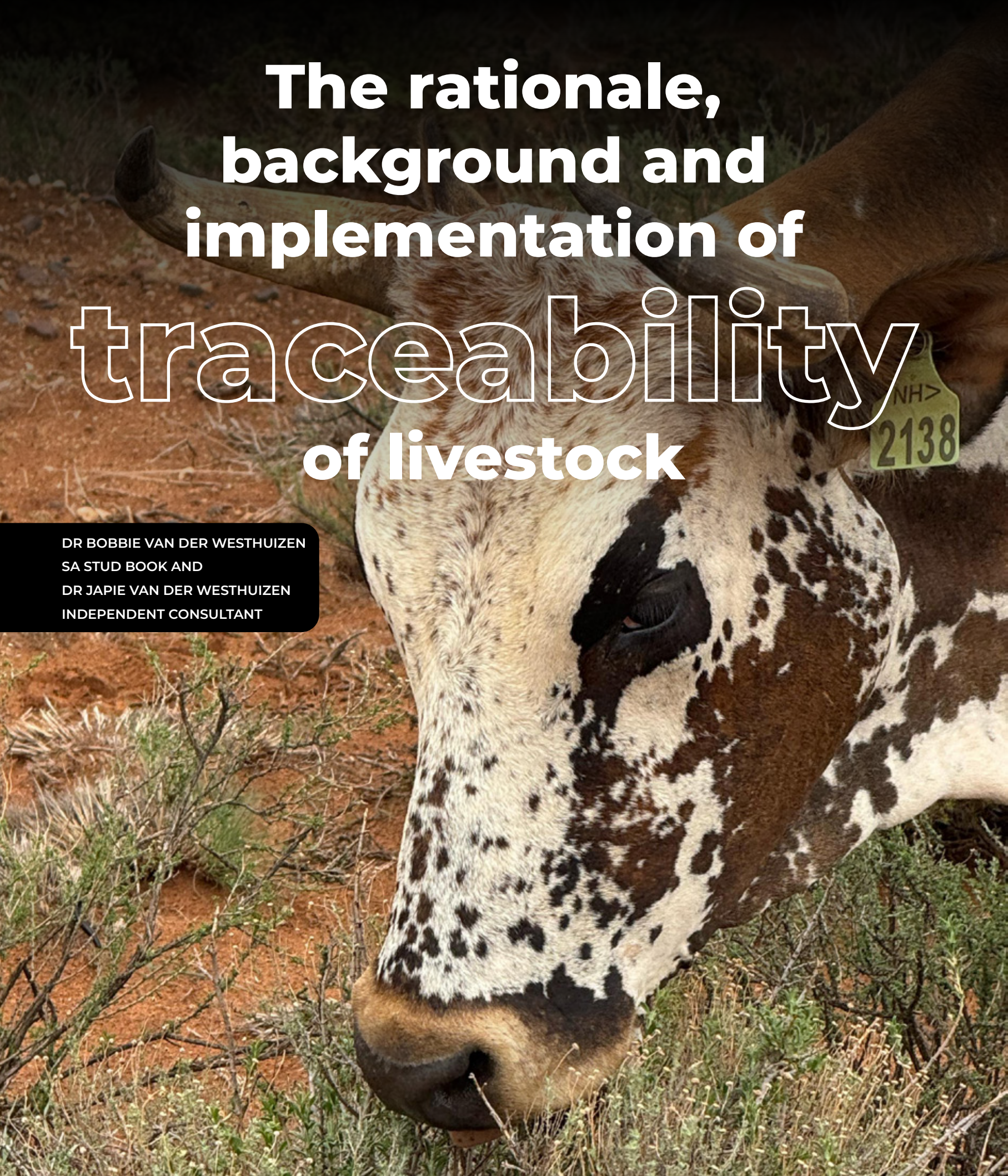


A close-up photograph of a cow's head, showing its face and one of its long, curved horns. The cow has a white coat with large brown patches. A yellow identification tag with the number 2138 and the letters NH is visible on its ear. The background is a dry, reddish-brown landscape with sparse green vegetation.

