

# Consumer Demand Sparks the Growth of Quality Assurance Schemes in the European Food Sector

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**Abstract:** Concerns over food quality and safety have led to the growth of quality assurance schemes that provide technical requirements for production and processing and provide inspection and monitoring to assure compliance. The schemes, increasingly prevalent in the U.K. livestock and meat industry, will impact market structure, international competitiveness, and trade.

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## Introduction

Developed countries are mature markets for food, as illustrated in Chapter 2. Income growth has less impact on expenditures for food and agricultural products *per se* compared with less well-off countries. However, higher incomes can drive increased demand for food with certain characteristics: safer, higher quality, more healthful, or produced in ways believed to be more beneficial to the environment.

The preceding chapters document the rise in consumer demand for organically-produced food and discuss the effects of consumers' perceptions of food safety and concerns about animal welfare on their demand for food and agricultural products. The factors contributing to these new demands are by now well-known: food scares, outbreaks of food-borne illnesses, concerns over

food produced through biotechnology, concerns over humane treatment of animals in food production, and the environmental impacts of food production.

In Western Europe, consumer demand for food products with known and documented characteristics and with certified attributes has grown. This has been fueled by the possible linkage of BSE ("mad-cow disease") to human illness, by the widespread incidence of illness from contaminated food sources, by product recalls of processed foods, and by the growing awareness of the impacts of farm production practices on the environment and animal welfare.

An example of industry response to this demand has been the development and implementation of mandatory and voluntary quality control, management, and assurance schemes. Such schemes include certification systems for meat supply chains guaranteeing the ability to trace fresh and processed meat back to the originating animal and farm (commonly called "traceability"), certification schemes aimed at guaranteeing both product quality and environmental management of farms, and labeling and certification schemes covering organic and natural production. These schemes are an important part of the change in the way that food products are produced, marketed, and traded in Europe.

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This chapter reports on the emergence of food quality assurance schemes in the United Kingdom as an illustration of the trend in Western Europe<sup>2</sup>. It explains the reasons for the emergence of these schemes and analyzes the characteristics of the schemes in terms of the product *attributes* that the schemes' provisions aim to affect. Lastly, it discusses the potential economic and market impacts of quality assurance schemes and evaluates their potential trade impacts. The article focuses on those schemes that have arisen in the livestock and fresh meat sector; however, the implications may apply equally to schemes covering other sectors.

## Characteristics of Quality Assurance Schemes

Quality assurance schemes define a series of technical requirements for producing, processing, or transporting food, and may include standards of environmental and other management practices. The schemes also delineate an inspection system to verify that members comply with these requirements. Labels or quality marks of these programs provide an indicator of an extrinsic product attribute, such as animal welfare, organic production practices, or some aspects of food safety, such as permitted uses of veterinary medicine (see box "Quality Assurance Schemes and Quality Attributes").

Quality assurance schemes have arisen in response to several developments in the European food sector.

■ **BSE.** Revelations of a possible link between bovine spongiform encephalopathy (BSE) and a related human brain disease precipitated a widespread health scare in Western Europe that led to a ban on exports of British beef, restrictions on certain feed supplements, and a livestock slaughter program aimed at eradicating the disease. The crisis resulted in a significant drop in European beef consumption and a decline in public trust in the ability of government institutions to assure the safety and quality of food.<sup>3</sup> The late-2000 confirmation of cases of BSE in continental Europe resulted in plunging beef demand and broadened the erosion in consumer confidence.

<sup>2</sup> A more in-depth treatment of quality assurance schemes, including those in Germany, and quality assurance systems for organic products, will be the subject of a forthcoming ERS report, *Agricultural Quality Assurance Schemes in the United Kingdom and Germany*, by Bredahl, Northen, and Boecker.

<sup>3</sup> Chapter 7 in this report discusses how consumer perceptions of food safety have been affected by the BSE incident and its surrounding publicity.

■ **Food borne illnesses and food contaminants.** Several food safety incidents in Europe have raised consumers' concerns regarding the quality and safety of their food supply. These have included outbreaks of food borne illnesses, including an outbreak of salmonella in the early 1990s, and several outbreaks of listeriosis during the 1990s. In 1999, the use of dioxin-contaminated feed in Belgium was discovered, prompting the emergency removal of a wide range of products from retail stores in Belgium, the Netherlands, and France.

