European Union
Market Access Constraints for Fresh Bovine Meat from the Republic of South Africa

SOUTH AFRICA AS A BEEF PRODUCER

IT is confidently thought by many well-informed persons in South Africa that that country is destined to become one of the great beef-producing countries of the world, so it is stated in a recent report to Washington by Consul Edwin N. Gunsaulus at Johannesburg.

Under normal conditions there has been every reason to believe that South Africa would in time assume considerable prominence as a supplier of certain grades of beef for the European markets, but the conditions brought about by the war appear to be hastening the day when this expectation will be realized and that, as a result, that country may before very long become a keen competitor with Australia and Argentina in supplying the world's big markets with this commodity.

Owing to the extraordinary demand for beef, it is stated that the rise in prices has already enabled South African meat to obtain a footing in the London and other markets, and there are now indications that there will be a steady increase of these exports, provided South African producers pay due attention to market requirements.

There has of late been considerable newspaper and other discussion on the subject of the export of beef from South Africa, and Government experts have not been slow in giving expression to their views in regard to this trade. While it is held that South Africa cannot expect to suddenly jump into prominence in the exportation of beef, it is felt that the steady growth of the beef industry in South Africa is assured, conditional on the proper efforts made to build up suitable herds of cattle, the establishment of the requisite packing plants, &c.

It is admittedly true, continues Mr. Gunsaulus, that the class of animals marketed for beef in South Africa is unsuitable for the English market under normal conditions, although considerable improvement in quality has taken place within the past four or five years. Small shipments of prime beef from South Africa are now possible, but any extensive supply from that market would at present necessarily have to be of inferior grades, of which there is a large available surplus. It is said that the quality of meat South Africa can export is bringing in the London market fully twice as much as it does in Johannesburg, which is by far the biggest cattle and general produce market in South Africa.

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ABSTRACT

The European Union (EU) prohibits the import of fresh bovine meat from the Republic of South Africa (RSA). The research investigates the EU market access constraints for fresh bovine meat from the RSA. It states that "the beef production chain in the RSA, as a developing country, has not been able to keep pace with the changes of EU legislation for food safety and quality for fresh bovine meat".
A literature search is done and informal discussions have taken place with stakeholders to identify issues that potentially could cause EU market access constraints for fresh bovine meat from the RSA. Ten experts in the RSA are identified and have joined the expert opinion survey, in which the experts have scored the issues.
Thirteen issues are identified that potentially could cause market access constraints for fresh bovine meat from the RSA to the EU. The thirteen issues are scored by the experts.
The three issues with the highest score in causing EU market access constraints for fresh bovine meat from the RSA are: 1 the use of growth hormones in fresh bovine meat of the RSA and/or control of veterinary drugs that are prohibited in the EU; 2 the traceability and registration throughout the beef production chain; and 3 the definite political agenda by the EU to prevent competition from producers in the RSA.
The legislation of the RSA does not prohibit the use of growth hormones nor require implementation of a traceability system in the beef supply chain. The investigator concludes that especially the implementation of an adequate traceability system will significantly contribute to more competitiveness and food safety in the beef production chain, despite the different circumstances (sanitary, economic and structural) that exists in the RSA comparing it with the EU. In addition, a large informal market exists in the RSA. These communal areas contain large untapped areas and need further development in order to enter the commercial market. This will add to global competitiveness and food safety. Furthermore, international harmonization processes of SPS standards should be made with much more effective participation of developing countries. Developing countries should join together to take in a joint position regarding the issues of international trade.

CHAPTER 1

INTRODUCTION

1.1 Motivation

This research is about the market access constraints of fresh bovine meat exported from the Republic of South Africa (RSA) to the European Union (EU). Some constraints appear to be caused by strict European requirements (SAMIC newsletter Nr. 38, 2007; Informal discussion: November 2007: C.M.E. McCrindle: Professor of the Department of Veterinary and Public Health in the RSA); others appear to be caused by shortcomings of the RSA in the beef production chain (Informal discussion: November 2007: F. van Knapen: Professor of the Department of the Science of Food of Animal Origin in the Netherlands). Below is a brief overview of important developments of both countries regarding to meat safety.

The EU began with the formation of the European Coal and Steel Community (1952) by six European countries and the Treaty of Rome (1957). The goal of the Treaty of Rome was to establish a common market (Stevenson, 1999; O'Rourke, 2005). Since then more and more European countries have joined, extending the size of the EU and the policy area. In contrast to national legislation, EU legislation developed piecemeal over a longer time, especially in regard to food law. The European Commission (EC) focused mainly on the free movement of foodstuffs throughout the common market law (Stevenson, 1999; O'Rourke, 2005).

The progress towards more uniform food law and setting out of general principles was slow. Only after two famous court cases did the EC attempt to look critically at food law. The result was a new approach to food law, in which veterinary public health now also played an important role (Goodburn, 2001; Blanchet et al., 1994; O'Rourke, 2005).

After the BSE and dioxin crises the EU had again to look at the way food law had developed (Vos, 2000; Vincent, 2004). The EC reformed its structures for preparing food legislation and this resulted in the Green Paper on Food Law in 1997 (Cotter, 2004; O'Rourke, 2005). The Green Paper stated that:

"Health protection in relation with consumption of foodstuffs is to be an absolutely priority at any time and not only something to be looked at in emergency situations."

(EC, 1997)

With the publication of the White Paper on Food Safety (2000), general EU-wide principles of food law were introduced (Goodburn, 2001). This resulted in the publication of general principles, as outlined in Regulation EC/178/2002 (see appendix A) and was called the General Food Law (GFL). The GFL developed in the EU had then to be

implemented in the national legislation of each member state[a]. This will be discussed in more detail in the literature review.

The Republic of South Africa (RSA) has also gone through several developmental stages in regard to food law. The delivery of meat hygiene services in RSA has gone through several changes in legislation since the function was officially made the responsibility of the Department of Agriculture in the early 1960s (National Department of Agriculture, 2000; Informal discussion with a Control Meat Inspector: Veterinary Public Health of the National Department of Agriculture in the RSA, February 2008).

Globally, the beef supply chain is not a static entity and it changes with time (van Knapen, 2000). As the process evolves, new intermediates step into the chain. Therefore the characteristics of the beef supply chain have had to alter in line with the "new and free economy" of the EU (Olivier, 2004).

Both the RSA and the EU have also gone through several changes in regard to meat safety. These developments have had an effect on international trade. The RSA currently does not export fresh bovine meat to the EU (SAMIC newsletter nr. 38, 2007). Some possible reasons for this are listed below:

- use of growth hormones;
- monitoring residues;
- traceability of meat and registration of animals;
- surveillance control;
- "farm to fork approach".

According to the website of the EU[b]

"Consumer confidence in the safety of food products has sometimes been shaken in recent years by food-related health crises. Responding to the challenge, the European Union has put in place a comprehensive strategy to restore people's belief in the safety of their food "from the farm to the fork". This is based on a combination of high standards for food, animal health and welfare, and plant health. These standards apply both to food produced inside the EU and food imports."

This comprehensive strategy has inter alia resulted in a list of EU import conditions for fresh meat and meat products. To be eligible to export fresh meat to the EU, the country of interest must be on a positive list. For this purpose a list of eligibility criteria exists[c].

This research focuses on the vital access constraints of the EU market for the RSA regarding fresh bovine meat.

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[a] EU 2008 EU website [Online] URL: http://ec.europa.eu/food/food/foodlaw/principles/index_en.htm [Accessed: January 2008]

[b] EU 2008 EU website [Online] URL: http://europa.eu/pol/food/overview_en.htm [Accessed: January 2008]

[c] EU 2008 EU website [Online] URL: http://ec.europa.eu/food/animal/animalproducts/freshmeat/index_en.htm [Accessed: January 2008]

1.2 Hypothesis

The beef production chain in the RSA, as a developing country, has not been able to keep pace with the changes of EU legislation for food safety and quality for fresh bovine meat.

1.3 Objectives

The objectives of this study were to:

- discover and describe the main organizations involved as international role-players;
- understand the role and meaning of import-export risk analysis, traceability and HACCP;
- describe the historical background of the legislation pertaining to (bovine) meat safety in the EU and the RSA;
- make a flow-chart of the beef production chain in the RSA;
- develop a checklist for ranking and scoring constraints to export fresh bovine meat to the EU by the RSA; and
- do an expert opinion survey in the RSA to rank and score constraints to export fresh bovine meat to EU

CHAPTER 2

LITERATURE REVIEW

2.1 Literature review of organizations, principles and systems

When discussing meat safety in relation to the European Union (EU) and the Republic of South Africa (RSA), there are several different organizations, principles and systems that are important to understand. These include: the World Trade Organization (WTO), the Food and Agriculture Organization (FAO) of the United Nations (UN), the World Health Organization (WHO), the World Organization for Animal Health (OIE), Risk Assessment and Risk Analysis, Traceability and Hazard Analysis Critical Control Points (HACCP). In addition, the history relating to the legislation of meat safety in the EU and the Republic of South Africa (RSA) will be described.

2.1.1 World Trade Organization

According to the website of the WTO[a]:

"The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations. At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. The goal is to help producers of goods and services, exporters, and importers conduct their business."

A number of agreements were concluded at the Uruguay Round of negotiations (which are the basis of the present WTO system) and have had an important impact on foodstuffs. There are two agreements, which have had far-reaching consequences on food law (MacMaoláin, 2007; O'Rourke (2005). These are:

- Agreement on Sanitary and Phytosanitary Measures (SPS);
- Agreement on Technical Barriers to Trade (TBT).

The intention of these agreements is to avoid unjustified trade barriers, when making legislation aimed at protecting human health or providing consumer protection.

The WTO SPS Agreement[b] states that:

[a] WTO 2008 WTO website [Online] URL: http://www.wto.org/english/thewto_e/whatis_e/whatis_e.htm [Accessed: January 2008]
[b] WTO SPS Agreement 1995 WTO website [Online] URL: http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm [Accessed: 2008 January]

"to harmonize sanitary and phytosanitary measures on as wide a basis as possible, Members shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations."

The agreement names the joint FAO/WHO Codex Alimentarius Commission as the relevant standard-setting organization for food safety.

WTO is to a certain extent a supra-national organization. The treaties between its members are binding. There is an arbitration procedure to resolve conflicts. The winning party may implement economic sanctions if the country at fault does not implement the decision that is reached in an arbitration procedure (van der Meulen & van der Velde, 2004).

All 27 members of the European Union (EU) and the Republic of South Africa (RSA) are members of the WTO[a].

2.1.2 World Health Organization

According to the online brochure of the WHO[b]:

"The World Health Organization (WHO) is the directing and coordinating authority on international health within the United Nations' system. WHO experts produce health guidelines and standards, and help countries to address public health issues. WHO also supports and promotes health research. Through WHO, governments can jointly tackle global health problems and improve people's well-being".

All countries which are members of the United Nations may become members of WHO by accepting its Constitution. All 27 members of the European Union (EU) and the Republic of South Africa (RSA) are members of the WHO[c].

2.1.3 Food and Agriculture Organization of the United Nations

The FAO is a specialized agency of the UN that leads international efforts to defeat hunger. According to Redman (2000), the active programs of the FAO include:

- food safety and standards;
- food quality;

[a] WTO 2008 WTO website [Online] URL: http://www.wto.org/English/thewto_e/whatis_e/tif_e/org6_e.htm [Accessed: 2008 January]
[b] WHO brochure 2007 WHO website [Online] URL: http://www.who.int/about/brochure_en.pdf [Accessed: January 2008]
[c] WHO 2008 WHO website [Online] URL: http://www.who.int/countries/en/ [Accessed: January 2008]

- food science;
- research sponsorship;
- information dissemination; and
- sponsors conferences in these areas

The website of the FAO[a] mentions that the food and nutrition division of the FAO aims to:

- create sustainable improvements in nutrition, especially among nutritionally vulnerable households and population groups;
- provide information, assessments and analysis to combat hunger and reduce all forms of malnutrition;
- assist countries in identifying people who are food insecure and vulnerable to nutritional problems;
- promote food safety and quality, and prevent food-borne diseases;
- focus on consumer protection and fair practices in food trade.

The Codex Alimentarius Commission (CAC) was created in 1963 jointly by the WHO and FAO to set international food standards aimed at enabling trade and protecting consumers according to the Codex Alimentarius website[b].

All 27 members of the European Union (EU) and the Republic of South Africa (RSA) are members of the FAO[c].

2.1.4 World Organization for Animal Health (OIE)

According to the website of the OIE[d]:

"The need to fight animal diseases at global level led to the creation of the Office International des Epizooties through the international Agreement signed on January 25th 1924. In May 2003 the Office became the World Organization for Animal Health but kept its historical acronym OIE".

[a] FAO Nutrition and Consumer Protection 2008 FAO website [Online] URL: http://www.fao.org/ag/agn [Accessed: January 2008]
[b] CAC 2008 CAC website [Online] URL: http://www.codexalimentarius.net/web/index_en.jsp [Accessed: January 2008]
[c] FAO 2008 FAO website [Online] URL: http://www.fao.org/unfao/govbodies/membernations_reg_en.asp [Accessed: January 2008]
[d] OIE 2008 OIE website [Online] URL: http://www.oie.int/eng/OIE/en_about.htm?e1d1 [Accessed: January 2008]

The objectives of the OIE include[a]:

- to guarantee the transparency of animal disease status world-wide;
- to collect, analyze and disseminate veterinary scientific information;
- to provide expertise and promote international solidarity for the control of animal diseases;
- to guarantee the sanitary safety of world trade by developing sanitary rules for international trade in animals and animal products;
- to improve the legal framework and resources of national Veterinary Services; and
- to provide a better guarantee of food of animal origin and to promote animal welfare through a science-based approach.

These are achieved through measures in the form of standards, guidelines and recommendations. Examples are:

- The Terrestrial Animal Health Code.
- The Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.

According to Slorach (2006), the OIE has the responsibility for developing international standards related to animal health and zoonoses under the SPS agreement. Zoonoses can also effect food safety and that is the area of the CAC. Therefore it is important that the OIE and the CAC cooperate closely to avoid duplication of effort, gaps and conflicting standards.

All 27 members of the European Union (EU) and the Republic of South Africa (RSA) are members of the OIE[b].

2.1.5 Risk analysis and risk assessment

According to the Terrestrial Animal Health Code (OIE, 2007):

"The principal aim of import risk analysis is to provide importing countries with an objective and defensible method of assessing the disease risks associated with the importation of animals, animal products, animal genetic material, feedstuffs, biological products and pathological material. The analysis should be transparent. This is necessary so that the exporting country is provided with clear reasons for the imposition of import conditions or refusal to import."

Since the SPS agreement came into force, the importance of risk analysis has increased. The WHO and the FAO are in the forefront in the development of risk-based approaches

[a] OIE 2008 OIE website [Online] URL: http://www.oie.int/eng/OIE/en_objectifs.htm#1 [Accessed: January 2008]
[b] OIE 2008 OIE website [Online] URL: http://www.oie.int/eng/OIE/PM/en_PM.htm?e1d1 [Accessed: January 2008]

for the management of public health hazards in food. The approach used is called risk analysis. The international standards, guidelines and recommendations for risk analysis according to the SPS-agreement are developed and promoted by the OIE (OIE, 2007) and the CAC. However, the definition and structure of risk analysis is not the same in both organizations. According to the Terrestrial Animal Health Code (OIE, 2007), called the Code, risk analysis comprises four components (see Fig 1). These are:

- hazard identification;
- risk assessment;
- risk management; and
- risk communication

Fig 1: **The four components of risk analysis according to the Code (OIE, 2007)**

Whereas, according to the CAC (2007) risk analysis comprises of three components:

- risk assessment;
- risk management; and
- risk communication.

Risk assessment relates to the provision of scientific advice, which necessitates extensive information gathering and analysis (O'Rourke, 2005).
According to the FAO/WHO (1995), risk assessment is the scientific evaluation of known or potential adverse health effects resulting from human exposure to food borne hazards. The main questions that must be answered during the risk assessment process are:

- What can cause risk?
- How can it cause risk?
- What is the probability of risks occurring?
- What are the consequences?
- What are the prerequisites for risks to indeed occur?

The CAC procedure manual has defined risk assessment as a scientifically based process (See Table 1) consisting of the following steps:

- hazard identification;
- hazard characterization;

- exposure assessment; and
- risk characterization.

(CAC, 2007)

Table 1: **Risk assessment according to the CAC procedure manual (CAC, 2006)**

Hazard identification means the identification of biological, chemical, and physical agents capable of causing adverse health effects and which may be present in a particular food or group of foods. **Hazard characterization** means the qualitative and/or quantitative evaluation of the nature of the adverse health effects associated with biological, chemical and physical agents which may be present in food. For chemical agents, a dose response assessment should be performed. For biological or physical agents, a dose-response assessment should be performed if the data are obtainable. **Exposure assessment** means the qualitative and/or quantitative evaluation of the likely intake of biological, chemical, and physical agents via food as well as exposures from other sources if relevant. **Risk characterization** means the qualitative and/or quantitative estimation, including attendant uncertainties, of the probability of occurrence and severity of known or potential adverse health effects in a given population based on hazard identification, hazard characterization and exposure assessment.

In the Terrestrial Animal Health Code 2007 (the Code) of the OIE, risk assessment follows hazard identification and is defined as:

"the evaluation of the likelihood and the biological and economic consequences of entry, establishment, or spread of a pathogenic agent within the territory of an importing country"

Risk assessment, according to the Code, consists of four steps:

- release assessment;
- exposure assessment;
- consequence assessment; and
- risk estimation.

Definitions of each of these steps are given in Table 2.

Table 2: **Risk assessment according to the Code (OIE, 2008)**

Release assessment consists of describing the biological pathway(s) necessary for an importation activity to 'release' (that is, introduce) pathogenic agents into a particular environment, and estimating the probability of that complete process occurring, either qualitatively (in words) or quantitatively (as a numerical estimate). The release assessment describes the probability of the 'release' of each of the potential hazards (the pathogenic agents) under each specified set of conditions with respect to amounts and

timing, and how these might change as a result of various actions, events or measures. Examples of the kind of inputs that may be required in the release assessment are:

a. Biological factors
   - species, age and breed of animals
   - agent predilection sites
   - vaccination, testing, treatment and quarantine.

b. Country factors
   - incidence/prevalence
   - evaluation of Veterinary Services, surveillance and control programmes and zoning systems of the exporting country.

c. Commodity factors
   - quantity of commodity to be imported
   - ease of contamination
   - effect of processing
   - effect of storage and transport.

If the release assessment demonstrates no significant risk, the risk assessment does not need to continue.

Exposure assessment consists of describing the biological pathway(s) necessary for exposure of animals and humans in the importing country to the hazards (in this case the pathogenic agents) released from a given risk source, and estimating the probability of the exposure(s) occurring, either qualitatively (in words) or quantitatively (as a numerical estimate).

