
Livestock identification and recording: The Namibian experience

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A brief historical account of livestock identification and recording in Namibia is given. A meat quality assurance scheme (FAN Meat) was introduced in the late 1990's which had a traceability component based on cattle brands. It was found that brands cannot be used for traceability and an ear-tagging system has been introduced. A voluntary livestock recording scheme has also been initiated; this will run on the back of the identification and traceability system. It is considered that the additional cost of the traceability system is economically feasible given the total value of Namibia's meat industry.

Key words: South African National Beef Cattle Performance Testing Scheme, traceability, FAN Meat Scheme, Bar-coded ear tags, standards.

The practice of marking livestock in Namibia started in German colonial times (Namibia was a German colony from 1884 to 1915). The German administration initiated a stock brands register and cattle were branded with marks identifying their owners. Following the First World War, German Southwest Africa (as Namibia was then known) came first under South African military administration, and once the territory was given to South African protection under a League of Nations mandate, a new civilian administration was instituted in 1920. Under the civilian administration, an ordinance requiring the branding of white-owned cattle was passed in 1921, followed by an Ordinance for 'native' cattle in 1923. A new Ordinance was passed in 1931 for white-owned commercial cattle and it was some years after Namibia's independence that a unified law for branding all livestock in the country (the Stock Brands Act of 1995) was passed.

On the side of livestock recording, Namibia has a history of attempts at recording the performance of livestock for selection purposes.

The South African National Beef Cattle Performance Testing Scheme was initiated in 1980 and implemented in Namibia, which was at that time administered by South Africa. The objective of the scheme was to attempt to characterise genotypes of breeding stock by measuring weight

Summary

Introduction

gain, feed conversion, fertility etc, and giving farmers yardsticks by which to measure their stock – other than by appearance alone. Farmers participated voluntarily by sending breeding stock to government testing stations for a 90-day testing period during which animals were evaluated. Individual identification of these animals was the key to the system.

A similar performance-testing scheme was designed for on-farm trials; the on-station trials have now been phased out.

During the 1960's, a 'postal recording system' was introduced to which farmers could subscribe. This was designed to measure farmers' financial performance, solvency, returns to investment, etc. A part of this was biomass determination so that returns per kg produced could be determined. There was no direct need for keeping records of individual animals, but obviously farmers who did this could participate more effectively. The system has been modified over the years, but still continues.

The Namibian Stud Book Association runs a complete individual recording system for all registered stud animals in the country, keeping records of each animal's growth performance, reproduction, movements and slaughter. The system is fully computerised and runs on web-based software.

The present situation

The present situation with regard to livestock identification and recording in Namibia arises from two separate needs that were articulated almost at the same time:

- *Identification for traceability*: better identification methods to meet traceability requirements of the EU and certain South African retail and catering chains became a clear need shortly after the beginning of the present decade
- *A new record-keeping system*: commercial farmers began searching for a computer-based system that would help them keep detail records of individuals' performances on a nationwide, standardised basis

The drive for traceability

The need for meat to be traceable back to the animal from which it originated and then back to the various links in the production chain through which the animal passed, was occasioned by various 'food scares.' The BSE scandal probably played the greatest role in triggering the design of traceback systems, but other 'triggers' such as *E. coli* O157:H7, the use of growth stimulants and the fear of other toxic residues in meat also played a key role.

Namibia, being an exporter of quality beef to the European Union (Namibia has a 13 000 mt annual quota in terms of the Cotonou Agreement) was not untouched by the drive for better traceability. In addition, various commercial clients in South Africa were also insisting on product traceability.

Some key role-players in the Namibian meat industry began to realise as early as the mid-1990's that Namibia needed to put in place some kind of quality assurance scheme for its meat industry if it was to continue to access premium markets. The 'farm-to-fork' approach had already been emphasised in Britain with the advent of Farm Assured British Beef and Lamb (FABBL) and it was felt that Namibia should put a similar scheme in place.

After much negotiating between stakeholders and government, the FAN Meat Scheme was codified in a comprehensive manual and approved by the Namibian Cabinet in 1999 with the Meat Board of Namibia mandated to manage the Scheme. Inspection and certification is the responsibility of the Directorate of Veterinary Services of the Ministry of Agriculture, Water and Rural Development.

The FAN Meat Scheme puts in place a set of voluntary standards covering farm management, record-keeping, livestock feeding, animal welfare, animal health, animal movement control, animal identification and animal transport.

The FAN Meat Scheme attempted to put in place a traceability system based on:

1. a computerised farm register
2. a stock brands register (brand codes were coded based on districts, allocated uniquely to individual farmers, and kept on a computerised register, linked to the farms where they were in use)
3. endorsement of brands on movement permits (veterinary movement permits are required for all livestock movements; when a movement took place, the farmer would endorse the brand symbols of the animals being moved on the permit).

The Namibian Stock Brands Act of 1995 made the branding of cattle compulsory; brands normally consisted of 3-character codes where the first character designated the district and the second two identified the farmer. These codes were computer-generated and were stored on a computerised register against the name of the owner of each brand (the farmer).

Under the FAN Meat Scheme, a second register of farms was created, and the register of farmers were linked to the farm register. In other words, the two databases were linked to show the association between the brand owners and the farms on which they farmed. In some cases, two or more farmers might farm on one farm, or one farmer might farm on two or more farms. A query on any given brand code would instantly show the name of the brand owner and the farm(s) on which he/she farmed.