■ **Animal welfare and the environment.** Growing consumer awareness of and concern for the effects of production practices on the well-being of animals and the environment have led retailers to seek food products that are produced in more humane or environmentally sound ways.

■ **The Food Safety Act of 1990 (U.K.).** This law required retailers and other participants in the food supply chain in the United Kingdom (U.K.) to exercise "due diligence" in ensuring that the food they sold was safe. As a result, retailers were no longer shielded from liability by a warranty or guarantee from their suppliers. They were required, as are other participants in the food chain, to proactively ensure that the food they sell is safe. This change raised concerns among food retailers, in particular, regarding a number of animal rearing practices and led them to seek documentation of their efforts to ensure the safety of products (Fearne, 1998). In effect, risk management (i.e., protecting themselves against liability), as well as vertical coordination, spurred the development of quality assurance schemes and the growth in their membership.

These developments led to increased demand for assurances regarding food production processes and practices. In addition, food safety incidents have given rise to calls for improvements in the ability to document the source of livestock and other food products, including the feed used to produce them. Quality assurance schemes meet this demand through identification and documentation requirements aimed at tracing animals (and sometimes meat) from the farm of origin to the slaughterhouse or market. Quality assurance schemes may require animals to be bought from farms certified by a recognized assurance scheme or may limit geographic origin. Most have extensive documentation requirements, including identification of animals/carcasses, feedstuffs or treatments used,

and slaughter and grade, through if not all levels, a large part of the supply chain.

A common aim of many quality assurance schemes is to communicate to a customer (either a final consumer or a customer in the supply chain) that the scheme has affected particular product attributes in a desired way. Quality assurance schemes play two main roles in the supply chain. First, they provide documented assurance to customers that the supply of the assured product contains all the attributes that the scheme seeks to affect (for example, improved animal welfare, improved trace-back capability, and elimination of objectionable feedstuffs). This assurance is particularly valuable for retailers who supply own-label meat and must, therefore, be confident that the meat they buy satisfies the requirement of a due diligence defense. Second, they can act as a coordinating mechanism in the supply chain where different levels of the chain are under different ownership. The ability of quality assurance schemes to provide certain physical characteristics or consumer attributes is crucial when there is limited control through the supply chain by consumers or retailers. This coordinating role is especially useful when farm level schemes tie in with other transport and processor level schemes to provide integrated supply chain coordination. For example, to be eligible to go through the pork processing assurance scheme (BQAP), pork must come from pigs that have met the pig farm assurance scheme (FABPIGS) standards.

For successful operation of a quality assurance scheme, an inspection system is required to assure compliance with their production or processing requirements. One way of assuring that an inspection is independent is to have a competent third party perform it, where the third party has no direct interest in the results of inspections. In the U.K. livestock sector, inspections are undertaken either by an independent inspection agency specifically set up for the purpose or by veterinarians. An additional tier of monitoring has developed for the U.K. fresh meat sector, where Assured British Meat<sup>4</sup>(ABM) and Scottish Food Quality Certification Ltd. act as independent certification bodies for development of both

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<sup>4</sup> ABM is now one of several umbrella quality assurance schemes which come under the 'British Farm Standard'. The logo for this standard is the 'Little Red Tractor' logo, which is increasingly being used in stores to advertise 'British' food. Other schemes include the National Dairy Farm Assurance Scheme, Assured Chicken Production, Assured Combinable Crops, and Assured Produce.

quality assurance technical requirements and for the approval of competent third party inspection. In addition to an initial inspection to approve the producer or processor for membership, schemes may carry out routine audits, and the majority of schemes carry out some form of random inspection. Finally, the majority of schemes reserve the right to test carcasses for banned substances. The ability to support livestock production requirements with *post mortem* analysis is an effective way of reducing the extent to which these requirements are credence (not readily detectable or observable by the consumer—see box “Quality Assurance Schemes and Quality Attributes”) in nature.

## Quality Assurance Schemes in The United Kingdom

Reflecting food safety and quality concerns of consumers, producers, and other members of the food value-added chain, quality assurance schemes have proliferated in the United Kingdom over the last decade, with the majority of schemes implemented in the early 1990s. These programs now exist at many stages of the food supply chain and cover many different types of food. Quality assurance schemes are particularly prevalent at the production stage of the value-added chain: farm level production quality assurance schemes (commonly known as “farm assurance schemes”) cover all major species of livestock, in addition to arable crops, milk, potatoes, and fresh produce. Further up the chain, processor level schemes cover meat from the major livestock species, as well as processed organic products.