The probability of exposure to the identified hazards is estimated for specified exposure conditions with respect to amounts, timing, frequency, duration of exposure, routes of exposure (e.g. ingestion, inhalation, or insect bite), and the number, species and other characteristics of the animal and human populations exposed. Examples of the kind of inputs that may be required in the exposure assessment are:

d. Biological factors
   - properties of the agent.

e. Country factors
   - presence of potential vectors
   - human and animal demographics
   - customs and cultural practices
   - geographical and environmental characteristics.

f. Commodity factors
   - quantity of commodity to be imported
   - intended use of the imported animals or products
   - disposal practices.

If the exposure assessment demonstrates no significant risk, the risk assessment may

conclude at this step.

Consequence assessment consists of describing the relationship between specified exposures to a biological agent and the consequences of those exposures. A causal process must exist by which exposures produce adverse health or environmental consequences, which may in turn lead to socio-economic consequences. The consequence assessment describes the potential consequences of a given exposure and estimates the probability of them occurring. This estimate may be either qualitative (in words) or quantitative (a numerical estimate). Examples of consequences include:

g. Direct consequences
   - animal infection, disease and production losses
   - public health consequences.

h. Indirect consequences
   - surveillance and control costs
   - compensation costs
   - potential trade losses
   - adverse consequences to the environment.

Risk estimation consists of integrating the results from the release assessment, exposure assessment, and consequence assessment to produce overall measures of risks associated with the hazards identified at the outset. Thus risk estimation takes into account the whole of the risk pathway from hazard identified to unwanted outcome.

For a quantitative assessment, the final outputs may include:

- estimated numbers of herds, flocks, animals or people likely to experience health impacts of various degrees of severity over time;
- probability distributions, confidence intervals, and other means for expressing the uncertainties in these estimates;
- portrayal of the variance of all model inputs;
- a sensitivity analysis to rank the inputs as to their contribution to the variance of the risk estimation output;
- analysis of the dependence and correlation between model inputs.

The most significant difference between both risk assessment approaches is the inclusion of consequence assessment in the risk assessment approach of the OIE. Therefore, the risk estimation at the end of the risk assessment process is based on three pillars, i.e. health, economical and environmental consequences. In contrast, the Codex Alimentarius approach addresses only public health consequences. When using one of the approaches, one must be sure that only one approach is chosen and strictly followed (Maijala, 2006).

In the light of the contents of this research, the concepts of risk management and risk communication need not be further discussed.

2.1.6 Traceability

As mentioned previously, the BSE and Dioxin crises led to the development of the GFL (Regulation (EC) No 178/2002: see appendix A). It is an approach to ensure food safety all along the food chain. One key element that is important is the concept of traceability.

According to Germain (2003):

"Traceability is part of a control system for risk analysis. This is because it allows regulators to trace contamination to its source, to eliminate contaminated products from the market, and then to contain the problem. The crisis of dioxin in animal feed in Belgium in the late 1990s or the Bovine Spongiform Encephalopathy (BSE) crisis, have emphasized its importance."

There are several definitions of traceability. Some of them are shown below. According to the GFL traceability means:

"the ability to trace and follow a food, feed, food-producing animals or substance intended to be, or expected to be, incorporated into a food or feed, through all stages of production, processing and distribution."

Further, the GFL states that businesses must at least be able to identify the immediate supplier of the product and the subsequent recipient:

"Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food-producing animal, or any substance intended to be, or expected to be, incorporated into a food or feed."

According to the procedural manual of the CAC (2007):

"Traceability/ product tracing is defined as "the ability to follow the movement of a food through specified stage(s) of production, processing and distribution"."

The United States Environmental Protection Agency defines "Traceability" as the ability to (Caporale *et al*., 2001):

"trace the history, application or location of an entity by means of recorded identifications."

According to the Terrestrial Animal Health Code (OIE, 2007):

"Animal traceability means the ability to follow an animal or group of animals during all stages of its life."

The advantages of implementing a traceability system would enable the RSA to (Germain, 2003):

- improve the control of disease outbreaks;
- avoid consecutive huge trade losses;
- possibly gain access to premium markets;
- control lost and stolen cattle; and
- improve systems' efficiency

2.1.7.1 Hazard Analysis Critical Control Points (HACCP)

A general definition of HACCP is shown below and the seven points are illustrated in Table 3.

"The HACCP (Hazard Analysis Critical Control Point) system is proposed as a management tool to be implemented by food business operators to ensure food safety. It prescribes a number of logical steps to be followed by operators throughout the production cycle in order to allow – through hazard analysis – the identification of points where control is critical with regard to food safety"

(Daelman, 2002).

Table 3: **HACCP is based around seven established principles (FAO/WHO, 2001)**

Principle 1: Conduct a hazard analysis. Plants determine the food safety hazards and identify the preventive measures the plant can apply to control these hazards. A food safety hazard is any biological, chemical, or physical property that may cause a food to be unsafe for human consumption.
Principle 2: Identify critical control points. A critical control point (CCP) is a point, step, or procedure in a food process at which control can be applied and, as a result, a food safety hazard can be prevented, eliminated, or reduced to an acceptable level.
Principle 3: Establish critical limits for each critical control point. A critical limit is the maximum or minimum value to which a physical, biological, or chemical hazard must be controlled at a critical control point to prevent, eliminate, or reduce to an acceptable level.
Principle 4: Establish critical control point monitoring requirements. Monitoring activities are necessary to ensure that the process is under control at each critical control point. In the United States, the FSIS (Food Safety and Inspection Service) is requiring that each monitoring procedure and its frequency be listed in the HACCP plan.
Principle 5: Establish corrective actions. These are actions to be taken when monitoring indicates a deviation from an established critical limit. The final rule requires a plant's HACCP plan to identify the corrective actions to be taken if a critical limit is not met. Corrective actions are intended to ensure that no product injurious to health or otherwise adulterated as a result of the deviation enters

commerce.

Principle 6: Establish record keeping procedures. The HACCP regulation requires that all plants maintain certain documents, including its hazard analysis and written HACCP plan, and records documenting the monitoring of critical control points, critical limits, verification activities, and the handling of processing deviations.

Principle 7: Establish procedures for ensuring the HACCP system is working as intended. Validation ensures that the plants do what they were designed to do; that is, they are successful in ensuring the production of safe product. Plants will be required to validate their own HACCP plans. FSIS will not approve HACCP plans in advance, but will review them for conformance with the final rule.

Verification is an important concept. In its 1992 report, the US Committee on Microbiological National Advisory Criteria for Food (NACMCF) (National Advisory Committee, 1992) defined verification as:

"The use of methods, procedures or tests in addition to those used in monitoring to determine if the HACCP system is in compliance with the HACCP plan and/or whether the HACCP plan needs modification and reevaluation."

According to Hulebak and Schlosser (2002) NACMCF identified four processes as steps in the establishment's verification of its HACCP system. These are shown in Table 4 below.

Table 4: **The four processes as steps in the establishment's verification of its HACCP system (Hulebak and Schlosser, 2002)**

1. Scientific and technical processes to verify that all critical limits at CCPs are adequate and sufficient to control hazards that are likely to occur (also known as ''validating the process'').

2. Assurance that the HACCP plan functions properly, through frequent review of the plan, verification, review of records, and determination that appropriate decisions and product dispositions occur when deviations occur.

3. Documentation through periodic review to ensure the accuracy of the HACCP plan, including an on-site review and verification of all flow diagrams, CCPs, critical limits, monitoring procedures, corrective actions, and records.

4. Regulatory verification that the plan is functioning satisfactorily through overall process validation (including any or all of the verification steps listed above) plus final product testing to demonstrate compliance with regulatory as well as other desired performance standards. FSIS considered this verification principle a key element to link HACCP with the agency's regulatory strategy to establish public-health-oriented standards that establishments must meet in order to do business. Without some objective measure of what constitutes an acceptable level of food safety performance with respect

to pathogenic microorganisms, it would be impossible to determine whether an establishment's HACCP plan is acceptable and functioning effectively.

2.1.7.2 HACCP prerequisites

To ensure food safety in a food processing facility, application of HACCP alone is insufficient. The production of safe food products requires that the HACCP system be built upon a solid foundation of prerequisite programs (Table 5). These serve to control the environment in which processing occurs. Each segment of the food industry must provide the conditions necessary to protect food while it is under their control (NACMCF, 1997).

Table 5: **Examples of Prerequisite programs (NACMCF, 1997)**

Facilities. The establishment should be located, constructed and maintained according to sanitary design principles. There should be linear product flow and traffic control to minimize cross-contamination from raw to cooked materials;
Supplier Control. Each facility should assure that its suppliers have in place effective GMP and food safety programs. These may be the subject of continuing supplier guarantee and supplier HACCP system verification.
Specifications. There should be written specifications for all ingredients, products, and packaging materials.
Production Equipment. All equipment should be constructed and installed according to sanitary design principles. Preventive maintenance and calibration schedules should be established and documented.
Cleaning and Sanitation. All procedures for cleaning and sanitation of the equipment and the facility should be written and followed. A master sanitation schedule should be in place.
Personal Hygiene. All employees and other persons who enter the manufacturing plant should follow the requirements for personal hygiene.
Training. All employees should receive documented training in personal hygiene, Good Manufacturing Practice (GMP), cleaning and sanitation procedures, personal safety, and their role in the HACCP program.
Chemical Control. Documented procedures must be in place to assure the segregation and proper use of non-food chemicals in the plant. These include cleaning chemicals, fumigants, and pesticides or baits used in or around the plant.
Receiving, Storage and Shipping. All raw materials and products should be stored under sanitary conditions and the proper environmental conditions such as temperature and humidity to assure their safety and wholesomeness.
Traceability and Recall. All raw materials and products should be lot-coded and a recall system in place so that rapid and complete traces and recalls can be done when a product retrieval is necessary.
Pest Control. Effective pest control programs should be in place.

2.2 Historical background of the legislation of (bovine) meat safety in the European Union

2.2.1 Establishing the European Economic Community

The Treaty of Rome (1957) was created to establish a common market. According to the Treaty establishing the European Economic Community (ECC), the ECC should include):

- the elimination of customs duties and quantitative restrictions between Member States in relation to the import and export of goods;
- an internal market characterized by the abolition of obstacles to the free movement of goods, persons, services and capital; and
- the approximation of the laws of Member States to the extent required for the functioning of the common market.

(Stevenson, 1999; O'Rourke, 2005)

2.2.2 Completion of the Internal Market: Community Legislation on Foodstuffs

As mentioned previously, EU food law developed piecemeal over a long period of time. Only amendments of the Treaty of Rome Art. 3. by the Single European Act and the Maastricht Treaty, explicitly mentioned consumer protection and public health, which were originally not goals (O'Rourke, 2005). For many years the EC concentrated on the free movement of foodstuffs throughout the common market. It was not until after court cases (especially Dassonville'74 and Cassis de Dijon '79) that the EC changed its approach to food law. The new approach was introduced in 1985 called "Completion of the Internal Market: Community Legislation on Foodstuffs". The EC legislation on foodstuffs must now be justified by the need to:

- protect public health;
- provide consumers with information and protection in matters other than health and ensure fair trading; and
- provide for the adequate and necessary official controls of foodstuffs.

(Goodburn, 2001; Blanchet et al., 1994; O'Rourke, 2005)

2.2.3 The Free Movement of Foodstuffs within the Community

The Commission published in 1989 another Communication, "the Free Movement of Foodstuffs within the Community" (MacMaoláin, 2007; O'Rourke, 2005). Thereby, establishing the principle that in general a food product lawfully produced and marketed in one Member State should be allowed to be marketed in other Member States, unless it was a threat to public health. But in practice, consumer protection and public health aspects of food law were playing second fiddle to trade issues.

2.2.4 Making consumer protection the first priority

The BSE-crisis changed all this (Vos, 2000; Vincent, 2004). It brought to light many shortcomings in the European food law. The commission was accused of putting the interests of industries above public health and consumer safety. After investigations and publication of a report by a temporary Inquiry Committee that investigated the actions of the national and European agencies involved in the crisis, the Commission published a Green Paper in 1997 on the general principles of food law in the EU as a response to the report (Cotter, 2004; O'Rourke, 2005). Thereby, consumer protection had become the first priority. The Green Paper reaffirmed the fundamental requirements of EU food law (EC, 1997):

- to provide a high level of protection of public health, safety and of consumer protection;
- to ensure the free circulation of goods within the single market;
- to ensure that the legislation is primarily based on scientific evidence and risk assessment;
- to place the primary responsibilities for safe food with industry, producers and suppliers, through self-checking provisions (HACCP systems) backed up by official controls and enforcement; and
- to ensure that the legislation is coherent, rational, consistent, simpler, user-friendly and developed in full consultation with all interested parties.

Furthermore, an inspection agency – the Food and Veterinary Office (FVO) – was set up in 1997 and the establishment of an independent food safety authority was announced.
Then a new food safety scare – the Belgian dioxin crisis – occurred. This time the commission was able to move quickly and efficiently to protect consumers from the dioxin crisis. However, other shortcomings were brought to light. David Byrne – the Commissioner for Health and Consumer Protection - was given the task in the wake of these crises to re-evaluate and improve EU food law in order to give it a more safety/consumer-orientated perspective (Phelan, 2001).

The outcome of this work was the White Paper on Food Safety published in January 2000. The purpose of the White Paper was to restore and maintain the consumer confidence (Holland and Pope, 2003; O'Rourke, 2005). Eighty-four laws were designed together with policy initiatives that had to be implemented.

The objectives of the White Paper were (EC, 2000a):

- to outline a comprehensive range of actions needed to complement and modernize existing EU food legislation;
- to make it more coherent, understandable and flexible;
- to promote better enforcement of that legislation; and
- to provide greater transparency to consumers in addition, to guarantee a high level of food safety

The Strategic Priorities of the White Paper on Food Safety were (EU website[a]):

- to create a European Food Safety Authority;
- to consistently implement a "Farm to Table" (or "Fork") approach in food legislation; and
- to establish the principle that feed and food operators have primary responsibility for food safety, that Member States need to ensure surveillance and control of these operators, that the Commission shall test the performance of Member States' control capacities and capabilities through audits and inspections.

This resulted inter alia in specific food safety legislation including an overhaul of the existing hygiene legislation and the creation of a framework for harmonized food controls (White Paper on Food Safety, 2000). The ability to trace products through the whole food chain was a key element, called traceability (White Paper on Food Safety, 2000). This was defined and discussed in detail Section 3.1.6. Another important concept was the precautionary principle (see below).

The White Paper proposed the establishment of an European Food Safety Authority (EFSA). According to the Commission, this would guarantee a high level of food safety. Responsibilities of the EFSA should be (Phelan, 2001; Daelman, 2002):

- preparation and provision of scientific advice;
- collection and analysis of information required to underpin both that advice and the Community's decision making process;
- the monitoring and surveillance of developments touching upon food safety issues (including rapid alert systems); and
- the communication of its finding to all interested parties.

Two years after the Publication of the White Paper, Regulation (EC) No 178/2002 (see appendix A) was laid down. It's referred to as the "General Food Law". The objectives were to :

- laydown the general principles and requirements of food law;
- establish the European Food Safety Authority; and
- lay down procedures in matters of food safety.

The general principles of the GFL contain the following sections (Regulation (EC) No 178/2002):

- general **Principles of Food Law**: general objectives, risk analysis, **precautionary principle** (see later), protection of consumer' interests;
- principles of **Transparency**: public consultation and information during the preparation or revision of food law, access to public information;
- general **Obligations of Food Trade**: imports, exports; and
- general **Requirements of Food Law**: food and feed safety requirements, presentation, responsibilities, traceability, responsibilities for food, responsibilities for feed and liability.

[a] EU 2008 EU website [Online] URL: http://ec.europa.eu/food/food/intro/white_paper_en.htm [Accessed: January 2008]

The precautionary principle (Regulation (EC) No 178/2002, see appendix C) has been established to protect public health when scientific information is lacking and decisions have to be made.

"*If there are reasonable grounds for suspecting there is a problem, the Commission acts to limit the risk. It does not necessarily need to wait for proof that there really is a risk."*
(EC, 2004)

Such measures should be considered as temporary until more comprehensive information is available. In addition, the General Food Law underwrites the EC obligation to its international commitment (Regulation (EC) No 178/2002, Article 13, see appendix C). Particularly in relation to the following agreements, which have had far-reaching consequences for food law[a]:

- The agreement on Sanitary and Phytosanitary Measures (SPS);
- The agreement on Technical Barriers to Trade (TBT).

These agreements are under the auspices of the WTO.

Examples of the **harmonized legislation** (see appendix C): that built on the GFL were the following

- Regulation (EC) No 882/2002 of the European Parliament and of the Council of 29 April 2004 on official controls to be performed to ensure the verification of compliance with feed and food law, animal health and animal welfare;
- Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs;
- Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin;
- Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption;
- Council Directive 2002/99/EC of 16 December 2002 laying down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption; and
- Corrigendum to Directive 2004/41/EC of the European Parliament and of the Council of 21 April 2004 repealing certain Directives concerning food hygiene and health conditions for the production and placing on the market of certain products of animal origin intended for human consumption and amending Council Directives 89/662/EEC and 92/118/EEC and Council Decision 95/408/EC (OJ L157, 30/04/2004).

The Regulations (EC) No 852/2004, 853/2004, 854/2004, Council Directive 2002/99/EC and Corrigendum to Directive 2004/41/EC, were generally referred to as the "Hygiene

[a] The General Principles of Food Law in the European Union 2008 Delegation of the European Commission to Japan website [Online] URL: http://www.deljpn.ec.europa.eu/union/showpage_en_union.afs.food.php [Accessed: 2008, March]

Package" (see appendix A). It dealt with the hygiene requirements for safe food (O'Rourke, 2005).

Its aim was to simplify and harmonize the complex hygiene requirements that were scattered over seventeen directives. Emphasis was placed on traceability of all food and food ingredients (O'Rourke, 2005).

Third countries wishing to export live animals and/or food products of animal origin to the EU must provide guarantees with an effect at least equivalent to residue monitoring requirements of the EU. In the light of this research it is important to mention the following Directives. Council Directive 96/23/EC lays down requirements in relation to the execution and the planning of a national residue control plan for live animals and food products of animal origin (EU website[a]):

"The principal objective of the legislation is to detect illegal use of substances in animal production and the misuse of authorised veterinary medicinal products and to ensure the implementation of appropriate actions to minimise recurrence of all such residues in food of animal origin."

In order to be approved to export the live animals and/or food products of animal origin, the residue monitoring plan of the third country has to be favorably evaluated by the European Commission services (EU website[a]).