Although the software and the permit system underlying the traceability system were theoretically very good, the system foundered on a single factor: the use of livestock brands. The reasons for this are as follows:

1. The brand identifies the owner, not the animal. For traceability to be meaningful, the individual animal must be identified.

Assuring a better product: enter the FAN Meat Scheme

Traceability falters

2. The brand mark itself was often not readable. This read to confusion when endorsing brand marks on movement permits; this involved a lot of guesswork and the symbol noted on the permit and the (often unreadable) mark on the animal often did not match.

Efforts were made to encourage farmers to brand more clearly, but these were unsuccessful. Even the clearest brand may be unreadable through a winter haircoat. The final straw came during an inspection by the EU Food and Veterinary Office which noted the deficiencies in a traceability system based on branding.

The challenge was thus to find a means of livestock identification that would clearly and unambiguously identify the individual animal.

Stakeholder discussions were intense and lengthy. Identification methods rejected were:

- *Tattoos*: poor readability.
- *Tail tags*: poor readability; non-permanent
- *RFIDs*: both the microchips and the electronic infrastructure they require are too expensive
- *Bar-coded ear tags*: electronic infrastructure expensive, but could be considered as an adjunct to other methods

Visual ear tags were accepted as being the most cost-effective method for use in Namibia; a clear set of characters of appropriate size laser-printed on tags would give good readability (within seconds at a distance of 1-2 metres).

Ear tag standards

A set of standards for cattle identification was agreed on. These standards would include:

1. The means of identification should not damage or contaminate the meat or hide of the identified animal.
2. Once an animal is in a head clamp, identification should take no more than 30 seconds to apply, pose no undue risk to the operator and cause minimal discomfort or danger to the animal.
3. The means of identification used should not cause pain or discomfort to the animal once in place.
4. Identification must be readily readable from a distance of one to two metres.
5. The means of identification used should be of uniform quality and manufacture, and be produced by means that reduce the possibility of forgery or unauthorised duplication.
6. Ordering and distribution of identification devices must be centrally controlled.
7. The means of identification used must be tamper resistant and non-transferrable.
8. The means of identification must be durable and have a high retention percentage.
9. Identification codes shall be in alphanumeric form for ease of recording.

With these standards in mind, a black-on-yellow laser-printed twin (male-female combination) tamper-proof plastic ear tag was agreed upon. They would be printed with a composite code that would contain two parts: one which identifies the birth farm, and one which identifies the animal.

Farmers may tag animals at any point in time, but they must be tagged before leaving their birth farms. Many farmers have undertaken to tag at birth in order to take advantage of a new livestock recording scheme that is under development (see below).

Identification is only one part of a traceability system. A 'paper trail' is required to record the movements of identified animals. Under the new system about to be fully implemented in Namibia, departures of each animal will be recorded at 'exit points' (on farms, at auctions) on an official register. At 'entry points' (farms, auction pens, abattoirs) the tag numbers of arrivals are recorded.

Movements between exit and entry points are further recorded through endorsement of veterinary movement permits.

When such permits are received (at present on a monthly basis) at district state veterinary offices, the identification of individuals will be entered on a computer system. Access will be via internet connection.

Although the system of manual registers has been developed, the computer software (to be integrated into the existing system of farm registers, etc) is still under development.

The system is now implemented on a voluntary basis (several hundred farmers have procured tags) and will compulsory from early next year.

A new regulation has been promulgated under the Stock Brands Act making provision for sheep to be identified with ear tattoos or ear tags bearing the owner's approved brand symbol. This has not yet been enforced. There are doubts about the readability of tattoos in dark-eared sheep.

Namibia's two agricultural unions – the Namibia Agricultural Union (NAU) and the Namibia National Farmers' Union (NNFU) have requested the Meat Board of Namibia to help design and finance a livestock recording system which will be open for use by any farmer who wishes to participate. The system will be based on a computerised database with a web interface, and will make provision for individual performance recording (weight gains, health, movements, slaughter weight and carcase grade, etc). With the advent of an official ear-tagging system and the allocation of individual identification, this recording system can easily "piggy-back" on the official system.

Making traceability work

Small ruminant identification

Livestock recording has a bright future

The Bottom Line

Trying to separate the exact costs of Namibia's beef traceability scheme is difficult due to the fact that its administration and enforcement is so closely entwined with existing elements of the veterinary control system. The farm register system will simply be absorbed into the farm inspections normally carried out by animal health inspectors of the Agriculture Ministry. The movement permit system already exists; instead of writing the stock brands of transported stock on the permits, they will be endorsed with ear tag numbers.

However, there are "new" costs associated with the scheme, and these are given in table 1.

Table 1. "New" costs associated with the scheme.

Item/Description	Cost (US\$)
<i>Initial Investment by Industry</i>	
Software development	114 000
Total	114 000
<i>Recurrent Costs</i>	
Ear tags: 300 000 animals annually at \$0.70/tag	299 000
Administration (salaries)	40 000
Stationery	10 000
Total	349 000

Veterinary Services annual running costs amount to some USD 8 million p.a. This includes all services rendered in the livestock sector.

Total earnings from the meat industry come to over USD 150 million annually.

The cost of running a full traceability system for beef exports is thus a small percentage of total earnings.

Conclusion

The Namibian meat industry, in collaboration with the country's Veterinary Services, has designed a traceability system that is workable and affordable for developing countries. The system is still in its infancy, but there is optimism amongst Namibian farmers and industry leaders that it can be effective.

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