Farm level quality assurance schemes include both “generic” schemes, which have been developed with broad public participation, and proprietary schemes developed and operated by food retailing chains and large processing firms. In the livestock sector, separate generic farm-level schemes have been developed for the major livestock species and for the different regions of the United Kingdom (i.e. England, Wales, Scotland, and Northern Ireland). Generic farm-level schemes may extend beyond the farm level to specify welfare and trace-back requirements when transporting animals to slaughter. Standards have also been developed for trace-back capability through livestock auctions. Process-level schemes often include animal welfare practices and provisions for the slaughter and processing of meat. Many farm-level schemes dovetail with processor level quality assurance schemes to

provide integrated quality assurance throughout the supply chain.

In addition, the major food retailers have implemented “proprietary” quality assurance schemes used in the production of own-label products. All proprietary schemes require their members to be a member of one of the generic farm-level schemes, but specify a variety of additional requirements, such as carcass specifications, age limits, breed, additional feed constraints, and enhanced ability to document the animal’s source and how it was produced.

### **Generic Assurance Schemes**

The United Kingdom has witnessed a rapid growth in the number of farm level assurance schemes covering the livestock sector. A generic quality assurance scheme now exists for cattle, sheep, and pigs for each major region of the United Kingdom (table J-1). The majority of schemes were implemented in the early 1990s, largely in response to food retailers’ concerns regarding the due diligence defense for product safety. Membership in the programs jumped significantly following the BSE crisis in March 1996, and has been maintained at these higher levels since, as processors and retailers increasingly required product from farms adhering to these programs. For example, membership in Farm Assured British Beef and Lamb (FABBL) and other schemes became a de facto mandatory requirement of major processors, who were in turn

responding to pressure from major food retailers, restaurants, and food service.

In 2000, about half of English beef producers and about a quarter of English lamb producers belonged to Farm Assured British Lamb and Beef (FABBL). They produced 76 percent of beef and 51 percent of lambs slaughtered in England. About 30 percent of pig producers belonged to Farm Assured British Pigs (FABPIGS), but they produced about 85 percent of the pigs slaughtered in England.

Generic processor-level assurance schemes in the fresh meat supply chain have existed for a similar length of time as the farm assurance schemes (table J-2). While proprietary quality assurance schemes require participation in a farm-level assurance scheme, membership in a processor-level scheme is not *de facto* mandatory. Generic processor-level schemes are used more widely when the processed meat is sold through other supply channels such as specialist butchers or restaurants and food service. However, ‘Specially Selected Scotch’ meat (through the SQBLA and GSQMS schemes) is increasingly being seen in supermarkets.

### **Proprietary Farm Assurance Schemes**

Many food retail chains demand livestock that has come from farm assurance scheme members. In addition, many chains also run their own (proprietary) farm-level schemes, which go well beyond the requirements

**Table J-1—Inventory of generic farm quality assurance schemes operating in the U.K. livestock sector**

Scheme	Regions	Species	Date started	Members
Farm Assured British Beef and Lamb (FABBL)	England and Wales	Cattle and Sheep	1992	18,000
Scotch Quality Beef and Lamb Assurance (SQBLA)	Scotland	Cattle and Sheep	1990	6,500
Farm Assured Welsh Lamb (FAWL)	Wales	Cattle and Sheep	1992	6,700
Northern Ireland Farm Quality Assurance (NIFQAS)	Northern Ireland	Cattle and Sheep	1991	7,000
Farm Assured British Pigs (FABPIGS)	England and Wales	Pigs	1996	2,700
Scottish Pig Industry Initiative (SPII)	Scotland	Pigs	1990	200
Northern Ireland Pig Assurance Scheme (NIPAS)	Northern Ireland	Pigs	1999	n.a.

Source: Northern (2000)

**Table J-2—Generic processor quality assurance schemes-U.K. livestock sector**

Scheme	Region	Species	Origin	Members	Eligible Volume Percent
Guild of Scottish Quality Meat Suppliers (GSQMS)	Scotland	Beef and Lamb	1988	20	80
Scottish Pork Industry Initiative (SPII)	Scotland	Pork	1991	8	80
British Quality Assured Pork (BQAP)	England and Wales	Pork	n.a.	n.a.	n.a.

covered in the generic quality assurance schemes. There are several reasons why this has occurred:

- generic schemes' requirements do not fully meet the due diligence requirements of food retailers;
- food retailers are able to gain competitive advantage by developing additional quality requirements, such as carcass classification and breed; and
- closer cooperation with both processor and farmer guarantees the food retailer a more consistent and stable supply of meat.