The rationale, background and implementation of traceability of livestock

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Rationale

The ability to track animals and animal products from farm to fork has come to a critical turning point for South Africa's animal production, especially, as illustrated, during the current foot-and-mouth disease (FMD) outbreaks. Without a sound traceability system, multiple FMD outbreaks disrupted both local and export markets.

An effective national industry-driven traceability system will assist in containing the spread of any health-related outbreak, protect trade relationships, and safeguard the livestock industry's future.

Traceability, within compartments, allows authorities to identify and quarantine infected animals rapidly, preventing further spread to other compartments or regions. Precision tracking of animals ensures a focused disease management program, instead of blanket restrictions, reducing economic losses for producers, auctioneers, feed-lots, abattoirs, packers, retail and restaurants.

A sound traceability system must be effective, practical, implementable and cost-effective. Every role-player in the value chain, from the animal's birth to the retailers and restaurants, must buy into such a system and be actively involved to ensure trusted, reliable data.

Introduction

The requirement to track animals and their products throughout the production chain was initially necessitated by human health concerns caused by consuming livestock products, especially meat. These conditions included bovine spongiform encephalopathy (BSE or so-called, "mad cow disease"), Escherichia

coli contamination, and residues such as antibiotics, from substances administered to production animals. Although the first needs centred on human health, the demands for traceability rapidly increased as consumers sought much more transparency regarding the origins of their food. This need goes beyond health, including factors such as acceptable, humane and environmentally friendly animal husbandry practices, transportation conditions, slaughter methods, and clear and accessible documentation covering all stages within the production chain. This has also led to traceability evolving into, not only a health safeguard but also a marketing tool that provides consumers with confidence in both product safety and ethical standards.

Consequently, it is built on the necessity for reliable, tamperproof and straightforward identification systems for animals, as well as comprehensive records documenting each phase of the production process. Moreover, effective traceability requires linking animals to their derived products, such as ensuring that carcasses and meat cuts, can be traced back to the originating live animal and place of origin.

Brief overview of a traceability system

A traceability system is composed of interconnected compartments such as primary or farm locations, transportation, auction or sale yards, feedlots, abattoirs, packers, retail outlets and even restaurants, linked through an audit-able computer system, and maintained by a series of audits to ensure quality control. Each item transferring from one component or compartment of the system throughout the production chain, to another, must be assigned a unique identification code or number, with every movement into and out of each component being documented using this unique identifier.

Therefore, implementing a traceability program in animal production, will mean that each animal must be identified with a clear and unambiguous permanent identification number. This unique identification

number must be recorded at every stage to verify its passage throughout the animal's life. Trace-back audits should confirm not only the route taken, but also that all conditions at each point in the chain have complied with established standards. For example, an animal may move from its place of birth to an auction, then to a feed-lot, and finally to an abattoir, requiring entry and exit dates at each location to be logged via the animal's identification number. Animal transportation is just as important and necessary as the farm, feedlot or abattoir. In the case of a disease outbreak like FMD, it is important to identify which animals were in contact with the affected animal and most importantly which

compartments (sites) were all exposed to the outbreak.

A country needs to have an animal numbering system to ensure that each animal has a unique identification number and that it is recorded on a computer system integrated with a national system. An ear-tag alone is not a traceability system.

For traceability programs to be comprehensive and all-inclusive, the overarching scheme needs to be overseen by a central authority. Such a body can typically set standards of adherence of individual traceability systems, standards for data exchange, issue or set rules for animal identification numbering and/or premises and other locations involved in the production chain, establishing standards or codes of conduct for every link in the production chain, operating accreditation systems to ensure adherence to acceptable management practices, and executing inspection and/or audit processes to validate system integrity.

The Red Meat Industry Services (RMIS) has taken up this responsibility to create a national data-exchange system for the traceability of livestock in the South African context. The RMIS created the backbone of the system and empowers current and future comprehensive recording systems, which can and are willing to integrate with this system.

SA Stud Book's, ICAR certified, Logix Animal Recording and Improvement system is one of a couple of systems identified by the RMIS to integrate with its system. The Logix system is already a tractability platform, because each animal is identified and belongs to a specific breeder and is located at a specific farm or test facility.



