareness, the globalization of food networks and market saturation for 'commodity' type products as well as by growing social and environmental concerns (Ponte and Gibbon, 2005; Allaire, 2003). Food safety concerns have increased internationally over the past decade and continue to be an important accelerator of changes in the development of food markets. The increased food scandals and scares such as the mad cow disease, foot and mouth disease, pesticide residues, dioxin and toxic chemicals in the food chain, *Listeria*, *Salmonella* and other microbiological hazards received significant attention in the media.

As pointed out by Watts and Goodman (1997) among others, changes towards making quality more central to how food supply chains operate are an important element of the evolution of agro-food supply chains. This is further confirmed by Marsden (1997) which suggests that the attribution of quality criteria along food supply chains is becoming more ingrained. This is translating into an increasing complexity of quality and new quality conventions. The 'traditional' view of food quality applies to an environment characterised by mass consumption of homogeneous commodities, where improved quality is established through stricter product controls and the rejection of products that do not meet with higher quality standards (i.e. product selection). The modern view of quality is more specific and encompasses traditional quality dimensions as well as non-measurable elements such as health, taste, environmental awareness and ethical issues, as elaborated on below. As a result, the concept of food quality has been expanding to include alternative quality attributes in line with evolving consumer expectations.

In Peri et al (2004), a food quality model is developed as a set of consumer requirements that include alternative quality attributes together with the basic quality

requirements. According to this model, consumer requirements include requirements relating to food safety, commodity requirements, nutritional requirements and sensory requirements. The safety and commodity requirements relate to what consumers would perceive as "authenticity" and "genuineness". The legal requirements for safety, commodity and nutrition are "implicit requirements' taken as a given by consumers. Sensory requirements are explained as relating to memory, values, culture and emotions. Peri (2006) included as alternative quality attributes requirements related to the production context, ethical requirements, guarantee (certification and traceability) requirements, requirements of the product/packaging system and requirements of the product/market system. According to Peri (2006), sensory requirements relate to our knowledge/ memory of a product and our sensory reactions to it, creating an integrated perception that determines the ideas and emotions we associate with a specific product. These safety, commodity, nutritional and sensory requirements form the basic framework of the quality of a product.

However, it is important to stress that there is no single generally accepted definition of food quality in the literature as has been widely acknowledged (see among others Luning and Marcelis, 2007; Peri (2006)). As pointed out by Lang and Heasman (2004), food quality today is a battleground of competing paradigms, each of them advocating specific food and production consumption norms and structuring specific organisational patterns in the food system as further developed below (see also Brunori, 2007).

Approaches to food quality range from purely objective (i.e. quality that is defined by a set of measurable characteristics) to purely "subjective" approaches (i.e. quality that is determined by consumers' attitudes and behaviours). Peri (2006) states that quality can be defined in utilitarian terms as ''fitness for use'' or in the context of food as ''fitness for consumption''. According to the definition of quality as consumer satisfaction, quality can be described as the requirements needed to satisfy the needs and expectations of the consumer (Vastoia, 1997). In the marketing and consumer economics literature, there are two main approaches to defining food quality (Grunert, 2005). The *holistic* approach includes within the concept of food quality all the desirable characteristics a product is perceived to have. By contrast, the *excellenc*e approach views food quality as referring only to characteristics that deal with an elevated, more restrictive or 'superior' specification of the product.

Brunori (2007) points out that quality refers to communication as it deals with the development and exchange of meaning. This emphasises the informational dimension of quality, Ilberry and Kneafsey (1997) illustrate that consumers may equate quality to food safety concerns whereas producers may view quality as a marketing opportunity. While demand economists, when referring to quality, differentiate between subjective qualities (*attributes*), as perceived by the consumers and objective qualities or *characteristics* of the good in question (Lancaster, 1966), on the contrary, according to network sociology, all the product qualities (the material and immaterial ones) are relational characteristics, i.e. they derive from a process of qualification / re-qualification which involve all actors, human and non-human in the *network* built up by the product on its way from design to consumer. Fonte (2005) points out that from this perspective, quality is seen as a process of adjustment and interaction between demand, supply and intermediaries. Callon et al. (2002) uses the concept of qualification to explain the construction of quality as related to the network-building

activity of various actors from different spheres such as production, consumption and business. Despite the lack of a generally accepted definition of or approach to food quality, Brunori (2007) highlights that most of the approaches defining quality recognise that a) quality is the outcome of interaction between product characteristics, producers and consumers; b) there is a gap between "perceived quality" and "measurable quality" and c) this gap provides opportunity for marketing strategies. Quality can thus be seen as a constantly changing and "socially constructed" concept which is continually recreated through the interaction of different role players that create alternative meanings for quality (Marsden and Arce, 1995).

2. Information asymmetry and quality perception

The growing interest in expanding the notion of quality in agro-food production is illustrated by the recent emergence of food standards and quality assurance systems. Consumers' information about product quality is often far from perfect as shown by Nelson (1970) which found that consumers do not have perfect access to information regarding the prices of goods, and even less so as to the quality of the goods. He classified goods on the basis of how information is accessed by and/or conveyed to consumers as summarised in Table 1. This classification has been extensively used in consumer and supply chain literature, given its implications for quality management and signalling, as further explored below.

Table 1: Classification of goods based on access to information

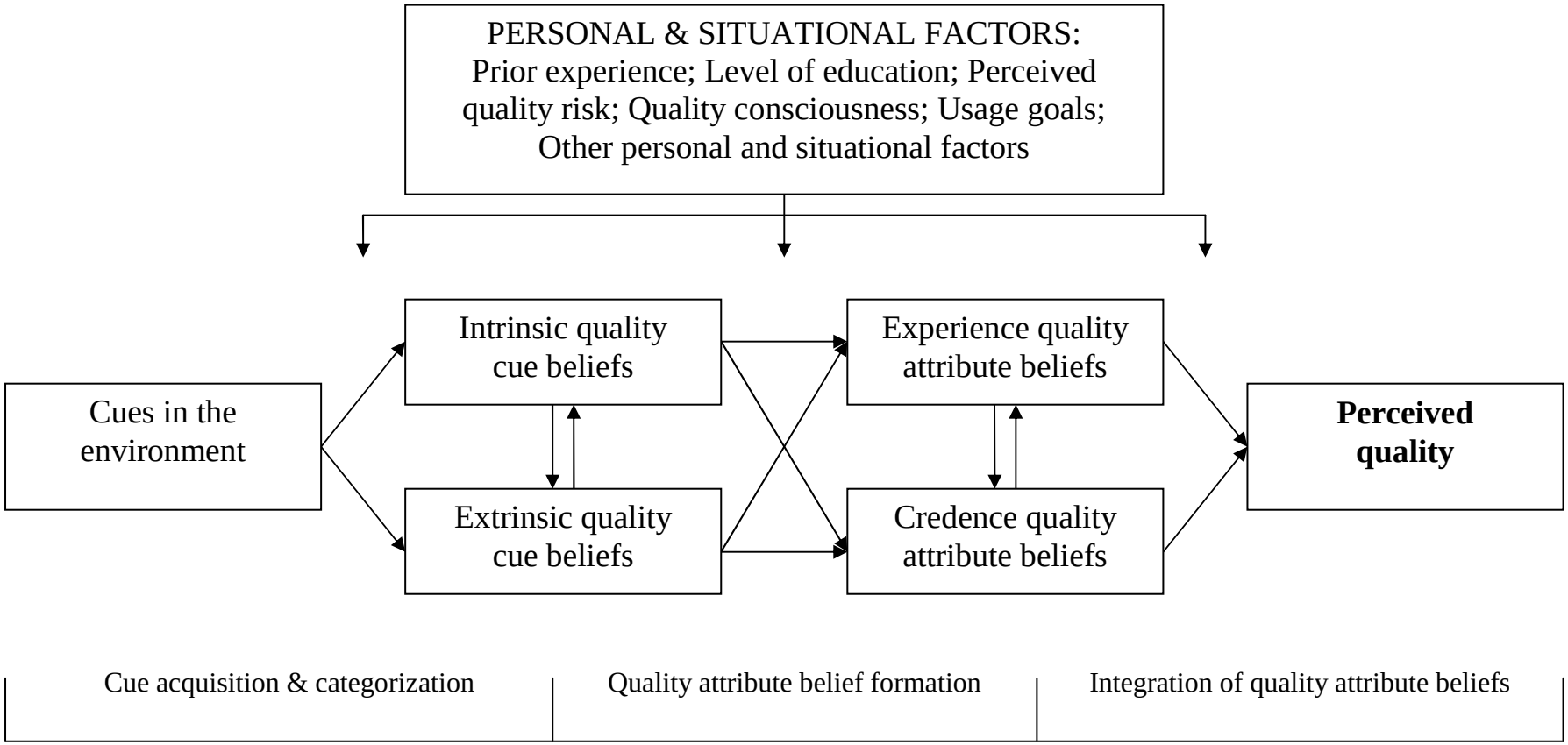
Search goods	Consumers can ascertain quality prior to purchase through inspection and/or research.
Experience goods	Consumers can ascertain quality after purchase through use and experience.
Credence goods	Neither prior inspection nor subsequent use is sufficient to ascertain quality.

Source: Nelson (1970)

From an information theory perspective, it is further recognised that products are conceived as consisting of an array of information cues. Each cue assists consumers in evaluating the product. Cues can be classified as either extrinsic or intrinsic (Olsen, 1972). Intrinsic cues refer to characteristics such as physical features of the product (e.g. shape, size etc) while extrinsic cues, although related to the product, are not part of its physical description (e.g. price, brand, region of origin). Building upon Nelson's classification and these dimensions, Steenkamp (1989) developed a conceptual model that helps in understanding the process through which consumers form their perceptions. This model is presented below. It gives a foundation as to how cues derived from the product and from the environment are processed by consumers according to their socio-economic characteristics as well as other dimensions such as prior experience, intended use and risk perception. According to Brunori (2007), credence characteristics are particularly important signals that influence consumer choice by creating an association between a product and a value system (see also Benedict and Steenkamp, 1990).

A conceptual model of the quality perception process

(Steenkamp, 1989; In: Ophuis & Trijp, 1995)



It is widely acknowledged that food products display characteristics of all three types of goods (Rangnekar, 2003). As food markets are characterized by varying qualities, only the producer is fully aware of the product quality in advance, while the consumer runs the risk of buying an inferior product. This information gap leads to typical market information problems in the form of adverse selection and moral hazard, originally described by Akerlof (1970) in his work on the market for second hand cars. It is clear that information asymmetry impacts negatively on the market: with consumers not being able to distinguish between different quality levels, producers have no incentive to produce high quality products; on the contrary, inferior quality producers have scope to free ride at the expense of both the consumers and high quality producers. Producers maintaining the quality of their products thus face unfair competition from producers who can sell lower quality products at the same price given the lack of differentiation among products of different qualities. The quality of total supply drops, higher-quality products are driven out of the market and some consumers will no longer be able to satisfy their preferences (see also OECD, 2000). That this holds true in the case of food safety is clear – the market will adversely select lower quality food that is potentially unsafe as a result of information asymmetry.

To deal with this problem, both consumers and producers have developed various strategies. On the producer side, strategies consist of investing in the signalling of its product quality and creating a reputation for it. Consumer strategies may consist of repeat purchases that result in brand loyalty and/or a willingness to pay a premium based on a producer's reputation. Klein and Leffler (1981) showed that the existence of that premium determines producer or firm investment in quality. In his model on reputation at individual firm level, Shapiro (1982 and 1983) analyses the firm's choices regarding the quality level of its production with a view to maximizing profits in a situation where it is assumed that markets are perfectly competitive but information is imperfect. He stresses the importance of the dynamics emerging among the following three elements: firm reputation, consumer learning and the seller's choice of product quality. If product quality cannot be observed in advance, consumers tend to use the quality of products offered by the same producer in the past as an indicator of future levels of quality. According to Shapiro (1983) reputation thus embodies expected quality in that individuals extrapolate past behaviour to make inferences about likely future behaviour. This value judgment develops over time creating an intangible asset whose value is given by capitalisation of future price premiums (Belletti, 1999).

However, as stressed by Goodman (2003), it is clear that where common morals, shared norms and institutional risk assurances lack, trust alone provides an inadequate base for food quality. In this respect, Loader and Hobbs (1999) see three possible ways to convey information to the consumer regarding the credence attributes of food products: (i) firm level responses such as the introduction of product certification, branding or labelling as mentioned above, (ii) legislative protection in the form of labelling regulations and (iii) the introduction of legislative liability provisions[5].

[5] For a discussion on the impact of legislative liability provisions see section5 below.

3. Collective reputation and geographical indication labelling

As a result of the need to signal quality, an interesting category of distinctive signs is the one related to geographical indication labelling. It provides a useful illustration of both private and collective dimensions of signalling quality. Indeed it builds on collective reputation as further developed in this section. As with other distinctive signs, the economics underlying geographical indication labelling is founded on the economic theories of information and reputation. These theories illustrate the importance of (1) preventing the market distortions that arise when there is asymmetry of information between producers and consumers and (2) averting the consequences of such asymmetry of information on the level of output quality (OECD, 2000) that have been highlighted in the previous section.

As indicated in the section above, the concept of reputation, as applied to studies on markets where there is imperfect information (Stiglitz, 1989; Tirole, 1988), aids in overcoming the market failure associated with asymmetry of information. However, the successful use of reputation to restore efficiency to the market through averting the consequences of information asymmetries requires that reputation be protected through a process which can be viewed as the "institutionalisation of reputation" (Belletti, 1999). Distinctive signs such as geographical indications can achieve this by institutionalising the relationship between the product and the region and/or tradition through the use of legal instruments that prevent the misappropriation of benefits. Geographical indications can thus be viewed as the result of a process whereby reputation is institutionalised in order to solve certain problems that arise from information asymmetry and free riding on reputation. This highlights a fundamental feature of geographical indications protection i.e. that it functions as both a consumer protection measure (through addressing information asymmetries and quality) and a producer protection measure (through its role in protecting reputation as an asset) (OECD, 2000).

As stated by Sauvée and Valceschini (2003) "*In the current competitive universe, the definition of quality and the information on qualities are from now on at the heart of the competitive strategies of economic actors*". Origin labelled products are an important example of this, as trends in the food sector over the past decade indicate that consumers are increasingly placing value on products they can associate with a certain place and/or special means of production (Ilbery & Kneafsey, 1998). The economic rationale for protecting geographical indications fundamentally derives from the fact that place of origin may be used as a quality signal or alternatively the resources of the region may be captured in the origin labelled product as quality attributes (Pacciani *et al*, 2001). In contrast to trademarks which are distinctive signs identifying goods of an enterprise and thus not limited by any territorial link, geography is at the heart of geographical indications (Marsden, 1998). This geographically intertwined nature of geographical indications has certain implications for the organization and control of origin labelled supply chains. As Belleti and Marescotti (2002) mentions, origin labelled products are very often characterized by a "collective dimension" in the sense that they are linked not only with the skills of many producers and/or processors but also with locally created public goods and with the history, habits and culture of the local community. This requires the creation of collaborative networks through which many actors jointly manage the common product in the same way a single firm might do (Barjolle & Sylvander, 2002).

Chappuis and Sans (2000) have identified co-ordination in the supply chain as a prerequisite for the success of origin labelled products and for the competitiveness of the firms producing and marketing it. According to Barjolle and Sylvander (2002) coordination in the context of origin labelled supply chains should be understood as the ability of firms to achieve collective and efficient product and market management. Ménard (2000) states that there are various advantages associated with cooperation and collective production: (1) economies of scale in the acquisition of information, (2) risk-bearing among the group when facing unanticipated contingencies, (3) mitigation of adverse selection and moral hazard and (4) increased productivity due to a more developed "sense of responsibility". However, he highlights that there are also limits and costs to cooperation, resulting from: (1) free riding strategies through selection of members (ex-ante) and malingering behaviour once selected (ex-post), (2) collective decision-making that may hamper the advantages of command, (3) incentives to collude and develop side payments and (4) the high cost of processing information and communicating in a team-oriented organization. In assessing how effective coordination and cooperation is with regard to product management, Barjolle and Sylvander (2002) consider two factors: (1) the capacity to bring out the product's differentiation potential and (2) the ease with which each actor can appropriate the collective process. The latter refers specifically to the ability of the actors to adapt their individual strategies to the collective strategy.

Landon & Smith (1997) provide an empirical analysis of the extent to which consumers use reputation and current quality indicators when making purchase decisions using data from the market for Bordeaux wine. The analysis is conducted by relating prices to the information that is available to consumers using a hedonic model of differentiated product price. The result suggests that consumers place considerable value on mechanisms that provide information on past quality. The study further indicates that the price premium associated with the collective reputation variables is as large as that associated with individual firm reputation. The authors point out that the high value that consumers place on the government determined regional designations and on the industry determined quality classifications suggests that both government and industry can meaningfully provide information product characteristics. In a further study based on the same type of model in which price is a function of current and expected quality (where expected quality depends on reputation), Landon and Smith (1998) deepen their analysis. The results indicate that the marginal impact of expected quality on price of Bordeaux wine is approximately 20 times higher than that of current quality. Consumers appear to consider a long term reputation for quality as a more significant indicator of current quality than recent quality improvements. The authors thus point out that it may take a considerable time for a firm to establish a reputation for high quality that would result in a significant price premium.

Costanigro et al. (2009) stress the importance of both firm and collective reputations in price formation (with regard in particular to current quality performance) and point out the use of nested names as reputation devices: "[…] *reputations are essentially consumers' a priori (pre-consumption) association of a name to a quality expectation, multiple reputation may related to a single experience good (adopting Nelson's, 1970, definition)*". As they note, their focus is different from previous literature that either focused on firm reputations or on collective reputation following the seminal contribution from Tirole (1996). They state that this comes from the "*radically*

different structure of incentives inherent to private and common reputations…". Nested names contribute to categorize products with increasing specificities, they refer not only to the product name but also to the firm that produces the product and to the region or the country of origin. Costanigro et al. (2009) analyses the hierarchical structure attached to purchase decisions of products with nested names based on empirical data from the wine sector, where names and attached reputations are known as important product attributes. But as they mention, the use of nested names is not restricted to the wine sector and can be found in other food sectors such as cheeses in particular. Using a hedonic model applied to Californian wines to estimate the link between different quality attributes (among which production region names and winery names) and prices, they show that for cheap wines, reputation premia are attached to collective names (related to a wine producing region) while for more expensive wines, the reputation premia relates to specific wineries reputation in addition to the producing region reputation. According to the authors, this can be interpreted as reflecting a two-stage decision making process, whereby consumers, when purchasing an item of significant value, will first sort products according to collective reputations and will only look for additional information on specific wineries within selected regions to balance search costs and the costs of a bad choice.