The benefits to the farmer of joining one of these schemes appear to be either a premium for his stock, a more stable price, and/or a more stable supply channel. Table J-3 gives an overview of the requirements of these schemes for beef for five British food retailers. These five retailers account for over 60 percent of food sales and over 70 percent of meat sales in the United Kingdom (Meat and Livestock Commission 2000, FAS 2000).

### Provisions of Quality Assurance Schemes

The main features of several U.K. quality assurance schemes are analyzed with a conceptual framework that identifies and categorizes desired product and process attributes and how they are communicated to consumers (see box "Quality Assurance Schemes and Quality Attributes"). Using this conceptual framework, the provisions of the quality assurance schemes can be presented not in terms of production requirements alone, but in terms of the product attributes that are affected by those requirements.

The U.K. Farm Assured British Beef and Lamb (FABBL) scheme provides an example of the provisions of a typical generic farm-level assurance program. Table J-5 demonstrates how farm assurance scheme requirements affect quality attributes. The FABBL scheme is a typical farm-level scheme in terms of the attributes affected. FABBL scheme requirements affect mainly process attributes such as animal welfare and trace-back capability at the farm level. In addition, technical requirements are laid down regarding the environment and food safety, in particular pathogens, toxins, and drug residues. The majority of quality attributes affected will be 'credence' in nature, hence only extrinsic cues can be used to communicate these attributes to the customer. Extrinsic cues at this level of the supply chain will generally take the form of a quality assurance scheme certificate presented by the seller as proof that the animals have been produced to scheme requirements.

Turning from farm level to the processing level, table J-6 highlights the provisions of a typical processor-level assurance scheme—the Guild of Scotch Quality Meat Suppliers (GSQMS) scheme—and the product attributes it affects. This scheme dovetails with the Scotch Quality Beef and Lamb Assurance (SQBLA) farm level assurance scheme to create an integrated scheme for beef and lamb. Any meat passing through both schemes can be labeled as "Specially Selected Scotch" to consumers. Compared with the earlier farm-level example, there are more requirements regarding animal welfare at both the transport and resting stages, and trace-back capability is covered through a large part of the supply chain. In addition, the food safety and quality attributes have several requirements affecting them both *pre* and *post* slaughter. Processor schemes additionally affect sensory attributes, such as "taste" and "tenderness,"

**Table J-3—Proprietary quality assurance programs in the U.K. beef sector, 1998**

Scheme Criteria	<b>Tesco</b> <i>Producer Clubs</i>	<b>Sainsbury</b> <i>Traditional Beef Partnership</i>	<b>M&amp;S</b> <i>Select Scheme</i>	<b>Asda</b> <i>Beef Bond</i>	<b>Waitrose</b> <i>Beef Scheme</i>
Carcass Specification	270-360 kg Specified carcass requirements.	280-380 kg Specified carcass requirements.	270-350 kg Specified carcass requirements.	240-350 kg Specified carcass requirements.	230-360 kg Specified carcass requirements.
Target Animals	Steers, heifers, bulls. 12-30 months.	Steers, heifers. Under 30 months.	Suckler bred. Steers only. 18-26 months.	Steers, heifers, bulls. Bulls <14 months. Steers, heifers <18 months.	Sucklers, steers, heifers, only. 15-29 months.
Breeds Accepted	All breeds.	Sire: recognized beef breed; no restriction on dam.	Sire: Charolais Simmental, Limousin Scotch Angus Dam > 50% beef.	Three-quarter beef, single suckled.	Sire: Aberdeen-Angus Dam: Any breed.
Members	1,500 registered. Target 2,000.	1,200.	1,500 registered. 500 full approval.	40. Target 100-126 to source 600 cattle per week.	400.
Banned Feeds	Growth promoters.	Fishmeal; growth promoters; growth enhancers.	Fishmeal; growth promoters; growth enhancers.	Meat/bonemeal blood-based fertilizers on pasture; other.	Fishmeal; genetically engineered corn; growth promoters; digestive enhancers.
Farm Assurance	All national schemes recognized.	FABBL (Farm Assured British Beef and Lamb) approved.	None recognized.	FABBL and Asda approved.	FABBL, SQBLA, or FAWL members.
Traceability	Farm of birth; producer database.	Cattle born on finishing farms; farm of birth.	Farm of birth; producer database.	Farm of birth.	Farm of birth; producer database.