A key point of Council Directive 96/22/EC is from article 11 (EU website[b]):

"Prohibition of Member States from importing from third countries, animals (and/or products derived therefrom) to which stilbenes and thyrostats have been administered under any circumstances, or animals (and/or products derived therefrom) to which certain steroid hormones and beta-agonists have been administered for growth promotion purposes."

(EU website, 2008)

2.2.5 Reflection on the development of the General Food Law

The development of the GFL was driven by incident instead of planning and it reflects little of a coherent design (Van der Meulen B & van der Velde M, 2006). The recent major food scares (BSE crisis and the dioxin crises) had resulted in more power for the EU to regulate the European food industry (O'Rourke, 2005).
The Office of Agricultural Affairs at the U.S. Mission to the EU, composed of the Foreign Agricultural Service (FAS) and the Animal and Plant Health Inspection Service

[a] Directorate-General Health and Consumer Protection 2008 EU website [Online] URL: http://ec.europa.eu/food/food/chemicalsafety/residues/third_countries_en.htm [Accessed: February 2008]
[b] Directorate-General Health and Consumer Protection 2008 EU website [Online] URL: http://ec.europa.eu/food/food/chemicalsafety/residues/third_countries_en.htm [Accessed: February 2008]

(FAS and APHIS: both agencies of the United States Department of Agriculture), suggested that the EU followed a dual approach in harmonizing food laws[a]:

- vertical legislation on specific products; and
- horizontal legislation that covers aspects common to all foodstuffs (such as additives, labelling and hygiene, etc.)

After the Cassis de Dijon court judgment, emphasis shifted from vertical legislation to horizontal legislation, which applied to all foodstuffs (O'Rourke, 2005).

2.2.6 EU past and present

The EU has grown in size through the accession of new member states since the beginning, when only six countries signed the Treaty of Paris in 1951 and the Treaty of Rome in 1957. It has supra-national and inter-governmental features, located primarily in Europe. It has increased its powers by the addition of new policy areas. The Maastricht Treaty (EU Law website[b]), established the current legal framework. The Treaty of Lisbon (also known as the Reform Treaty) signed in December 2007 is intended to amend the existing treaties to update the political and legal structure of the union, if successfully ratified by all EU member states (EU website[c]).

The EU is now an economic and political partnership between 27 democratic European countries. Peace, prosperity and freedom are the aims of the EU for its citizens. The member states have set up specific bodies to achieve those aims. According to the EU website[d], the three main bodies are:

- the European Parliament (representing the people of Europe);
- the Council of the European Union (representing national governments);
- the European Commission (representing the common EU interest).

The task of keeping the EU laws on the safety of food up to date, lies in the hands of the Directorate-General Health and Consumer Protection. According to the website of the EU[e] their job is:

"to ensure food and consumer goods sold in the EU are safe, that the EU's internal market works for the benefit of consumers and that Europe helps protect and improve its citizens' health".

[a] FAS and APHIS 2008 Foreign Agricultural Service U.S. Mission to the European Union website http://useu.usmission.gov/agri/harmonization.html [Accessed: January 2008]
[b] Maastricht Treaty 1992 EU Law website [Online] URL: http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html [Accessed: February 2008]
[c] Treaty of Lisbon 2007 EU website [Online] URL: http://europa.eu/lisbon_treaty/index_en.htm [Accessed: February 2008]
[d] EU 2008 EU website [Online] URL: http://europa.eu/abc/panorama/index_en.htm [Accessed: February 2008]
[e] Directorate-General Health and Consumer Protection 2008 EU website [Online] URL: http://ec.europa.eu/dgs/health_consumer/weare_en.htm [Accessed: February 2008]

2.3 Historical background of the legislation on (bovine) meat safety in the RSA

2.3.1 Public Health Act

In 1919 the Public Health Act was created. This Act gave the control of meat hygiene to the Department of Health, which was the same legislation used in England and Wales as South Africa was a colonial state. This function was later delegated to local authorities by the regulations promulgated in 1924. The responsible authority in terms of these regulations, varied from a provincial administrator to a local magistrate. These regulations were not very clear. A meat inspector could be any person, as long he was authorized by a local authority. At that stage, local authorities simply could not meet the requirements of the Public Health Act on meat as they did not have sufficient trained personnel (Veary, 2007).

2.3.2 Department of Health and the Department of Agriculture

Prior to the 1960s, the control of abattoirs and meat hygiene was, as mentioned above, vested in the Department of Health. In 1961 the de Villiers Commission of Enquiry into abattoirs and related facilities was appointed by the Minister of Agricultural Economics and Marketing, to, *inter alia*: investigate, report and make recommendations on the most efficient and most appropriate system for the provision, management and control of abattoirs and related facilities in the RSA, with special reference to (Verslag van die Komitee van Ondersoek, 1991):

- the nature and extent of the facilities and services that abattoirs must provide;
- the authorities that must be responsible for the health inspection of meat.

The basic requirements of the Health Act were found to be appropriate, by the Commission of Investigation, but the application of the law was considered to be inadequate for the following reasons (Verslag van die Komitee van Ondersoek, 1991):

- it was on a voluntarily basis (not legally enforceable) under the jurisdiction of local municipalities;
- there were a great number of abattoirs;
- the general hygienic situation in these abattoirs was not up to standard;
- the structure of many of the abattoirs were old fashioned;
- the accommodation and education of the abattoir workers needed attention;
- the understanding of what was meant by "voluntary meat inspection" was ambiguous and interpreted in different ways by different municipalities; and
- there was a shortage of certified meat inspectors.

The Commission recommended putting the Department of Agriculture in control instead of the Department of Health regarding the hygiene and requirements of abattoirs, as well as meat inspection. This recommendation was mainly based on the fact that (then) the

Department of Veterinary Service in rural areas was best prepared to do the job (Verslag van die Komitee van Ondersoek, 1991).

The recommendations resulted in the Abattoir Commission Act (Act 86 of 1967) and the Animal Slaughter, Meat and Animal Products Hygiene Act (Act 87 of 1967). The latter Act gave the control of meat hygiene to the veterinarian and gave certain functions of the Department of Health to the Department of Agriculture. This brought the RSA in line with the more developed countries (Veary, 2007; Verslag van die Komitee van Ondersoek, 1991).

2.3.3 Confusion about the exact jurisdiction

The implementation of the recommendations of the report led to some confusion as to the exact jurisdiction of the different authorities in relation to the handling of meat. As a result, the Steyn Committee was appointed by the Minister of Health in 1975 to investigate the Health and Hygiene Requirements relating to the Trade in Meat and Meat Products.

This Committee was instructed to (Verslag van die Komitee van Ondersoek, 1991):

- determine what legislation is applicable to meat and meat products;
- determine what overlapping, shortcomings and problems or not, arise with the application of the legislation; and
- make recommendations on steps that must be taken to obtain, as far is possible, uniform regulations and efficient control over meat and meat products.

The Steyn Committee report was released in March 1978. It recommended, *inter alia,* that the Department of Agriculture should accept responsibility for the activities that fell within the boundaries of the abattoir employees, as well as tasks in relation to export e.g. the approval and maintenance of hygiene of de-boning rooms, packaging and cold stores for export. Whereas, those activities that fell outside the boundaries of the abattoir employees, such as processing, wholesale and retail sales were recommended to the care of the Department of Health (Verslag van die Komitee van Ondersoek, 1991). Furthermore, the availability of a permanent meat inspector in an abattoir should be a premise for getting certification for that abattoir. This was another recommendation of the Steyn Committee (Verslag van die Komitee van Ondersoek, 1991).

2.3.4 Legislation and Veterinary Service

In 1992, the Abattoir Hygiene Act (Act 121 of 1992, see appendix B) replaced the Animal Slaughter, Meat and Animal Products Hygiene Act (Act 87 of 1967, see appendix B) and the South African Abattoir Corporation Act (Act 121 of 1992, see appendix B) abolished the Abattoir Commission Act (Act 86 of 1967, see appendix B) and amended the Abattoir Industry Act (Act 54 of 1976, see appendix B) as it applied to the SA Abattoir Corporation. The SA Abattoir Corporation Act (Act 121 of 1992, see appendix

B) provided for the privatization of the South African Abattoir Corporation (Veary, 2007). At that stage, South Africa had five provinces and several homelands. In terms of the Interim Constitution of South Africa (Act 200 of 1993, see appendix B) in 1993, the homelands, which were a feature of Apartheid, were combined with the existing five provinces to form nine new provinces.

The inspection service was deregulated or decentralised under the Directors of Veterinary Services of the nine new provinces in terms of the Abattoir Hygiene Act of 1992 (Veary, 2007). Table 6 shows the structure of the Veterinary services after 1994, when the veterinary services were restructured in line with the new provincial structure.

Table 6: **Veterinary Services after 1994, according to the NDA website**[a]

Veterinary Services was restructured during 1994 under the Interim Constitution (Act 200 of 1993). It consists of a National Directorate and nine Provincial Directorates of Veterinary Services. With a mission to provide national veterinary risk management services, the National Directorate of Veterinary Services has the mandate to set legislation, policy and standards regarding all functions of Veterinary Services. The nine Provincial Directorates of Veterinary Services have the mandate to execute all regulatory functions, within their own contexts and in close co-operation with both the National Directorate and the other Provincial Directorates of Veterinary Services. The aims of the National Directorate Veterinary Services are to ensure effective biological risk management in terms of animal diseases, food safety, as well as veterinary imports and exports. This goal is attained by providing information, legislation, policy, standards, capacity building, certification, control and audits.

During the last decades, the supply of meat hygiene services in the RSA has been changed several times. The following legislation has played a crucial role in this aspect (Meat Inspectors Manual - Red Meat, 2000; see appendix B):

- Animal Slaughter, Meat and Animal Products Act, 1967 (Act No. 87 of 1967) published in 1967
- Abattoir Hygiene Act, 1992 (Act 121 of 1992) published in 1992.
- Meat Safety Act, 2000 (Act No 40 of 2000) published in 2000, is the present Act under which legislation for abattoirs is provided.

In the foreword of the Meat Inspectors Manual Red Meat (NDA, 2000) Dr. G. Brückner says:

[a] Directorate Veterinary Services 2008 NDA website [Online] URL: http://www.nda.agric.za/vetweb/Profile/A_Profile_Main.htm [Accessed: March 2008]

"The emphasis on the delivery of services as reflected in consecutive legislation since 1967 has changed gradually from a structural and end-point approach of service delivery, to a holistic approach with the focus on food safety. Growing international concerns, that the State should be the custodian on all matters related to food safety and provide the sanitary guarantees required by consumers and our trading partners necessitated a change of focus on the delivery of these services".

2.3.5 Meat Safety Act and Hygiene Management requirements

The Meat Safety Act (Act 40 of 2000, see appendix B) requires abattoirs to implement a Hygiene Management System that is similar to the HACCP system and prerequisites. This system is audited by the authorities using a Hygiene Assessment System as provided for in the Act (Informal discussion with a Control Meat Inspector: Veterinary Public Health of the National Department of Agriculture in the RSA, February 2008).

According to informal discussions with a Control Meat Inspector employed in the Veterinary Public Health section of the National Department of Agriculture in the RSA (February, 2008), the regulations under this Act provide detailed prescripts of the Hygiene Management Programs required for the System. Capacity building is provided by Provincial Authorities as well as the industry to assist abattoir owners in implementing this system. He further explained that export abattoirs following the requirements of importing countries mostly implement HACCP according to the South African Bureau of Standards. These standards are accepted internationally. Also, the local retail industry increasingly requires their suppliers to have HACCP resulting in larger abattoirs adapting their Hygiene Management Systems to HACCP, which is still compliant to the requirements of the Act.

2.3.6 Present situation

The RSA has a large commercial sector and a smaller communal sector. The RSA has a well established cattle feedlot sector included in the commercial sector.

According to the SAMIC website[a] (2008):

"On primary production level the South African red meat industry has a strong dualistic character, which stems from the past existence of self-governing states of the pre-1994 political dispensation. This has given rise to a large-scale commercial production sector co- existing with a small-scale, so-called communal, production sector in the former self-governing states. The commercial and communal production sectors respectively are also known as the developed and developing sectors".

[a] SAMIC 2008 SAMIC website [Online] URL: http://www.samic.co.za/SAMIC/Introduction.htm [Accessed: February 2008]

Since the end of the Apartheid in 1994, the South African agriculture changed dramatically. According to the NDA website[a] (2002), after the cold war South Africa had become inefficient inherent in government regulated markets and opted for the dismantling of all controls. The Marketing of Agricultural Products Act of 1996 (Act 47 of 1996, see appendix B) replaced a detailed and prescriptive act. The act was motivated by the repeal of statutory control measures. The result was a compromise act, which recognised the need for a national marketing council but failed to define its role and therefore lacking the authority it needed (NDA website[b], 2002):

- It removed statutory regulations and services but failed to set up an alternative delivery system to meet the real needs of farmers;
- It acknowledged developmental obligations but left them to market forces and the goodwill of rivals in the established sector;
- It vested all decision-making powers in the Minister and therefore managed to create a large amount of what is basically administrative work for her office, while also concentrating state influence on the market more than ever before

The state regulated market had been changed to a self regulated system.

Concerning the legislation related to food, the Department of Health (2002) noted that:

"Today, the South African Food Control System is still fragmented between a number of authorities and components at national, provincial and local level as well as between several other organizations. The same product is therefore often controlled by several different authorities in terms of a number of different sets of legislation. This can be illustrated by looking at the country's control over meat and meat products."

According to the website of the Food Advisory Consumer Service (F.A.C.S.), the following national departments are the main parties responsible for food legislation[c]:

- The Department of Agriculture;
- The Department of Health; and
- The Department of Trade and Industry

At least 13 Acts relate to food. Examples of these acts are (see appendix B):

Department of Agriculture

- The Agricultural Product Standards Act, 1990 (Act 119 of 1990)
- The Meat Safety Act, 2000 (Act 40 of 2000)
- The Animal Health Act, 2002 (Act 7 of 2002)

Department of Health

[a] Agricultural Marketing – a discussion moment 2002 NDA website [Online] URL: http://www.nda.agric.za/docs/agricultural_marketing.htm [Accessed: March 2008]
[b] Agricultural Marketing – a discussion moment 2002 NDA website [Online] URL: http://www.nda.agric.za/docs/agricultural_marketing.htm [Accessed: March 2008]
[c] F.A.C.S. 2008 F.A.C.S. website [Online] URL: http://www.foodfacts.org.za/siteindex/consumerconcerns [Accessed: February 2008]

- The Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972)
- The Health Act, 1977 (Act 63 of 1977)
- The International Health Regulations Act, 1974 (Act 28 of 1974)
- The Medicines and Related Substances Act, 1965 (Act 101 of 1965)

The fragmented structural and legislative control over food safety and quality has led to: inefficiency, duplication, overlapping, lack of coordination and sometimes even lack of control (Department of Health, 2002; Flip website[a], 2005).

[a] South Africa 2005 FLIP website [Online] URL: http://www.reading.ac.uk/foodlaw/flip2000/South%20Africa.htm [Accessed on: March 2009]

CHAPTER 3

MATERIALS AND METHODS

3.1 Work plan

In Chapter 1, the objectives were summarized. In line with the objectives a work plan was developed.

Chapter 2 contains:

- a literature review about the different organizations, principles and systems that are important to understand in the light of this research;
- a literature review of the historical background of the legislation of (bovine) meat safety in the European Union to make clear which important incidents happened;
- a literature review of the historical background of the legislation of (bovine) meat safety in the Republic of South Africa to make clear which important incidents happened.

Chapter 4 contains the results of:

- a literature search, informal discussion and visits to rural and communal farmers, feedlots, abattoirs and meat processors to develop a flow chart of the beef supply chain in the RSA;
- informal discussions and a literature search to identify the EU market access constraints in the RSA for fresh bovine meat;
- the development of a checklist for an expert opinion survey of identified South African experts on exports to the EU to score and rank the market access constraints of the EU market for the RSA for fresh bovine meat; and
- execution and statistical analysis (ranking and scoring according to qualitative data analysis methods) of the expert opinion survey.

Chapter 5 contains the discussion of chapter 4 and the conclusion of the research.

3.2 Explanation of the work plan

3.2.1 Literature review of organizations, principles and systems

To understand the different organizations, principles and systems that play a role in meat export of fresh bovine meat from the RSA to the EU a literature search was done. The World Trade Organization (WTO), the Food and Agriculture Organization (FAO) of the United Nations (UN), the World Health Organization (WHO), the World Organization for Animal Health (OIE), Risk Assessment and Risk Analysis, Traceability and Hazard Analysis Critical Control Points (HACCP) are described in the literature review. This was done by using published peer-reviewed articles, text-books and the internet.

3.2.2 Literature review of the history of legislation pertaining to fresh bovine meat in the EU and the RSA

The development of the GFL in the EU legislation is a result of developments in the past (Van der Meulen B & van der Velde M, 2006). It is important for the RSA to know to what extent their legislation differs from the EU legislation regarding export of food, since the importing country determines the requirements in line with SPS agreements and trade harmonization (Germain, 2003; OIE, 2008). To clarify the differences in developments regarding food safety and public health, a literature search of the history of the legislation on meat safety was done for both the EU and the RSA. This was used to explain the current situation.

3.2.3 Development of a flow chart of the beef supply chain of the RSA

A flow chart (Pyzdek, 2003) of the beef supply chain of the RSA was made. To develop a flow chart a literature search on the cattle production chain was done. In addition, commercial, communal, emerging farmers, feedlots, abattoirs and meat processors were visited and informal discussions were held with farmers, veterinary staff and other stakeholders. During these visits informal discussions took place as this was in essence Descriptive or Observational Research. The flow chart was constructed in Microsoft Office Excel ® 2003.

3.2.4 EU market access constraints for the RSA

This research used reports, published articles, text books, newsletters, informal discussions with stakeholders (farmers, abattoir personnel, feedlot owners, personnel working at the National Department of Agriculture etc.) and supervisors (C.M.E. McCrindle: Professor of the Department of Veterinary and Public Health in the RSA; F. van Knapen: Professor of the Department of the Science of Food of Animal Origin in the Netherlands) to identify potential and existing EU market access constraints for fresh bovine meat produced in the RSA.

3.2.5 Development of a checklist and identifying South African experts for the expert opinion survey

The expert opinion survey was based on Likert-scaling, a qualitative data analysis method (Russell Bernard, 2000). A questionnaire and a checklist was developed so as to execute the expert opinion survey (see Appendix C for the layout of the expert opinion survey). The expert opinion survey was based on a checklist of thirteen issues that were identified for causing (potentially) EU market access constraints. Of these, two questions were open-ended questions that were used in the discussion to clarify certain constraints.

Only a few people have sufficient knowledge about the EU market access constraints for fresh bovine meat from the RSA. Ten experts of the RSA were identified to answer the checklist (See Table 6).

