



Tracing your *food's origin*

by Prof Johann Kirsten, Danie Jordaan and Melissa van der Merwe



One of the latest trends in the market for food products is the desire among consumers to know the origin (and history) of the food product they purchase and to be physically or emotionally connected to the farm and the producer.

This consumer need for origin-based food is affecting the industry in many different ways as food processors and retailers are increasingly labelling their products to communicate the origin of the product.

Quite often regional names are used for identification. In order for the origin and history of a food product to become evident, a transparent supply chain is necessary. However, for a supply chain to be transparent, a fully operational traceability system is mandatory. Traceability is, therefore, a proactive approach to create, maintain, share and assure intrinsic and extrinsic product attributes throughout the chain to ensure a transparent, traceable supply chain that consumers can trust.

In the South African context, a typical example of an origin-based meat product is that of Karoo lamb. In an attempt to protect the origin and integrity of Karoo lamb as an origin-based product, a certification system has been developed to provide assurances in this regard. The development of this system brought about questions regarding the ability of South African abattoirs to guarantee the origin of a meat product through their traceability systems.

During 2012 and 2013 research was conducted by the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria to characterise South African abattoirs' traceability systems. The point of departure for the research was that, ideally, such traceability systems should be able to protect, manage and govern the origin and production attributes of a meat product through the chain.

Can traceability systems guarantee origin?

In characterising traceability systems for sheep meat in South Africa a number of dimensions of traceability were considered. In this regard, traceability can be divided into three elements: level, breadth and depth. The level of a traceability system refers to the way in which a product can be traced back or tracked forward within a supply chain.

Three levels exist: genetic, farm to retail and batch traceability. Genetic traceability refers to taking DNA samples from carcasses to locate all the relevant records of the animal. Farm to retail traceability refers to tracking the identity of all animals from the farm through the processing and distribution channels to a specific meat cut. Batch traceability is the ability to trace live animals from the farm to carcasses at abattoir level without further tracking on the cutting floor.

The breadth of a traceability system refers to the amount of information the traceability system records for each product and the depth of traceability refers to how far back or forward the traceability system is able to trace or track an item.

South African traceability systems

The research team administered questionnaires as the basis of the study and as the primary data collection method. From the 284 sheep slaughtering abattoirs across South Africa, 55 abattoirs were randomly selected. The questionnaire in-

cluded questions relating to the level and type of traceability systems within the abattoirs, possibilities of the traceability system implementation decision, costs and benefits for implementing traceability system and identifying the drivers for the implementation of traceability systems. It is noteworthy that, of the 55 randomly chosen abattoirs, only 39 were still operational and willing to participate in the study.

The majority of the abattoirs in the sample was from the Eastern Cape, Free State and the Northern Cape. The majority of slaughtered sheep originates from these provinces. However,

it is noteworthy that not all sheep are sourced and slaughtered in the same province. Abattoirs disclosed that in times of low supply or during high demand, abattoirs are compelled to travel distances of up to 400 km to source sheep.

During the study, it was found that South African sheep abattoirs are on average 26 years old, with some being operational since 1927. Most abattoirs are characterised by significant capital investments which in turn require high throughputs and slaughtering capacities to maintain their feasibility. The Red Meat Abattoir Association (RMAA)



Figure 1: Sampled abattoirs per province (total 39).

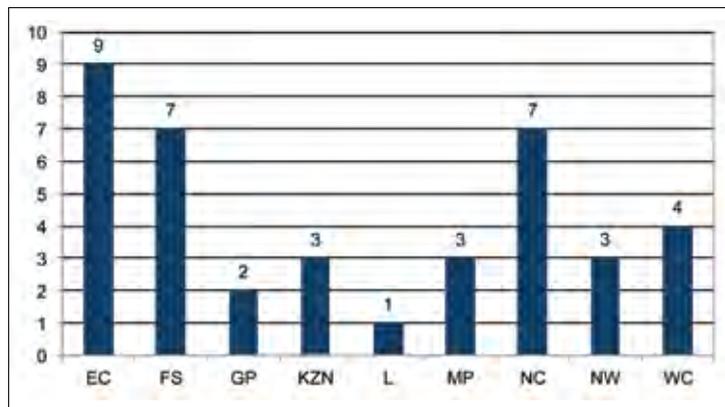
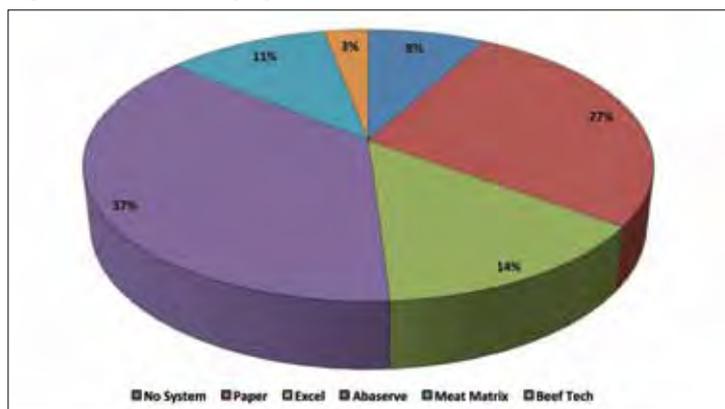