Note: Tesco, Sainsbury, M&S, Asda, and Waitrose are British food retailing chains. The use of these firms' names does not imply any endorsement of the firms or their practices by USDA.

## Quality Assurance Schemes and Quality Attributes

Consumers purchase food products to consume a desired set of quality attributes. The two main attribute categories are process attributes and product attributes. Consumers purchase products to consume physical product attributes, such as sensory and nutrition attributes. Depending on personal values and cultural norms, consumers may also purchase products to consume process attributes, i.e. those which form part of the production process but which cannot be detected during consumption. Examples of process attributes include country or region of origin, animal welfare practices, or environmental impacts of certain production practices. Consumers are willing to pay a higher price for products that provide desired attributes.

Quality attributes can be further divided into two broad classes: those that are ascertained and evaluated by actually consuming the product, termed experience characteristics; and those that cannot be directly determined by consumers, termed credence characteristics. Experience attributes include sensory attributes such as ‘taste’, whereas credence attributes include many attributes within the process category in addition to some product attribute categories like nutrition and food safety.

Consumers use cues and indicators to detect attributes that they want to consume. Cues, such as color,

odor, and size, are used to predict experience attributes, such as tenderness and taste. Extrinsic indicators (*e.g.* product labels and certificates) are used to detect both process and product attributes. Customers base the amount they are willing to pay for a product on cues of intrinsic product attributes and indicators of process or extrinsic product attributes. A label certifying that a product was produced to the requirements of a quality assurance scheme is one indicator guiding consumer purchases.

Examples of process and product attributes according to the types of cues used to detect them are presented in table J-4. For example, the presence or absence of many feed additives cannot be readily detected based on consumers’ experience or perception (termed “credence” attributes) of a product and hence can be communicated only through an extrinsic indicator, such as a label. Many process attributes, such as how animals are treated in production and transport, can only be communicated through an extrinsic indicator.

Quality assurance schemes provide a system for assuring and certifying desired product attributes by establishing production and processing standards that relate to the provision of these attributes, inspecting to ensure that standards are being observed, and providing an indicator of these attributes through a mark, label, or certification.

**Table J-4—Elements of process and product attributes and relationship to extrinsic and intrinsic cues**

Process attributes	Product Attributes			
	Extrinsic cues		Intrinsic cues	
	Food safety	Nutrition	Sensory	Functional
Animal welfare	Pathogens	Fat content	Taste	Convenience
Biotechnology	Residues	Calories	Texture	Shelf life
Organic	Growth	Fiber	Tenderness	
production	promoters	Sodium	Juiciness	
Traceability	Additives	Vitamins		
Feed	Feed	Minerals		
	Toxins			
	Physical			
	contaminants			

Source: Based on Northen.

**Table J-5—Provisions of a farm-level generic quality assurance scheme—Farm Assured British Beef and Lamb (FABBL)**

Attributes	Examples of standards	Supply level affected*				
		F	T	P	T	R
<b>Process</b>						
Animal welfare	Animals must be treated and handled to avoid injury and minimize stress.	✓				
	All animals must have access to sufficient clean water.	✓				
	The use of electric prods is not permitted.	✓				
	Naturally suckled animals should have regular contact with the mother.	✓				
	All stock must have a well drained, dry lying area.	✓				
Traceability	Store animals, breeding stock, and young animals must be bought from a farm certified by a recognized assurance scheme. Alternatively, animals must be kept on the farm for minimum periods before slaughter.	✓				
	On-farm movement records, as required by legislation must be kept up-to-date and available for inspection and reconciliation with the relevant animals on request.	✓				
Environment	There must be systems to prevent pollution of the environment and spread of infectious disease.	✓				
	Animal waste and effluents must be stored and disposed of in such a way which avoids the danger of polluting the environment.	✓				
	All chemicals (e.g. organophosphates and synthetic pyrethroids) must be disposed of safely at all times.	✓				
<b>Food Safety</b>						
Pathogens/ Toxins	All feed must be free from contamination. All purchased compound feed must be obtained from a reputable source that manufactures to the relevant standard laid down by legislation.	✓				
	Diets must not contain any product of mammalian or avian origin with the exception of dairy products.	✓				
	Paints, preservatives, and other chemical compounds that may be toxic should not be used on surfaces accessible to cattle.	✓				
Residues	Withdrawal periods for veterinary medicines must be strictly adhered to.	✓				

\*Key: F=Farm level; T=Transport from one stage to next; P=processing level; R=retail sector.