Table 6 **Expertise of identified experts for the opinion survey**

Code	Job description	Main expertise
A	Professor of VPH	Meat safety and HACCP
B	Deputy Director of Chemical Safety, Department of Health[a]	Responsibility for evaluation of toxicology of stock/agricultural remedies, genetically modified organisms (GMOs) and veterinary drugs
C	Senior product manager of Beefcor[b], BSc Agric (Animal Science)	Senior product manager
D	Deputy Director of Department of Agriculture and Environmental Affairs[c], Kwazulu-Natal (KZN)	VPH and export services
E	Bsc Veterinary Medicine authorized Veterinarian contracted by International Meat Quality Assurance Services (IMQAS[d])	Perform duties at Export Abattoir on behalf of the National Department of Agriculture (NDA)[e]
F	Master Agriculture Economics	Risk manager of agriculture of economics for Absa[f]
G	Chief Electoral Officer (CEO) of SAMIC (South African Meat Industry Company)[g]	Manager of Meat Exporters of South Africa (MESA)
H	Department of Agriculture and	Senior Manager: Veterinary Services

[a] DOH website [Online] URL: www.doh.gov.za [Accessed: February 2008]
[b] Beefcor (cattle feedlot in the RSA) website [Online] URL: www.Beefcor.com [Accessed: February 2008]
[c] KZN Agriculture and Environmental Affairs website: [Online] URL: http://agriculture.kzntl.gov.za/ [Accessed: February 2008]
[d] IMQAS website [Online] URL: http://www.imqas.co.za/ [Accessed: February 2008]
[e] NDA website [Online] URL: www.nda.agric.za [Accessed: February 2008]
[f] Absa (large commercial and private bank) website [Online] URL: www.absa.co.za [Accessed: February 2008]
[g] SAMIC website [Online] URL: http://www.samic.co.za/ [Accessed: February 2008]

	Land Reform[a]	
I	Import- export control, National Department of Agriculture[e] (NDA)	Consultant Veterinary Services
J	Deputy Director of Department of Agriculture of the Western Cape[b]	Food safety and export control

The study used a checklist for the opinion survey, because this took approximately twenty minutes for an expert interview and experts of this seniority are short of time.
Data from the expert opinion survey was analysed using Microsoft Office Excel ® 2003.

3.2.6 Execution and scoring and ranking of the expert opinion survey

Ranking and scoring is a recognised qualitative data analysis tool (Russell Bernard, 2000). The opinions from experts on the issues causing EU market access constraints were graded on a scale from 1 to 5, where 1 was of low importance and 5 was of high importance (Russell Bernard, 2000). A zero (0) was given if the expert did not have an opinion on the specific issue. An average score was calculated for each issue/constraint by adding up all the grades and dividing by the number of experts. The issue with the highest score was considered the most important constraint to market access to the EU (highest rank). The answers with zero were not used in the calculation, because they did not have value when grading and ranking the issues.

[a] Department of Agriculture and Land Reform website [Online] URL: http://www.agrinc.gov.za/index.php?option=com_frontpage&Itemid=1 [Accessed: February 2008]
[b] Department of Agriculture of the Western Cape website [Online] URL: http://www.elsenburg.com/ [Accessed: February 2008]

CHAPTER 4

RESULTS

4.1 Introduction

In this chapter the results of the flow chart, the identified market access constraints and the expert opinion survey were presented.

4.2 Flow chart of the beef supply chain in the RSA

4.2.1 Introduction

The flow chart of the beef supply chain of the RSA was made to get an overview of the production of fresh bovine meat. This is helpful, when one wants to investigate the EU requirements and see if they are in place, or where in the chain the sector is lacking.

G.C. Olivier (2004) made an analysis of the South African beef supply. The primary objective was:

"to contribute towards a better understanding of the South African beef supply chain from 'farm to fork', in order to aid collaboration, transparency and supply chain strategies to enhance national industry competitiveness."

In addition to the research of Olivier (2004) the visits to formal and informal beef production and processing systems described in Chapter 3 were used to develop the flow chart.

4.2.2 Beef production systems

A formal (commercial farmers) and an informal (communal farmers) market for beef exists in the RSA. It was estimated in 2004 that 64.63% was commercial cattle herds versus 35.35% communal cattle herds (Olivier, 2004). In addition, a third group exists called the emerging farmers (see for explanation below).

4.2.2.1 Commercial farming

In the RSA commercial, emerging and communal farmers produce cattle. According to (Van Zyl et al., 1993), three basic systems of beef production can be distinguished in commercial farming:

- weaner production;
- production of steers; and
- speculative beef production.

According to Van Zyl (1993) the most popular is the weaner production. Weaners are produced and sold at 6-9 months old, mostly to feedlots to finish them off. The cow herd runs on a farm (mainly extensive production systems) and the calves are moved or sold to feedlots (an intensive production system) for further processing. In contrast, in the production of steers system, the further processing of calves takes place on the same farm[a]. In this system the producers raise their offspring on the farm until they are ready to be sold, mostly to abattoirs (Olivier, 2004). Some farmers buy weaner calves and finish them off on grazing. This can also be classified under the production of steers system.

The production of steers system can also be called an oxen/tollie system. "Tollie" is the Afrikaans word for a steer. They are the yearlings (up to 18months or 2 years – i.e. two tooth male animals) and oxen are the older oxen (castrated bulls). Mainly, commercial farmers use a combination of the production systems depending on the relative price of live weight and slaughtered stock (see Figure 2 according to Olivier, 2004).

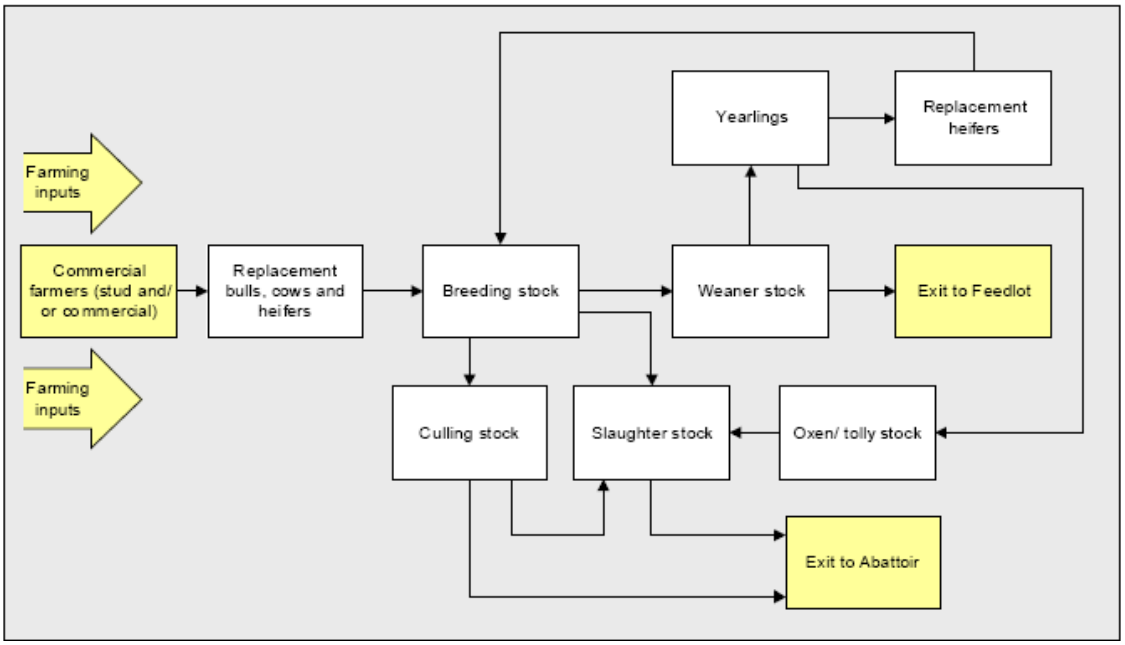

Fig. 2: **Commercial cattle farming according to Olivier (2004)**

Weaner stock could be used to produce and replace the breeding stock, to sell to the feedlot and to produce older oxen/tolly stock.

[a] Beef Production Systems 2008 KZN Agriculture and Environmental Affairs website[Online] URL: http://agriculture.kzntl.gov.za/portal/Publications/ProductionGuidelines/BeefProduction/BeefProductionSystems/tabid/124/Default.aspx [Accessed: February 2008]

According to Van Zyl (1993) the speculative beef production is another option. During dry periods (winter, spring or seasons of poor rainfall), pregnant cows or cows with calves can be bought at lower prices than in summer and autumn or good rainy seasons. Once rain is falling again, highly profitable gains in weight can be obtained. This system is not very common and calls for great skill. It is very flexible and the farmer has to have a good knowledge of beef and cattle prices. It can be highly profitable, when done properly.

4.2.2.2 Communal farming

South Africa produces 85 percent of its beef requirements. According to the Livestock Development Project 'Increasing Productivity, Commercialisation and Marketing' by the government of the RSA (2007), the communal farming areas contain untapped areas.

In communal farming, the farmers use unfenced land. During the day, the farmer moves with their grazing herd and at night the herd is kept inside in a pen. The calves are naturally weaned (Informal discussion with communal farmers in surroundings of Potchefstroom, North West Province, February 2008).

Permitting small numbers of cattle of a relative or a friend to follow the herd is common. For most communal farmers, farming is just a part of the livelihood. In times of need, cattle can be sold. Cattle are not primarily raised for meat, but as a way of capital savings and as an important source of draught power. Draught animals can be used for many purposes: mowing, ploughing, weeding, harvesting and transportation. In addition, cattle are an important source of milk and manure (Bembridge and Tapson, 1993).

According to Bembridge and Tapson (1993) ceremonial slaughtering at funerals and weddings, the payment of lobola (bride wealth) and the perception of cattle as a form of security are other practices of cattle used in the rural communities (Informal discussion with communal farmers in surroundings of Potchefstroom, North West Province, February 2008). Most of the number of cattle slaughtered are used for direct consumption and exceeds sales by as much as tenfold (Bembridge and Tapson, 1993). Instead of productivity, the goal of almost all communal farmers is an increase in the number of animals owned.

According to Olivier (2004):

"Communal farmers see cattle as a measure of wealth and, in some instances, cattle are regarded as their "children". They therefore seldom sell calves or oxen at livestock auctions for additional income. Communal cattle farming is therefore mostly for their own use or for the needs of their extended families and is largely outside the main cattle industry of South Africa."

According to Bembridge and Tapson (1993) cattle in communal farming have a high level of mortality, low production rates and poor take-off (sales and slaughtering) in

comparison with commercial cattle production in the RSA. However, in considering take-off it should be remembered that in many instances of cattle deaths, part or the entire carcass is used as food.

The only fixed facility is the pen where animals are confined at night (Informal discussion with communal farmers in surroundings of Potchefstroom, North West Province, February 2008).

During a visit of a farmer's day in Jericho (North West Province, February 2008) cattle were collected and treated with paraciticides against ticks and vaccinated. Management practices that show high rates of adoption in some provinces such as tick control (ticks act as vectors and can cause anaplasmosis, heart water, Congo Crimean hemorrhagic fever or babesiosis), vaccination (*Clostridium chauvoei* and *Clostridium botulinum)* and castration are carried out by State Veterinary Services (either Animal Health Technicians or registered Veterinarians). Other State Veterinary Services only do heifer vaccination against Brucellosis and annual vaccination against Anthrax free of charge because they are controlled diseases. Other practices such as internal parasite control and dehorning are not often done by the State Veterinary Services as they are considered to be "private good". (Informal discussion with farmers at the farmer's day in Jericho, North West Province, February 2008).

According to the Bembridge and Tapson (1993) a lack of knowledge, lack of finance and inability to exercise control in communal grazing systems are the major reasons for the low level of adoption of cattle management practices.

4.2.2.3 Emerging farmers

During visits of farmers in Potchefstroom (North West Province) and surroundings, the North West Nguni Cattle Development project was encountered (February, 2008). The project was executed by the North West Department of Agriculture, Conservation and Environment in partnership with the Industrial Development Corporation (IDC) and North West University (South African Government online website[a]). It is an example of a project to commercialize the developing agricultural sector by developing emerging farmers. The purpose of this project was dual: reintroducing the Nguni cattle breed in the province and focusing on emerging farmers. The idea was to loan cattle to a couple of farmers for five years. After five years farming, the emerging farmers had to give a certain percentage of the herd back and could keep the rest (Informal discussion with emerging farmers in surroundings of Potchefstroom, February 2008).
Criteria to be considered for being selected were:

- had to be black;
- interested in beef cattle farming;
- South African citizen; and

[a] North West emerging farmers to benefit from the Nguni cattle pilot project 2007 South African Government online website [Online] URL: http://www.info.gov.za/speeches/2007/07011611451001.htm [Accessed: February 2008]

- had to have enough fenced grazing land.

According to the National Emergent Red Meat Producers' Organization (NERPO) website[a]:

"The National Emergent Red Meat Producers' Organization (NERPO) aims to commercialize the developing agricultural sector and ensure meaningful participation of black individuals within the mainstream commercial agribusiness sector, hence ensuring the long-term sustainability of the agricultural sector in South Africa."

Another project called "Developing profitable beef business systems for previously disadvantaged farmers in South Africa", focused on both emerging and communal farmers. The project had run from 2006 till 2008. The objectives of this project were to (Burrow *et al.,* 2008):

- Enable individuals, groups and networks of beef farmers to achieve continuous improvement of profitable production and marketing of beef products (i.e. to develop the resource-poor farmers and their networks);
- Benchmark and develop the role of Southern African indigenous cattle genotypes for profitable production and marketing of beef (i.e. to develop the role of the cattle and improve their performance through the South African commercial beef system);
- Increase knowledge of relationships between components of herd profitability in tropical and sub-tropical environments, to improve efficiency and product quality without unduly compromising breeder herd performance or adaptability (i.e. to provide the means for ongoing genetic and non-genetic improvement of beef cattle in the tropics and sub-tropics worldwide);
- Develop and implement an 'exit strategy' to preserve the gains in social infrastructure and training built up in the project and transfer the carriage of further expansion of the project to local, provincial and industry management and leadership; and
- Conduct an aggressive campaign to publicise the key information emanating from Objective 2 that the carcass attributes of indigenous cattle are the equal of or better than those of conventional, exotic breeds reared under conditions of high input agriculture.

According to the report (Burrow *et al.*, 2008), published in 2008, it was highly successful:

"outstanding progress was achieved towards all objectives, greatly exceeding the originally-planned outputs and resulting in very significant impacts on the commercialisation and profitability of the project's emerging farmers and providing them with significant new opportunities to enter South Africa's commercial beef markets."

(Burrow *et al.*, 2008)

[a] Welcome to NEPRO 2008 NEPRO website [Online] URL: http://www.nerpo.org.za/ [Accessed: March 2008]

4.2.2.4 Marketing channels from the farm to agents, auctions, feedlots and abattoirs

According to Olivier (2004) the beef can go from the farm to the live auctions via speculators and service agents. Livestock auctions are collection points where large numbers of cattle are bought and sold. Speculators work for themselves and try to make a profit by selling the animals at the auction. Service agents normally work for larger players (e.g. feedlots). They work on a commission basis.
The animals have to be transported to the livestock auctions. Transport and handling is stressful for cattle (Grandin, 2000)

According to Olivier (2004), private sales are an important marketing channel in the developing areas. Farmers sell their cattle to individuals. Individuals buy livestock for different reasons. The two most important are bartering (to trade goods or services without the exchange of money) and cash sales. It is bought for investment, slaughter or social functions, like weddings, funerals and religious celebrations (Informal discussion during visit of the farmer's day in Jericho, North West Province, February 2008). Farmers do not pay any marketing cost. Therefore, it is cheap and simple.

4.2.2.5 Feedlots

According to the KwaZulu-Natal Freight Transport Data Bank website[a], almost 60% of cattle in the RSA are finished for slaughter in commercial feedlots. Beefcor is a feedlot operator and wholesaler in Bronckhorstspruit in Gauteng Province. According to informal discussions during a visit to Beefcor (February, 2008), the buyers purchase weaners direct from farmers in the RSA and Namibia. The weaners are then vaccinated against to prevent getting diseases on the feedlot. The animals will get an ear tag to monitor the growth efficiency. This will provide feedback to the producers and the farmers. The weaners are raised on a pasture near the feedlot until they are in good condition to enter the feedlot. Then the animals are fed for approximately 3 months. At the end of the feeding period, the cattle are selected by trained employees to judge if the animals are in sufficient condition to be slaughtered. The feedlot has approximately 30000 head of cattle at the feedlot at any time and around 90000 animals are marketed annually. It provides 1800 cattle weekly to the market (Informal discussion during visit of Beefcor, February 2008).

The efficiency of the feedlots comes from finishing weaners in the feedlot instead of calves. This results in producers that are able to keep bigger herds[b].
More information on beef production according to the SAMIC (South African Meat Industry Company) website[a]:

[a] Livestock Production 2008 KwaZulu-Natal Freight Transport Data Bank website [Online] URL: http://www.kzntransport.gov.za/public_trans/freight_databank/kzn/industries/poultry_production/index_xml.html [Accessed: March 2008]
[b] Livestock 2008 Free State Province Freight Transport Data Bank website [Online] URL: http://www.freetrans.gov.za/FTD/fs/industries/livestock/index.html [Accessed: March 2008]

"The 53 registered South African Feedlot Association (SAFA) commercial cattle feedlots, which market animals throughout the year, have a standing capacity of 320 000 animals and slaughter around 70% of the commercial sectors annual 2 million cattle slaughterings at registered abattoirs. Feedlots normally buy from extensive cattle farmers weaner calves with live mass of 230 kg and add 105 kg carcase mass through intensive feeding of about 100 days, eventually slaughtering an animal at 215 kg carcase weight.
Availability of beef in the formal sector amounts to an average of 475 000 tonnes per annum respectively. This is based on an estimated annual slaughter of 1,95 million cattle. It is further estimated that slaughterings in the informal sector could amount to a further 20 to 25%."

According to Olivier (2004), the farmer can also send the livestock for fattening to custom feedlots. The farmer pays the custom feedlot for treatments (e.g. vaccination, dipping and treatment for sick animals) and management. The cattle will remain the property of the farmer. When the animals are at the end of the feeding period he decides what happens to them.

4.2.2.5 Abattoirs

Transport is stressful for animals and when slaughtered this will cause stress induced meat quality problems such as dark cutters. Dark cutting beef (dark, firm and dry) has a shorter shelf life and is darker and drier than normal (FAO, 2001).
Upon arrival, cattle are kept before being slaughtered, to facilitate a calming process. During this period the Official Veterinarian performs an ante mortem inspection on the animals (informal discussion with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008).