4. Definition and classification of standards

Of particular importance in supporting consumer choices, as noted by Ponte and Gibbon (2005), is the use of standards that have widely developed recently and are instrumental in supplying information on the attributes of a product or a process. Reardon and Farina (2002) define standards as a "*collection of technical specifications, terms, definitions and principles of classification and labelling*". The International Organisation for Standardisation (ISO) defines standards as " *documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions to ensure that materials, products, processes and services are fit for their purpose*". According to the "Glossary of terms" developed by the FAO/WHO in 1976, food standards can be defined as "*a body of rules or legislation defining certain criteria, such as composition, appearance, freshness, source, sanitation, maximum bacterial count, purity, and maximum concentration of additives which food must fulfil to be suitable for distribution or sale*" (as cited by Lasztity (2004)). David (1987) attributes three roles to a standard: (i) a reference role to decrease transaction costs, (ii) a compatibility rule to increase compatibility of products and methods in supply chains and (iii) a social role by enhancing the welfare of consumers. Reardon et al (2001) describe standards as "credence goods" whereby consumers can *prima facie* accept the information provided by a standard or a label as the basis for making consumption decisions without needing to actually acquire this information through the supply chain. However, Busch (2000) points out that although standards are instrumental in creating objectivity in the market, they can never be fully specified and are constantly renegotiated.

The movement towards the development of different food standards that has been observed in the last decades internationally goes along with the fact that other factors, in addition to price, are gaining importance in transmitting knowledge about product quality to consumers as stated initially as well as in the competition among actors in the supply chains. Food safety concerns have been major drivers of the development

of standards and of new quality management systems as widely acknowledged (see among others Hobbs (2003)). Standards are critical to transactions between businesses as they provide a means by which to codify complex sets of information. This can lead to a reduction in transaction costs (Nadvi and Wlatring, 2004; Gibbon and Ponte, 2005; Hobbs, 2003). However, it is important to note that a fundamental shift is occurring in the role of standards from merely reducing transaction costs in commodity markets, to serving as strategic tools for market penetration, system coordination, quality and safety assurance, brand complementing, and product niche definition (Giovannucci and Reardon, 2000). This is in line with the move from producer driven to buyer driven supply chains (Gereffi, 1994). It is clear that standards do not only serve as tools of standardisation. As pointed out by an FAO study (2007), agro-food standards in most cases do not aim solely at standardisation as such, but are implemented to achieve objectives such as improved food safety and quality or environmental and social sustainability.

Different classification systems exist for standards. Standards can be developed based on outcomes or processes related to: (1) quality (e.g. appearance and taste), (2) safety (e.g. pesticide or microbial presence), (3) authenticity (link with geographical origin or traditional production method) and (4) nature of the production process (e.g. environmental impact) (Reardon and Farina, 2002). Holleran et al. (1999) distinguish three main groups of quality assurance systems: (i) private voluntary international quality assurance standards such as ISO 9000, (ii) national farm level assurance systems that may be used in conjunction with labels and (iii) quality assurance systems that deal with retailers' specific safety and quality requirements.

Standards can further be classified as either performance or process standards and are categorized together with grades in this regard. According to Reardon and Farina (2002) "*Performance G&S (Grades and standards)*" are the characteristics the product is expected to have when it reaches a certain point in the supply chain e.g. pesticide residues. Performance standards aim to realize a high quality of the final product and do not focus on the production method. "*Process G&S*" deal with the nature of the methods applied in the supply chain, from production to processing and distribution. This may include requirements such as that food be organically grown or that a product be handled according to methods which limit the bacteria count. Process standards assume that sound production methods will result in high product quality. A further distinction can be drawn between in-chain standards which are not communicated to the final consumer (e.g. GlobalGAP) and those standards which are specifically aimed at signalling information to consumers (typically food labelling schemes such as organics that inform as to the method of production).

As shown by Ventura and van der Meulen (1994), it is the social interaction between the different actors which is paramount in the construction and communication of specific notions of quality. This has led Young and Morris (1997) to argue that the question of who is setting standards (i.e. constructing particular versions of what quality means) is an important element in the use of such notions for competitive ends. Fearne and Kuznezof (1994) and Morris and Young (1997) show that many quality schemes are initiated by retailers, especially large supermarkets and relatively few are developed by producers.

5. The evolution of and relationship between public and private standards

In both developed and developing countries, food safety and quality standards are proliferating as already mentioned, and are becoming more onerous as will be further elaborated on below. This process is taking place through changes in direct public food safety and quality regulations and indirectly through product liability provisions[6] as well as developments in the private spheres (self and third party certification) (Henson and Caswell, 1999).

Food safety concerns and food scares in particular contributed to increased consumers' concerns about the trustworthiness of food regulators and the food industry as a whole. In response to this there has been political pressure in some countries to strengthen public control over food production and marketing, which has led to revisions and reformulation of food laws and regulations and increased border controls in major export markets such as Japan, the EU and the USA among others. This has also triggered significant moves in the private sector. Indeed, following the food scares and scandals, the private sector has experienced losses because of stocks that have had to be discarded, interrupted supply, loss of business and recalled shipments and above all damage to company image and brand names. In order to avoid further food safety scares and to win back consumer confidence, food companies nowadays consider food safety not only as an important commercial risk, but also, in some cases, as an opportunity with which to distinguish themselves from competitors (Verhallen et al, 2004). Furthermore, the relationship between public and private standards is shifting within the broader context of international markets and international trade agreements. Nadvi (2008) observes that the rise of global standards is characterised by two important features. Firstly, there is a relative decline in the role and involvement of national actors, especially public actors. This includes the weakening of national regulatory bodies, as well as the deterioration in many countries of public monitoring bodies. Farina et al. (2005) has documented this in the case of Brazil and Argentina. Secondly, both public and private regional and international actors are becoming more significant role players in formulating and monitoring standards.

While emerging international agreements and institutions primarily address food safety and the prevention of trade distortions, consumer trends towards quality are increasingly leading towards the development of standards that inform about special product attributes related to environmental, origin/traceability and ethical/social concerns. These alternative product standards are predominantly taking the form of private standards and codes of conduct, which are not subject to state intervention and fall outside the jurisdiction of the WTO. Nadvi (2008) also observes the increasing importance of private actors in the global governance around standard setting (see also Henson and Reardon (2005)). Examples include the Eco-friendly standard, the IFOAM organic guidelines, the Fair Trade Initiative and the Ethical Trading Initiative.

Thankappan and Marsden (2006) highlights the fact that private standards, which are well established in many developed countries, are rapidly becoming a global phenomena and have been permeating food markets in the developing world (Reardon

[6] For a more detailed elaboration on the impact of liability provisions on the evolution of private standards, the reader is referred to the legal discussion below.

et al, 2001; Reardon and Berdegué, 2002). As a result, private standards are becoming the predominant drivers of agrifood systems (Henson and Hooker, 2001). Indeed, the literature highlights the influential role of retailers in defining and regulating food quality (Marsden and Arce, 1995; Harrison et al., 1997; Marsden, 1998). This is in line with other studies (Marsden et al, 2000; Thankappan et al., 2004), which have observed a shift from mandatory standards as the predominant form of governance over food safety and quality, which is invariably located within the public sector, to more voluntary forms of governance, allowing for a more actively driven private sector.

An OECD study (2006) highlights three important developments in standards in the food sector over the past decade. These developments contribute to an understanding of the increased importance of the private sector in standard development and include 1) a move to voluntary management systems in the food industry for the monitoring of product and process attributes; 2) the emergence of coalitions of firms for setting private collective voluntary standards and 3) an increased use of private standards in the context of global business to business practices. These private standards have evolved in response to regulatory developments and consumer concerns and as a means of competitive positioning in markets for high-value agricultural and food products (World Bank, 2005). According to Reardon and Farina (2002), the recent development and growth of private standards have been due to the fact that the demand for standards has out-grown the supply of public standards. Furthermore, standards are not merely public goods to resolve market failures, they are strategic tools for market differentiation and are used to protect market share and build a niche (Reardon et al., 2001) as already pointed out; and thirdly, private standards have become increasingly important as tools of chain coordination and as meta-management systems (Caswell et al., 1998) to implement process standards such as HACCP and product quality standards such as ISO standards at each level of the chain. This is done to cut costs and therefore increase competitiveness in a liberalized market as well as to ensure quality and safety.

A further factor which has played a role internationally in the increased use of private standards is the tightening of the regulatory environment, in particular the increased levels of liability for food companies to ensure food safety. Fulponi (2006) observes that public authorities are increasingly engaging industry in the development of food safety and quality objectives and their implementations. In the UK for example, the 1990 Food Safety Act requires buyers to take all “reasonable precautions” to ensure that the food they receive from upstream suppliers is safe. In terms of this Act, any supplier of a branded product would be liable for the safety of that product. All fresh produce sold in unpackaged form is considered to be the own brand of the retailer (Jaffee and Masakure, 2005). The Act replaced what was known as the “warranty” defence under earlier legislation which only required that buyers in the supply chain prove that the food was not compromised while under their control. The new act introduced the concept of “due diligence”. As the interpretation of this concept is vague, retailers have been compelled to develop more onerous quality management systems, including increased food safety and quality standards, with traceability in particular becoming more important. At EU level, the European Product liability directive which has been operational since 1985 has due to different food crisis been extended to include primary production. It stipulates that consumers can sue food producers for damages caused by defective products without proving negligence. Both

the due diligence defence in the UK and the European legislation created an incentive for the development of private standards within the supply chain[7].

Various studies (in particular Henson, 2006) allude to the fact that the proliferation of private standards is leading to the development of mixed forms of governance, where public and private regulatory systems co-exist, influencing one another's development. According to Thankappan and Marsden (2006), the evolution of private standards reflects the increased role of "soft law"[8] in the governance of economic systems (Morth, 2004) and the innovation of regulatory systems, including a shift towards the use of co-regulation (Martinez et al., 2005). The concept of "liberal governmentality", as used by Gibbon (2006) to explain the evolving forms of governance in developed countries, provides a useful context for the evolving relationship between public and private standards. Fulponi (2006) refers to suggestions that the reigning liberal economic perspective held in most OECD countries explains the inclination of governments to allow private standards an increasing role in governing the food system, partly due to fiscal constraints on regulatory activities. Fulponi (2006) also considers that the governance of the agro-food system may be"naturally expanding" to include a broader group of actors as increasing attention is given to various stakeholders' views.

Vuylsteke et al (unknown) refers to literature which argues that the incentive for standards to be private decreases as the public good nature of the standard increases. As a result, quality standards are more often private goods, while food safety standards are more likely to take the form of public standards. This is confirmed by Reardon and Farina (2002) who concludes that the incentive for private standards development would be (1) strongest for quality standards (2) less strong for food safety standards, and (3) weakest for standards dealing with animal and plant health. Codron et al. (2005) point out the mutual dependence between public and private standards regulation. Furthermore, it has been argued that there are significant grounds for regulatory and standard-setting activities of governments and the private sector to be mutually supportive and that the relationship between the two could be characterized as a "tacit alliance" (UNCTD, 2007). Each deals with separate aspects of risk management. Government regulations focus on outcomes (i.e. the characteristics of the finished product are specified with producers and importers being responsible for meeting these requirements notwithstanding the way they operate) while private-sector standards, by contrast, focus on processes (i.e. with requirements set along the supply chain, with specifications on production methodologies and testing procedures) (Chia-Hui Lee, 2006).

Henson and Northern (1998) point out that, although voluntary, many private standards are becoming de facto mandatory in certain markets. As Vuylsteke et al (unknown) explains, the term voluntary becomes relative as participation is not enforced by law but has become a prerequisite for market access. This is to a large extent the result of the increasing power of large retailers as reflected by the formation of the EurepGAP[9] standard by a group of European retailers (Eurep). The food retail sector is dominated by a relatively small number of large retailers. Producers therefore

[7] See legal discussion below on the implications of the new Consumer Protection Act in South Africa.
[8] The concept of "soft law" refers to quasi-legal instruments which do not have any binding force, or whose binding force is weaker than that of other regulations.
[9] Now known as GlobalGAP.

do not have many alternative outlets for their produce. This gives the retailers the market power to impose their standards on the supply chain. Vuylsteke et al (unknown) refers to a UK study by Northern (2001) and remarks how the due diligence defence (as discussed above) together with the increased power of the retailers allow retailers to impose their requirements throughout the supply chain.

The private standards required by retailers focus predominantly on the management process used to achieve a given outcome in addition to the traditional product control. These procedures, together with its reporting requirements, often make private standards more onerous than government requirements (OECD, 2006).

B. A legal perspective on the international and domestic standards landscape

The expansion of international retailers and the sourcing of food globally mean that the rules governing the food system are becoming more international. The trend in food regulation is characterized by increased attempts at international harmonization. Henson (2006) points out that the pace at which private standards are being harmonised far exceeds similar attempts in public standards making. As a result of this tendency towards harmonisation and equivalence, it is important, even in the context of the current study‘s emphasis on domestic market access, to take into account international developments in food regulations.

Four tiers of standards setting organisations that govern food safety and quality can be identified (Will and Guenther, 2007):

- multilateral standards ruling (WTO) and standards setting organisations (eg. Codex Alimentarius, ISO and IFOAM)
- supra national standards setting organisations (e.g. EU regulations and directives)
- national standards setting organisations (national goverments)
- private industry and trade (eg. retailer standards)

The WTO does not itself design standards but is a standards ruling organisation in that it develops rules to be applied by WTO member countries when setting national standards. It ensures in particular that its key principles of most favoured nation treatment, national treatment and reciprocity are embedded in national standards. The Uruguay Round of the General Agreements on Tariffs and Trade led to the signing of the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) as well as the Agreement on the Technical Barriers to Trade (TBT Agreement). The WTO SPS and TBT agreements recognise the importance of harmonising standards internationally in order to prevent food standards from becoming barriers to trade and define minimum food standards.

The SPS Agreement applies to the food and agricultural sector and sets out to ensure that measures implemented by Member countries to protect human and animal (sanitary) and plant health (phytosanitary measures) are based on scientific risk assessment. The Agreement determines that Members shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations, where they exist. It continues to state that sanitary or phytosanitary measures that conform to international standards, guidelines or recommendations shall be deemed necessary to protect human, animal or plant life or health, and presumed to be consistent with the relevant provisions of the Agreement. Importantly, it makes provision for Members to implement sanitary or phytosanitary measures which result in a higher level of sanitary or phytosanitary protection than would be achieved by measures based on the relevant international standards, guidelines or recommendations, if scientific justification exists. From a legal perspective, the SPS agreement is currently interpreted to only apply to public standards. Private standards do not meet with WTO requirements of transparency and scientific justification of food safety measures and may be more trade restrictive than necessary for health.

The TBT agreement is similar to the SPS Agreement in that it also encourages the use of international standards. It differs, however, in its coverage as it applies to all products and deals with all technical requirements and conformity assessment procedures including food standards. The two agreements also differ on the grounds for applying a measure. Where the SPS agreement allows for a measure to be introduced when scientifically justifiable, the TBT agreement requires a measure to be based on a legitimate objective. In signing the WTO TBT agreement, Member countries agree that their standard setting bodies will comply with the WTO Code of Good Practice for the Preparation, Adoption and Application of Standards.

As mentioned, the WTO does not itself set standards, but it does recognise standards developed by certain organisations as a bench mark for standards in Member countries. Both the SPS and TBT agreements require that Member countries apply recognised international standards, guidelines or recommendations when implementing food safety regulations and/or standards. The standards contained in the Codex Alimentarius Commission, World organisation for Animal Health (OIE) and the International Plant Protection convention (IPPC) are recognised as benchmarking standards. These guidelines harmonise and establish scientific standards for food quality and safety which can then be applied by governments in designing regulations that will facilitate international trade. Member countries are not obliged to implement these standards but any deviation from these benchmarks needs to be well motivated. The WTO endorsement of these standards has in effect made these standards de facto mandatory for Member countries.

Other multilateral standard setting organisations include the International Organisation for Standardisation (ISO). The standards set by ISO are voluntary but many of the standards, in particular those dealing with health, safety and/or environmental standards, have been implemented as part of national regulations. They have in many instances also become a prerequisite for market access, especially in the case of the ISO 9000 quality management systems. The Organisation for Economic Cooperation and Development (OECD) has also developed various schemes that facilitate the implementation of quality standards. Of interest in the current context is the scheme for the Application of International Standards for Fruit and Vegetables which promotes uniform quality management procedures and disseminates quality assurance guidelines.

The International Federation of Organic Agriculture Movements (IFOAM) has been developing an organic guarantee system of which the key components are the IFOAM Basic Standards and Criteria for Accreditation. It is designed to facilitate the development of organic standards and third-party certification globally and to provide an international guarantee of these standards and certification. The IFOAM Basic Standards provide a framework for certification bodies and standard-setting organizations worldwide to develop their own standards and cannot be used for certification by itself. IFOAM stresses that certification standards should account for local conditions and provide more specific requirements than the IFOAM Basic Standards. The IFOAM standards have been granted equivalency in the EU but do not have any legal status per se.

The most prominent example of food regulation at supra national level is the food quality system created in the EU under the General Food Law (Regulation 178/2002).

This regulation is implemented by the EU Food Safety Authority (EFSA). The EU has seen a strong trend towards creating a coherent and transparent body of regulations, strengthening controls from farm to fork and improving human health and consumer protection (Garcia, 2007). Importantly, all imported food products must comply with the provisions of the General Food Law or with provisions that have been found to be equivalent thereto. The Common Market Organisation for fruit and vegetables (Regulation 2200/96) has, furthermore, established marketing standards for 33 fruit and vegetable products. Apart from mandatory standards dealing with food safety, the EU also provides voluntary food quality standards which producers may opt to implement. The most important of these are those dealing with the protection of geographical indications (Regulations 510/2006 and 509/2006) and organic farming (Regulation 834/2007). The latter Regulation establishes a new regulatory framework for organic produce. It provides the objectives and principles which apply to organic production as well as the rules applicable to production, labelling, inspection and trade with third countries. The new legislation allows for organic produce from third countries to enter the EU on condition that it is produced and controlled under the same or equivalent conditions. Under previous legislation, only organic produce from third countries recognised by the EU or whose production was controlled by an EU Member State and which had been granted an import licence could be imported. The EU food law system is one of the best illustrations of how the national regulatory functions on specific standards are making way for regional initiatives, with the EU formulating various standards dealing with health, safety and environmental considerations, and which apply to all Member states (Nadvi, 2008) and take precedence over the national legislation of Member countries.