**Table J-6—Provisions of the Guild of Scottish Quality Meat Suppliers scheme**

Attributes	Examples of standards	Supply level affected*				
		F	T	P	T	R
<b>Process</b>						
Animal welfare	<p>Unloading docks must be provided. Animals must be unloaded promptly.</p> <p>Pens, gates, and walkways must be designed to minimize stress.</p> <p>Animals must be penned in the groups they were transported in.</p> <p>Animals must have access to adequate clean water and feed when necessary.</p> <p>Slaughter: animals must be slaughtered humanely and with minimum of distress.</p>		✓	✓		
Traceability	<p>Animals must come from SQBLA farm assurance scheme members.</p> <p>Animals must be penned in groups they were transported in up to stunning.</p> <p>After slaughter, sides must be clearly identified and bear slaughter no., date, classification, and cold weight.</p> <p>Precise and up-to-date records must be maintained to demonstrate the achievement of standards.</p>	✓	✓	✓		
			✓	✓	✓	
		✓	✓	✓	✓	
<b>Food Safety</b>						
Pathogens/ Toxins	<p>Product labels of retail packs should carry full instructions for domestic storage.</p> <p>Processing: carcass must be dressed in accordance with official specifications. Brain, spinal cord, etc. must be removed.</p> <p>Chilling procedure must ensure that first 10 hours of slaughter the muscle temperature remains above 10°C.</p> <p>Cutting must occur in clean, hygienic conditions and be quick enough to avoid contamination from microorganisms.</p>			✓		✓
<b>Sensory</b>						
Taste	<p>Packaging must not affect organoleptic characteristics of the meat.</p> <p>Specified carcass characteristics according to EU standards.</p>			✓	✓	✓
Tenderness	<p>If sides are to be aitch bone hung this must be done within 1 hour of stunning. Aitch bone suspended sides must remain on the hook for 48 hours.</p>			✓		
<b>Value/Functional</b>						
Size	<p>Specified carcass characteristics according to EU standards.</p>			✓		
Convenience	<p>When deboning all major tendons must be removed and the joints trimmed to remove excess seam fat, exposed blood vessels, glands, and blood staining.</p>			✓		
<b>Cues</b>						
Color	<p>Fat must be firm and white; muscle must be good color; muscle and fat must be free from bruising and blood splash.</p>			✓		

\*Key: F=Farm level; T=Transport from one stage to next; P=processing level; R=retail sector.

and lay down specific requirements that affect intrinsic cues (such as specifying the amount of visible fat on a piece of meat).

Detailed requirements for proprietary farm assurance schemes such as those presented for farm-level and processor-level generic schemes are not publicly available. Nevertheless, it is possible to take as an example the additional requirements presented for one of the proprietary schemes—Waitrose Beef Scheme—in table J-3 and place them into quality attribute categories (table J-7). The Waitrose scheme, like most proprietary schemes, accepts membership of one or several of the generic farm-level assurance schemes but covers additional areas, concentrating on those that mainly affect sensory quality attributes. The food retailer’s name, or brand, on the product label will indicate to consumers the presence of attributes arising from producing to the technical requirements of their proprietary scheme.

In addition to the schemes discussed above, there are several organic assurance schemes operating in the United Kingdom. The organic schemes, not covered in detail here, cover a much broader range of quality attributes within the “process” attribute category. Organic schemes emphasize product requirements that target consumer concerns regarding residues, the use of hormones, and genetic engineering. Feed requirements are explicitly included as they form a mainstay of organic processing. Animal welfare, documentation through the supply chain, and environmental effects are also covered.

## Market and Trade Effects of Quality Assurance Schemes

The quality assurance schemes considered here may impact domestic firms and markets, as well as trade. Market and economic impacts will depend on the provisions and credibility of the scheme, the market structure of the national food system, as well as consumer demand for the attributes targeted by the schemes.