According to Olivier (2004) and informal discussion with Professor Veary (former professor of Veterinary Public Health, University of Pretoria, 2008), the number of abattoirs increased since the deregulation of the South African red meat industry in 1994. It shifted from high throughput abattoirs to low throughput abattoirs (informal discussion with Professor Veary: February, 2008; Olivier, 2004). Abattoirs are graded according to their slaughter capacity. The grades run from A to F. An A grade abattoir slaughters over 100 cattle per day, where an F grade abattoir slaughters less than 4 cattle per day (informal discussion with Professor Veary: February, 2008; Olivier, 2004).
In A Grade abattoirs the ante-mortem inspection must be carried out by a veterinarian or a meat inspector. In the later case the meat inspector must be under the supervision of a veterinarian (informal discussion with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008).

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[a] Introduction 2008 SAMIC website [Online] URL: http://www.samic.co.za/SAMIC/Introduction.htm#IntHM [Accessed: March 2008]

Meat inspection consists of the following aspects (Olivier, 2004; informal discussion with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008):

- ante-mortem inspection;
- primary (on the line) inspection;
- secondary meat inspection of detained carcasses or organs; and
- laboratory analysis including screening procedures.

A final decision about a carcass or part of one must be based on all the information obtained from these aspects.

The following control points are built into the slaughtering process to reduce the risks of unsafe products of low quality (Olivier, 2004; informal discussion with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008):

- assessment of transport used for animals to the abattoir;
- ante-mortem inspection of livestock;
- compulsory resting periods for slaughter stock;
- measures to ensure the cleanliness of slaughter stock;
- meat inspections;
- slaughter process and control measures to reduce the possible contamination of meat with external skin/ hide surfaces;
- routine and specific laboratory diagnostics to confirm disease conditions or residues; and
- chilling.

Some of the A-grade abattoirs in the beef industry are Balfour, Cato Ridge, Bull Brand, Maitlands, Piramyd, Chalmar Beef, LAW, East London, Strydenburg, Upington, Port Elizabeth and Witbank (informal discussion with veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008)

The Meat Safety Act 2000 (Act 40 of 2000, see appendix B) and the Agricultural Product Standards Act 1990 (Act 119 of 1990, see appendix B) are acts to provide for measures to promote meat safety and the safety of animal products; to establish and maintain essential national standards in respect of abattoirs; to regulate the importation and exportation of meat; to establish meat safety schemes; and to provide for matters connected therewith.
Meat classification is a voluntary system in terms of the Agricultural Product Standards Act (Act 119 of 1990, see appendix B) to provide for the classification and marking of meat.

According to the Agricultural Product Standards Act 1990 (Act 119 of 1990, see appendix B) quality and value are determined by the following physical characteristics of the animal to be marketed:

- age;
- fatness;
- confirmation;
- damage;

- sex; and
- state of health

To determined age one looks at the animals permanent teeth. This is important, because younger animals have more tender meat (NDA website[a], 2008; informal discussing with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008). The following grades are used:

- A: no permanent incisors;
- AB: 1 or 2 permanent incisors;
- B: 3 to 6 permanent incisors; and
- C: more than 6 permanent incisors.

The fatness of the animal vary from class 0 (no fat) to class 6 (excessively over fat). Usually, more fat gives more taste to the meat and have more juice (NDA website[a]; informal discussing with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008).

Confirmation describes the ratio bone and meat. This is important for example to determine the right supply of cuts for the retail. The classification runs from code 1 (very flat) to code 5 (very round) (NDA website[a], 2008; informal discussing with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008).

Damage to the meat will give lower prices when being sold. This runs from 1 (slightly damaged) to 3 (severely damaged).
Sex is important in the way that castrated bulls are usually sold for higher prices. This is because the meat taste better and it contains more fat (NDA website[a], 2008; informal discussing with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008).

State of health is important, because the carcass of sick animals usually is condemned and not marketed (NDA website[b]; informal discussing with a veterinarian of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng, January 2008).
Table 7 shows an overview of the classification system according to SAMIC[c] (2007).

Table 7: **Classification characteristics of beef, lamb and goat meat according to the Agricultural Product Standards Act 1990 (see appendix B) from SAMIC classification pamphlet[a].**

[a] Red Meat Marketing 2008 NDA website [Online] URL: http://www.nda.agric.za/docs/MarketExtension/7Livestock.pdf [Accessed: March 2008]
[b] Red Meat Marketing 2008 NDA website [Online] URL: http://www.nda.agric.za/docs/MarketExtension/7Livestock.pdf [Accessed: March 2008]
[c] Classification Pamphlet 2007 SAMIC website [Online] URL: http://www.samic.co.za/Downloads/SAMICClassificationPamphlet2007.zip [Accessed: March 2008]

AGE	CLASS
0 Teeth	A
1– 2 Teeth	AB
3– 6 Teeth	B
More than 6 Teeth	C
FATNESS	**CLASS**
No fat	0
Very lean	1
Lean	2
Medium	3
Fat	4
Slightly overfat	5
Excessively overfat	6

CONFORMATION	CLASS
Very flat	1
Flat	2
Medium	3
Round	4
Very round	5
DAMAGE	**CLASS**
Slight	1
Moderate	2
Severe	3
SEX	
The carcase of a ram or a bull as well as of a hamel, a kapater or an ox showing signs of late castration of the AB, B or C age classes, are identified.	

4.2.2.7 Manufacturers of fresh bovine meat

According to Olivier (2004) and informal discussion with a veterinarian of Chalmar Beef abattoir (Kemptonpark, Kaalfontein, Gauteng, January 2008) and a veterinarian of Seemann's Red Meat Processing (Olifantsfontein, Midrand area, Gauteng, January, 2008) fresh chilled meat can be further processed into smaller pieces (called primals) or as half or quarter carcasses. The process in which carcasses are cut into smaller primal cuts is called deboning. Some abattoirs process their meat themselves, others sell it to processing plants (visits of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng and Seemann's Red Meat Processing, Olifantsfontein, Midrand area, Gauteng, January 2008).

4.2.2.8 Trade

According to Olivier (2004) some of the major trade role-players in the industry are Pick 'n Pay, Spar, Woolworths, Checkers and Shoprite. The retail has a large bargaining power and ensures competitive pressure upon producers.

4.2.2.9 Live cattle (on the hoof) imports

Most live cattle are imported from Namibia, Botswana and the European Union (Olivier, 2004; SAMIC website[a], 2008).

[a] Introduction 2008 SAMIC website [Online] URL: http://www.samic.co.za/SAMIC/Introduction.htm#IntHM [Accessed: March 2008]

4.2.2.10 Beef imports

According to the SAMIC newsletter (nr. 38, November 2007) the RSA is a net importer of beef.
Information of beef imports according to the SAMIC (South African Meat Industry Company) website[a]:

"Annual imports from outside the Southern African Customs Union (SACU, Agreement between South Africa, Botswana, Lesotho, Namibia and Swaziland) amount to an average of 20 000 tonnes beef. The dominant exporter to South Africa of beef is the European Union. As far as SACU is concerned, live cattle imports from Namibia amount to an average of 104 198 head per year, while annual live small stock imports amount to 917 576 head. Beef imports from Namibia and Botswana amount to an average of 15 000 tonnes per year."

However, according to figure 3 (NDA website[a], 2008), most beef for the domestic market comes from domestic production.

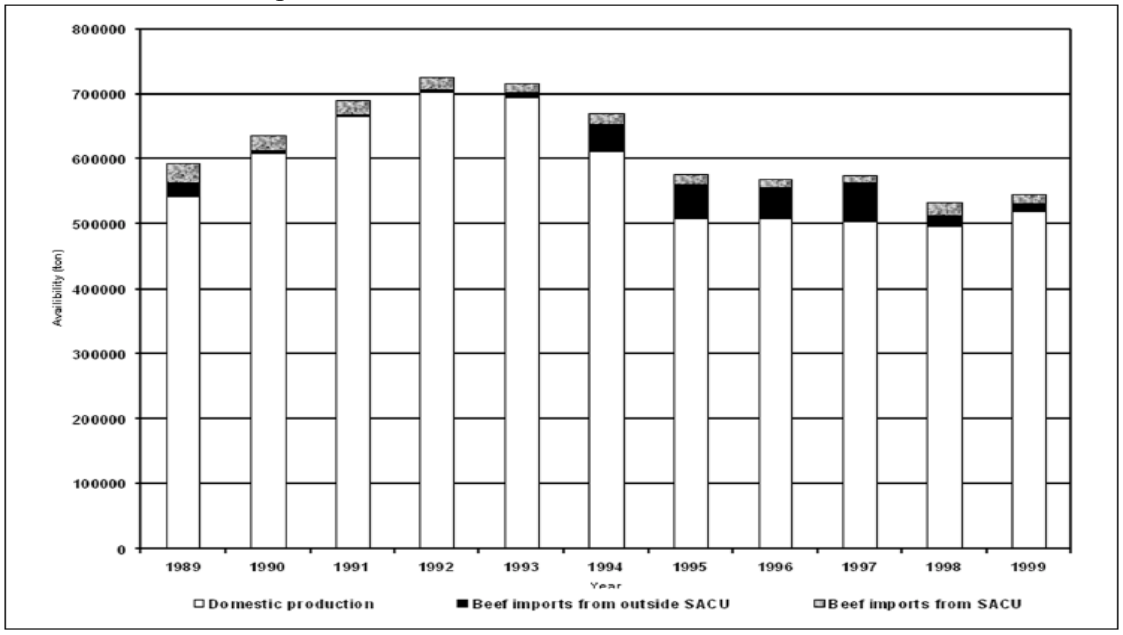

Fig 3: **Availability of beef on the domestic market (NDA website)**

4.2.2.11 Infrastructure

The RSA has a network of tar roads and railways, three deep-water ports, three international airports and well-developed cold chain facilities (informal discussion during visits of Chalmar Beef abattoir, Kemptonpark, Kaalfontein, Gauteng and Seemann's Red

[a] Red Meat Marketing 2008 NDA website [Online] URL: http://www.nda.agric.za/docs/MarketExtension/7Livestock.pdf [Accessed: March 2008]

Meat Processing, Olifantsfontein, Midrand area, Gauteng, January 2008; SouthAfrica.info website[a], 2008).

Using Oliviers (2004) research and the visits of the different stakeholders a flow chart was made of the beef production chain relating to export, see figure 4.

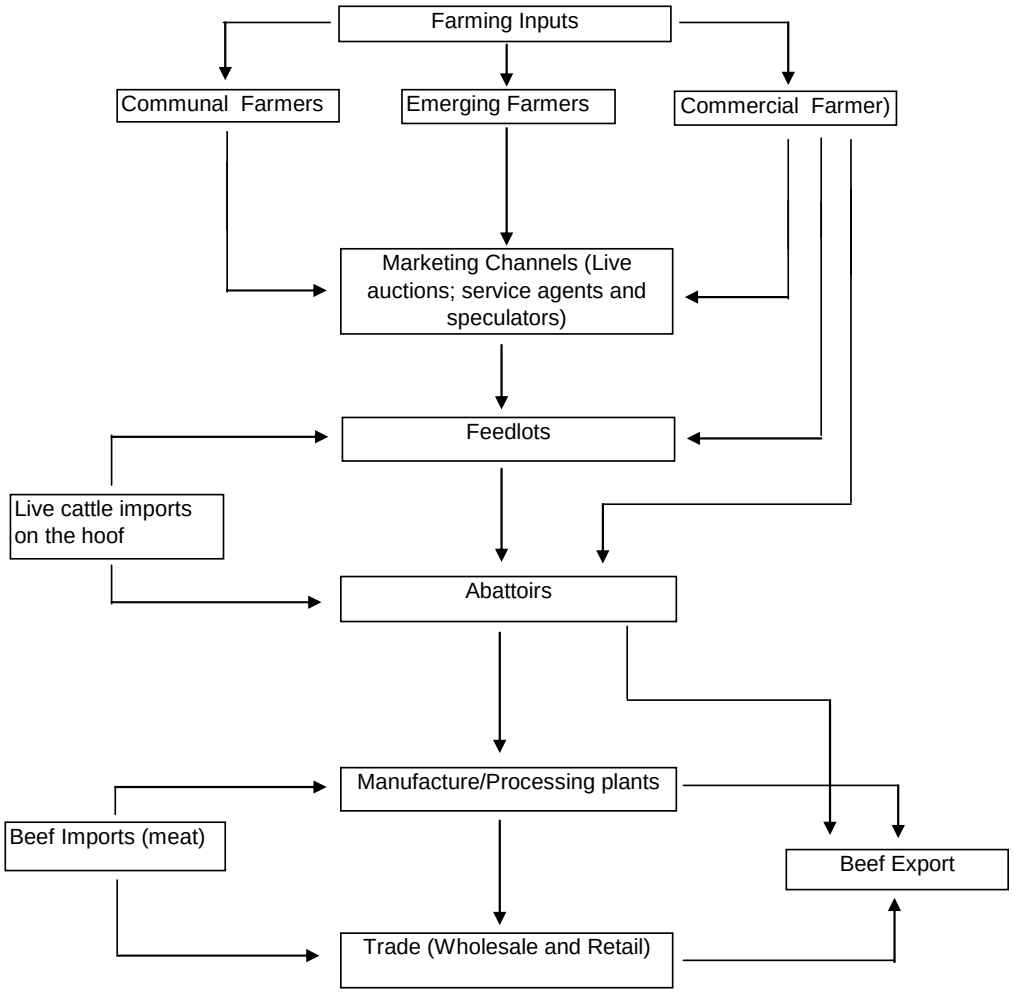

Fig. 4: **Flow chart of the beef supply chain of fresh meat for export according to Olivier (2004) and visits to stakeholders (January, 2008).**

[a] South African Agriculture 2008 SouthAfrica.info website [Online] URL: http://www.southafrica.info/business/economy/sectors/agricultural-sector.htm [Accessed: March 2008]

4.3 The EU market access constraints for the RSA regarding fresh bovine meat

4.3.1 Introduction

The RSA is not exporting fresh bovine meat to the EU (SAMIC newsletter nr. 38, November 2007). The South African beef supply chain is part of the global food supply chain. According to the AFMA (Animal Fed Manufacturers Association) forum[a] (2008), the production of food in the RSA needs to stay competitive, to create more export opportunities and to protect the local market.

In this section of Chapter 4, thirteen issues were identified that caused EU market access constraints for the RSA for fresh bovine meat.

In determining what causes market access constraints, different sources were used. These included the reports of Food and Veterinary Office (FVO) missions to the RSA. The FVO plays an important role in ensuring that the EU legislation on food safety, animal health, plant health and animal welfare is properly implemented and enforced. However, these reports are from an EU point of view and will not necessarily cover the whole area. For example, the RSA or non-EU documents may argue that other issues play an important role in causing market access constraints. Therefore other entries will be used, such as: informal discussions with experts (e.g. personal working in the industry, for the government or University in the RSA) and non-EU documents. The thirteen issues affecting export from the RSA to the EU, discovered during the study will be discussed in detail below. In summary, they are:

- Use of growth hormones in fresh bovine meat of the RSA and/or control of veterinary drugs that are prohibited in the EU;
- Traceability and registration throughout the beef production chain;
- Significant shortage of Official Veterinarians at all levels;
- Problems with control and vaccination strategies used for Foot and Mouth Disease in SA
- Problems regarding control of BSE in the RSA;
- Lack of interest in export by producers, because there are sufficient local markets and/ or export is not profitable enough;
- Poor cooperation between the Competent Provincial Authorities and with the National Competent Authority, which causes different ideas and standards;
- Definite political agenda by the EU to prevent competition from SA producers;
- The changes in EU legislation regarding to the new rules on the hygiene of foodstuffs and to the rules of officials controls (2004);
- Economic Partnership Agreements that puts market access constraints on export products (implementation of tariff preferences; rules of origin; and environmental and sanitary and phytosanitary measures);
- Large proportion of informal slaughter and marketing of beef cattle in SA;

[a] AFMA 2008 AFMA website [Online] URL: http://www.afma.co.za/ [Accessed: March 2008]

- No guaranteed impartiality of officials (veterinarians or meat inspectors) towards running establishments; and
- Deficiencies in the certification process (e.g. false declarations, misleading information).

4.3.2 The first identified issue

According to Directive 96/22/EC (see chapter 2 and appendix A), the use of oestradiol, testosterone, progesterone, zeranol, trenbolone acetate and melengestrol acetate (MGA) for growth promotion in farm animals is forbidden in the EU. The prohibition also applies to countries that want to export to the EU. The third (non-EU) country must be able to provide guarantees it complies with at least equivalent standards to those laid down in EU legislation.

In the RSA a large range of hormones are freely available. Most farmers use them as growth promoters for their cattle. By doing this, more beef can be produced in a shorter time interval (ZoBell et al., 2000). Growth hormones are used only for a short period while the animal is being fattened on the feedlot. According to South Africa's first independent food and nutrition consumer service[a], the most common hormone ear implants contain zeranol or a mixture of trenbalone and estradiol. In feeder cattle, implants containing estradiol improve feed efficiency and gain 5-15 percent. Implants which include trenbalone can provide an additional 3-5 percent improvement in feed efficiency and daily gain (ZoBell et al., 2000; informal discussion during visit of Beefcor, Bronckhorstspruit, Gauteng, 2008 February).

It also ensures that South African beef contains a low fat content. By using hormones, bovines require 18 to 24 months to reach slaughter weight. Without the use of growth hormones, the bovines need about three years (informal discussion during visit of Beefcor, Bronckhorstspruit, Gauteng, February 2008).
Those are reasons why exporting to the EU, without the use of growth promoters, makes it less profitable. The incentive for not using growth promoters is not strong.

In addition, the report of the FVO mission of June 2007 concerning the evaluation of the control of residues and contaminants in live animals and animal products in the RSA states that (EC, 2007):

"In the absence of any results, the competent authority cannot guarantee that food of animal origin exported to the EU complies with Community residue limits.";

"Whilst South Africa currently does not export beef to the EU (due to the delisting of the approved bovine meat establishments), there is no split system in place for this commodity guaranteeing that hormonal growth hormones have never been used in animals, meat from which is eligible for export to the EU.";

[a] Hormones in meat 2008 Food Advisory Consumer Service (F.A.C.S.) website [Online] URL: http://www.foodfacts.org.za/siteindex/hormonesinmeat [Accessed: March 2008]

and;

"Most veterinary medical products, medicated feeding stuffs and feed additives for use in food producing animal, including growth promotants with hormonal effects (natural and synthetic hormones, beta-agonists, zeranol) for several species (cattle, pigs, sheep and ostriches), are freely available in South Africa. The controls of the distribution and use of these products are currently insufficient to detect possible misuse or illegal use of these products. Thus South Africa cannot provide guarantees with an effect at least equivalent to those provided for in Community legislation, particularly Council Directives 96/22/EC and 96/23/EC."