At national level across the world, various aspects of food safety and quality are addressed in national legislation. These sets of laws form the national regulatory framework for food. It includes laws and regulations which deal with specific kinds of foods (e.g. foods of plant or animal origin), provisions dealing with the control of additives, residues and contaminants in food and rules on how food is produced, processed and sold. The wider regulatory framework for food even includes legislation which does not deal with food directly but which may hold implications for safety, quality and trade such as water, environmental and legislation dealing with the use of land. It is interesting to note that the South African food safety and quality system fall under different government departments including the Department of Agriculture Forestry and Fisheries (DAFF), the Department of Health and the Department of Veterinary Health. With respect to the domestic market, the Directorate Food Safety and Quality Assurance, which falls under the DAFF, is responsible for all food quality issues, including grades and classes, marking, packaging and labelling as well as the chemical composition and microbiological contaminants of the products, but only to the extent that it does not relate to food safety (i.e. can make the consumer sick).The Department of Health is responsible for food safety regulations for the local market. With respect to food safety issues for export markets, the Directorate Food Safety and Quality Assurance also deals with food safety standards for exports of plant products. Food safety for the export of animal products falls under the Department of Veterinary Sciences and processed foods under the South African Bureau of Standards. Attempts are underway to streamline this complex institutional and regulatory system.

The food quality and safety standards implemented by the Directorate Food Safety and Quality Assurance are promulgated under the Agricultural Products Standards Act No.119 of 1990. This Act provides for the control over the sale and export of certain agricultural products and other related products and any matters related thereto. The aim of the regulations issued under this Act is to provide the consumer with products of consistent quality through correctly applied quality standards. Quality standards have been developed for specific products as indicated in table 2 below. Although adapted to domestic needs, an attempt is made to harmonise these norms with international standards. The Agricultural Products Standards Act provides that the Minister may prohibit the sale of an agricultural product locally if that product is not sold according to the prescribed standards regarding class or grade or does not meet the requirements regarding packing, marking and labelling.

Table 2: Food quality regulations issued by the Department of Agriculture

Product	**Regulation (as amended)**
Canola	R622 of 5 July 200
Dry Beans	R897 of 5 July 2002
Sorghum	R532 of 16 May 2008
Wheat	R905 of 10 July 1998
Wheat Products	R186 of 22 February 2008
Maize	R473 of 8 May 2009
Maize Products	R31 of 25 January 2008
Sunflower	R493 of 8 May 2009
Soya Beans	R225 of 6 March 2009
Ground nuts	R966 of 7 October 2005

Source: Adapted from www.daff.gov.za

Export standards and requirements regarding certain products have been promulgated in Regulation 1983 of 23 August 1991, as amended, under the Agricultural Products Standards Act. The Regulation provides a list of plant products for which export standards have been promulgated. As explained above, these export standards deal with food safety issues and have been developed in response to pressure from export markets (mainly the EU) for implementation of a governmental food safety system.

With respect to domestic food safety regulations, the Department of Health has promulgated various regulations under the Health Act 63 of 1977; the International Health Regulations Act 28 of 1974 and the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972. The Health Act provides for regulations dealing with the hygienic handling of food and the inspection of food premises. The International Health Regulations Act deals with food safety issues regarding the source of food for consumption at ports, airports, on vessels and on aircraft. The Foodstuffs, Cosmetics and Disinfectants Act governs the manufacture, sale and importation of all food products in order to enhance food safety control. A foodstuff is defined as: "*any article or substance ordinarily eaten or drunk by man or purporting to be suitable or manufactured or sold for human consumption and includes any part or ingredient of such article* […]". The Act provides for the Department of Health to issue regulations under section 15(1) of the Act. These regulations set minimum standards that all food products should comply with and may deal with issues such as composition, quality, description, labelling and packaging of foodstuffs.

Regulation 908 of 27 June 2003 issued under Section 15(1) of the Foodstuffs, Cosmetics and Disinfectants Act provides for the implementation of Hazard Analysis Critical Control Systems in the food sector in South Africa. It provides that no owner of a food handling enterprise may handle food without a fully implemented HACCP system approved by the health authorities and a valid certificate to this effect. A "food handling enterprise" is defined as a "*business which during its operations produces, processes, manufactures, stores, transports, distributes or sells foodstuffs or is engaged in any activity which may impact on the safety of such foodstuffs*". It is important to note that primary producers are excluded from the requirements under this Regulation. The regulation specifically states that when implementing an HACCP system, the owner of the food handling enterprise must ensure that the system is in accordance with the principles provided under the Codex Alimentarius "*Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application*". Certification of the HACCP system must be conducted by a SANAS accredited certifying body. The Regulation further provides that owners of a food handling enterprise are responsible for ensuring that all the food handlers involved in its operation are sufficiently trained on an ongoing basis regarding the application of the HACCP system.

The South African Bureau of Standards (SABS) 049 of 2001 provides a code of practice which deals with the hygienic handling of food for human consumption. It covers the preparation, processing, packaging, storage, transport, distribution and sale of food for human consumption. This standard sets out the basic requirements for a food hygiene management system with an emphasis on management responsibility. Although voluntary, compliance with SABS 049 assists in complying with the legislative provisions dealing with HACCP.

Similar to the development of the due diligence defence under the UK Food Law, the new Consumer Protection Act 68 of 2008 creates onerous obligations and prohibitions for suppliers. The Act applies to all transactions within South Africa as well as to the marketing and supply of goods and services. It addresses issues such as the quality, advertising, labelling and marketing. The most controversial provision of the Act is the creation of product liability for producers, distributors and suppliers for damage caused by the supply of defective goods. This means that consumers are able to claim damages from producers, distributors or suppliers for any damage suffered without having to prove negligence. The introduction of these provisions is likely to result in more preventative steps to minimize the chances of being held liable. This in turn is likely to lead to a further proliferation of private standards in order to minimize risk for supply chain actors. Interviews with key stakeholders in the South African Agrifood System such as Freshmark confirmed that actors in the supply chain are anticipating these changes and that this Act is likely to have important implications with regard to the procurement system of major actors such as the formal retail chains.

In line with efforts in various other countries, South Africa started the process of developing standards which aim to govern organic production nearly a decade ago. The process has resulted in draft regulations which are to be promulgated under the Agricultural Products Standards Act. These draft regulations are to a large extent based on the EU regulations governing organic produce, as well as the IFOAM and Codex Alimentarius guidelines. The process has proved to be very cumbersome and

difficult to reach agreement on the exact definition and implementation of the regulations. It is currently at WTO notification stage in terms of the SPS and TBT agreement provisions (Erasmus, 2009). Should no objection be raised, it is expected that the regulations will come into effect on publication in the Government Gazette. The regulations will provide a minimum standard for the sale of organically produced products in South Africa. Importantly, the proposed regulations make provision for participatory guarantee schemes which are defined as: "*systems based on the concept of organic production that cater for small scale production and associated sale at markets, and foster producer-consumer contact and trust, but are not certified*". These schemes are quality assurance initiatives which are driven by the producers themselves and which do not make use of third party certification. They are strongly community based and the credibility of the system depends on the participation of all actors involved.

Despite most nations having a regulatory framework for dealing with food safety and quality issues, confidence in the public sector's ability to govern food quality remains limited (Jaffee & Masakure, 2005). Roberts (2004) furthermore, points out that public standards are characterised by numerous limitations. Firstly, fiscal shortcomings often result in poorly developed standards and/or enforcement. Secondly, public standards are often non-responsive to changes in the market such as the rise of ethical consumerism and an increasing demand for information which relates to the process and not necessarily the product (which is usually what public regulations deal with). As a result of this and other abovementioned reasons, an increasing number of private standards schemes have been developed globally and also in South Africa. These schemes have been largely driven by retailers and take the form of collective international schemes, collective national schemes or individual firm schemes. These private standard schemes are often characterised by a management systems approach to monitor performance of production processes and are frequently referred to as meta-systems (Caswell et al, 1998). Nadvi (2008) points out that different trends are emerging in the development of private standards, with a move towards convergence which has led to the creation of common standards on the one side, and a proliferation of individual retailer standards on the other.

Within the EU, retailer groups have led to the creation of the International Food Standard (IFS), the British Retailers Consortium Standards (BRS) and the EurepGap standard. Both the IFS and the BRC standards have now been adopted by retailers outside the EU and UK and are part of several standards recognized by the larger Global Food Safety Initiative (GFSI). The GFSI is one of various international private standards organisations which has been developing guidelines for the benchmarking of private food safety standards to promote harmonization or mutual recognition of differing standards. The GFSI is the first approach towards harmonisation in the field of private standards, ensuring food safety from farm to fork while reducing the efforts and cost of multiple certifications. The GFSI is not involved in certification or accreditation activities, but has produced a Guidance Document as a benchmarking tool for food safety management schemes. Although voluntary, GlobalGAP[10] certification has become de facto mandatory for suppliers to be able to export fresh food products to retailers in the UK and the EU, who have all adopted the GlobalGAP standard. Its name change reflects how European retailers' move towards

[10] Known as EurepGap before September 2009.

harmonisation has gained ground globally. The GlobalGAP standard is an on-farm standard which specifies the requirements for Good Agricultural Practices (GAPs) in primary production with regards to food safety, occupational health and safety, traceability and environmental aspects for farms. It extends the principles of risk identification and management to farm production. It has led to the introduction of audits and third party certification in the preparation, growing, harvesting and packaging of fresh food products.

Various countries have been developing and implementing national GAP schemes in support of food safety considerations and increased access to export markets. Most GAP schemes in developed countries are owned by the private-sector. However, in developing countries GAP schemes are often owned by government (UNCTAD, 2007). These national schemes are adapted to local conditions and differ in their approaches. However, in order for a national scheme to be recognised by GlobalGAP, it needs to comply with all the GlobalGAP criteria. As mentioned by Garbutt and Coetzer (2005) this "*strict interpretation of equivalence*" is important in order for consumers to have confidence in the global standard. As pointed out by UNCTAD (2007), the equivalence required by GlobalGAP is more onerous than the equivalence required under the WTO SPS and TBT agreements. The WTO agreements apply the test of equivalence of outcomes whereas GlobalGAP tests for equivalence of processes. What makes it even more onerous is the fact that the national standard needs to reapply for assessment of equivalence at each revision of the GlobalGAP standard. The GlobalGAP standard has become increasingly important for access to European markets. In South Africa, Good Agricultural Practices have been introduced as a requirement for the export of plant products in terms of the Regulations issued under the Agricultural Products Standards Act. These practices define the minimum requirements for food safety and traceability.

With respect to alternative quality trends, various private standards schemes have been emerging. These schemes deal with a variety of issues such as environmental concerns, social considerations and production methods. A global network of Fairtrade organisations have joined to create the Fairtrade Labelling Organisation International (FLO). This international organisation is the leading Fairtrade standard setting and certification body. Its objective is to enhance sustainable development and empower third world producers. So far, the Fair Trade movement is mainly dealing with exports from developing to developed countries. However, in countries such as Mexico, some supply chains (e.g.coffee) have developed Fair Trade schemes for the domestic market. Fairtrade initiatives have until now enjoyed limited application in the South African context, with major role players being of the opinion that there is limited scope for such initiatives given the South African socio-economic context. As a result, this report does not further elaborate on Fairtrade as an alternative quality initiative.

Various private guarantee systems have been emerging with respect to the production of organic food since the 1980's. Today, there are hundreds of private organic standards worldwide. The consumers demand for reputable organic certification and the absence of national legislation have led to the development of private certification schemes, which impose organic standards on producers as a market entry requirement by local retailers and/or international importers. All certified organic farmers are subjected to a comprehensive annual inspection and to frequent retailer audits. As

there are no legislative requirements, any certification may be accepted and the choice depends on the policy of the retailer (Barrow, 2006). Apart from international certification bodies such as Ecocert International and the UK Soil Association which have been active in South Africa for nearly two decades, local certification bodies have also emerged. One of the more prominent local bodies has joined Ecocert International and is now known as Ecocert-Afrisco. Pick 'n Pay and Woolworths only procure organic produce from farms that have been certified by accredited certification bodies (except for BDCOA). Woolworths has furthermore been using its own distinctive organic logo since 1999, which appears on the product label alongside the certification mark of the certifying authorities. Apart from the major retailers, the Michael Mount Organic Market in Bryanston, Johannesburg operates a participatory guarantee system based on its own organic standard.

The trajectory of organic standards is interesting in that the governing process is mostly driven by private initiatives, with governments lagging in the provision of minimum standards. This has been the case both in the EU and US and now also in South Africa where public regulations have been developed in the wake of earlier private initiatives.

Public regulations governing free range production in South Africa is still in the process of being drafted[11]. As in the case of organics, South African retailers have, in the absence of national legislation, developed individual schemes dealing with the certification of free range production. Woolworths and Checkers in particular have developed specific certification schemes for free range lamb that consist in a guarantee that the lamb labelled as free range or certified natural is naturally reared, raised according to environmentally sustainable practices and, in the case of Checkers, originates from the Karoo or Kalahari.

[11] Attempts are underway to finalise draft regulations under the Agricultural Products Standards Act which deal with the control over the sale of free range eggs and poultry meat and barn eggs in South Africa.

C. A consumer perspective on food quality trends internationally

The following section explores consumer preferences towards specific fresh food groups. Given the wide range of literature on this topic, the literature review was based on a search focused on the main agricultural economics and food choice journals including Food Policy, Agricultural Economics, American Journal of Agricultural Economics, Food Quality and Preference that covered the following specific topics Consumer acceptance / preferences / perceptions / quality / attributes and 1) Fresh products / fruit / vegetables; 2) Eggs; 3) Dairy / milk / yoghurt; 4) Meat / beef; 5) Traceability; 6) Poultry / chicken; 7) Organic; 8) Production origin. The structure of this section reflects the nature of the search. It also includes a section on organic as well as on geographical labelling. General searches on platforms such as Cambridge Journals, EbscoHost, Emerald, Sciencedirect and AgeconSearch were also conducted. Identified trends in consumer demand, retailing and food safety management are most visible in the high-income industrial countries, but are steadily spreading to the developing countries especially in urban areas where incomes are relatively high.

1. Consumers' perception towards fresh produce

Most scientific literature dealing with consumers' preferences for fruit and vegetables covers a diverse range of commodities, often with subsequent commodity-specific quality attributes, such as the following studies. Most reviewed studies investigate conventional quality attributes and intend to determine which type of information consumers are more sensitive to. Results put the stress on the importance of sensory evaluation for consumers.

On a general level, Lin et al (2004) analysed Nielsen Homescan panel data from 2005 to report on US fruit and vegetable consumption revealing that consumption varies based on age, household income, ethnic and regional factors in particular. At-home consumption dominates for most fruit and vegetables (with the exceptions of French fries and tomato sauce).

According to Gamblea et al. (2006), the preferences of Australian and New Zealand consumers regarding pears vary in terms of colour (green, yellow, and red), shape (round, elongate-concave, and intermediate-straight), and with different levels of blush (none, slight, full coverage) based on a conjoint study. A literature review by Harker et al (2003) on consumers' attitudes and preferences for apples pointed out that quality overshadows price given that prices vary within the expected commercial range and that price premiums vary widely among consumers. It also puts forward that health and convenience are critical motives for consumers' fruit consumption. Other quality evaluation factors include crispness, sweetness, juiciness and acidity (linked to specific cultivars). Péneau et al (2006) investigated consumer perception of freshness of apples by eliciting Swiss consumers' perceived importance of attributes for apple choice and freshness of apples. Results revealed that the most important freshness related attributes were taste, crispness, aroma and juiciness, while appearance, storage time, nutritional value and organic were of lesser importance, thus indicating a consumer orientation towards experience attributes over both search and credence attributes. Péneau et al (2007) also found that Swiss consumers' evaluation of freshness for fruit and vegetable are primarily based on the observation

of sensory properties. Through an experimental market in New Zealand, Lund et al (2006) showed that consumer' perceptions regarding the monetary value of apples are influenced by both sensory and emotional aspects of consumers' assessments of freshness.

Poole et al. (2007) investigated UK consumers' quality perceptions for five different varieties of soft citrus under evolving information conditions (i.e. visual inspection of the fruit before peeling; visual inspection after peeling; and after consumption). Results indicate the importance of product-specific information for consumers, in order to improve the alignment between purchases and eating preferences, especially in cases where product characteristics are poorly understood. Scriver and Seaman (1990) found that Australian banana consumers select fruit based on skin colour and softness elicited through sensory evaluation and perceived importance evaluation.

2. Consumers' perceptions towards eggs

Scientific literature on the consumption preferences and economics of eggs are dominated by alternative quality issues such as functional eggs (e.g. omega-3, vitamin enhanced), animal welfare (e.g. free range) and organic eggs and origin of production. Fearne and Lavelle (1996) investigated UK consumers' perceptions of egg quality. They mention that consumers' growing awareness of diet, health and animal welfare have had negative impacts on the UK egg industry possibly linked to cholesterol in eggs and the impact of a salmonella scare on the preparation of eggs. The consumer research revealed that price and animal welfare were important in consumers' purchase decisions, leading to the identification of four market segments:

- 'Price-conscious battery-egg' consumers, representing the mass market of mainly lower socioeconomic groups;
- 'Apathetic battery-egg' consumers, representing the second largest segment consisting of mainly the lower middle and middle class. They are aware of bird welfare and have a latent concern for the issue but do not consider the wide range of shell *eggs* available.
- 'Hard-core free-range egg' consumers from the higher socioeconomic categories who feel strongly about animal welfare and purchase free-range eggs regardless of taste.
- 'Soft free-range' consumers from the higher socio-economic classes who have strong preferences for natural foods, even though they also care about animal welfare.