Figure 2: Traceability systems at the abattoir level.



classifies abattoirs into low (slaughtering 12 to 120 sheep per day) and high (slaughtering 120 to 600 or more sheep per day) throughput abattoirs.

The different types of traceability software systems in place at the abattoir level include Abaserve, Meat Matrix, Beef Tech, Excel and paper-based systems, with high-throughput abattoirs more likely to have sophisticated electronic and software systems in place. The distribution of the use of these systems is illustrated in Figure 2.

Traceability systems are expected to protect, manage and govern origin attributes of a meat product. Such systems should capture:

- the name of the owner and the farm or feedlot where the animal was reared
- the number of animals off-loaded, the date of offloading, the breed and gender



Karoo lamb is sought after by South African consumers, and in order to protect the origin and integrity of Karoo lamb as an origin-based product, a certification system has been developed to provide assurances in this regard.

- the date and time of slaughter and the batch number
- the live weight, slaughter weight, moisture content, temperature and pH
- the grade and class of the carcass and
- the basic information (date and customer) on the first point of sale.

A common opinion among the abattoirs is that traceability systems are primarily used for inventory management and not necessarily to guarantee certain quality or origin-based attributes. The abattoirs identified the key drivers for the increasing relevance of traceability systems as retailers, consumers and authorities, which require the ability to trace the origin of the product. This confirms the increasing interest in consumer needs regarding food safety and quality and the authorities' responsibility in terms of public safety. The majority (82%) of abattoirs thinks traceability systems will become an inevitable part of the meat industry's future.

Interestingly, however, according to the respondent abattoirs, given the choice, they would not voluntarily implement traceability systems. Despite consensus that there is, at least, sizeable benefits for all actors in the supply chain they are of the opinion that abattoirs carry all the costs of the im-

plementation of a traceability system while very little of the benefits befall them. Traceability requirements from retailers are, however, the compelling motivation to invest in such systems.

The general feeling among respondent abattoirs was that retailers use the requirement of traceability systems as a market entry evaluation. The study found that 95% of the retail delivering abattoirs have traceability systems in place purely because it was a requirement to gain access to retailers. On their part retailers are forced to buy from trustworthy abattoirs owing to the increasing complexity of the food safety legal environment. Because of this complexity retailers might find it easier to use traceability systems as a mechanism towards safe and reliable meat products and to secure their supply solely from abattoirs with traceability systems.

An interesting dimension of emerging super-market procurement strategies was that retailers in remote areas, where abattoirs are few and far between, do not deal with abattoirs as strictly as their urban counterparts and often buy from the closest abattoir regardless of its traceability status. This might be as a result of the type of market that the specific retailer provides for or because the retailer in the rural area has less bargaining power compared to the retailer in the urban area.



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In light of the research it can be concluded that the South African sheep meat industry and its abattoirs generally have the ability to trace a meat product with their traceability systems. This is especially true for those abattoirs that supply retail outlets.

The research also reveals that the majority of the South African abattoirs have the ability to guarantee the origin of a meat product with specific credence attributes such as the place of origin and the production system. These systems provide a means to provide consumers with information about the production process of a meat product and it further connects the consumer with the region of origin or the livestock producer. These systems therefore improve the reputation of the abattoir and supply chain as well as the meat product supplied by that specific abattoir and supply chain.

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Prof Johann Kirsten, Danie Jordaan and Melissa van der Merwe are from the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria. For more information contact Prof Kirsten per e-mail at Johann.Kirsten@up.ac.za. 