According to the SAMIC newsletter (Nr. 38, November 2007):

"The EU health and consumer protection directorate has recommended that South Africa be removed from the EU's list of exporters of ostrich meat, poultry, milk, honey, pork and beef, after failing to provide an approved residue monitoring plan."

A variety of growth promoters are freely available and their use is not controlled. A lot of samples were taken, but never tested due to the lack of laboratory capacity (EC/ FVO, 2005):

"In light of the fact that several thousand samples taken from April to date have not been analyzed at all by the OVI and that the analyses of the previous sampling year 2005/2006 were neither completed nor the results assessed and summarized means that the residue content of all commodities has been unknown since April 2005. The absence of any residue testing results for several years means that the competent authority cannot guarantee that food of animal origin exported to the EU complies with Community residues limits."

From informal discussions with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services in the (February, 2008):

"Before 2005 there was one man on the job for residues full time, but later on there wasn't enough personnel, resulting in people doing it part-time. This was not improving the situation. Results were: not enough personnel to do the job of residue monitoring and laboratory capacity were too small. So the RSA didn't have sufficient information on the residues. The EU treated to stop importation of any meat (crocodile, ostrich, lamb, cattle) from the RSA."

The following issue for causing constraints on the EU market was therefore identified to be graded in the checklist:

- Use of growth hormones in fresh bovine meat of the RSA and/or control of veterinary drugs that are prohibited in the EU.

4.3.3 The second identified issue

The second issue was identified from the FVO missions of 28 February to 7 March 2005 and 12 to 21 June 2007. According to the report of the FVO mission of 2005 concerning the evaluation of animal health controls, in particular over Foot and Mouth Disease and African Horse Sickness, public health control systems for fresh meat and wild game meat and certification procedures (EC/ FVO, 2005):

"No significant progress was noted in relation to systems for farm registration, animal identification and movement controls."

According to the report of the FVO mission of 12 to 21 June 2007:

"Whilst there is a system for export approval of farms designed inter alia, to provide a 'split system' guaranteeing that growth promotants have not been used, the system does not cover all relevant commodities (beef is not included), is not comprehensive and there are several gaps in its implementation."

(The legal basis for the quote is Article 11 of Council Directive 96/22/EC).

From informal discussion with personal working at the Chief Directorate Food & Veterinary Services of the National Department of Agriculture (NDA) the following citation (2008, February):

"EU requirements say there must be identification of farms. The farmer must declare that he doesn't use any growth hormones; must test urine samples; and the abattoirs must test for the use of growth hormones as well.
Farmers lost interest in doing this, because they didn't export meat to the EU."

According to Germain (2003):

"However, developing countries still face significant constraints when attempting to implement traceability systems, including the following:

- *high costs and lack of financial resources;*
- *for some of the countries, huge size and dispersion of the various stakeholders;*
- *lack of infrastructure and knowledge."*

The mentioned citations give reasons why the RSA was lacking in their traceability and registration system throughout the beef chain. The second consideration that was made to be graded was therefore:

- Traceability and registration throughout the beef production chain.

4.3.4 The third identified issue

The third issue was identified form the following citations. According to the report of the FVO mission of 28 February to 7 March 2005:

"Despite recommendation of previous FVO missions, staffing levels, particularly at central level, remain inadequate, with a significant turnover which undermines the performance of official supervision."

From informal discussions with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services (February, 2008) the following citations were quoted:

"Rural areas don't have enough Official Veterinarians, because it's not economically justified."

; and

"After 1994, each province have their own veterinary service and directives, which had to report to the provincial MEC (which is more or less a provincial minister). Each provincial had their own ideas and priorities, resulting in 10 different standards.
Furthermore, the National authority is responsible for (OIE) legislation and the Provincial authorities for the enforcement of the legislation. To do the job, constant audits are necessary. Since personnel is lacking, this is a problem."

The National Department of Agriculture has considered introducing Compulsory Community Service (CCS), because of (T Songabe and G Mathye, 2008):

- the shortage of veterinarians in the country;
- the high migration rate of newly qualified veterinarians to overseas countries;
- the skewed distribution of the few available veterinarians in favor of urban areas; and
- the fact that the only single Faculty of Veterinary Science in the Republic of South Africa cannot logically produce enough veterinarians to adequately service the present high local and overseas market demand for South African trained veterinarians.

2010 has been proposed as the year for the CCS implementation (T Songabe and G Mathye, 2008). However, the situation now is still inadequate.

The third issue that was identified:

- Significant shortage of Official Veterinarians at all levels.

4.3.5 The fourth identified issue

The fourth issue was determined by using the following references. According to Germain (2003), FMD and BSE-related issues are particularly important as these diseases are of great concern to producers and consumers in the EU.
The report of the FVO mission of 28 February to 7 March 2005 says that Foot and Mouth Disease (FMD) is endemic in wildlife of the Kruger National Park (KNP). The outbreak of August 2004 was satisfactorily controlled, but knowledge of the animal population in FMD free areas is lacking. This will jeopardize bringing an outbreak in these areas to an early detection and successful control. In addition, cattle movements in FMD free areas are not subjected to official controls.

Report of the mission of FVO from 28 February to 7 March 2005:

"Extensive and effective FMD control measures are in place in the controlled area to prevent spread of the disease from the infected zone (KNP). The outbreaks which occurred in August 2004 were properly managed and led only to a slight extension of the buffer and surveillance zones."

; and

"In the FMD free area, the lack of knowledge of holdings and animal population, the absence of movement controls could jeopardize the capacity of the CA's (Competent Authorities) to ensure early and proper detection, diagnosis and control."

The fourth cause was:

- Problems with control and vaccination strategies used for Foot and Mouth Disease in SA.

4.3.6 The fifth identified issue

The fifth issue was about BSE. Third countries or regions wishing to export into the EU are subjected to the determination of their BSE status and are classified into five different categories (Germain, 2003):

- Category 1: country or region free of BSE.
- Category 2: BSE provisionally free country or region where no indigenous case has been reported.
- Category 3: BSE provisionally free country or region where at least one indigenous case has been reported.
- Category 4: country or region with low incidence of BSE.
- Category 5: country or region with high incidence of BSE.

BSE status is determined mainly on the outcome of a risk assessment. It's a qualitative indicator of the likelihood of the presence of BSE. The RSA was determined as category

3. It's therefore subjected to the presentation of an international health certificate attesting that (Germain, 2003):

- the feeding of ruminants with proteins derived from mammals is banned and the ban is enforced; and
- the fresh meat and products of bovine animal origin intended for export to the EU do not contain or are not derived from specified risk material or mechanically recovered meat obtained from the bone of the head or vertebral column.

From informal discussions with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services, the following citation was quoted:

"Because of no good working traceability system during the BSE crisis of the UK, South Africa does have a category 3 grading on BSE. This means that South Africa has imported meat, which most likely was infected, but not proved. During the whole history, South Africa had two suspects of BSE, which both happened to be negative."

This will consequently cause a market access constraint for fresh bovine meat. The fifth cause was therefore determined to be:

- Problems regarding control of BSE in the RSA.

4.3.7 The sixth identified issue

The sixth issue causing market access constraint follows from informal discussions with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services (February, 2008), the following citation were quoted:

"Importers of fresh bovine meat in the EU have to pay an additional 20 rand per kilogram taxes, which makes it less profitable.";

"Growth promoters which are registered in the RSA are prohibited by EU law. Therefore, in order to export there must be a split system implemented. So that in one system the meat is produced without the use of growth promoters, there's supervision of a veterinarian and a traceability system is in place. Because the export of beef isn't profitable enough (transport costs and import levies) the split system collapsed.";

"Economically it isn't really viable, consequently a strong drive by producers to export beef is missing.";

"Other thing is that SA doesn't produce enough meat, not even for themselves."

; and

"Use of growth hormones gives a 25% production of more beef production. That's why using growth hormones makes it so profitable."

The farmers are therefore not stimulated to raise their cattle according to EU requirements. As a result the sixth issue identified was:

- Lack of interest in export by producers, because there are sufficient local markets and/ or export is not profitable enough.

4.3.8 The seventh identified issue

The seventh issue follows inter alia from the FVO report of 28 February to 7 March 2005:

"The line of command at national level between the different directorates or between the National and Provincial authorities is not always operational and practical difficulties are encountered by the CCA's (Central Competent Authorities) to ensure proper communication and implementation of the legislation."

; and

"The intended audit system of the provincial services is not carried out by the CCA."

From informal discussions with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services (February, 2008), the following citation is (again) quoted:

"After 1994, each province have their own veterinary service and directives, which had to report to the provincial MEC (which is more or less a provincial minister). Each provincial had their own ideas and priorities, resulting in 10 different standards.
Furthermore, the National authority is responsible for (OIE) legislation and the Provincial authorities for the enforcement of the legislation. To do the job, constant audits are necessary. Since personnel is lacking, this is a problem."

The seventh cause was identified:

- Poor cooperation between the Competent Provincial Authorities and with the National Competent Authority, which causes different ideas and standards.

4.3.9 The eighth identified issue

The eighth issue was selected inter alia from Olivier (2004):

"Unfair agricultural trade and inconsistencies in world trade (between the developing world and the developed world) are some of the biggest concerns for the South African beef industry. In addition to subsidies and high tariffs, the developed world continuously introduces new barriers of entry to protect their markets and local farmers, such as hormone bans."

; and

"First world subsidies, tariffs and trade barriers have tended to shut export markets. Red meat trade barriers are experienced in approximately 40% of the global beef eating population in the form of hormone bans, technical discrimination (red tape and paperwork), anti-dumping measures and positive discrimination to capitalize on the food fears of modern consumers."

From informal discussions with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services (February, 2008), the following citation was quoted:

"EU is abnormal strict regarding beef importation, because the EU is a net exporter of fresh bovine meat. That's why the EU wants fresh bovine meat, which doesn't contain growth hormones that are supplied during the beef production chain."

The eighth issue was therefore chosen to be:

- Definite political agenda by the EU to prevent competition from SA producers.

4.3.10 The ninth identified issue

The EU has implemented new legislation that requires all animal product imports to undergo harmonized frequencies of documentary, and physical checks by veterinarians before entering the Union.

The EU has implemented new food hygiene Regulations including (EC, 2007):

- Regulation (EC) No 852/2004 (see appendix A), which lays down the general hygiene requirements for all food business operators;
- Regulation (EC) No 853/2004 (see appendix A), which lays down additional specific requirements for food businesses dealing with foods of animal origin; and
- Regulation (EC) 854/2004 (see appendix A) lays down the official controls for foods of animal origin; and

The Regulations are bases on the General Food Law, Regulation (EC) No 178/2002 (see appendix A). The complementary sets of rules are to harmonize EU food safety measures. The result is that all animal product imports require undergoing harmonized frequencies of documentary, and physical checks by veterinarians before entering the Union (EC, 2007).
Since the adoption of these new rules on the hygiene of foodstuffs (Regulations (EC) No 852/2004, 853/2004 and 854/2004, see appendix A), and of the rules on officials controls (Regulation (EC) No 882/2004, see appendix A), the RSA will have to comply with these regulations when exporting fresh bovine meat to the EU. Therefore, the ninth issue to give problems in accessing the EU market was:

- The changes in EU legislation regarding to the new rules on the hygiene of foodstuffs and to the rules of officials controls (2004).

4.3.11 The tenth identified issue

The tenth issue is about the Economic Partnership Agreement (EPA) and the Cotonou Agreement. Between the ACP (African, Caribbean and Pacific) countries and the EU exists a partnership pact, called the Europe's Cotonou Agreement. The EPAs are defined by the Cotonou Agreement as the major instrument of economic and trade co-operation between the EU and the ACPs. The EPAs are to take effect in 2008. The new arrangement provides for reciprocal trade agreements, The Secretariat of Common Market of Eastern and Southern Africa (COMESA, 2003) states in a report about the EPA negotiations:

"The studies point to general trends which tend to confirm the suspicion that the EU uses rules of origin, environmental regulations and sanitary and phyto-sanitary provisions as much to protect its own producers from competition as it does to protect its consumers and the environment and to avoid trade deflection. In general, the Cotonou Rules of Origin could be said to be overly complex and place an unnecessary burden on the exporter.";

"There are concerns that certain sanitary and phytosanitary measures applied by EU countries may be inconsistent with the WTO's SPS Agreement. Technical regulations, rules and procedures can facilitate and enhance trade in that they reduce the risk for consumers that they might purchase unsafe food and thereby increases confidence in the imported products. On the other hand, such regulations can become barriers to trade if they place demands on importers that are more costly to meet than the requirements applied to domestic producers."

"Southern African countries (including Namibia and Botswana) face difficulties in entering the EU food market not necessarily because their products are unsafe but often because the Southern African country lacks the monitoring, testing and certification infrastructure that would make it possible for them to demonstrate compliance with import requirements."

and;

"What is clear, however, is that the Cotonou Rules of Origin are complex and impose a significant cost in terms of compliance to ACP exporters and could be viewed as a non-tariff barrier which hinders the development of the ACP countries concerned."

In addition, Munalala et al. (2006) did a study about the impact of the EPA:

"In conclusion, the results of this assessment suggest that the impact of the EU-ESA FTA on revenue would be largely negative, irrespective of the sequencing of tariff revision

towards forming the EPA. However, the magnitudes of impact would be to varying degrees dependent on the extent and sequencing of tariff reduction."

As a result, the tenth issue causing market access constraint:

- Economic Partnership Agreements that puts market access constraints on export products (implementation of tariff preferences; rules of origin; and environmental and sanitary and phytosanitary measures).

4.3.12 The eleventh identified issue

It's known that the RSA has to deal with a formal and informal market regarding beef production. According to Olivier (2004):

"Furthermore, 240 000 small commercial farmers provide local and regional markets, principally to informal traders, and an estimated 1 to 3 million rural householders produce food primarily to meet their family's needs.";

"Currently, the South African beef supply chain is facing a dilemma, as it is difficult to fully determine and/ or calculate the precise number of producers in the beef supply chain or accurate cattle herd numbers in the commercial and communal/ informal sectors. This is mainly due to mixed farming practices and the lack of an accurate agricultural census in South Africa.";

"Based on the above figures, the split between commercial and communal cattle herds in the country is: 64.63% commercial cattle herd, versus 35.35% communal cattle herd.
One must take into consideration that the South African beef supply chain is diverse, ranging from small scale to large-scale businesses in the commercial and communal farming communities."

; and

"Commercial and communal farmers produce cattle in all nine provinces of the country."

The informal market gives problems when implementing a successful traceability system. According to Germain (2003):

"With regard to international trade, new legal requirements in mainly developed countries relating to traceability have recently been implemented, and in various sectors, importing countries have placed increasing pressure on exporting countries to comply with traceability requirements. These measures, however, must comply with the World Trade Organization agreements; they must be justified as having a sanitary or phytosanitary (SPS) objective or as having a legitimate objective."

; and

"Changes in ownership and the size of establishments can be frequent for certain production systems and countries. In some countries (African countries for instance), herds move from one place to another (e.g. transhumance) due to weather conditions, feed availability, time of the year, etc. This could lead to major constraints in the traceability implementation."

As a result the, the eleventh issue that was identified to cause problems for exporting fresh bovine meat:

- Large proportion of informal slaughter and marketing of beef cattle in SA

4.3.13 The twelfth identified issue

According to the FVO report of the 28 February to 7 March 2005 mission:

"The system by which veterinarians and meat inspectors are hired by a private company paid directly by the operators, does not ensure a status which guarantees their impartiality and independence towards running establishments."

According to informal discussion with personal working at the National Department of Agriculture (NDA) at the Directorate Veterinary Services (February, 2008):

"Still strange is that survey of an abattoir have to be done by an Official Veterinarian (OV) in order of the government, but is paid by the abattoir."

; and

"EU states that meat inspectors have to be supervised by Official Veterinarians. They can be assisted by Para-Veterinarians. So, it's more or less approved that Official Veterinarians is impartial and Para-Veterinarians can be provided by service providers."

The twelfth cause:

- No guaranteed impartiality of officials (veterinarians or meat inspectors) towards running establishments.

4.3.14 The thirteenth identified issue

According to the FVO report of the 28 February to 7 March 2005 mission (EC/FVO, 2005):

"Despite training and new instructions, serious deficiencies were found in the certification process, including false declarations (e.g. that game meat had been matured when this was not the case), and inaccurate, insufficient or misleading information.

The system for certification is still unreliable and not in compliance with EU requirements."

The final identified issue:

- Deficiencies in the certification process (e.g. false declarations, misleading information).

4.4 Expert opinion survey

4.4.1 Grading results of the issues causing market access constraints

For this research ten experts were identified and used for the expert opinion survey. (See appendix C for the layout of the expert opinion survey).

Figure 6 shows the results of the expert opinion survey. The issues are set out against the experts grading (see appendix C for the layout for which issues the numbers stand for). Then at the bottom of figure 6 the average (rounded off to second decimal) was calculated. This was done without the use of zero (0), because this answer meant the expert didn't have an opinion on that specific issue (see Materials and Methods).