The authors highlight the importance of effective marketing communication for value-added products. Ness and Gerhardy (1994) applied conjoint analysis to investigate UK consumers' preferences for quality and freshness attributes of eggs, focusing on production method (battery, barn and free-range), source (local, British and imported from outside UK), freshness (date the eggs were laid, packing date and sell-by date) and price (3 levels). The results indicated that many consumers still prefer battery eggs due to price sensitivity, despite the general consumer trends towards increased awareness levels regarding issues such as health and environmental concerns. Only some consumer segments revealed preferences for eggs labelled with 'date of lay', while none of the segments valued eggs labeled as being produced locally (instead of 'British' eggs).

In a more recent study, Asselin (2005) investigated Canadian consumers' willingness to pay for functional eggs by means of a choice experiment – specifically omega-3 eggs and vitamin enhanced eggs -compared to generic eggs through stated preference methods. He found that on an aggregate level, when choosing an omega-3 egg, consumers' utility gain decreased as price increases as expected. Willingness to pay was positively associated with respondents' health consciousness and health behavior scores. Interestingly, while very health conscious' respondents revealed a significantly positive WTP for omega-3 eggs ($0.56 to $0.72), this WTP was still significantly lower than the existing premium in the market ($0.93). The author stressed the importance of educating consumers' regarding the benefits of functional eggs, as well as consumer education towards risk reassurance. Canadian consumers' attitudes, willingness to pay and revealed preferences for speciality egg production attributes were investigated by Goddard et al (2007) through stated preference and revealed preference data analysis. Among specialty eggs (e.g. omega-3, organic, free range, vitamin enhanced and vegetarian eggs), organic eggs incurred the highest willingness to pay, followed by free-range eggs. Interestingly, different patterns were found across regions. In some geographical regions, consumers were not willing to pay more for specialty eggs (compared to normal eggs), while in other regions consumers were willing to pay more for specialty eggs – especially organic eggs. The authors suggested that consumers may have an inadequate understanding of the attributes and relative nutritional benefits of specialty eggs. Baltzer (2004) found that naturalness was an attribute particularly valued by Danish egg consumers.

The potential impact of the 'dieting' health trend was explored by Tepper et al. (1997) who showed that dietary restraint among US adult men influenced their consumption of foods such as eggs, full cream dairy, beef cured meats, fast foods and fats / oils.

3. Consumers' perceptions towards dairy

Consumer issues related to alternative quality attributes of dairy foods (particularly fresh milk) dominates scientific literature on the consumption and economics of dairy. These attributes include aspects such as rBST-free milk, organic milk and 'no use of antibiotics'. Studies reveal the significant premium potential attached to these attributes. Issues such as labelling effects and the stigmatization of conventional alternatives are also addressed.

When comparing conventional milk, organic milk and two primary components of organic milk (rBST-free and no use of antibiotics) using an elasticity analysis, Bernard & Bernard (2009) revealed strong substitute and complement relationships between organic, rBST-free and no antibiotics milk varieties. Their results showed that certain consumer segments are willing to pay significant premiums for rBST-free milk and milk from cows not treated with antibiotics. From a policy perspective the authors recommends the implementation of a nationally regulated certification program for rBST-free and no use of antibiotics in milk products that could be beneficial to consumers as well as dairy operations. Kolodinsky (2008) investigated the impact of information (through labelling) as attitude signals, affecting consumers' valuation of rBST free and organic milk products. According to the analysis, the market commanded a premium for rBST-free milk during 2004. The authors state that rBST-free and organic labels can serve as cognitive information signals and states that "the marketplace has now moved toward fulfilling the criteria for using labeling to

communicate the process attributes rBST-free and organic on a federal level". When considering the consumer benefits from rBST-free and organic labelled milk, Dhar and Foltz (2005) also found that US consumers are willing to pay significant premiums for rBST-free and organic milk. They show that while consumers derive much greater benefits from organic milk than rBST-free milk, they derive significant benefits from the presence of both milk types in the market. Furthermore, they state that a stringent national standard is necessary to protect the consumer benefits derived from these milk products.

Interestingly, Kanter et al (2009) investigated the potential impact of organic and rBST-free production labelling on the stigmatization of conventional milk by highlighting perceived product problems. This could have a potential negative economic impact on producers if consumers decrease their willingness to pay for the conventional product that dominates the market, while the new product has a relatively small market share. The results confirmed the existence of that stigma effect where consumers viewed conventional milk more negatively after the introduction of rBST-free and organic milk.

Food safety is also an important consideration when dealing with the topic of consumers and dairy foods and this has been demonstrated in different contexts including developing countries. Wang et al (2008) investigated Chinese consumers' awareness, willingness to pay, and price premiums for milk products manufactured according to the Hazard Analysis Critical Control Point (HACCP) food safety management. They applied a survey of consumers' willingness to pay (WTP) for HACCP-certified products and a survey of actual product prices to analyse the factors associated with supermarket milk prices through hedonic regression analysis. The results revealed limited awareness among consumers regarding HACCP. Interestingly, many respondents were willing to pay a modest price premium for HACCP-certified products after presented with information on HACCP. Price analysis revealed that milk products with HACCP labels carried a 5% premium. The study concluded that food safety is emerging as an attribute of food demand by consumers in a developing country context such as China.

Some studies address the more general quality issues related to dairy foods, as discussed below. The attitudes of consumers in New Zealand towards milk in general were investigated by Wham and Worsley (2003). They found that about 30% of respondents consumed less than a glass (250 ml) of milk a day, and non-consumption was particularly evident among young women. Heavy milk consumption (i.e. more than two glasses per day) was prominent among young men. According to the results, consumers' concerns about milk related to monetary, physical and emotional threats such as risk of high blood cholesterol and high milk prices. In general women were more positive towards milk, even though they were concerned about fat content. On the other hand, male consumers revealed a lower awareness of the nutritional benefits of milk with a subsequent lower perceived product value. In a European consumer survey of 11 countries, Valli and Traill (2005) showed that cultural differences continue to determine consumers' consumption decisions for yoghurt. They emphasize the context of consumption as an important determinant of yoghurt consumption decision stating that consumers' consumption decision regarding yoghurt is "a multi-stage process in which yoghurt knowledge, attitudes to different yoghurt attributes (such as bio-bifidus, low-fat, organic) and overall attitude towards

yoghurt as a product all feed into the frequency with which yoghurt is consumed at breakfast, as a snack and as a dessert."

4. Consumers' perceptions towards red meat - beef

Most studies indicate that meat safety is a key determinant of meat purchase. It is also evident from consumer studies on meat that other factors than price are important in meat purchase and that consumers are sensitive to different types of information as detailed below, confirming the general argument of the first part of the report regarding the quality turn.

Departing from the Total Food Quality Model, Grunert (1997) engaged in focus group research and conjoint analysis to establish consumers' evaluation of beef quality in a purchase situation. They found that the dominant product attributes affecting European consumers' (France, Germany, Spain and UK) quality evaluation of beef were fat content and meat colour, while other attributes such as taste, tenderness, juiciness, freshness, nutrition and trust in place of purchase also played a role. In a review article on the changing demand for meat and the factors that influence this demand, Resurreccion (2003) indicated that important factors included consumers' growing health concerns, demographics changes, the demand for convenience, changes in the distribution of meat and price. Alfnes and Rickertsen (2003) investigated European consumers' willingness to pay for Irish beef, US hormone-free beef and US hormone-treated beef in an experimental auction market. Results indicated that consumers in Norway preferred domestic beef to imported beef, while imported Irish beef was preferred to imported US beef. Consumers viewed hormone treated beef as the least attractive option.

Acebron and Dopico (2000) investigated the importance of intrinsic and extrinsic cues to expected and experienced quality: for beef through quantitative questionnaire-based research among Spanish consumers. They found that during purchase consumers' quality evaluation were based on the intrinsic cues colour, freshness and visible fat, as well as the extrinsic cues price, promotion, designation of origin and presentation. Furthermore, experienced quality was subject to expected quality and attributes such as taste, tenderness and juiciness. Bernue et al. (2003) applied questionnaire-based research to investigate several aspects related to extrinsic quality attributes of red meat in relation to consumers in England, Italy, France, Scotland and Spain. The results revealed that the most important red meat extrinsic quality attributes to these European consumers are animal feeding, origin, environmentally friendly production and animal welfare issues. The health and safety of meat was perceived as a function of animal feed assurance and environmental / animal friendly consideration. In a review of literature on consumers' perceptions of meat quality, Grunert et al (2004) indicates that the various intrinsic and extrinsic quality cues may impact on consumers. The intrinsic quality cues include meat cut, colour, fat limps, fat rim, marbling and fat content. The extrinsic quality cues include price, origin and information on animal production, animal welfare and the artificial hormones and additives. However, the authors point out that consumers are generally uncertain regarding quality evaluation with the subsequent notion to entrust an expert (e.g. a butcher) with the quality evaluation task. They also point out the limited correspondence between expected and experienced meat quality.

Verbeke and Vackier (2004) developed market segments based on Belgium consumers' involvement in fresh meat, with involvement described as "…the level of perceived personal importance, interest or relevance evoked by a stimulus or stimuli, which are linked by the consumer to enduring or situation-specific goals". Data was gathered through personal interviews. Different market segments were identified. The differentiating factors were the extensiveness of the decision-making process (e.g. extensiveness of information search and the length and complexity of the decision process), impact and trust in information sources, levels of risk concern, price consciousness, claimed meat consumption, consumption intention and preferred purchase location.

Verbeke and Ward (2006) investigated Belgium consumers' interest in beef labels (involving factors related to quality, traceability and origin) and the potential impact of a campaign aiming at informing consumers about beef quality, traceability and origin, through a consumer survey. Results revealed high consumer interest in direct indications of quality (e.g. a quality guarantee seal or product expiry date), moderate interest in origin and low interest in traceability. Furthermore, consumers' attention to direct indications of quality (e.g. quality mark or expiry date) and country-of-origin increased significantly after receiving information. The authors suggest that traceability should be used to substantiate indications of quality and origin.

The factors affecting Spanish consumers' willingness to pay for certified beef was studied by Angulo and Gil (2007), through a consumer survey, revealing that the most important factors were income, level of beef consumption, the average price consumers pay for beef and the perception of beef safety.

Loureiro and Umberger (2007) applied a conjoint study to investigate US consumers' relative preferences for food safety, country-of-origin labeling and traceability, revealing positive premiums for all these attributes. However, the steak label certifying USDA food safety inspection carried the highest (significantly large) premium, followed by the country-of-origin label. The dominance of food safety certification implies that food safety certification is a mandatory requirement for consumers in order to select a beef product. The authors conclude that "indications of origin may only become a signal of enhanced quality if the source-of-origin is associated with higher food safety or quality". As other studies also indicate, for consumers to value higher quality, proper standards of generic quality and in particular food safety must first be met.

Investigating the effect of information regarding country of origin, price and animal handling prior to slaughter on consumers in a developing country context (Chile) through a consumer survey, Schnettler et al (2009) found that origin and animal welfare information overshadowed price. However, consumers revealed a small willingness to pay for information about animal handling.

Napolitano et al (2009) investigated the effect of information about organic production on Italian consumers' liking of beef (evaluated by means of consumer sensory panels) and willingness to pay. The results indicated that information about the organic nature of beef production increased consumers' willingness to pay providing merit for market differentiation based on organic production.

5. Consumers' perceptions towards traceability

A number of studies by prominent authors focus on consumers' demand for traceability, particularly within the context of meat. Overall, these studies show that traceability is not a stand-alone determinant of food purchase but is considered as important in relation to other food dimensions such as food safety in particular.

Van Rijswijk et al (2008) applied means-end-chain laddering to investigate European consumers' perceptions regarding traceability and the benefits associated with traceability. Their findings indicated that traceability could improve consumer confidence in food products indirectly, but that it is critical to link traceability to issues such as health, safety, quality, control, origin and naturalness (organic production). They conclude that consumers relate the benefits associated with traceability to what they consider as significant dimensions of food consumption overall: "*the importance of traceability to consumers is in terms of benefits in relation to aspects that they think are important regarding food in general*". In a conjoint study, Loureiro and Umberger (2007) found that US consumers' willingness to pay (WTP) for the beef attribute 'USDA food safety inspection' was higher than their WTP for labeled attributes such as traceability, country-of-origin labeling and tenderness. They highlight the need for beef traceability systems, based on consumers' value perception of the traceability attribute as well as the need to verify other important quality attributes related to value addition such as tenderness. Traceability to the live animal might be valued by consumers since the possibility of verifying credence attributes (such as origin) rely on traceability. Furthermore, they emphasize the potential role of traceability systems as public good arguing that "traceability systems can be a public good if they provide security for the industry and consumers in the case of a food safety incidence, and if they allow the industry to react quickly and help to maintain consumer confidence."

Verbeke and Ward (2006) confirm consumers' relatively low interest in traceability labelling in isolation, stating that "*although traceability has to be in place for legal purpose and in order to help guaranteeing product quality or origin, consumers are not interested in the traceability information per se*". They recommend that traceability should be used to enforce the authenticity of on-label quality attributes (such as origin), without providing consumers with detailed traceability information on food labels. Verbeke and Vackier (2004) propose a more nuanced analysis arguing that consumer reassurance initiatives, such as traceability, may gain effectiveness when targeted specifically at consumer segments characterized by a strong perception of meat risks.

A number of studies focused specifically on consumers' perceptions regarding traceability within a food scare context. Studies assessing willingness to pay for increased insurance regarding traceability in these contexts reveal differences across consumers from different countries. In the light of the BSE scare in Europe (in the late 1990's), Latouche et al. (1998) found that French consumers seek improved traceability (or transparency) in European beef supply chains in order to avoid the negative effects of food borne illnesses. Consumers revealed a significant willingness to pay for safe livestock products (presenting adequate information on product originand production practices), with a 14% to 22% price premium for beef. As a result of the significant willingness to pay that they reveal in their study, Latouche et

al (1998) point out the risk of the development of a dual market consisting of one market supplying premium-priced labeled and guaranteed livestock (mainly to wealthier consumers) on the one hand and on a second market for less wealthy consumers who cannot afford to pay the price premiums for additional safety guarantees and will have to accept the health risks associated with such products on the other hand. Such a dual market would lead to ethical discrimination towards consumers' right to safe food. On the other hand, Angulo, Gil and Tamburo (2005) found that despite increasing beef safety concerns among Spanish consumers, a significant 73% of consumers surveyed were not willing to pay a premium for labelled beef with a traceability certificate. From a traceability point of view their results suggest that beef safety is considered as a standard attribute by Spanish consumers, and subsequently the traceability attribute in isolation is not a dominant factor in consumers' choices confirming statements from studies presented above in this regard.

6. Consumers' perceptions towards poultry

Some studies focus on the wide range of evaluation factors applied by consumers when purchasing chicken meat. In particular, the origin of poultry products is a dimension that has been widely investigated across countries and stressed as a determinant of poultry purchasing. As discussed below, some scientific literature on the consumption preferences and economics of chicken meat focuses specifically on alternative quality issues such as animal welfare (e.g. free range), natural, organic meat and the origin of production. A number of studies more specifically focus on consumers' perceptions regarding chicken meat safety.

With regard to assessing a broad range of attributes affecting consumers' chicken meat purchase, we can quote a comprehensive international literature review (based on meat science literature) by Fletcher (2002) in particular, according to whom the most important poultry meat quality attributes are appearance and texture, followed by juiciness, flavour and functionality. On the one hand, texture (or tenderness) is a critical attribute affecting the final quality assessment of the consumer. On the other hand, appearance is critical for both product selection and final product satisfaction. Appearance quality attributes include dimensions such as skin colour, meat colour, cooked meat colour and appearance defects (e.g. bruises and haemorrhages). However, it is critical to note that Fletcher emphasises the dramatic changes in the poultry market (e.g. portions, deboned, ready-to-eat and other further processed products) resulting in new quality expectations among consumers even though the traditional considerations are still important.

In a quantitative personal interview consumer survey, Vukasovič (2009) found that consumers in Slovenia perceived poultry meat in a very positive manner, associating the product with attributes such as tasty, high quality, healthy and protein-rich. When purchasing poultry meat, their most important consideration factors were 'known meat origin', quality, meat safety, use by date, taste, price, fat content, packaging, meat colour, producer and brand image. Through consideration of poultry meat consumption trends in Europe, viewed through the geographical diversity and dynamics of poultry meat consumption, Magdelaine et al (2008) investigated the main factors affecting poultry meat consumption in Europe and the impact of avian influenza. They state that the main factors driving the consumption are product

affordability, the absence of 'cultural or religious obstacles" and nutritional considerations. Additional consumption drivers are consumers' interest in reliable information on production methods (linked to the emergence of certified products) and local production as well as products involving services such as ready-to-eat food and consumption of poultry meat outside the home. Interestingly they note that the main trends in poultry consumption were not changed by the avian influenza incident.

On the other hand, Pouta et al. (2008) investigated consumers' choice of broiler meat in Finland through a choice experiment by specifically focusing on the effects of country of origin and production methods (e.g. organic, animal welfare and consumer health aspects). Consumers had very positive perceptions regarding domestically produced poultry products. Even though the effect of production methods was minimal, it did impact positively on consumers' choice (particularly animal welfare but also organic meat). Bolliger & Réviron (2008) applied a double-bounded dichotomous choice approach in an in-store setting to investigate consumers' preference and willingness-to-pay (WTP) for the chicken meat product attributes "Swiss origin" relative to "European origin". Results indicated a very strong preference for Swiss chicken meat. Two of the four identified market segments were willing to pay a premium for Swiss chicken meat, particularly since they perceive Swiss chicken meat as trustworthy due to better food safety and product quality aspects.

Farina and Almeida (2003) investigated consumers' perceptions towards alternative chicken attributes through conjoint analysis, specifically focused on natural and free-range chicken compared to conventional chicken, as well as various authenticity options (no seal, company seal or independent certified seal). The results confirmed that the consumption of chicken with alternative attributes were mainly concentrated among wealthy and highly educated consumers with lower levels of price sensitivity. Consumers revealed similar preferences for natural and free-range chicken, but did feel strongly that chicken had to be free from antibiotics and growth promoters. Consumers' willingness to pay was associated with perceptions of healthiness and safety. The authors also stressed the importance of credible certification to dissolve the asymmetry of information for the consumer.