Roles and Responsibilities

Central authority and recording systems

It is expected that each registered traceability service provider record and log every animal movement. This will require recording the animal's ID, locations and dates of movement, within a digital database compatible with the commercial traceability systems and in adherence with the set-up guidelines for data exchange with the centralised database and other service providers.

Livestock owners

To participate, farmers must register their farm location with RMIS. The RMIS funds the cost involved for the farmer to obtain his or her unique Globule Location Number (GLN). GLNs are used to uniquely identify any location, such as a company's headquarters, a specific warehouse, a retail store, a farm or a department within a company. Each GLN is a 13-digit number and is part of the GS1 system, which is a globally recognised standard for supply chain management that enables better tracking and tracing of products throughout the supply chain.

Secondly, the farmer must assign and register all new animals with a unique visible ID and any other identification number, like an electronic or QR-code ID, at one of the accredited recording systems.

The Logix platform uses the ICAR animal ID numbering system, which is also approved for use by the RMIS system. The ICAR ID numbering format is a 19-digital number, consisting of the animal's country of origin, the breed or breed type, the sex and a 12 national unique ID number. In South Africa, for Stud animals as described by the Animal Improvement Act, the unique ID is the



breeder herd designation mark, followed by the year of birth and the sequence number of that specific calf born in that particular year.

For all commercial animals, the same format can be used. In accordance with the Animal Identification Act, each commercial or non-stud farmer must register for a brand mark. This brand mark is unique, and the owner of that animal must use that brand mark for the purposes of proof of ownership of his or her animals. This brand mark, consisting of 3 symbols, can be used in the same uniquely identified ID format as that of a stud breeder, by using the brand mark instead of the herd designation mark, issued as described in the Animal Improvement Act.

Lastly, the farmer must submit each inward and outward movement information of his or her animals to their preferred accredited recording service provider to effectively update the central industry-driven database.

Lifelong animal identification and logging of any transfer of location is at the heart of the system. Prompt recording of transactions enables rapid tracing if disease outbreaks or issues arise.

In certain regions, veterinarians may issue movement permits (especially for quarantined animals), and connecting these permits to national databases adds an extra layer of security.

Traders and transporters

Agents and transporters must use approved service providers to log all animal transfers, ensuring every move is fully traceable. Prior to any movement, all vehicles must be registered.

Auction houses, sale Yards and feedlots

Auction houses, sale yards and feedlots must ensure that all animals accepted are already registered and accessible within the centralised animal movement database. These facilities must also report all animal IDs and the date of movement, in or out of the specific facility.

Abattoirs, meat processors and packers

Beyond the recording of live animal movements, abattoirs, processors, and packers must also use recognised integrated systems that connect meat packages or carcasses back to the originating animal. Techniques such as timestamping and carcass marking allow full trace-back, integrating all steps so that the product histories are always accessible. The correct labelling can be used to trace the contents immediately back to their origin.

Summary

Traceability systems have become vital due to food safety concerns, chemical hazards, and consumer demand for transparency and ethical sourcing. These systems provide precise tracking across the production chain, requiring every participant to meet minimum standards, verified through a credible system and ensuring trustworthy movement data.

A national traceability system can be implemented by two pathways. The first is a mandatory traceability system. Mandatory traceability systems require legislation, legal support and enforcement by law. An alternative approach in keeping market access open, is a voluntary system that is market-driven and relies on internal rules. Non-compliance with these internal rules must lead to a loss of market access. As international trade grows, robust traceability is increasingly crucial for both our South African domestic and export markets.

The time of arguing whether we as a South African Livestock industry need a sound animal tractability system, or whether we must participate, is over. If the livestock industry of South Africa wants to be sustainable and profitable in the coming years, we as an industry have the obligation to take action and make a national centralised livestock traceability system work, especially now that animal health protocols are not enforced, and animal diseases like FMD are out of control.

Traceability is the only way the livestock industry can minimise the financial losses of disease outbreaks by identifying and quarantining only compartments or clusters of infected areas instead of a national blanket ban from international markets.

The aim of a national sound tractability system is not to keep an inventory of how many animals are on a specific farm or facility, but to record every movement of any production animal in the country, to be proactive in the fight against animal diseases like FMD.

For any livestock traceability system to be successful, it must be practically implementable, cost-effective and recognised and supported by the entire value chain, from farm to fork. ■