Issues causing market access constraint →

Experts grading	1	2	3	4	5	6	7	8	9	10	11	12	13
1	5	5	2	1	1	5	3	5	0	2	1	1	1
2	5	5	5	1	1	4	3	0	1	4	0	1	5
3	5	5	1	0	3	1	5	4	0	0	1	1	5
4	3	3	4	3	3	1	4	4	3	3	1	3	3
5	5	2	4	2	2	3	2	4	3	2	2	3	2
6	5	5	5	5	3	5	3	5	1	4	1	1	5
7	5	4	5	1	5	1	4	3	0	3	1	4	3
8	5	0	0	0	0	1	5	5	1	1	0	0	0
9	5	5	5	5	5	5	5	5	5	5	1	5	4
10	2	5	4	1	1	5	3	1	5	4	4	1	1
Average	4.50	4.33	3.89	2.40	2.67	3.10	3.70	4.00	2.71	3.11	1.50	2.22	3.22

Fig. 6: **Grading of issues causing market access constraints by the experts**

4.4.2 Ranking and scoring of the issues causing market access constraints

Table 8: Ranking and scoring of the issues causing market access constraints

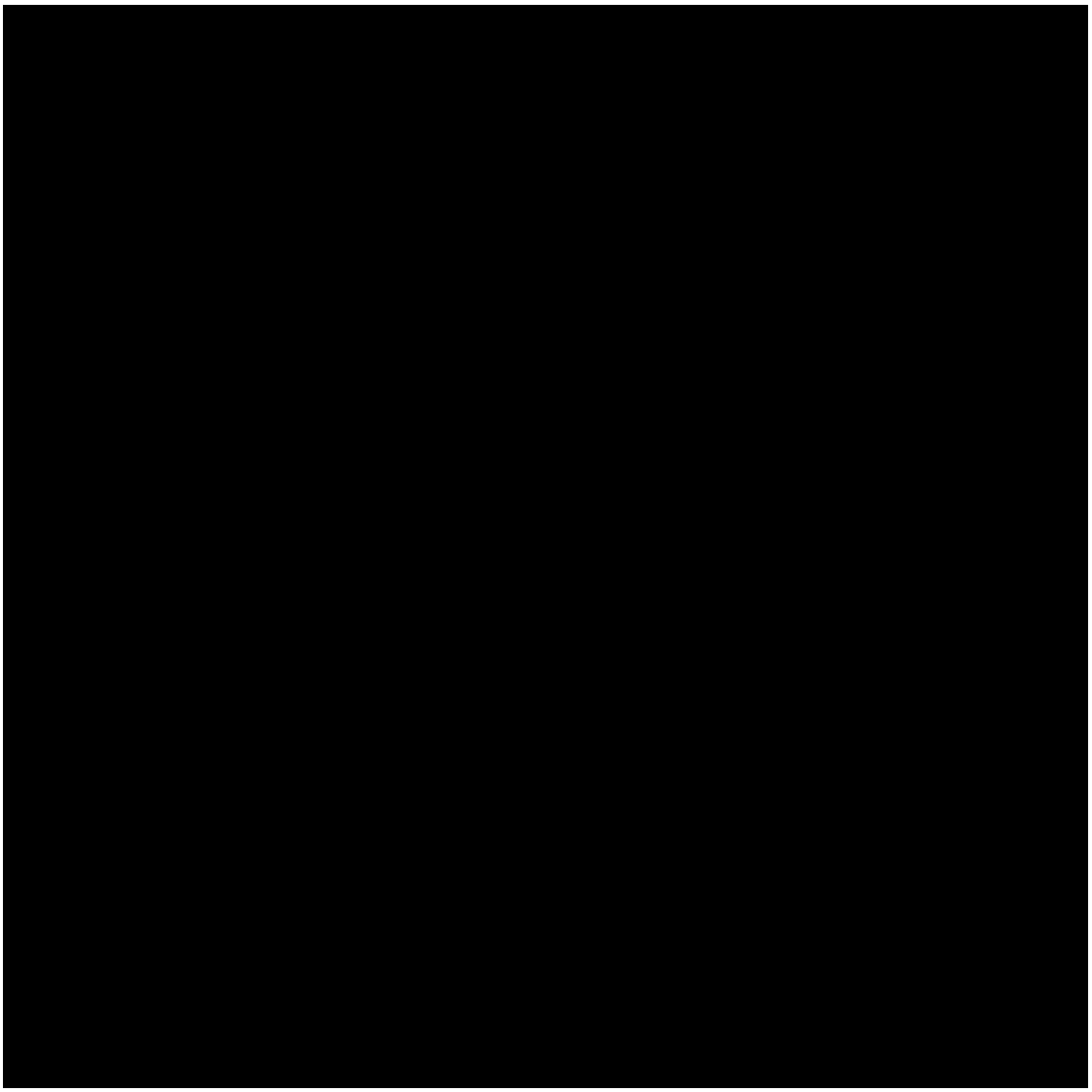

Table 8 shows which issue had the highest score on average (rounded off to second decimal) according to the opinion of the experts.

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter will discuss chapter 4.

5.2 Flow chart of the beef supply chain in the RSA

When discussing the beef supply chain of the RSA, the element that stands out most in comparison with the EU are the communal and emerging farmers. According to the government of South Africa (2007) about 40% of the beef cattle are owned by emerging and communal farmers. Only 5% goes through formal marketing channels. Since the democratisation of 1994 the South African beef market has changed radically (Burrow *et al.,* 2008). According to the Australian Centre for International Agricultural Research website (2009), the commercial market now requires bovines to mature earlier, be more efficient converters of food and have superior carcase attributes. These requirements have resulted in exclusion of the communal and emerging farmers, making the farming less profitable. Local butchers or meat required for local festivals are generally available to the communal and emerging farmers, but these markets are unreliable and unpredictable (Burrow *et al.,* 2008).

According to the government of South Africa (2007) capacity and knowledge is lacking for participating in the mainstream economy and contributing to economic development. The potential of the emerging and communal farmers need to be unleashed (more) in order to be contributing towards their own economic development and poverty alleviation. In addition improving the beef supply chain in competitiveness on the global market.
The projects mentioned in chapter 4, the "North West Nguni Cattle Development" project and the "Developing profitable beef business systems for previously disadvantaged farmers in South Africa" project, shows the recognition of the need for commercialization of the communal and emerging sectors. These are positives developments.

5.3 Expert opinion survey

The three issues with the highest score are discussed below. It must be made clear that experts of the RSA were chosen to participate in the survey. Their opinion on the identified issues were ranked and scored. This resulted in a South African point of view on the matter. However, it must be noted that EU-FVO inspection reports (inter alia) were used to identify the issues that caused market access constraints. These documents

bear the opinion or position of the EU. Therefore, the construction of the research will result in a South African view or position on EU market access constraints.

5.3.1 Use of growth hormones in fresh bovine meat of the RSA and/or control of veterinary drugs that are prohibited in the EU

The issue with the highest score on average for causing market access constraint was "Use of growth hormones in fresh bovine meat of the RSA and/or control of veterinary drugs that are prohibited in the EU".

It is often said that third (non-EU) countries are facing different circumstances when exporting beef meat. However, some third (non-EU) countries do export beef to the EU. For example the primary market of Brazil for beef export is the EU. Since 1994, Brazil has expanded its national herd 24% and the expansion of exports, up over 450% in volume. Brazil is now the world's leading exporter (Steiger, 2006). This enormous change has occurred because of the continued availability of natural resources, a favorable exchange rate and subsidized credit. The credit are being used for improving animal genetics (average slaughter age has fallen from 54 months to 38), pasture, machinery and cold storage capacity (Steiger, 2006). In addition, the aggressive marketing efforts of ABIEC (Brazilian Beef Processors and Exporters Association) has been significant to promote the brand: Brazilian Beef. The emphasize is on a natural (grass-fed beef instead of grain-fed beef), environmental and healthy product (Steiger, 2006).

As regard to the control of veterinary drugs, third (non-EU) countries that are exporting fresh meat and/or processed meat to the EU are obliged to submit a residue control plan in accordance with Council Directive 96/23/EC (see chapter 2 and appendix A). Brazil's control plan was evaluated in March 2008. The report of the FVO on the mission to Brazil states that:

"In contrast to previous years, the national residue control plan covers all of the relevant substance groups required by Council Directive 96/23/EC and significant process has been made by the competent authority in implementing the plan."

And;

"With regard to veterinary medicines, a new legislative proposal on antibiotics will mean that Brazil's regulatory framework will be similar to that operating in the EU member States."

(21: EC/FVO, 2008)

The control plan involves the Brazilian Bovine and Bubaline Identification and Certification System (SISBOV). It was adopted in January 2002 by Instruction Norm N^{o} 1/2002. Definition of the SISBOV system:

"a set of actions, measures and procedures adopted to characterize origin, health status, production, and productivity of national animal production and the safety of food deriving from this economic sector."

(De Moraes, 2002)

On the end of 2007 the European Commission placed restrictions on the export of Brazilian beef to the EU on the basis of failings in the SISBOV system (Embassy of Brazil in London website[a]). The SISBOV system was again evaluated by the FVO mission of January 2009 (The BeefSite.com website[b], 2009) as the system was improved and would now be able to meet the requirements of those provided for by the Community legislation. The report is expected to be released in March 2009. The Brazilian cattle industry is expecting a positive outcome (The BeefSite.com website[b], 2009).

It's remarkable that the Deputy-Director of Food Safety and Export Control of the Department of Agriculture states that export of fresh bovine meat is not profitable enough in the RSA (informal discussion with the Deputy-Director of Food Safety and Export Control of the Department of Agriculture, February 2008). In the past, a split system was introduced in the RSA (NDA, 2002). The system provided a method in the beef production industry to separate beef treated with growth promoters from beef free from growth promoters. It had supervision of State Veterinarians (Official Veterinarians) and a traceability system in place. However, the system collapsed. According to the Deputy-Director of Food safety and Export Control of the Department of Agriculture, this was because export of fresh bovine meat was not profitable enough (informal discussion with the Deputy-Director of Food Safety and Export Control of the Department of Agriculture, February 2008).

In contrast, in Brazil a strong incentive exists to export beef to the EU. Hormonal growth promoters are not authorized for use in livestock in Brazil. Apparently, the production of beef without the use of growth hormones is profitable enough.

For the past 25 years the EU and the US have been disputing the use of growth hormones in cattle. In 1989 the EU banned the import of beef from cattle treated with growth hormones. The US has always been claiming that the use of certain growth hormones in cattle does not cause public health risk (United States Department of Agriculture Foreign Agricultural Service website[c], 1999). According to the US and Canada, the ban was inconsistent with the WTO ruling (EU website[d], 2008). Since 1999, the US and Canada impose sanctions on the EU. The import duty on EU exports (US $116.8 million and Canada $11.3 million) have been applied to some manufactured goods and a range of

[a] EU restrictions on Brazilian beef exports 2007 Embassy of Brazil in London website [Online] URL: http://www.brazil.org.uk/newsandmedia/pressreleases_files/20071220.html [Accessed: February 2009]

[b] Brazilian Beef On its Way Back to EU 2009 The BeefSite.com website [Online] URL: http://www.thebeefsite.com/news/26276/brazilian-beef-on-its-way-back-to-eu [Accessed: February 2009]

[c] The U.S. – EU hormone dispute 1999 United States Department of Agriculture (USDA) Foreign Agricultural Service website [Online] URL: http://www.fas.usda.gov/itp/Policy/hormone1.html [Accesses: February 2009]

[d] WTO Dispute Settlement 2008 EU website [Online] URL: http://ec.europa.eu/trade/issues/respectrules/dispute/pr310308_en.htm [Accessed: February 2009]

agricultural products (Reuters website[a], 2008). In 2003, the EU adopted a new directive based on thorough scientific grounding for the EU restrictions on the use of hormones in raising cattle and imports of meat treated with hormones. This meant that the ban now conformed with WTO ruling and the EU called for the sanctions to be lifted (Reuters website[b]). The US and Canada disagreed and the sanctions remained in force.
The WTO ruled in October 2008 that the EU can continue banning the imports of beef treated with hormones from the US and Canada, but those countries do not have to lift the sanctions (International Herald Tribune website[c], 2008).

EU spokesman Peter Power said (The CattleSite.com website[d], 2009):

"We are convinced that our legislation on hormones is fully in line with WTO law: the restrictions on hormone-treated beef are based on solid scientific evidence showing risks for human health. We are thus very confident and hope that the US and Canada will engage constructively in these consultations and that we can find a solution to this long-lasting dispute."

Opposed to that, the US and Canada still continue to believe the ban is unfounded. It's likely that in the near future the ban as well as the sanctions will continue to exists. Negative inducements, such as sanctions create a climate of conflict and divide the two parties (Stone, 2002). Likely, this will only harden the EU's resistance. For the RSA, this means the farmers will have to raise cattle without the use of growth hormones in order to be able to export beef to the EU.

In July 2008 an inspection of the South African residue monitoring system and the handling of veterinary medicines was carried out. For 2008/2009 the only commodities covered by the National Residue Control Plan (NRCP) of the RSA are wild game and ostrich. The FVO report of the mission (ref. 22: EC/FVO, 2008) states that:

"Notwithstanding the shortcomings in laboratory performance identified during the mission, with regard to ostrich and wild game for meat production, the current residue control system in South Africa provides guarantees with an effect at least equivalent to those provided for by Council Directive 96/23/EC."

[a] EU seeks WTO case to test hormone-treated beef rules 2008 Reuters website [Online] URL: http://www.reuters.com/article/scienceNews/idUSTRE4BL49A20081222?pageNumber=1&virtualBrandChannel=0 [Accessed: February 2009]
[b] EU seeks WTO case to test hormone-treated beef rules 2008 Reuters website [Online] URL: http://www.reuters.com/article/scienceNews/idUSTRE4BL49A20081222?pageNumber=1&virtualBrandChannel=0 [Accessed: February 2009]
[c] WTO appeals panel faults EU hormone ruling 2008 International Herald Tribune website [Online] URL: http://www.iht.com/articles/ap/2008/10/16/business/EU-WTO-Beef-Hormones.php [Accessed: February 2009]
[d] New Twist in the Never Ending Beef Hormone Dispute 2009 The CattleSite.com website [Online] URL: http://www.thecattlesite.com/news/25860/new-twist-in-the-never-ending-beef-hormone-dispute [Accessed: February 2009]

As a result, the EU has lifted its ban on game meat imports. Apparently, the RSA is able to meet the requirements of the EU considering game meat.

5.3.2 Traceability

The issue with the second highest score was: "Traceability and registration throughout the beef production chain".

The General Food Law requires the traceability of food throughout the beef chain. The document on the implementation of a traceability system can be found on the SANCO (EU Directorate-General for Health and Consumers) website. It requires that businesses are at least able to identify the immediate recipient and the immediate supplier. This document recognizes that some EU importers demand traceability systems that are beyond legal requirements (ref. 16: EC, 2004).

In line with this, the following quote must be taken into account considering the implementation of a traceability system in developing countries:

"in the developing countries, cattle-breeding conditions are completely different and far more extensive than cattle breeding conditions in Europe, where small numbers of animals are raised in small, controlled conditions. Beef production takes place on extensive grass pastures in developing countries, which makes identification and maintenance of calving, health and other records more difficult."

(Germain, 2003)

However, in the future more emphasis will lie on quality rather than low production cost of beef (Steiger, 2006). In order to keep or gain market access to the EU, third countries will have to improve their quality control. A tool to achieve this, is the implementation of an adequate traceability system.

As mentioned above, Brazil is likely to enlarge access to the EU market. Brazil is expecting an positive outcome of the evaluation of the SISBOV system by the EU (The BeefSite.com website[a], 2009). The SISBOV system does not cover the entire national cattle and will not have to. According to Silva (2006), the Ministry of Agriculture, Livestock and Food Supply (MAPA) accredits private certifications entities, monitoring the registration of animals under SISBOV. The Animal Health Department (DDA) estimated in 2006, that about 30% of Brazil's cattle herd are accredited to conduct traceability.

Brazil is a example that shows that the RSA does not have to implement the traceability system for the entire national cattle. In addition, the RSA seems to have enough capacity to implement an adequate traceability system for game meat (ref. 22: EC/FVO, 2008).

[a] Brazilian Beef On its Way Back to EU 2009 The BeefSite.com website [Online] URL: http://www.thebeefsite.com/news/26276/brazilian-beef-on-its-way-back-to-eu [Accessed: February 2009]

This suggests that when the incentive of exporting beef to the EU is big enough, implementation of an adequate traceability system could be made possible by the competent authority and the beef sector.

According to Germain (2003), it is often said that the costs of high technology and identification devices are to be major constraints for implementing traceability systems. In 2009, the national government of the RSA has allocated 1.8 billion Rand (0.136 billion Euro) to boost rural development. The key objectives of the government's rural development strategy are (AllAfrica.com website[a], 2009):

- increasing agricultural output;
- raising rural incomes;
- supporting small scale farmers; and
- investmenting in rural roads.

It is likely, that the untapped reserves in the communal areas for beef production will be explored, increasing total beef production. It seems logic that the incentive to implement an adequate traceability system will grow stronger as a result. The advantages will grow compared to the disadvantages. For example, more producers, production and consumers of beef will emerge that can bear the burden of the financial costs.

As for identification devices, since 2007 the RSA is experimenting with new technologies in the Northern Cape. The ID tags have been introduced to emerging farmers on a voluntary basis. Livestock are fitted with barcoded ear tags, linking them to a central database containing information such as weight, sex, change of ownership and treatment history (New Agriculturist website[b], 2007). Knowledge and experience of these kind of experiments can add to development of an adequate traceability system that meets EU requirements.

However, the beef production market in the RSA is being threatened by import of subsidized beef from the EU. According to Olivier (2004):

"Farm subsidies no longer exists for the South African commercial farmer, and First World subsidies and tariff barriers have tended to shut export markets".

The beef production industry needs to stay competitive to protect their own market (AFMA forum[c], 2004). In order to protect the market in the RSA, it can put higher import tariffs on the import of beef. This will make it more profitable to work in the beef industry. In addition, the declining trend in beef demand can be improved by better quality red meat and positive nutrition messages. One of the elements in contributing to that is implementing traceability systems (Olivier, 2004). The beef industry of the RSA is

[a] South Africa: NW Govt Prioritises Support for Emerging Farmers 2009 AllAfrica.com website [Online] URL: http://allafrica.com/stories/200902190439.html [Accesses: February 2009]
[b] Traceability for small-scale livestock farmers in Africa 2007 New Agriculturist website [Online] URL: http://www.new-ag.info/07/04/develop/dev3.php [Accessed: March 2009]
[c] AFMA forum 2004 AFMA website [Online] URL: http://www.afma.co.za/AFMA_Template/feedpaper8.html [Accessed: March 2008]

part of the global economy and therefore regulated by universally established control systems at all stages of production. To be able to export to the EU, fresh bovine meat must comply with control systems at all stages (EC, 2006). According to Olivier (2004):

"Traceability, transparency and assurance are becoming critical success factors for the survival of our local beef industry"

5.3.3 Definite political agenda by the EU to prevent competition from SA producers

Argentina, Brazil, Chile and Thailand typically dominate the WTO complaints related to food regulations (Frohberg *et al.,* 2006). According to Frohberg *et al.* (2006) three times as many complaints were addressed to the EU than to the US. Henson (2006) gives three reasons for this:

- the harmonization process of SPS measures within the EU which often leads to the adoption of the most stringent standards which have been used previously in individual EU countries;
- the frequent use of the 'precautionary principle' when adopting food safety standards; and
- the complex administration of the EU.

In the Green Paper of 1997 on the general principles of food law in the EU, consumer protection was given the first priority over industries interests (EC, 1997). In addition, the General Food Law underwrites the EC obligation to its international commitment (Regulation (EC) No 178/2002, Article 13, see appendix C). Particularly in relation to the SPS agreement.

However, the EU creates trade barriers on the basis of concerns about the health of EU consumers. Some of the regulations require even standards beyond WTO agreements. For example products for human consumption has to be completely free of aflatoxin, which is more strict than the internationally agreed Codex standard (Germain, 2003). The same applies for the use of growth hormones. The implementation of these regulations has important economic consequences for developing countries trying to export (Wilson and Otsuki, 2001; Caswell, 2003; Jaffee, 2005). The adoption of increasingly stringent food safety standards puts up trade barriers for developing countries (Wilson and Otsuki, 2001; Caswell, 2003; Jaffee, 2005).