According to Onyango et al. (2009) who focused on the chicken meat safety dimension, American consumers have different risk perceptions towards different types of poultry products when considering a possible food-borne disease outbreak. Three categories of poultry products were identified through principal component analysis based on consumers' safety level perceptions linked to individual food handling practices, trust and confidence. These are home cooked poultry products and familiar brands (highest trust levels), products produced through technological processes or novel products, and organic chicken products and fast food poultry products (lowest trust levels). It is interesting to note that organic chicken products in this study are associated with the lowest level of trust contrary to what other studies on organic had shown. Mazzocchi et al (2008) explored chicken consumption choices of European consumers' (France, Germany, Italy, the Netherlands and the United Kingdom) in a 'standard' purchasing situation and in the case of a food scare based on the theory of planned behaviour and estimated through a combination of multivariate statistical techniques. Consumers' trust in food safety information was not related to socio-demographic variables (such as age, income, food expenditure, household

composition and education level) but rather linked to the source of information. However, consumers from different countries revealed trust in different information sources, choosing between mass media, the food chain, experts, alternative sources (consumer organizations, animal welfare groups, environmental groups and organic shops) and other sources. For example German consumers place the most trust in the mass media and alternative sources, while French and British consumers largely trust information provided by food chain actors. Interestingly the study revealed that consumers' risk perceptions only influenced consumer choices in a food scare context, but not in the absence of a food scare.

7. Consumers' perceptions towards organic

A number of studies put the emphasis on the need to improve consumers' information and understanding of organic. As emphasised below, organic purchasing in many countries is driven in particular by health concerns. Interestingly, some studies are also exploring other farming practices that share commonalities with organic in terms of lowering the level of input uses. This is important as it can be argued that these practices are more accessible to farmers than 'pure' organic farming, and might be a particularly interesting dimension for small-scale farmers. This point is being raised especially in the South African context where farming organic is constrained among others by the lack of availability of organic inputs as reflected in interviews held between May and December 2009, which is particularly detrimental to small-scale farmers who may not have the capacity to produce in-house inputs contrary some large-scale farmers. The potential associated with labelling organic in conversion has also been investigated as discussed below. This is in line with practices observed in the South African context with retailers having different labels according to the level of conversion to organic (1st year conversion, in conversion, fully organic) and it might be particularly important given the transition phase to organic is a critical phase for farmers during which premiums are required to cover investment and costs associated with changes in practices.

Studies show that, in Europe at least, the level awareness about organic food is quite significant. According to Briz and Ward (2009), about 46% of Spanish consumers clearly understand the meaning of organic foods, with awareness levels ranging from 29% to 71% depending on consumers income, age, education, and region of the country. On the one hand, the results revealed the potential importance of improving consumers' understanding of organic food, particularly in the case of the lower income and education demographics where a positive relationship exists between awareness and consumption. However, on the other hand they also found that higher income and education level consumers' likelihood to purchase organic food declined with increased awareness, which the authors suggest might be explained by the possibility that "*as consumers become more aware of organics their decisions are based on true discernable attributes and less on just perceptions. Perceptions and fads become less important.*". The latter observation enforces the challenge faced by the organic food sector to gain market share among the higher income and education level consumers where the largest purchasing power is concentrated.

The Nielsen Company survey on organics and functional food (2007) compared the perceptions of consumers in Europe and US towards organic food. In terms of factors preventing consumers from consuming more organic foods, high prices, minimal

selection and lack of availability dominated. Motivations for consuming organic food vary between countries and include personal health, health of children or environmental and animal benefits. This is in line with Gracia and De Magistris (2008) finding that Italian consumers' perceptions regarding the environmental and health benefits of organic food impacted positively on consumption. These authors also confirmed the importance of improved organic knowledge among consumers. Health concerns are seen as a major dimension of organic purchasing in many countries. Pirog and Larson (2007) found that, among US consumers, 57% of respondents revealed the perception that organic food was healthier than conventional food. According to Wier et al. (2008), consumers in mature organic markets such as the UK and Denmark purchase organic products based on private good attributes such as freshness, taste and health benefits. The authors also point out that these organic markets are vulnerable to consumer dissatisfaction.

Ball et al. (2008) studied UK consumers' perception of organic, ethical and local foods served in restaurants and found significant differences between male and female. Results indicated that while female consumers sought more food information to make purchase decisions, male consumers were more inclined towards selecting restaurants using local, organic or ethical foods.

Sawyer et al. (2008) found that consumers in the US, the UK and Canada do not have a strong attachment to the existing national organic standards and that consumers even prefer alternatives to their domestic standards when presented with a choice. Subsequently the authors suggest that international harmonization may be a legitimate food policy goal.

Batte et al. (2007) found that different US consumer segments were willing to pay a variety of premium prices for organic foods – with both 100% organic ingredients and less than 100% organic ingredients. The results stressed the importance of target marketing in the context of organic processed foods to accommodate different consumers groups based on their WTP for these food products. For example a distinction could be made between specialty grocery consumers (e.g. tend to shop at a natural food store) and traditional grocery shoppers, since specialty grocery shoppers were generally willing to pay substantially more than traditional grocery shoppers even though they did reveal a threshold amount of organic content below which they will not pay premium prices.

As already mentioned, it is important to note that in addition to explore the potential for organic food, recent studies are now also investigating consumers' perception of low input products. Janssen et al. (2009) investigated German consumers' perceptions towards 'low-input products', defined as products characterized by single aspects of organic production systems such as reduced input levels (e.g. pesticides, food additives or concentrated animal feed). The results revealed that low-input buyers were a heterogeneous group of consumers. The cluster analysis revealed that low-input products were mainly preferred by consumers who usually purchase mainly conventional products, as well as those usually purchasing conventional products in particular categories and organic products in other cases. The authors suggest that low-input products might gain future market shares at the expense of conventional and organic products. They also stress that a "concerted communication strategy focusing on tangible aspects of organic production as well as organic certification

might be a successful strategy for the organic sector to gain new customers and to differentiate organic products from low-input products". Ness et al. (2010) investigated European consumers' behaviour towards conventional foods, quality low-input foods and organic foods. The results revealed that the perceptions of consumers in France, Germany, Italy and the UK could be improved through information on product benefit aspects such as nutritional value, value for money and shelf life. Consumers in Greece and Switzerland valued attributes such as appearance, eating experience, taste and price, implying that these attributes could be used by marketers to improve consumers' food product perceptions.

Tranter et al (2009) illustrated the marketing potential of conversion-grade organic produce given EU consumers' willingness to pay a premium for conversion-grade produce (about 50% of organic premiums), with vegetables attracting higher premiums than meat products.

8. Consumers' perceptions towards origin labelling

Various European studies have shown, through analyzing buyers' willingness to pay for specific characteristics, that consumers place value on the origin of food products. Combris *et al* (1997) applies hedonic pricing to the Bordeaux wine market and estimates a hedonic price function for Bordeaux wine that includes the label characteristics but also the sensory characteristics in contrast to previous studies using hedonic pricing[12]. The results indicate that objective characteristics appearing on the label of the bottle are the primary determinants of the price for Bordeaux wine. The authors explain this by pointing out the cost of obtaining information about sensory characteristics (through tasting, learning and reading wine guides). Loureiro and McCluskey (2000), who analysed consumers' willingness to pay for the Protected Geographical Indication label Veal from Galicia using a hedonic price function, found that the presence of the label generates a high premium only in high quality meat cuts while in cheap cuts as well as for the highest quality cuts, the label does not generate any extra premium. The study concludes that the PGI label is significant in combination with other quality cues. A study by Teuber (2007) explores the economic effects of geographical indications for coffee. Using internet auction data for single-origin coffees, a hedonic pricing model was estimated. The results indicate that in the speciality coffee sector, coffees from individual coffee-growing regions receive price premia due to their reputation.

Bonnet and Simioni (2001) estimate consumers' willingness to pay for Protected Denomination of Origin (PDO) labelled French Camembert cheese using mixed multinomial logit models based on scanner data on purchases of Camembert brands in the French market. Their results suggest that brand appears to be more relevant in the consumer's evaluation of alternative products than the PDO label. This may be associated to the high level of segmentation of this product and the significant use of brand based differentiation strategies. On the contrary, Monteiro & Lucas (2001) carried out a conjoint analysis on Portuguese consumers' preferences for four main quality attributes of traditional cheeses: price, quality certification label, type of paste

[12] See also Nerlove (1995) and Oczkowski (1994). For a review of the literature about hedonic wine studies, see Viana (2006).

or texture and sale size unit and showed that the most important attribute for consumers of Portuguese traditional cheeses is the PDO protection, supporting the idea of a PDO benefitting from a price premium. Van der Lans *et al* (2001) also applied conjoint analysis to data on Italian consumers' quality perceptions and preferences for extra virgin olive oils from Sabina and Canino, Italy. They found that both the region of origin cue and the PDO label influence regional product preferences through perceived quality, although the effect is limited to specific consumer segments, especially those residents in the product's region of origin. This is confirmed by Fotopoulos and Krystallis (2003) who explored the effectiveness of PDO labelling through calculating Greek consumers' willingness to pay for PDO apples from Zagora, Central Greece using conjoint analysis and found that the existence of the PDO label compared to price is more important only for certain segments of consumers.

D. Supply chain coordination and quality management

Trends towards quality-oriented and standard-based supply chains are significantly modifying modes of coordination within these chains and are reshaping/ remodelling the organization of production and trade relations. Several authors point out that there is a move away from open spot markets with anonymous suppliers and lack of proper accountability towards higher degrees of vertical coordination in global and quality-oriented food supply chains (Pingali et al, 2005; Buhr, 2003; Gibbon and Ponte, 2005). According to Ruben et al. (2006), increased monitoring of product quality and process standards goes along with an increased degree of vertical integration based on complex contractual arrangements. Coordinated supply chains increasingly deal with food safety risks through increased control of product movement from farm to table (Luten, Oehlensechläger and Ólafsdóttir, 2003). Over the years, this has resulted in increased reliance on preferred suppliers who can assure safety and be accountable through tracking and tracing, and in the development of independent certification of good agricultural and good manufacturing practices, as described earlier. Hanf and Pienadz (2007) stresses that the need to act together along the supply chain and to strengthen coordination among actors to meet new quality requirements and trends and ensure differentiation has moved the competition between individual actors to competition between supply chain networks. To increase coordination and control, collective action has also increased even among large supply chains and companies (e.g. EurepGap, the British Retail Consortium).

Studies based on transaction cost economics support the observations of trends towards more coordinated supply chains and complex quality management systems. Some also analyse the implications of these more diverse forms of governance on quality. Raynaud et al. (2002) study the governance of the transactions in supply chain as a way of supporting the credibility of quality signals and analyse the link between the governance structures that are designed to guarantee quality to the final consumer along the supply chain and the quality signal. Following transaction cost economics, the authors build on Williamson's (1991, 1996) work on governance structures to describe and compare the several bilateral governance structures observed as part of a structural analysis of 42 case studies in three different agro-food sectors conducted in seven European countries. The study confirms that when an agent develops a quality signal whose value can be influenced by several other agents in the supply chain, he will design the governance of transactions in order to assure product quality and improve the credibility of his signal, which may consist of different types of contractual relations associated with different quality signals. Ménard and Valceschini (2005) further mentions that the type of quality signals influence the governance of transactions, pointing out that private brands are more often associated with vertical integration than brands that are linked to public certification[13]. According to Ménard and Valceschini (2005), a 'satisfying solution' in the face of quality signalling

[13] Certification is a procedure by which a third party gives written assurance that a product, process or service is in conformity with certain standards (ISO Guide, 1996). The certifying organisation is called the certifier or certification body. The certifier may do the audit/inspection itself or contract it out to an auditor/inspecting body. The system of rules, procedures and management for carrying out certification, including the standard against which a company is being certified is called the certification programme. One certification body may execute different certification programmes. To ensure that certification bodies have the capacity to carry out the certification programme, they are evaluated and accredited by an authoritative institution (FAO, 2007).

problems consists in adopting a transaction cost minimizing organisational framework along the chain while ensuring signal credibility. They also point out the importance of considering the link between supply chain-based governance structures that are designed to address specific quality signalling issues and the macro level at which institutional mechanisms are developed that support the credibility of the adopted modes of organisation (e.g. increased use of third party certification that are accredited by public institutions). Barcala et al (2007) also study different governance aspects of vertical chains and their impact on product quality. Different mechanisms of governance such as hierarchy, quasi-integration and geographical indications are analysed to determine how organisational forms impact on product quality. Based on a case study approach focused on a set of international cases of quality brand names in the agrifood sector, the authors find that quality problems may be ascribed to high transaction costs (see also, among others, Hobbs, 2003), and that mechanisms of governance thus affect product quality. The results indicate that the most market oriented mechanism of governance in the sample (quasi integrations and geographical indications) need to introduce (i) coordination oriented mechanisms such as norms and routines to perfectly define standards and attributes and (ii) a complementary set of quality control devices based on direct supervision. According to Wilson et al. (2000) who conducted two case studies to examine the key factors behind the differences in market performance of two Protected Denomination of Origin products (i.e. early potatoes from the United Kingdom and from the Netherland), differences in co-operation and co-ordination between the supply chains result in significant differences in product specification and traceability systems, and are associated with different consumer awareness and brand promotion efforts.

Interestingly, Ponte and Gibbon (2005) states that the capacity to capture complex information over quality in standards, labels, certification and codification procedures lowers the need for vertical integration arising from the increase in quality complexity. Indeed, in many high value supply chains, one or a small number of lead firms employ standards and branding strategies to exercise control over suppliers without necessarily establishing ownership structures (UNCTAD, 2008). Ponte and Gibbon (2005) further emphasise the role played by defining and managing quality in buyer driven chains where leading firms exercise their 'functional leadership' not only based on their market power (levels of concentration, market share) but also on their control over the qualification mode and information management. They show that firms' capacity to transfer relatively intangible information to their suppliers and/or standardize and/or obtain credible external certification for increasingly complex quality content of goods and services allow for relatively loose forms of coordination and high level of drivenness. This is supported by Vorley (2001) who put the stress on the increased importance of controlling and owning intangible assets, in particular information and brands, rather than of controlling the physical means of production as ways of dealing with competition and governing supply chains. Vorley (2001) further stresses these issues with a particular view on the development of standards or requirements related to sustainability considerations that are developed in particular in response to pressure from the civil society (NGOs). He argues that these standards contribute to reinforcing the control of downstream concentrated players on the governance of the supply chain and the increase in barriers to market entry: "*sustainability as a set of process standards can provide leverage for large enterprises to control markets and raise barriers to competition*". Through their dominant position, downstream players have the capacity to shift the burden of compliance costs and risks to their suppliers and are thus playing an increasing role in

farm level decision making without necessarily adopting vertically integrated structures. While Hatanaka et al. (2005) that analyse the role of third-party certification (TPC) in the global agri-food system support this argument by recognising that TPC development is clearly related to the global policies of the major retail chains, they also point out that TPC can also help in ensuring some level of control over these retailers' strategies. Hence they provide means that ensure transparency over and accessibility to standards that can be increasingly used and controlled by civil society internationally given the growing importance of NGO's and consumer activists as well as the media.

It is also widely acknowledged that consumers' demands are key drivers of quality changes in supply chains. Lead firms are therefore by no means in complete control of the governance of consumption. However, the mutual interaction between consumers and processors/retailers should not be disregarded. As stated by Callon et al. (2002), "*one of the main concerns of lead firms (retailers, branded manufacturers) is to prompt consumer to question their preferences and, indirectly, their identities. Thus, they try to steer 'spontaneous' and gradual processes of qualification and requalification of products to their advantage. They do so, inter alia, by setting up forms of organization, promoting collaboration between suppliers and consumers in the qualification of products. In this way, competition can be thought of turning around attachment of consumers to products with quality have progressively been defined with their active participation*".

E. Implication for small-scale farmers

While the importance of consumers as drivers for quality changes has to be recognized, it is important to stress again the role played by increasing quality requirements as major determinants of food supply chain restructuring (Hanz and Pienadz, 2007). Indeed the development of closed supply chains controlled in many cases by major agri-food industry players has been displacing spot markets as already mentioned and has changed the rules for market participation in vertically coordinated supply chains with privatised standards. This holds implications in terms of farming communities' marginalisation as emphasized among others by Vorley (2001). Vorley (2001) also mentions the effect of the increased dominance of downstream players on the supply chain on the increased disjunction between prices at producer level and food end product prices. He illustrates this with the US and UK cases where the proportion of value addition done outside the farm amounts to between 78-85%.

Ssemwanga (2005) proposed a schematic representation of the different types of marketing systems (see figure 1 below) with small-scale farmers participating mainly in the local low income market, clearly highlighting the marginalisation of small-scale farmers from high-value supply chains (export market). This illustrates the general argument that small growers are likely to be confined to the low value market and not benefit from quality trends. However, Vorley (2001) points out the process of rural differentiation and of diversification currently taking place in the smallholder economy and the need to understand it. He stresses in particular the issue of better understanding the actual changes in the terms of trade between the producers and downstream role players in the supply chains in different situations. There is a need to identify the nature of the upgrading in different supply chains and to relate it to the innovation capacity of the actors. Van der Meer (2006) points out that coordinated supply chains are more likely to develop for sensitive products, perishables, specialties and products with variability in price and quality that have more scope for adding net value through coordination. He also argues that in markets with moderate requirements, such as emerging modern urban consumer markets in developing countries, private investment in supply chain organisation will depend on the capacity to earn a net return from it.