### *Domestic Market Effects*

Domestic firms—producers, processors, and retailers—may be affected both by changes in the direct costs of complying with and maintaining the required scheme standards and in terms of the transaction cost.<sup>5</sup> The effectiveness of the scheme’s requirements and inspections will determine likely production cost changes for the supplier to and the customer of a scheme. A credible quality assurance system may reduce transaction costs, particularly the costs associated with searching and screening for suitable customers or suppliers, in negotiating the terms of a contract, and monitoring and in enforcing the terms of the contract. Quality assurance schemes may also provide a price from the provision of an extrinsic cue

<sup>5</sup> The effects of these schemes on costs are treated in detail in the forthcoming ERS report, *Agricultural Quality Assurance Schemes in the United Kingdom and Germany* (Bredahl, Northen, and Boecker).

**Table J-7—Additional provisions of Waitrose quality beef scheme**

Attributes	Examples of standards	Supply level affected*				
		F	T	P	T	R
<b>Process</b>						
Traceability	Animals and products must be accompanied by documents indicating farm of birth. Producer required to be on database.	✓				
Food Safety	Fishmeal, growth promoters, and digestive enhancers are banned.	✓				
Sensory	Weight: 230-360 kg., EU conformation and fat specifications.	✓				
	Acceptable breeds: Sire—Aberdeen Angus; Dam—any breed.	✓				
	Animals: sucklers, steers, heifers.	✓				
	Age: 15-29 months.	✓				
Value/ Functional	Weight: 230-360 kg, EU conformation and fat specifications.	✓				

\*Key: F=Farm level; T=Transport from one stage to next; P=processing level; R=retail sector.

of production practices, as well as the intrinsic attributes of the product.

The development, operation, and interaction of voluntary food quality assurance schemes will be an increasingly important determinant of the competitiveness of agricultural and food industries through their effects on production, transactions costs, and prices. Quality assurance schemes may convey a competitive advantage to domestic producers covered by the program. For example, all of the large retail food chains in the United Kingdom require farm assured livestock. Clearly, in order to source this primary market, quality assurance scheme membership has become *de facto* mandatory, conveying an advantage to suppliers participating in the schemes, and a disadvantage to those who do not. These schemes may come to convey the same advantage for their members as other national systems that aim to create a competitive advantage for some domestic producers based on the sensory attributes of food, or even on the location of production, such as that used for wine and other products.

### **Trade Effects**

The quality assurance schemes could have important impacts on trade in food products. Providing a product attribute that closely matches intermediate customer or final consumer demands may provide a competitive advantage to domestic producers and processors.

The trade impacts of food quality assurance schemes will depend on a complex set of factors. Ultimately, the impact depends on the value customers place on particular quality attributes and companies' relative ability to deliver them. The trade impact will also depend on whether the standards are mandatory or voluntary, and whether they are adopted at the national or European Union (EU) level.

Domestic customers' specifications may act to reduce the competitiveness of foreign suppliers, if not block imports entirely. By requiring imports to contain the same set of attributes as provided by products produced through domestic quality assurance schemes, trade could be blocked. Foreign suppliers may not have easy access to required certification procedures, imposing an enormous cost disadvantage relative to domestic producers. Or, foreign suppliers may simply be unable to produce products with the required set of attributes. For example, a required attribute that production take place in a particular region of a country would absolutely disadvantage foreign

producers. This type of trade barrier is likely to become more prevalent for importers into the United Kingdom, as domestic customers increasingly insist that technical requirements in schemes, and inspectors of these requirements, are accredited to national or EU-level standards (Henson and Northen, 1998).

Alternatively quality assurance schemes could have a positive effect on trade by establishing a set of clearly defined and readily available performance standards (like ISO 9000 standards) that, by reducing transaction costs, facilitate commerce between countries. For this to occur, schemes would need to exist in each country, and foreign customers would have to accept the technical requirements and inspections of foreign schemes.