According to findings from the World Bank's research program, adjustment of the SPS standards only gives a partial solution (Jaffee, 2005). Developing, but more or less well prepared countries, should address the SPS standards to manage food safety and agricultural health risks. According to these findings by adopting the SPS standards, developing countries could (America.gov website[a], 2005; Jaffee, 2005):

[a] World Bank Urges Poor Countries To adopt Food Safety Standards 2005 America.gov website [Online] URL: http://www.america.gov/st/washfile-english/2005/February/20050202160233AKllennoCcM0.4356806.html [Accessed: March 2009]

- increase competitiveness;
- maintain and improve market access;
- mitigate potential adverse health effect on vulnerable groups; and
- improve domestic food safety and agricultural productivity

For more poor countries, improving their SPS capacity creates difficulties (Jaffee, 2005). An interesting research commissioned by the World Bank Group was done, describing the capacity building agenda that could improve SPS capacity (Jaffee, 2005).

In addition, high income countries should not be triggered to increase standards as a tool to protect their own market. Consequences of divergent national standards compared to international standards based on Codex guidelines (in relation to standards of aflatoxin B1) were estimated by J. S. Wilson and T. Otsuki (2001). World exports were estimated to rise $38.8 billion if an international standard (Codex) were adopted, compared to the current divergent national standards. Exports would even decrease $3.1 billion if the world adapted to EU standard compared to the current national standards

As for the statement that the EU is still a net exporter (chapter 4) of beef seems to be unfounded (EU website[a], 2005). The EU beef production had taken a big blow during the BSE crisis. The consumer demand decreased significantly (American Cow Man website[b], 2008). The prospects are that the net import status of beef will persist and increase, which will probably make the EU more eager to import beef to answer the consumers demand (EC, 2005). For the RSA, this foresight most likely increases the motivation to export beef to the EU.

One can state that all issues are a result of the political agenda by the EU. The RSA had set limits to the use of growth hormones that are well below the allowed limits set by international organizations, such as the WHO, CAC and the OIE (F.A.C.S. website[c], 2008). Still the EU uses the usage of growth hormones as a reason to ban the import of beef treated with growth hormones even when the EU had failed to justify the hormone ban (Foreign Agricultural Service U.S. Mission to the European Union website[d] (2007); AFP & Google website[e], 2008; Independent Bangladesh in Collaboration with the Daily Commercial Times website[f], 2008).

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[a] Key Facts on EU Agriculture 2005 EU website [Online] URL: http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/05/474&format=HTML&aged=0&language=EN&guiLanguage=en [Accessed: March 2008]

[b] Beef production in the European Union – a look into the future? 2008 American Cow Man website [Online] URL: http://americancowman.com/business/0513-europe-beef-production/ [Accessed: May 2008]

[c] Hormones in meat 2008 Food Advisory Consumer Service (F.A.C.S.) website [Online] URL: http://www.foodfacts.org.za/siteindex/hormonesinmeat [Accessed: March 2008]

[d] WTO hormone case 2007 Foreign Agricultural Service U.S. Mission to the European Union website [Online] URL: http://useu.usmission.gov/agri/harmonization.html [Accessed: January 2008]

[e] WTO rejects EU beef hormone ban but also raps US 2008 AFP & Google website [Online] URL: http://afp.google.com/article/ALeqM5hEqmznwYN5qTPQWtGq27IEPJkwDw [Accessed: April 2008]

[f] EU has failed to justify beef hormone ban: WTO 2008 Independent Bangladesh in Collaboration with the Daily Commercial Times website [Online] URL: http://www.independent-bangladesh.com/200804023911/business/eu-has-failed-to-justify-beef-hormone-ban-wto.html [Accessed: April 2008]

Quote from informal discussion with a senior producer manager of a feedlot (March, 2008):

"EU doesn't like hormone implants, which is based on the perception that it's bad for human health. The South African meat is cheaper and will kill the market in the EU, resulting in pulling up trade barriers".

Quote from authorized Veterinarian contracted by International Meat Quality Assurance Services (IMQAS) to perform duties at Export Abattoir on behalf of the National Department of Agriculture:

"From my experience, joining the audits of the EU, I think that the EU puts up trade barriers. For example, the use of growth hormones is proved to be safe for humans. Still the EU doesn't want meat that's produced with the use of growth hormones".

To come back to the issue of concern. In my opinion, the problem is not the definite policy agenda of the EU to prevent competition of SA producers. But rather the international rules and commitments of countries to international organizations such as the WTO. Apparently, it creates space for high income countries to adjust more stringent standards, while poor countries have lots of difficulties to implement them. International harmonization processes of SPS standards should be made with much more effective participation of developing countries. In addition, developing countries should be able to anticipate the stringent standards. Impact on developing countries of proposed SPS measures should be understood in advance. As for the complex EU administration, 'rules of the game' should be such that complex (EU) administration has to become more transparent and accessible for developing countries.

5.4 Conclusion

According to chapter 2, the RSA has still a fragmented structural and legislative control over food safety (Department of Health, 2002; Flip website[a], 2005)

The results of the flow chart points out that a large informal market exists. These communal areas contain large untapped areas and need further development in order to enter the commercial market. This will add to global competitiveness and food safety.

The expert opinion survey showed that the average opinion of the experts was that the use of growth hormones, traceability of food and the definite political agenda of the EU plaid a major role in causing market access constraints to the EU. These issues are not only a reflection of the functioning of the beef industry of the RSA regarding meat safety when comparing it with the EU, but a reflection of the EU market as well.

[a] South Africa 2005 FLIP website [Online] URL: http://www.reading.ac.uk/foodlaw/flip2000/South%20Africa.htm [Accessed on: March 2009]

The legislation of the RSA does not prohibit the use of growth hormones nor require implementation of a traceability system in the beef supply chain. In my opinion, especially the implementation of an adequate traceability system will significantly contribute to more competitiveness and food safety in the beef production chain. Different circumstances (sanitary, economic and structural) exists in the RSA than in the EU. Positive signs are the projects that are developing the communal and emerging markets and the development of identification devices (Chapter 5.3.3). In addition, the RSA meets the requirements regarding game meat, which can give some confidence for the future regarding the beef production chain. Brazil can be seen as an example of a developing country in implementing more or less successfully an adequate traceability system (SISBOV).

International harmonization processes of SPS standards should be made with much more effective participation of developing countries. Developing countries should join together to take in a joint position regarding the issues of international trade.

In addition, a significant shortage of Official Veterinarians and shortcomings in laboratory performance (ref. 22: EC/FVO, 2008; chapter 5.3.1) in the RSA endanger food safety.

Quote from Olivier (2004):

"an appropriate slogan for the beef industry in South Africa could well be "adapt or die" in the global economy, despite the presence of highly "unequal economic playing fields".

For now, the conclusion is that the beef production chain in the RSA, as a developing country, has not been able to keep pace with the changes to EU legislation (import conditions) for food safety and quality for fresh bovine meat.

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APPENDIX A: EU legislation

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Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption. [Online] URL: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0854:20070101:EN:PDF [Accessed: 2008, February].
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APPENDIX B: RSA legislation*

Abattoir Commission Act, 1967 (Act 86 of 1967)

Abattoir Hygiene Act, 1992 (Act 121 of 1992)

Abattoir Industry Act, 1976 (Act 54 of 1976)

Agricultural Product Standards Act, 1990 (Act 119 of 1990). [Online] URL: www.ppecb.com/NR/rdonlyres/EE77877B-59F9-4629-8F58FAA505127FA3/67/APSAct119of1990.pdf [Accessed: February 2008]

Animal Health Act, 2002 (Act 7 of 2002). [Online] URL: http://www.info.gov.za/view/DownloadFileAction?id=68108 [Accessed: February 2008]

Animal Slaughter, Meat and Animal Products Hygiene Act, 1967 (Act 87 of 1967)

Constitution of the Republic of South Africa (Act 200 of 1993). [Online] URL: http://www.info.gov.za/documents/constitution/93cons.htm [Accessed: February 2008]

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Marketing of Agricultural Products Act, 1997 (Act 47 of 1996). [Online] URL: http://www.info.gov.za/acts/1996/a47-96.pdf [Accessed: March 2008]

Meat Safety Act, 2000 (Act 40 of 2000). [Online] URL: http://www.info.gov.za/view/DownloadFileAction?id=68208 [Accessed: February 2008]

Medicines and Related Substances Act, 1965 (Act 101 of 1965). [Online] URL: www.pharmcouncil.co.za/documents/ACT%2090%20OF%201997.pdf [Accessed: March 2008]

Public Health Act, 1919 (Act 36 of 1919)

South African Abattoir Corporation Act, 1992 (Act 121 of 1992)

Standards act, 1993 (Act 29 of 1993)

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APPENDIX C: Layout of the Expert Opinion Survey

Expert opinion survey:
Export of fresh bovine meat from South Africa to the European Union

Date:	Code:

Interviewer: Drs. K. Cirkel

University of Utrecht and Pretoria

Faculties of Veterinary Science

Repondent details (will be kept confidential)

Title of respondent: □ Prof. □ Dr. □ Mr. □ Mrs. □ Other (specify) :

Initials:	
Surname:	
Gender:	
Telephone:	
Fax:	
E-mail:	
Qualifications and/ or job descriptions:	

Date:	Code:

Introduction

The press has mentioned problems in regard to export of food of animal origin to the European Union (EU) from South Africa (SA). This research has focused on the nature of the EU market access contraints for SA fresh bovine meat.

Question 1:
In your opinion, what is the most important constraint to the export of beef from SA to the EU?

Question 2:
Literature research and informal discussions with role-players and stakeholders have indicated that the following market access constraints may play a role. Could you score the importance of each on a scale of 1-5? Where 1 is low importance and 5 is very important. A score of zero (0) should be given if you do not know or have an opinion on the mentioned factor.

	Score: 1-5
2.1 Use of growth hormones in fresh bovine meat of SA and/or control of veterinary drugs that are prohibited in the EU.	
2.2 Traceability and registration throughout the beef production chain.	
2.3 Significant shortage of Official Veterinarians at all levels.	
2.4 Problems with control and vaccination strategies used for Foot and Mouth Disease in SA.	

Date: 12-3-'08	Code:

Score: 1-5

2.5 Problems regarding control of BSE in SA.

2.6 Lack of interest in export by producers, because there are sufficient local markets and/ or export is not profitable enough.

2.7 Poor cooporation between the Competent Provincial Authorities and with the National Competent Authority, which causes different ideas and standards.

2.8 Definite political agenda by the EU to prevent competition from SA producers.

2.9 The changes in EU legislation regarding to the new rules on the hygiene of foodstuffs and to the rules of officials controls (2004).

2.10 Economic Partnership Agreements that puts market access contraints on export products (implementation of tariff preferences; rules of origin; and environmental and sanitary and phytosanitary measures).

2.11 Large proportion of informal slaughter and marketing of beef cattle in SA.

2.12 No guaranteed impartiality of officials (veterinarians or meat inspectors) towards running establishments.

2.13 Deficiencies in the certification process (e.g. false declarations, misleading information).

Question 3:
Your comments on the export of fresh bovine meat to EU from SA?
Solutions? Should it take place at all? Any other observations?

Date:	Code:

Thank you for your trouble.

DEFINITIONS

Agreement on Sanitary and Phytosanitary Measures (SPS)
Also known as the SPS Agreement is an international treaty of the World Trade Organization. It was negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade and entered into force with the establishment of the WTO at the beginning of 1995. Under the SPS agreement, the WTO sets constraints on member states' policies relating to food safety (bacterial contaminants, pesticides, inspection and labelling) as well as animal and plant health (phytosanitary) about imported pests and diseases.

Codex Alimentarius Commission (CAC)
The CAC was created in 1963 by Food and Agriculture Organization (FAO) and World Health Organization (WHO) to develop food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme.

Directive
This is a legislative act of the European Union that requires member states to achieve a particular result without dictating the means of achieving that result.
EU legislation is made up of Directives and Regulations which must be implemented at the Member State level. Directives define the result that must be achieved but leave to each Member State the choice of form and methods to transpose the directive into national laws (usually within 2-3 years after adoption).

Directorate-General for Health and Consumer Protection
The European Union has established EU laws on the safety of food and other products on consumers' rights and on the protection of people's health. The Directorate-General for 'Health and Consumers' has the task of keeping these laws up to date.
It is national, regional or even local governments in EU countries who actually apply the EU's health and consumer protection laws. It is their job to make sure traders, manufacturers and food producers in their country observe the rules. Part of the job is to check that this is really happening and that the rules are being applied properly in all EU countries.

EC Treaty –treaty of Rome
The Treaties of Rome are two of the treaties of the European Union signed on March 25, 1957. Both treaties were signed by The Six: Belgium, France, Italy, Luxembourg, the Netherlands and West Germany. The first established the European Economic Community (EEC) and the second established the European Atomic Energy Community (EAEC or Euratom).

European Atomic Energy Community (EAEC or Euratom)
The EAEC is an international organization which is semi-independent of, but completely controlled by, the European Community pillar of the European Union.

European Commission (EC)
The EC is the executive branch of the European Union. The body is responsible for proposing legislation, implementing decisions, upholding the Union's treaties and the general day-to-day running of the Union.

European Economic Community (EEC)
The EEC was an international organization created in 1957 to bring about economic integration between Belgium, France, West-Germany, Italy, Luxembourg and the Netherlands.

European Union (EU)
The EU is a political and economic union of twenty-seven member states, located primarily in Europe. It was established by the Treaty of Maastricht in 1993 upon foundations of the pre-existing European Economic Community.

Food and Agriculture Organization (FAO)
The FAO is a specialized agency of the United Nations that leads international efforts to defeat hunger.

Fresh meat
As defined in Council Directive 64/433/EEC and 79/542/EEC (EUR-Lex website). This refers to meat, including meat vacuum-wrapped or wrapped in a controlled atmosphere, which has not undergone any treatment other than cold treatment to ensure preservation. This includes minced meat and unprocessed (fresh) blood, bones and fat for human consumption

From farm to Fork
Common expression in the food industry. The production of safe food involves a chain of responsibility and every participant in the chain from 'farm to fork' has a role to play to ensure food is as safe as is practically possible.

Hazard Analysis Critical Control Points (HACCP)
HACCP is a systematic preventive approach to food safety and pharmaceutical safety that addresses physical, chemical and biological hazards as a means of prevention rather than finished product inspection. HACCP is used in the food industry to identify potential food safety hazards, so that key actions, known as critical Control Points (CCP's) can be taken to reduce or eliminate the risk of the hazards being realized.

Hazard identification
The process of identifying the pathogenic agents, which could potentially be introduced in the commodity considered for importation.

Regulation
EU legislation is made up of Directives and Regulations which must be implemented at the Member State level. Regulations are binding in their entirety and automatically enter

into force on a set date in all Member States. Amendments to existing EU legislation are usually published in new and separate Directives and Regulations.

Risk analysis
Is according to the CAC the process that's composed of risk assessment risk management and risk communication
Is according to the World Organization for Animal Health (OIE, 2007) the process, which composed of hazard identification, risk assessment, risk management and risk communication.

Risk assessment
The evaluation of the likelihood and the biological and economic consequences of entry, establishment, or spread of a pathogenic agent within the territory of an importing country (OIE, 2007).

Risk communication
The interactive exchange of information on risk among risk assessors, risk managers and other interested parties.

Risk management
The process of identifying, selecting and implementing measures that can be applied to reduce the level of risk.

Republic of South Africa (RSA)
The Republic of South Africa, also known by other official names, is a country located at the southern tip of the continent.

South African Meat Industry Company (SAMIC)
SAMIC is the national representative structure of the South African red meat industry, managed through its democratically elected Board of Directors. In its implementing role, SAMIC's strategy focuses on the provision of services to meet its stated objectives and will (SAMIC website[a], 2008):

- be the custodian of the South African red meat industry;
- unify the strategic initiatives of all industry role-players by promoting effective communication and co-ordination of their efforts; and
- be efficient in the provision of specific common services required by the industry

South African Custom Union
The Southern African Customs Union (SACU) consists of Botswana, Losotho, Namibia, the Republic of South Africa and Swaziland. SACU established in 1910, making it the world's oldest Customs Union (a market that is created when countries agree to eliminate trade and tariff barriers among participating countries and impose uniform tariffs on non-member countries).

[a] SAMIC 2008 SAMIC website [Online] URL: http://www.samic.co.za/ [accessed on: March 2008]

Traceability
Traceability in the food industry must aim to create a link between the various steps in the entire food chain. These steps must cover animal production at the farm, processing in meat plants and other food premises, distribution to wholesalers and retailers and right through to the moment the food is placed on the consumer's table. Traceability is defined by the Codex Alimentarius Commission as "the ability to follow the movement of a food through specified stage(s) of production, processing and distribution".
The International Standards Organization (ISO 84022) defines Traceability as the "ability to trace the history, application or location of an entity by means of recorded identifications".
The EU General Food Law defines Traceability as the "ability to trace and follow a food, feed, food-producing animals or substance intended to be, or expected to be, incorporated into a food or feed, through all stages of production, processing and distribution."

Terrestrial Animal Health Code
The aim of the World Organization for Animal Health (OIE) Terrestrial Animal Health Code (hereafter referred to as the Terrestrial Code) is to assure the sanitary safety of international trade in terrestrial animals (mammals, birds and bees) and their products. This is achieved through the detailing of health measures to be used by the veterinary authorities of importing and exporting countries to avoid the transfer of agents pathogenic to animals or humans, while avoiding unjustified sanitary barriers.

National Advisory Committee on Microbiological Criteria for Foods (NACMCF)
The NACMCF provides impartial, scientific advice to federal food safety agencies.

White paper
A white paper is an authoritative report or guide that often addresses problems and how to solve them. White papers are used to educate readers and help people make decisions. They are used in politics and business. They can also be a government report outlining policy.

World Health Organization (WHO)
The WHO is a specialized agency of the United Nations (UN) that acts as a coordinating authority on international public health. Established on 7 April 1948, and headquartered in Geneva, Switzerland, the agency inherited the mandate and resources of its predecessor, the Health Organization, which had been an agency of the League of Nations.

World Organization for Animal Health (OIÉ)
The Office international des épizooties (OIÉ, French for "International Epizootic Office"), now known as the World Organization for Animal Health (Organisation mondiale de la santé animale in French), is an international intergovernmental organization founded in 1924. In January 2008, the OIÉ had 172 member countries. Its headquarters are in Paris, France.
The OIÉ's claimed missions are:

- to guarantee the transparency of animal disease status world-wide;

- to collect, analyze and disseminate veterinary scientific information;
- to provide expertise and promote international solidarity for the control of animal diseases; and
- to guarantee the sanitary safety of world trade by developing sanitary rules for international trade in animals and animal products.

World Trade Organization (WTO)

The WTO is the only global international organization dealing with the rules of trade between nations. At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. The goal is to help producers of goods and services, exporters, and importers conduct their business.