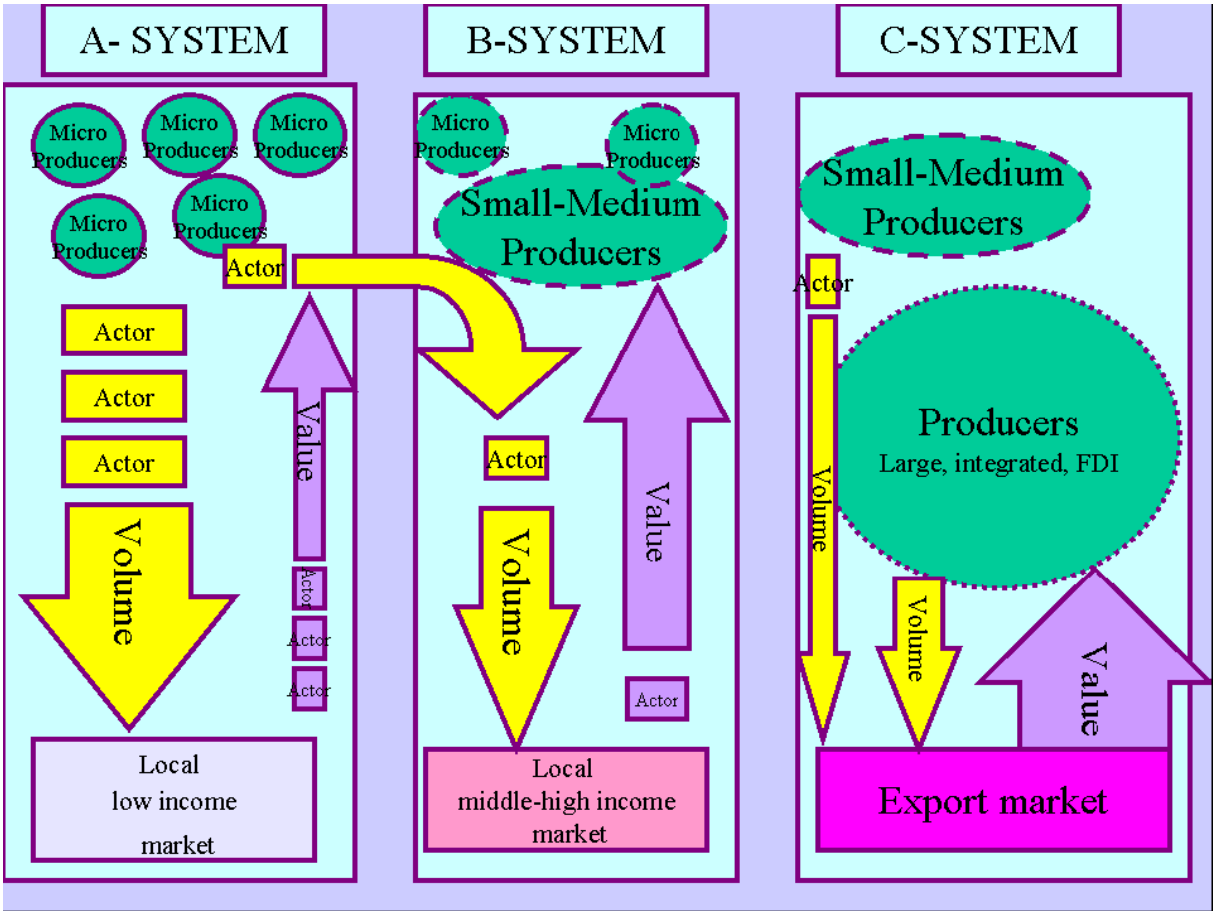


Figure 1: Sub systems in Agricultural production in developing countries
Source: Ssemwanga (2005)

As is widely acknowledged, in many countries the liberalisation process has resulted in the withdrawal of the State from supporting agriculture and from intervening in the market, thus obliging producers to rely on and better harness their competitive advantage and to build direct relations with the market. Vorley (2001) thus puts forward the fact that market access depends on the capacity to exploit 'marketing advantage'. Furthermore, Vorley (2001) note that the worldwide liberalisation process had put international markets in a position to set prices and standards for the domestic markets. Giovannucci (2003), referring to experts' prediction, states that social and environmental attributes will move from differentiating factors into mainstream market criteria and will become necessary conditions for inclusion in the more developed markets, thereby more strongly affecting small-scale farmers. It is thus extremely important to understand the capacity and limitations of small-scale farmers for developing and taking advantage of 'marketing advantage'.

From a smallholder perspective, rising quality requirements and the shift away from anonymous market-based exchange of products towards more closely coordinated supply chains can be seen as increasing barriers to entry but also as opportunities, in particular to acquire knowledge and secure market access. Evolving food standards clearly hold implications for small farmers' participation often requiring changes in production practices, access to the latest information and the implementation of new processes (Giovanucci and Reardon, 2000). The requirements for participation tend to

increase as lead firms demand higher levels of production as well as compliance with more sophisticated product standards. Various studies allude to the exclusionary effects of food quality standards for small farmers (Humphrey et al., 2004; Maertens, 2006). It is often asserted that the increasing prevalence of standards may be more difficult for small farmers in developing countries to cope with as a result of the higher cost of compliance due to economies of scale (World Bank, 2005). Transaction costs of compliance for small farmers also often exceed that of larger farmers due to higher communication and monitoring costs. Studies have found that this could result in buyers cooperating with larger farmers to the exclusion of small producers (Pingali et al. 2005; Swinnen, 2005). Chemnitz (2007) and Caswell et al. (1998) find that the exclusionary effect of standards may be particularly pronounced in the case of private standards, which are often more onerous with respect to information, communication and documentation of the certification process. Furthermore, Vorley (2001) questions the possibility of small-scale farmers to exploit 'marketing advantage' on their own when, as he notes, large-scale farmers' capacity to handle post harvest processes and transport may be favoured over small-scale farmers provision of higher quality at a lower cost.

Conversely, other studies (Gibbon and Ponte (2005); Giovannucci (2003)) highlight the potential of standards for inclusion of small farmers in developing countries in high value supply chains, which are driven by consumers' demand for quality. In this respect Chemnitz (2007) point out that, from a retail perspective, standards simplify the information collection process on product quality and can facilitate procurement from various independent producers, opening new opportunities for small farmers. From a smallholder perspective, standards could also create learning opportunities by providing knowledge in "packaged" or "codified" form through the standard specification (Fulponi, 2006; Unnevehr, 1996). In quality oriented chains, small farmers stand a better chance to comprehend and more readily comply with buyers' requirement through the stronger working links flowing from continued quality improvement, with the levels of success depending on the product, supply chain organisation and farmers' capability. Furthermore, with changes in supply chain requirements associated with quality standards development, competitive advantages may shift in favour of small farmers (Altenburg, 2006). In this regard, Ruben et al. (2006) point out the cost advantage of small-scale farmers in labour intensive products with high requirements in quality monitoring.

In conclusion, it is important to indicate the potential role of public intervention in this regard. Codron et al. (2005) show the mutual dependence between public and private standards in contrast with the view that they are mutually exclusive as already mentioned. Analysing the interaction between the establishment of public management quality system (MQS) and retailer strategies for product safety/quality differentiation, they show that retailers' incentives to differentiate themselves through premium private labels (PPL) increase when public MQS decline, while increased public MQS can contribute to PPL development but do not necessarily result in a similar rise in PPL. This supports the relevance of addressing the question of how governments could influence the retailers in their private standards setting in line with public interest via setting adapted public management quality systems. Importantly, they also point out the importance of considering the vertical relation between retailers and suppliers with a particular view on the distribution of bargaining power

between the two as it will determine the distribution of costs among these players attached to increase quality and the quality strategy adopted by the retailer when faced with mandatory MQS. However, Vorley (2001) argues that "*Public regulation is not geared up to deal with supply chain structures*" and advocates for the need to "*recognise the political nature of the rules and frameworks that comprise market structures, understanding that markets and political authorities are part of the same ensemble of governance, rather than contrasting principles of social organisation*." Vorley (2001) highlights the role that government can play in building small-scale farmers' capacity to access supply chains, especially by being able to comply with standards. The government can also contribute to supporting small-scale farmers through providing marketing alternatives to the formal supply chain systems such as local farmers' markets and school meal programmes.

F. Initial insights into quality trends in the South African context

1. The different marketing systems in the South African context and the emergence of farmers' markets

As a background to this section on quality trends in the South African context based on the literature, it appears important to briefly depict the South African context from an agribusiness and marketing perspective. It also serves to highlight the emergence of an alternative marketing trend, the development of farmers' markets that has apparently not been the topic of academic studies up to now.

The South African agro-food sector is dominated by the large retail sector, notwithstanding a still clear divide between an urban and rural food system. Indeed, this domination is much more pronounced in urban areas. The supermarket phenomenon has played an important role in food distribution in South African food since the 1980's. The growing urbanisation process and development of suburbs far away from the central business district has been accompanied since the 1960's by the development of suburban shopping centres and hypermarkets marking clear retail outlet growth in size. Recently, the supermarket format has been diversified with retail stores ranging from convenience stores and forecourts to hypermarkets. Botha and Van Schalkwyk (2006) describes the formal retail sector as a wide spectrum of neighbourhood convenience stores, specialty stores, boutiques, chain supermarket stores, department stores and large wholesale and retail outlets. Supermarkets account for more than 55 % of national food retail (Weatherspoon & Reardon, 2003). South Africa has a mature formal retail market, solely occupied by domestic retailers and highly concentrated, with four dominant players: Shoprite/Checkers and Pick 'n Pay, both with 33% market shares, SPAR with 26% market shares and Woolworths with 8% (personal interview with retailers during 2006).

In parallel to these well developed retail chain groups, a very large and growing informal market, especially for fresh fruit and vegetables, also exists in South Africa. It is generally prevalent in many rural regions (especially former homeland areas), townships, taxi ranks, train stations and street corners where supermarket retail outlets are absent or have been absent. The informal market includes traditional independent stores such as general dealers, cafes, spaza shops, street vendors, hawkers and tuck shops as well as primitive little street corner stalls (United States Department of Agriculture, 2005). On the two largest Fresh Produce Markets in South Africa, in Johannesburg and Pretoria, purchases by informal traders represent significant portions of about 50% and 29% of fresh produce trade respectively[14]. The level of consolidation in the informal sector has proven difficult to ascertain since very little information is available for this sector.

The third marketing format in South Africa is that of direct sales by producers. Direct sales include sales through roadside or farm stalls near large cities, sales to hawkers and informal traders. In general, South African consumers do not have a deep-rooted tradition of food purchasing at farmers' markets. However, farmers' markets (e.g. in

[14] Source: Personal interview with the senior manager of commission business at the Johannesburg Fresh Produce Market and with the marketing manager of the Tshwane Fresh Produce Market in August 2004, for the Regoverning Markets project.

the Western Cape) are becoming increasingly popular among wealthy consumers. Given the potential links between farmers' markets and quality trends, it is interesting to give insights into the development at the local level of this alternative quality related market outlet - food purchasing at local farmer's markets. While this is a common phenomenon among European consumers, it is still in its infancy in South Africa. As confirmed by the up market South African lifestyle magazine House and Leisure (Buitendach, 2007), the 'market movement' is becoming more popular, even though it is still far from a main stream food trend: "*Markets are the new malls*"; "*The 'market movement' is a reaction to confined, commercial, artificially lit, air-conditioned shopping centers and is in line with the international trend towards meaningful living. An antidote to malls, markets offer a laid-back, sociable outing. Plus they provide the opportunity to buy from small, specialized stores that offer great products* […]". There were at least 16 of these local markets in South Africa in 2007, providing an alternative food purchase experience for consumers and their number has most likely expanded. The food offering of these markets encompasses a number of new quality trends such as organic food, fresh farm produce, South African culture food (e.g. koeksisters, milktart, potjiekos), free-range produce, boutique cheeses, gourmet food, home-industry style baked goods and home-made processed fruit products (such as jams and preserves).

2. Food safety in South Africa

Even though food safety is increasingly becoming a prerequisite for participation in modern markets and is widely recognised by South African role players as an important dimension of food production and marketing, surprisingly little has been written about the food safety dynamics in South Africa and their implication on the agro-food system. Only a few studies were found as a result of a thorough web-based library and internet search using key words such as "foods safety", "consumer safety", "fresh foods", "South Africa" as a basis for the general search. The following databases were searched systematically for the key words "food safety and South Africa": Environmental Science and pollution, Econlit, Emerald, Agricola, Agricultural and Environmental biotechnology abstracts, Health and Wellness resource Center and Alternative Health Module, Google Scholar and ISI web of knowledge.

The literature that could be found focuses mainly on the potential health hazards related to the presence of harmful microorganisms in the food. However, the findings of such studies – the more significant of which are outlined below –cannot be generalized due to: (1) their limited scope and localised nature, (2) the fact that some of them give inconclusive picture of consumer safety and (3) the fact that they mainly target the informal markets with most of them not covering the formal markets (e.g. retail food chains and supermarkets). It is significant to note in particular that literature on consumer perceptions about the safety of the food in the domestic markets could not be found. The lack of literature in this regard points out the need for further exploration of the food safety issues in South Africa from an academic point of view. To give an overview of the existing literature in the South African context, the more often encountered studies as the result of the search are reviewed below. As already mentioned, these are mostly studies that focus on the presence of microorganisms in different agrifood products in relation to different processing and

marketing practices except for one study that explores the nutritional dimension. Overall, it is interesting to note that most studies find a low incidence of the microorganisms under investigation in different food products and thus conclude to a low level of threat posed to the consumers. However, most studies still emphasize the need for improving and controlling product handling and hygienic practices along supply chains.

Van Nierop et al (2005) investigated the presence of food borne pathogens in fresh and frozen chicken carcasses sourced from various retailers in Gauteng. While the study demonstrates the presence of the harmful pathogens including salmonella spp. in from products from the different outlets (i.e. from butcheries and supermarkets), it does not specify the extent to which such pathogens pose a threat to the safety of the consumers. Lues, Venter and van der Westhuizen (2003) analyzed the presence of harmful microorganisms in milk in the Botshabelo township. The study revealed samples with microbial counts exceeding national standards. The results were attributed to the lack of general food hygiene related knowledge and infrastructure in the study area. On the basis of the high microbial counts found by the study, the authors concluded that the milk poses a definite health risk in the study area and called for more investigation in the milk quality and milking protocols of small-scale farmers, milk vendors and general dealers. Christison, Lindsay and von Holy (2008) carried out a microbiological survey of ready-to-eat filled baguettes, salads, cutting boards, selected utensils (preparation knives and serving spoons) and hands of food handlers in 4 retail delicatessens in Johannesburg. The results showed a significant presence of micro-organisms on the ready-to-eat foods as well as the handling facilities. However it found a relatively low incidence of potential food borne pathogens in ready-to-eat filled baguettes and assorted salads prepared in retail delicatessens suggesting a low potential risk for food borne illness. Nonetheless, the authors call for improvement in the hygienic practices to minimize potential risks of food borne diseases.

Leggott and Shephard (2001) conducted a survey on the presence of the mycotoxin patulin on locally produced commercial apple products (whole fruits, fruit juices and infant purees and juices) purchased from retail outlets in South Africa between 1996 and 1998. In most of the apple juices and infant purees, the study found no detectable patulin contamination. In the relatively few whole fruit products and infant fruit juices, the study found detectable amounts of patulin. Generally the study noted that the levels of patulin contamination were all below the maximum legislative requirement for the sampled products, thus indicating the high quality of the apple fruit and apple fruit products as well as of the manufacturing practices. Abong'o and Momba (2009) investigated the prevalence of E. coli (bacteria) in selected meat and meat products sold in Amathole District. The results showed a low prevalence of E. coli but nonetheless emphasized that the low prevalence should not lead to underestimate the risk because the bacterium has been implicated in several disease outbreaks worldwide. The study highlights the need for frequent surveillance of E. coli in meat and meat products sold in the District as well as in South Africa as a whole to ensure consumer safety. Kubheka, Mosupye and von Holy (2001) surveyed salads and gravy from street vendors in central Johannesburg that were considered to be working under unsuitable conditions for preparing and selling of ready-to-eat foods to determine the presence of harmful micro-organisms. The study found low counts of food borne microorganisms. It concluded that the quality and safety of salads and

gravies analyzed were acceptable despite the observed unhygienic food handling practices and unsanitary environmental conditions under which the vendors operated. The study attributed the low presence of pathogens to the short holding times of the prepared foods.

Schonfeldt and Gibson (2009) present the initiatives taken in South Africa to promote healthy eating practices. These initiatives include food fortification and supplementary feeding programs, development of South African food-based dietary guidelines and food composition tables, which take into account the prevailing eating patterns, diet related health issues and locally analyzed foods. The paper points out that unlike most developed countries where problems of obesity are increasing, South Africa is faced with both problems of nutritional deficiencies and excesses leading to the extreme cases of malnutrition and obesity, respectively. It notes that about 56% of the adult population was recorded as overweight in 2003 with the highest rates of obesity arising among adult women (23%). It is stressed that all the discussed initiatives are meant to move the South African population towards good health conditions by applying a holistic and multi-sectoral approaches, including the food labelling regulations that aim at preventing misinformation and at protecting the consumer. The paper however calls for innovative solutions to address the public health issues.

3. Insights into other quality consumer perceptions in the South African context

Oyewumi, and Jooste (unknown) investigated the determinants of households' pork consumption in Bloemfontein, Central South Africa. The study used a logistic regression model on aggregated pork and non pork consumer data. The study solicited the determinants of pork consumption from previous studies and these included income, relative price of pork, price of other meat types, expenditure on meat, race, gender, religion, quality, place of purchase and value adding. The study found that pork consumption was influenced by preference for value added pork products, pork quality (i.e. appearance and health concerns were considered as quality dimensions), household income, household monthly expenditure on meat, relative price of pork, price of substitute meat especially the most preferred meat type. The study further analyzed the partial effects of the factors to determine the most important determinants of pork consumption. This analysis revealed that quality assurance and value-adding respectively could more than double the probability of pork consumption by households.

Shongwe (2005) analyzed the consumers' willingness to pay for less fat content in the two beef cuts in Bloemfontein, South Africa. The study, which used hedonic price model to determine the implicit price for fat content in the beef, analyzed beef sample from 17 geographically demarcated supermarkets in Bloemfontein. Contrary to what was expected, the study found that consumers in Bloemfontein were willing to pay for additional external fat. However the study found that consumers were not willing to pay for additional seam fat and did also not have willingness to pay for bones in cuts. The study attributed the unexpected results regarding willingness to pay for additional external fat to the eating habits of the people in the area. Indeed, it indicated that they

normally prefer ‘braai’, which by nature requires more external fat to lubricate the meat from drying or burning out. This finding relates to other studies that have shown that the quality of the product may depend on the usage situation.

Botha (2008) investigated the different market segments for food consumption in the Free State Province of South Africa and analyzed the factors that differentiate the segments. The study was based on a survey that covered 849 respondents. The sample was drawn through cluster- and stratified sampling techniques to account for the geographical spread of the population as well as the ethnical composition and income distribution of the population. Data was collected through a questionnaire that captured food related questions and households food preferences when making their food purchases and demographic characteristics of the households. Using Cluster analysis, the study established market segments on the basis of frequency of food consumption and place of consumption which were used to segment the sample into below -, similar-, above-, and high above the sample average. The study then applied Principal Component Analysis to determine the underlying structure of the market segments with respect to the food preferences. Finally the study used the Binary Logit model to analyze the determinants of the market segments food consumption.