Taking the example of the FABPIGS farm-assurance scheme, several trade effects are suggested for countries exporting pork to the United Kingdom. The demand for farm-assured pigs (and other livestock) with animal welfare and trace-back attributes in the United Kingdom is well developed. Many retail food chains (the likely buyers of most imported meat) demand farm-assured livestock, hence quality assurance schemes such as FABPIGS have become *de facto* mandatory for supplying the primary retail market. Although retail food chains may be prepared to accept pork from comparable schemes in other countries, the animal welfare and trace-back elements of such schemes are likely to have been developed for their own domestic market and may therefore need significant revision to satisfy the U.K. market. In addition, the mechanism by which the foreign scheme is inspected may not be sufficiently rigorous. Any revision to their technical requirements or inspection procedures will result in additional expense for foreign suppliers, which in turn may affect their relative competitiveness. In the case of pork, the costs of compliance with U.K. customers' demands are not likely to be prohibitive for all foreign suppliers. More likely, discrimination between foreign suppliers will occur, as those countries with welfare and trace-back standards similar to those in the United Kingdom will incur lower costs of meeting U.K. standards (for example the Netherlands and Denmark).

On the positive side, however, where foreign schemes are acceptable to U.K. buyers, the presence of the quality label (an extrinsic cue) should be sufficient to indicate the necessary quality and/or safety of the meat and allow for reduced transaction costs of U.K. buyers. This in turn may encourage a greater trade of meat between countries.

## Quality Assurance Programs in the United States

Quality assurance programs have been in place for some products for several years in the United States. In the livestock sector, a number of quality assurance programs aimed primarily at improving the quality and safety of the final product have been developed by producer organizations. Many programs establish guidelines for good practices. Some provide training to producers in implementing these guidelines and offer certification for producers who have completed the training. Some programs may verify the certification through on-farm inspections or other audits.

Fewer incorporate strict production/process controls and auditing to ensure that production standards are met. A few, recognizing the importance many consumers place on environmental issues, attempt to reduce adverse environmental impacts of livestock production. Some industry observers expect that more quality assurance plans like these will arise in the United States, partly in response to growing U.S. consumer demand for certain product attributes, and partly to remain competitive in export markets where these programs become more widespread abroad (Miller 2000).

A few examples of quality assurance programs established by U.S. producer groups include the following:

- National Cattlemen's Beef Association's (NCBA) Beef Quality Assurance (BQA) program was introduced in 1982 to address concerns of avoiding residues in beef. Since then, quality assurance programs have been launched in all segments of the beef industry to improve quality.
- National Pork Producers Council Pork Quality Assurance (PQA) program has been in place since 1989. Primarily a management education program, it emphasizes good management practices in handling and use of animal health products.
- The Texas and Southwestern Cattle Raisers Association's Beef Quality Assurance program, scheduled for implementation in 2001, will provide certification to those producers completing training aimed at raising their awareness of practices that have negatively affected meat safety or quality.

Quality assurance can also be provided by brand-name programs, such as those operated by IBP, Certified Angus Beef, Nebraska Corn-Fed Beef, and others. Brand-name

beef programs impose additional requirements beyond those established by producer organizations.

U.S. quality assurance programs established to date differ substantially from the comprehensive quality assurance schemes in the United Kingdom. U.S. programs tend to be limited in scope, focusing primarily on health characteristics, and rarely on extrinsic product characteristics such as animal welfare and environmentally benign production. They also tend to be limited to on-farm quality assurance, rather than providing assurance throughout the supply chain.

Some processors and retailers are beginning to address some of the concerns—like animal welfare—targeted by quality assurance schemes in the U.K. For example:

- In 2000, McDonald's announced that it would only buy eggs from suppliers who follow animal welfare guidelines—specifically, requirements regarding the size of battery cages for laying hens and an end to the practice of “forced molting,” withholding food and water from the birds so they will lay more eggs (McDonald's 2001).
- In September 2000, the American Humane Association (AHA) launched a voluntary labeling program—“Free Farmed Certification Program”—to assure consumers that dairy, beef, and poultry products come from animals raised under AHA guidelines established for humane care (AHA 2000). The program sets forth standards for housing, feeding, and environmental conditions for the animals, as well as training and education standards for farm management and staff. It provides certification that animals were treated according to these standards, and allows certified producers to use the “free farmed” label on their products. Compliance with standards is determined by on-site inspections carried out by a non-profit organization set up by AHA.

These programs are too new (and too few) to determine their impact on consumer demand, or whether they will spur similar programs. The AHA, in developing its program, pointed to research that found that consumers would be willing to pay slightly more for meat and poultry products that are humanely produced. If consumers respond positively to these initiatives, producers, processors, and retailers may follow suit.

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