From the Cluster Analysis, the study found five prevalent market segments in the Free State Province. These included: Inferior Product Consumer; At Home (basics); Balanced Consumer; Value Added Orientated and High Frequency Consumers (broad product range). The Inferior Product Consumers represented 34.7% of the sample and these households typically consume above average maize meal, average poultry and with a variety of other basic products but generally below the sample average of the food consumed and the place of consumption. The At Home (basics) represented 23.6% of the sample and these consumers generally consume bread, maize meal, maize samp, rice, mutton, poultry, fish (fresh/frozen and processed), fresh milk, butter, eggs, cooking oil, fruits, vegetables, sugar, coffee, cocoa and tea. The Balanced Consumers represented 26.6% of the sample and the usually consumer rice, pasta, breakfast cereals, beef, mutton, game, nuts, fruit juices, bottled water and sometimes eat at restaurants and also eat take away. The Value Added Orientated consumers represented 12.3% of the sample. These consumers generally consume pasta, pork, condensed milk, yoghurt, cheese, fruits, fruit juices, water bottled, take away and sometimes eat at restaurant. The High Frequency (broad product range) Consumers represented 2.6% of the sample and these consume especially high above the average beef, mutton, cheese yoghurt, fruits with below average consumption of maize meal and poultry

The Principal component analysis showed that there are four underlying structures of the quality related variables (such as convenience, packaging, brand name and nutritional information among others). These factors were referred to as: Intrinsic value indicator, Extrinsic value indicator, Nutritional value and Lifestyle. The intrinsic quality indicator explained the largest proportion of the total variation and this was important for consumers who indicated high preferences for health considerations, food safety and taste. The Extrinsic value indicator consisted of high preference for food traceability and packaging. The Nutritional value consisted of a single factor (i.e. nutritional information and the Lifestyle). The lifestyle factor consisted of convenience and cooking time.

Finally the Logit model was applied using the economic and non-economic variables and food preferences related variables. The economic variables considered included the household's monthly per capita income, monthly food expenditure and the importance of price when food is purchased. The non-economic variables included; age, gender, ethnicity, household size, location and the presence of a working female. The food preference related variables included such as convenience, packaging, brand name and nutritional information, health consideration, food safety, traceability, cooking time and taste

The results showed that the High Frequency Consumers were the most likely to earn the highest income and the Inferior Product Consumers were the likely to earn the least income. In correlation to this, the results showed that the Inferior Product Consumers were most likely to be concerned about price, while the High Frequency Consumer were the least likely to indicate that price is of importance. Furthermore the Inferior Product Consumer were the most likely to indicate that the Intrinsic factor were importance. The High Frequency Consumer segmented were the most likely to indicate that extrinsic products factors were more important in their purchase decision because of their lifestyle.

The study concluded that diverse consumption patterns exist that significantly differs in the driving factors. The study confirmed that as income increases, the non-economic factors become increasingly more important in food purchases. As disposable income increases the importance of price in food consumption and purchase decision decreases and other quality factors such as convenience, packaging, become increasingly important. The study noted that establishing the market segments along with their characteristics could assist policy makers in understanding the impact and extent of increases in various food prices and to determine the effect of policies on different segments.

References

Abong'o, B.O. and Momba, M.N.B (2009): Prevalence and characterization of Escherichia coli O157:H7 isolates from meat and meat products sold in Amathole District, Eastern Cape Province of South Africa: Food Microbiology 26 (2009) 173–176

Acebron, LB, Dopico, DC. (2000). The importance of intrinsic and extrinsic cues to expected and experienced quality: an empirical application for beef. *Food Quality and Preference*, 11 (2000).

Akerlof, AG. (1970). The market for Lemons: Quality, uncertainty and the market mechanism. *Quarterly Journal of Economics*, 84: August.

Alfnes, F. and Rickertsen, K. (2003). European consumers' willingness to pay for U.S. beef in experimental auction markets. *American Journal of Agricultural Economics*, 85(2).

Allaire G. (2002). L'économie de la qualité, en ses secteurs, ses territoires et ses mythes, Géographie, Economie et Société, n°4.

Allaire G. (2003). Quality in economics, a cognitive perspective. In Harvey, Mc Meekin and Warde (eds), *Theoretical approaches to food quality*, Manchester University Press.

Altenburg T. (2006). Symposium : shaping value chains for development. The European Journal of Development Research, Special Issue, 18.

Angulo, AM, Gil, JM and Tamburo, L. (2005): Food Safety and Consumers' Willingness to Pay for Labelled Beef in Spain. *Journal of Food Products Marketing*, Vol. 11(3).

Angulo,AM. And Gil,JM. (2007). Risk perception and consumer willingness to pay for certified beef in Spain. *Food Quality and Preference*, 18.

Asselin, AM. (2005). Eggcentric behavior – Consumer characteristics that demonstrate greater willingness to pay for functionality. *American Journal of Agricultural Economics*, 87(5).

Ball, S, Rowson, B and O'Toole, S. (2008). *Consumer perception of organic, ethical and local foods served in restaurants in the Sheffield area*. Research report prepared for the HEFCE Food Innovation Project by the Centre for International Hospitality Management Research Sheffield Hallam University. March 2008.

Baltzer, K. (2004). Consumers' Willingness to Pay for Food Quality—The Case of Eggs. *Food Economics,* 1.

Barcala MF, Gonzalez-Diaz M and Raynaud E. (2007). The governance of quality: The case of the agrifood brand names. *3rd International Conference on economics and management networks*. Rotterdam School of Management. Erasmus University, 28 – 30 June.

Barjolle, D & Sylvander, B. (2002). Some factors of success for "origin labelled products" in Agro-food supply chains in Europe: Market, Internal Resources and Institutions. *Économies et Sociétés*, 25.

Barrow, S. (2006). South African organic market study. Commissioned by EPOPA. Available at www.epopa.info.

Batte, MT, Hooker, NH, Haab, TC and Beaverson, J. (2007). Putting their money where their mouths are: Consumer willingness to pay for multi-ingredient, processed organic food products. *Food Policy*, 32.

Beletti, G. (1999). Origin labelled products, reputation and heterogeneity of firms. In: *The socio-economics of origin labelled products in agro-food supply chains: spatial, institutional and co-ordination aspects*. Eds: Sylvander B, Barjolle D & Arfini F. (2000). Series Actes et Communications, 17. INRA, Paris.

Belleti, G and Marescotti, A. (2002). OLP's and Rural development strategies. Dolphins Report, Introductory notes for Paris WP 3 Meeting, 6-7 May.

Benedict, J and Steenkamp, EM. (1990). Conceptual model of the quality perception process. *Journal of Business Research*, 21.

Bernard, JC and Bernard, DJ. (2009). What is it about organic milk? An experimental analysis. *American Journal of Agricultural Economics*, 91(3).

Bernue, A, Olaizolab, A and Corcoranc, K. (2003). Extrinsic attributes of red meat as indicators of quality in Europe: an application for market segmentation. *Food Quality and Preference* 14.

Bolliger, C. & Réviron, S. (2008). Consumer Willingness to Pay for Swiss Chicken Meat: An In-store Survey to Link Stated and Revealed Buying Behaviour. Proceedings of the 12th Congress of the European Association of Agricultural Economists – EAAE 2008

Bonnet, C and Simioni, M. (2001). Assessing consumer response to pretected designation of origin labeling: A mixed multinomial logit approach. *European Review of agricultural economics* 28(4).

Botha, F. (2008). An Investigation into household food consumption patterns in the Free State Province of the Republic of South Africa. Unpublished M.Com thesis (Agric Economics), Department of Agricultural Economics; Faculty of Natural and Agricultural Sciences, University of the Free State, Bloemfontein.

Botha, L. & Van Schalkwyk H.D, 2006. Concentration in the South African food retaling industry. Paper presented at the 44th Annual AEASA conference in Grahamstown, South Africa. 20 – 22 September 2006.

Briz, T and Ward, RW. (2009). Consumer awareness of organic products in Spain: An application of multinominal logit models. *Food Policy*, 34.

Brunori, G. (2007). Local food and alternative food networks: a communication perspective. *Antropology of food*. March 2007.

Buhr, B. (2003). Traceability, trade and cool, lessons learned from the EU meat and poultry industry. International Agricultural Trade Research Consortium Working Paper 03-5.

Buitendach, S. (2007). Get Fresh. House and Leisure, Issue 154, January / February 2007, 119-127.

Busch, L. (2000). The moral economy of grades and standards. *Journal of Rural Studies*, 16.

Callon, M., Meadel, C. and Rabeharisoa, V. (2002). The economy of qualities. *Economy and Society* 31(2).

Caswell, JA, Bredahl, ME and Hooker, NH. (1998). How Quality Management Metasystems are affecting the food industry. *Review of Agricultural Economics*, 20(2).

Chappuis JM. and Sans, P. (2000). Actors coordination: Governance structures and institutions in supply chains of protected designation of origin. In: The socio-economics of origin labelled products in agro-food supply chains: spatial, institutional and co-ordination aspects. Eds: Sylvander B, Barjolle D & Arfini F. (2000). Series Actes et Communications, 17(1). INRA, Paris.

Chemnitz, C, Grethe, H and Kleinwechter, U. (2007). Quality standards for food products - A particular burden for small producers in developing countries ? Contributed paper at the EAAE Seminar "Pro-poor development in low income countries : food, agriculture, trade and environment", 25-27 October 2007, Montpellier, France.

Christison, C.A., Lindsay, D and von Holy, A. (2008): Microbiological survey of ready-to-eat foods and associated preparation surfaces in retail delicatessens, Johannesburg, South Africa Food Control 19.

Codron, J, Giraud-Heraud, E and Solar, L. (2005). Minimum quality standards, premium private labels, and European meat and fresh produce retailing. *Food policy*, 30.

Combris P, Lecocq, S and Visser M. (1997). Estimation of hedonic price equation for Bordeaux wine: does quality matter? *The Economic Journal*, 107 (441).

Costanigro, M, McCluskey, JJ. and Goemans, C. (2009). The economics of nested names: name specificity, reputation and price premia. AAWE Working paper n° 49. October 2009. Available at World Wide Web www.wine-economics.org

David, PA. (1987). Some new standards for the economics of standardisation in the information age. In: Dasgupta and Stoneman (Eds.). *Economic policy and technological performance*. Cambridge University Press.

Dhar, T and Foltz, JD. (2005). Milk by any other name… Consumer benefits from labeled milk. *American Journal of Agricultural Economics*, 87(1).

Erasmus, N. (2009). Personal communication, Directorate Food Safety and Quality Assurance, DAFF.

FAO study. (2007). Private standards in the United States and European Union markets for fruit and vegetables – implications for developing countries. *FAO commodity studies*. Available at: www.fao.org

Farina, T.M.Q. & De Almeida, S.F. (2003). Consumer perception on alternative poultry. International Food and Agribusiness Management Review, 5(2)

Farina, EMMQ, Gutman, GE, Lavarello, PJ, Nunes, J and Reardon, T. (2005). Private and public milk standards in Argentina and Brazil. *Food Policy*, 10.

Fearne, A and Lavelle D. (1996). Perceptions of Food 'Quality' and the Power of Marketing Communication: Results of Consumer Research on a Branded-Egg Concept. *Journal of Product and Brand Management*, 5:29–42

Fearne, A, Kuznezof, S. (1994). Northumbrian lamb: a case study of consumer attitudes towards branded fresh meat products. Farm Management 8.

Fletcher, D.L. (2002). Poultry Meat Quality. World's Poultry Science Journal, 58(2002):131-145

Fonte, M. (2005). Slow food's presidia: What do small producers do with big retailers? In: *Between the Local and the Global: Confronting Complexity in the Contemporary Agri-Food Sector*,, Elsevier Publishers.

Foutopolis, C and Krystallis, A. (2003). Quality labels as a marketing advantage. The case of the "PDO Zagora" apples in the Greek market. *European Journal of Marketing* 37(10).

Fulponi L. (2006). Private voluntary standards in the food system: the perspective of major food retailers in OECD countries. *Food Policy*, 31.

Garbutt, N and Coetzer, E. (2005). Options for the development of national/subregional codes of good agricultural practice for horticultural products benchmarked to EurepGAP. Consultation Draft, September 2005, summarized in chapter III of UNCTAD (2007a).

Gracia, A and De Magistris, T. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy*, 33.

Gamblea, J, Jaeger, SR. and Harker, FR. (2006). Preferences in pear appearance and response to novelty among Australian and New Zealand consumers. *Postharvest Biology and Technology*, 41.

Gereffi, G. (1994). The organisation of buyerdriven global commodity chains: how US retailers shape overseas production networks. In: Gereffi and Korzeniewicz (1994). *Commodity Chains and Global Capitalism*, Westport, CT: Praeger.

Giovannucci D. (2003). Emerging issues in the marketing and trade of organic products. Published as the monograph on the proceedings of the OECD Workshop on Organic Agriculture, September 2002. Paris: OECD.

Giovannucci D. and T. Reardon (2000). Understanding grades and standards and how to apply them. Washington DC, World Bank.

Goddard, E, Boxall, P, Emunu, JP, Boyd, C, Asselin, A and Neall, A. (2007). Consumer Attitudes, Willingness to Pay and Revealed Preferences for Different Egg Production Attributes: Analysis of Canadian Egg Consumers. *Project Report #07-03*, July 2007. Department of Rural Economy, University of Alberta.

Goodman, D. (2003). The quality turn and alternative food practices: reflections and agenda. Editorial review, *Journal of Rural Studies*, 19.

Grunert, KG. (1997). What's in a steak? A cross-cultural study on the quality perception of beef. *Food Quality and Preference*, 8(3):157-174.

Grunert, KG, Bredahl, L and Brunsø, K. (2004). Consumer perception of meat quality and implications for product development in the meat sector - a review. *Meat Science*, 66.

Grunert, KG. (2005). Food quality and safety: consumer perception and demand. *European Review of Agricultural Economics*, 32(3).

Hanataka M., C. Bain and L. Busch (2005). Third-party certification in the global agri-food system. Food Policy 30 (2005).

Hanf JH and Pienadz A. (2007). Quality management in supply chain networks. The cases of Poland. International Food and Agribusiness Management Review, 10 (4), 103-128.

Harker, FR, Gunson, FA and Jaeger, SR. (2003). Review article - The case for fruit quality: an interpretive review of consumer attitudes, and preferences for apples. *Postharvest Biology and Technology*, 28.

Harrison, M, Marsden, T, and Flynn, A. (1997). Contested regulatory practice, the local state and the implementation of food policy. T*ransactions of the Institute of British Geographers*, 22.

Henson S. (2006). The role of public and private standards in regulating international food markets. Paper prepared for the Summer Symposium of the International

Agricultural Trade Research Consortium (IATRC), Bonn, Germany, 28-30 March 2006, accessible through: www.agp.unibonn. de/iatrc/iatrc_e.htm.

Henson, SJ and Caswell, JA. (1999). Food safety regulation: an overview of contemporary issues. *Food Policy*, 24.

Henson, SJ and Hooker, N. (2001). Private sector management of food safety: public regulation and the role of private controls. International food and agribusiness management review, 4.

Henson, SJ and Northen, JR. (1998). Economic determinants of food safety controls in the supply of retailer own-branded products in the UK'. *Agribusiness,* 14(2).

Henson, S. and Reardon, T. (2005). Private agri-food standards: Implication for food policy and the agri-food system. Food Policy 30, 241-253.

Hobbs, JE. (2003). Information, incentives and institutions in the agri-food sector. Presidential address to the Canadian Agricultural Economics Society Annual Conference, Montréal, 27-30 July 2003.

Holleran, E, Bredahl, ME and Zaibet, L. (1999). Private incentives for adopting food safety and quality assurance. *Food policy*, 24.

Humphrey J, McCulloch, N and Ota, M. (2004). The impact of european market changes on employment in the Kenyan horticulture sector. Journal of International Development 16 (1).

Ilberry, B and Kneafsey, M. (1997). Product and place: Promoting quality products and services in the lagging rural regions of the European Union. *European Urban and Regional Studies*, 5.

Jaffee, S and Masakure, O. (2005). Strategic use of private standards to enhance international competitiveness: Vegetable exports from Kenya and elsewhere. *Food Policy*, 30.

Janssen, M, Heid, A and Hamm, U. (2009). Is there a promising market 'in between' organic and conventional food? Analysis of consumer preferences. *Renewable Agriculture and Food Systems.* 24(3).

Klein, B and Leffler, KB. (1981). The Role of Market Forces in Assuring Contractual Performance. *Journal of Political Economy,* 89 (August).

Kanter, C, Messer, KD and Kaiser, HM. (2009). Does production labeling stigmatize conventional milk? *American Journal of Agricultural Economics*, 91(4).

Kubheka, LC, Mosupye, FM and Von Holy, A. (2001). Microbiological survey of street-vended salad and gravy in Johannesburg city, South Africa, *Food Control* ,12.

Kolodinsky, J. (2008). Affect or information? Labeling policy and consumer valuation of rBST free and organic characteristics of milk. *Food Policy*, 33.

Krystallis A and Ness,M. (2005). Consumer preferences for quality foods from a South European perspective: A conjoint analysis implementation on Greek olive oil. *International Food and Agribusiness Management Review*, 8(2).

Lancaster, K. (1966). A new approach to consumer theory: J*ournal of Political Economy*, 74(1).

Landon S & Smith CE (1997). The use of quality and reputation indicators by consumers: the case of Bordeaux Wine. Journal of Consumer Policy, September 20(3).

Landon S & Smith CE (1998). Quality expectations, reputation and price. *Southern Economic Journal*, January 64(3).

Lang, T and Heasman, M. (2004). Food Wars: The Global Battle for Mouths, Minds, and Markets. London: Earthscan.

Lasztity, R, Petro-Turza, M and Foldesi, T. (2004). History of food quality standards. In: Food Quality and Standards, (Ed. Radomir Lasztity), in *Encyclopedia of Life Support Systems (EOLSS)*, Developed under the Auspices of the UNESCO, Eolss Publishers, Oxford ,UK, [http://www.eolss.net]

Latouche, K, Rainelli, P. and Vermersch, D. (1998). Food safety issues and the BSE scare: some lessons from the French case. *Food Policy*, 23(5).

Leggott, NL and Shephard, GS. (2001). Patulin in South African commercial apple products. *Food Control* 12.

Lin, B, Reed, J and Lucier, G. (2004). U.S. Fruit and Vegetable Consumption – Who, What, Where and How Much. United States Department of Agriculture (USDA), *Agriculture Information Bulletin*, Number 792-2, October 2004.

Loader, R and Hobbs, JE. (1999). Strategic responses to food safety legislation. *Food Policy*, 24.

Loureiro, ML and McCluskey, JJ. (2000). Assessing consumers response to protected geographical identification labeling. *Agribusiness* 16 (3).

Loureiro, ML and Umberger,WJ. (2007). A choice experiment model for beef: What US consumer responses tell us about relative preferences for food safety, country-of-origin labeling and traceability. *Food Policy*, 32.

Lues, JFR, Venter, P and Van der Westhuizen, H. (2003). Enumeration of potential microbiological hazards in milk from a marginal urban settlement in central South Africa, Food Microbiology 20.

Lunda, CM, Jaeger, SR, Amosa, RL, Brookfield, P and Harker, FR. (2006). Tradeoffs between emotional and sensory perceptions of freshness influence the price consumers will pay for apples: Results from an experimental market. *Postharvest Biology and Technology*, 41.

Luning, P and Marcelis, W. (2007). A conceptual model of food quality management functions based on a techno-managerial approach. *Trends in Food Science and Technology*. 18(3), March.

Luten, JB, Oehlensechläger, J and Ólafsdóttir, G. (2003). Quality of Fish from Catch to Consumer, Labelling, Monitoring and Traceability: Wageningen Academic Publishers.

Maertens M. (2006). Trade, food standards and poverty : the case of high-value vegetable exports from Senegal. Poster paper at the 26th Conference of the International Association of Agricultural Economists, Gold Coast, Australia, August 12-18.

Magdelaine, P., Spiess, M.P. & Valceshini, E. (2008). Poultry meat consumption trends in Europe. World's Poultry Science Journal, 64:53-63.

Marsden, T. (1998). New rural territories: regulating the differentiated rural space. *Journal of Rural Studies*, 14.

Marsden, T and Arce, A. (1995). Constructing quality: emerging food networks in the rural transition. *Environment and Planning A*, 27.

Marsden T, Banks, J and Bristow, G. (2000). Food supply chain approaches : exploring their role in rural development. *Sociologia Ruralis*, 40(4).

Martinez GM, Fearne, A, Caswell, JA and Henson, SJ. (2005). Co-regulation of food safety: opportunities for private-public partnerships. Imperial College at Wye, Ashford.

Martinez, MG, Fearne, A, Caswell, J and Henson, S. (2007). Co-regulation as a possible model for food safety governance: Opportunities for public–private partnerships. *Food policy*, 32.

Mazzocchi, M., Lobb, A., Traill, W.B. & Cavicchi, A. (2008). Food Scares and Trust: A European Study. Journal of Agricultural Economics, 59(1):2–24

Ménard C. (2000). Enforcement procedures and governance structures: what relationship? In: *Institutions, Contracts and Organizations*. Eds: Menard, C and Elgar, E. (2000). Cheltenham, UK.

Ménard, C. and Valceschini, E. (2005). New institutions for governing the agri-food industry. European Review of Agricultural Economics, 32 (3).

Monteiro, DM and Lucas MR. (2001). Conjoint measurement of preferences for traditional cheeses in Lisbon. *British food journal* 103(6).

Morth U. (2004). Introduction in : Morth (ed) Soft law in governance and regulation. Edward Elgar, Cheltenham.

Nadvi, K. and Waltring, F (2004). Making Sense of Global Standards, *Local Enterprises in the global economy: Issues of governance and upgrading*, Edward Elgar.

Nadvi, K. (2008). Global standards, global governance and the organization of global value chains. *Journal of Economic Geography*, 8.

Napolitano, F, Braghieri, A, Piasentier, E, Favotto, S, Naspetti, S and Zanoli, R. (2009). Effect of information about organic production on beef liking and consumer willingness to pay. *Food Quality and Preference*. In press

Nelson, P. (1970). Information and consumer behaviour. *Journal of Political Economy*, 78, March-April.

Nerlove, M. (1995). Hedonic price functions and the measurement of preferences. *European Economic Review*, 39.

Ness, MR. and Gerhardy, H. (1994). Consumer preferences for quality and freshness attributes of eggs. *British Food Journal*, 96(3).

OECD. (2000). Appellations of origin and geographical indications in OECD Member countries: Economic and legal implications. *Working Party on Agricultural Policies and Markets of the Committee for Agriculture Joint Working Party of the Committee for Agriculture and the Trade Committee*. COM/AGR/APM/TD/WP (2000)15/FINAL. Paris.

OECD, (2006). Private Standards and the Shaping of the Agro-Food system, Paris.

Olsen M. (1972). Cue utilization of the quality perception process: a cognitive model and an empirical test. Phd Thesis. Purdue University, West Lafayette.

Onyango, B., Rimal, A., Miljkovic, D. & Hallman, W. (2009). Food safety risk perceptions as a tool for market segmentation: The USA poultry meat market. Contributed paper for the Southern Agricultural Economics Association Annual Meeting, Atlanta, Gerogia, January 2009

Oude Ophuis PAM and Van Trijp, HCM. (1995). Perceived quality: a market driven and consumer orientated approach. *Food Quality and Preference*, 6.

Oyewumi, OA. and Jooste, A. (unknown). Measuring the determinants of pork consumption in Bloemfontein, Central South Africa: Department of Agricultural Economics, University of the Free State, South Africa.

Pacciani A, Belletti G, Marescotti A and Scaramuzzi S (2001). The role of typical products in fostering rural development and the effects of regulation (EEC) 2081/92. 73rd Seminar of the European Association of Agricultural Economists, ANCONA, 28-30 JUNE.

Péneau, S, Hoehn, E, Roth, HR, Escher, F and Nuessli, J. (2006). Importance and consumer perception of freshness of apples. *Food Quality and Preference*, 17.

Péneau, S, Brockhoff, PB, Escher, F and Nuessli, J. (2007). A comprehensive approach to evaluate the freshness of strawberries and carrots. *Postharvest Biology and Technology*, 45.

Peri, C, Lavelli, V, and Marjani, A. (2004). Qualita` nelle aziende e nelle filiere agoalimentari. Milano: Hoepli.

Peri, C. (2006). The universe of food quality. *Food Quality and Preference*, 17.

Pingali P, Khwaja, Y and Meijer, M. (2005). Commercialising small farms : reducing transaction costs. ESA Working Paper N°05-08, Agricultural and Development Economics Division of the FAO, Rome.

Pirog, R and Larson, A. (2007). *Consumer perceptions of the safety, health, and environmental impact of various scales and geographic origin of food supply chains.* Research report: Leopold Center for Sustainable Agriculture – Iowa State University. September 2007. Available on the World Wide Web at http://www.leopold.iastate.edu/pubs/staff/consumer/consumer.htm

Ponte, S and Gibbon, P. (2005). Quality standards, conventions and the governance of global value chains. *Economy and society*, 34(1).

Poole, ND, Martınez, MC and Gimenez, FV. (2007). Quality perceptions under evolving information conditions: Implications for diet, health and consumer satisfaction. *Food Policy*, 32.

Pouta E., Forsman-Hugg, S., Heikkilä, J., Isoniemi, M., Mäkelä, J. & Paananen, J. (2008). Consumers' choice of broiler meat in Finland: the effects of country of origin and production methods. Proceedings of the 12th Congress of the European Association of Agricultural Economists – EAAE 2008

Rangnekar, D. (2003b). The socio-economics of geographical indications: A review of empirical evidence from Europe. *UNCTAD/ICTSD Capacity building project on intellectual property rights and sustainable development*, October.

Raynaud E, Sauvée L and Valceschini E (unknown). Brands value and governance implications: A transaction cost approach. Full reference unknown.

Raynaud E, Sauvée L and Valceschini E. (2002). Governance of the Agri-food Chains as a Vector of Credibility for Quality Signalization in Europe. 10th EAAE Congress, "*Exploring diversity in the European Agri-food System*", August 28-31, Zaragoza, Spain.

Reardon, T. and Berdegue, J. (2002). The rapid rise of supermarkets in Latin America : challenges and opportunities for development. *Development Policy review*, (4) September.

Reardon, T, Codron, JM, Busch, L, Bingen, J and Harris, C. (2001). Global Change in Agrifood Grades and Standards: Agribusiness Strategic Responses in Developing Countries. *International Food and Agribusiness Management Review*, 2 (3).

Reardon, T. and Farina, E. (2002). The rise of private food quality and safety standards: illustrations from Brazil. *International Food and Agribusiness Management Review*,4.

Resurreccion, AVA. (2003). Sensory aspects of consumer choices for meat and meat products. *Meat Science*, 66.

Roberts, D. (2004). The multilateral governance framework for sanitary and phytosanitary regulations: challenges and prospects. World Bank, Washington DC.

Ruben R, Slingerland, MA and Nijhoff, H. (2006). Agro-food chains and networks for development : issues, approaches and strategies. In : Agro-*food supply chains and networks for development : proceedings of the Frontis Workshop on Agro-food Chains and Networks for Development*, Wageningen, The Netherlands, 6-7 September 2004. Wageningen/Dordrecht : Frontis-Kluwer/Springer Verlag, (Wageningen UR-Frontis Series 14).

Sauvée, L and Valceschini, E. (2003). Agroalimentaire: la qualité au coeur des relations entre agriculteurs, industriels et distributeurs. *Demeter* 2004 (10).

Sawyer, EN, Kerr, WA and Hobbs, JE. (2008). Consumer preferences and the international harmonization of organic standards. *Food Policy*, 33.

Shapiro C (1982). Consumer information, product quality, and seller reputation. *Bell Journal of Economics*, 13.

Shapiro C (1983). Premiums for high quality products as a return to reputations. *Quarterly Journal of Economics*, 98(4).

Schnettler, B, Vidal, R, Silva, R, Vallejos, L and Sepúlveda, N. (2009). Consumer willingness to pay for beef meat in a developing country: The effect of information regarding country of origin, price and animal handling prior to slaughter. *Food Quality and Preference*, 20.

Schonfeldt, HC and Gibson, N. (2009). Healthy eating guidelines in the South African context. In press, Journal of Food Composition and Analysis.

Shepherd, R. (1989). Factors influencing food preferences and choice. *Handbook of the Psychophysiology of Human Eating*. Wiley, Chichester, West Sussex.

Shongwe, MA. (2005). Beef Quality: Will consumers pay for less fat? Unpublished MSc thesis (Agricultural Economics) Department of Agricultural Economics Faculty of Natural and Agricultural Sciences at the University of the Free State Bloemfontein

Stiglitz, JE. (1989). Imperfect information in the product market. In: Schmalensee R & Willig, RD (Eds) *Handbook of Industrial Organization Volume 1*. Elsevier Science Publishers, Amsterdam.

Swinnen, JFM. (2005). When the market comes to you – or not : the dynamics of vertical coordination in agri-food chains in transition. In : *Final Report of the World Bank (ECSSD) ESW on Dynamics of Vertical Coordination in ECA Agrifood Chains : Implications for Policy and Bank Operations*. World Bank, Washington D.C.

Tepper, BJ, Choi, YS and Nayga RM. (1997). Understanding food choice in adult men: Influence of nutrition knowledge, food beliefs and dietary restraint. *Food Quality and Preference*, 8(4).

Teuber R. (2007). Geographical indications of origin as a tool of product differentiation: The case of coffee. Paper presented as part of the 105th EAAE conference on "International marketing and international trade of food quality products". Available at http://www.bean-quorum.net/EAAE/pdf/EAAE105_Proceedings.pdf

Thankappan S, Marsden, T, Flynn, A and Lee, R. (2004). The battle for the consumers : building relationships in a new phase of contested accountability in the UK food chain. *BRASS Working paper*, no 17.

Thankappan S. and Marsden, T. (2006). Private standards driving the agri-food supply chains: what role do global organisations play ? *Working paper series* no 40, The Centre for business relationships, accountability, sustainability and society.

Tirole J (1988). *The theory of industrial organization.* MIT Press, Cambridge.

Tirole J (1996). A theory of collective reputations (with applications to the persistence of corruption and to firm quality). *Review of Economic studies* 63:1-22.

Tranter, RB, Bennett, RM, Costa, L, Cowan, C, Holt, GC, Jones, PJ, Miele, M, Sottomayor, M. and Vestergaard, J. (2009). Consumers' willingness-to-pay for organic conversion-grade food: Evidence from five EU countries. *Food Policy*, 34.

UNCTAD (2007). Private–sector-set Standards and Developing Counties' Exports of Fresh Fruit and Vegetables: Synthesis of Country-case Studies in Africa (Ghana, Kenya, Uganda), Asia (Malaysia, Thailand, Vietnam), and Latin America (Argentina, Brazil, Costa Rica). *Background Note by the UNCTAD secretariat for the FAO-UNCTAD Regional Workshop on Good Agricultural Practices in Eastern and Southern Africa: Practices and Policies*, Nairobi, Kenya, 6-9 March 2007.

UNCTAD (2007a). Codes for good agricultural practices: opportunities and challenges for fruit and vegetable exports from Latin American developing countries: Experiences of Argentina, Brazil and Costa Rica (UNCTAD/DITC/TED/2007/2) (eds. U. Hoffmann and R. Vossenaar).

Unnevehr, L and Jensen, H. (1996). HACCP as a regulatory innovation to improve food safety in the meat industry. Centre for Agricultural and Rural Development Working paper 96 – WP 152. February 1996.

Valli, C and Traill, WB. (2005). Culture and food: a model of yoghurt consumption in the EU. *Food Quality and Preference*, 16.

Van der Lans, IA, Van Ittersum, K, Decicco, A and Loseby, M. (2001) The role of the region of origin and EU certificates of origin in consumer evaluation of food products. *European Review of Agricultural Economics* 28(4).

Van Der Meer CLJ. (2006). Exclusion Of Small-Scale Farmers From Coordinated Supply Chains:*Market Failure, Policy Failure Or Just Economies Of Scale?* In Ruben R., M. Slingerland and H. Nijhoff (eds.). Agro-food chains and networks for development, Springer, Netherlands.

Van Nierop, W, Duse, AG, Marais, E, Aithma, N, Thothobolo, N, Kassel, M, Stewart, R, Potgieter, A, Fernandes, B, Galpin, JS and Bloomfield, SF. (2005). Contamination of chicken carcasses in Gauteng, South Africa, by Salmonella, Listeria monocytogenes and Campylobacter, International Journal of Food Microbiology 99.

Van Rijswijk, W, Frewer, LJ, Menozzi, D and Faioli, G. (2008). Consumer perceptions of traceability: A cross-national comparison of the associated benefits. *Food Quality and Preference*. 19.

Vastoia, A. (1997). Perceived quality and certification: The case of organic fruit. In: Quality management and process improvement for competitive advantage in agriculture and food. Proceedings of 49th seminar of the European Association of Agricultural Economists. (Eds Schiefer, G and Helbig, R).

Ventura, F, van der Meulen, H. (1994). Transformation and consumption of high quality meat: the case of Chianina meat in Umbria, Italy. In: van der Ploeg, J. and Long, A. (Eds.), Born from Within: Practice and Perspectives on Endogenous Rural Development. Van Gorcum, Assen..

Verbeke, W and Vackier, I. (2004). Profile and effects of consumer involvement in fresh meat. *Meat Science*, 67.

Verbeke, W and Ward, RW. (2006). Consumer interest in information cues denoting quality, traceability and origin: An application of ordered probit models to beef labels. *Food Quality and Preference*, 17.

Verhallen, T., Wiegerinck, V., Gaaker, C., and Poiesz, T. (2004): Demand Driven Chains and Networks. In The Emerging World of Chains and Networks: Bridging Theory and Practice: Camps, T, Diederen, Hofstede, G.J and Vos, B. eds: Reeds Business Information (129- 146)

Viana, R. (2006). Long-lived Port Inventories: essays on financial accounting measurement and recognition. *Unpublished Phd thesis*, FEP, University of Porto, Porto.

Vorley (2001). The chains of agriculture: sustainability and the restructuring of agri-food markets. IIED and RING opinion paper prepared for the World Summit on Sustainable Development.

Vukasovič, T. (2009). Consumer perception of poultry meat and the importance of country of origin in a purchase making process. World's Poultry Science Journal, 65(March 2009): 65-74

Vuylsteke, A, Van Huylenbroeck, G, Collet, E and Mormonot, M. (????). Exclusion of farmers as a consequence of quality certification and standardisation. *Cahiers Options Mediterraneennes*, 64.

Wang, Z, Mao, Y and Gale, F. (2008). Chinese consumer demand for food safety attributes in milk products. *Food Policy*, 33.

Watts, M and Goodman, D. (1997). Globalising Food: Agrarian Questions and Global Restructuring. London and New York, Routhledge.

Wham, CZ and Worsley A. (2003). New Zealanders' attitudes to milk: implications for public health. *Public Health Nutrition*, 6(1).

Wier, M, Jensen, KO, Andersen, LM and Millock, K. (2008). The character of demand in mature organic food markets: Great Britain and Denmark compared. *Food Policy*, 33.

Will, M and Guenther, D. (2007). Food quality and safety standards as required by EU law and the private industry. A Practitioners' Reference Book. Deutsche Gesellschaft fuer, 2nd Edition 2007.

Williamson OE. (1991). Comparative economic organization. The analysis of discrete structural alternatives. *Administrative Science Quaterly* 36(2).

Williamson OE (1996). The Mechanisms of Governance. Oxford University Press.

Wilson, N Van Ittersum K & Fearne A (2000). Cooperation and coordination in the supply chain: a comparison between the Jersey Royal and the Opperdoezer Ronde potato. In: The socio-economics of origin labelled products in agro-food supply chains: spatial, institutional and co-ordination aspects. Eds: Sylvander B, Barjolle D and Arfini F. (2000). Series Actes et Communications, 17(1). INRA, Paris.

World Bank, 2005. Challenges and Opportunities Associated with International Agro-Food Standards. World Bank, Washington, DC.

Young, C and Morris, C. (1997). A preliminary analysis of UK farm quality assurance schemes and new deals' for the rural environment. Anglo French conference of Rural Geographers, Nantes.