



MAFF BSE information: Cattle tracing system



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November 1998

COMPUTER LINK TO THE CATTLE TRACING SYSTEM

1. We are setting up a computerised cattle tracing system (CTS) with full details of births, movements and slaughter of all cattle. I am writing to tell you about progress. In particular, this letter explains the computer link which you will be able to use if you need to report high volumes of movements.
2. You need to take action **now** if you wish to use this computer link from the start. We have prepared a "Standard Interface Specification" (SIS). If you want to make sure your systems can feed directly into the CTS, you will need to adopt the SIS.

Background

3. The UK has for some time been looking at the possibility of setting up a fully computerised system in Great Britain to record details of cattle movements centrally. In April 1997, the European Union reached agreement on new rules for cattle identification. These rules include a legal requirement for all Member States to have computerised cattle traceability systems fully operational by 31 December 1999. The CTS will begin operating in Great Britain as soon as possible in 1998, well in advance of this EU deadline. It is an integral part of our efforts to lift the beef export ban.
4. The CTS is a computer-based system to register all cattle and their movements. It will hold details of the identity of cattle and of cattle movements from the animal's birth to death, including movements via **markets** and **abattoirs**. The intention is that CTS should hold movement details of all animals receiving passports after CTS goes operational in 1998 (ie cattle born from a date in 1998). The CTS will be linked to the Ministry's database of BSE cases. The organisation which will manage CTS will be the British Cattle Movement Service, to be based at Workington, Cumbria.
5. **Markets will be legally obliged to provide details of movements through their premises of cattle which receive passports from the date the CTS is operational in 1998 (ie cattle born from a date in 1998). These details will need to be passed to the British Cattle Movement Service at the time the movements take place.**
6. Abattoirs will have a similar legal obligation to pass the British Cattle Movement Service details of cattle which they slaughter. Again this will apply to cattle which receive passports from the date the CTS is operational. It will be a year or so after CTS starts up in 1998 before large numbers of such

cattle start to be slaughtered. Thus abattoirs have a little longer than markets to adjust to the new system, but we still recommend that they begin that process of adjustment now.

7. Unless the CTS has all cattle movement details, including through **markets** and **abattoirs**, it will not provide the full record of movements which is required to help lift the beef export ban and more generally, to underpin health controls and assurance schemes.

How movements can be notified

8. There is a choice. There will be newstyle cattle passports for animals born after the CTS becomes operational. These will include 'freepost' postcards for notifying movements. This is likely to be the preferred option for those with only a few movements to report.

9. Large livestock businesses such as **markets** and **abattoirs** are likely to find it much easier to report cattle movements by electronic mail (e-mail). This option will also be available from the start of CTS operations, so avoiding a paperwork burden. Some businesses may want to establish themselves as CTS **agents**, reporting cattle movements on behalf of a number of farmers or other businesses. Such agents may also want to make use of e-mail.

10. If you want to report cattle movements by e-mail you will need to adapt your IT software so that it can communicate with the CTS database. You will need to do this in accordance with a '**Standard Interface Specification**' (SIS). You may well need the assistance of your software supplier.

11. The technical specification for SIS and the Guidelines for SIS Users and Agents are now available and copies are attached for your information. Because of the benefits SIS has to offer, we expect that most markets and abattoirs will wish to report movements electronically.

What are the benefits of using SIS?

12. SIS will have a number of benefits, particularly for those reporting large volumes of movements. SIS users will benefit from:

less time spent on processing cattle movement notifications. Only one e-mail message will be necessary to report movements for many animals.

fewer errors and therefore less likelihood that their staff will have to spend time answering queries from the British Cattle Movement Service.

a more efficient, and quicker method of movement notification for their customers.

13. Larger markets and abattoirs may be able to reduce staff time dealing with movement notifications even further if they invest in bar code scanning equipment to read the bar code details on cattle passports. The use of scanning equipment would require only a minimal amount of manual data needed to be keyed into the system. You may wish to consider this possibility with your IT advisers.

How do I become an SIS user?

14. You should take steps to adapt your software to meet the requirements of the SIS **as soon as possible**. In most cases, you will need to liaise with your software supplier. We would recommend this approach. You will see from the application form that you will need two electronic mail addresses. These can be obtained for a small monthly charge from Internet service providers. Again your software supplier should be able to advise on this point.

15. When you are ready to commence conformance testing you should complete the enclosed registration form and send it to the address stated on the form. Your software supplier may wish to help you with this. The conformance testing allows 35 calendar days for your test, so you should be prepared for your test transmission when you send in your application form.

16. Upon receipt of your application form, MAFF will then forward details of how to undertake the test.

17. It is essential that if you want to e-mail animal movement details to us, you take the necessary steps now particularly if you run a livestock market. There are around 700 markets and abattoirs in Great Britain which are all potential SIS users. There is a great deal of work to be done before CTS goes live in a few months' time.

18. If you do not take the necessary steps, or if you do not do so in time, your business will have to notify us of cattle movements using 'freepost' postcards. This could be much more labour intensive for you.

Further Information

19. For further general information on the CTS you can contact:

Mrs J Bott

CTS Project Management Team

Ministry of Agriculture, Fisheries and Food

Tolworth

Surbiton

Surrey KT6 7NF

Phone: 0181-330-8875

Fax: 0181-330-8873

20. For further information on SIS, you should contact:

Mr P Yarrow

SIS Project Team

Ministry of Agriculture, Fisheries and Food

Epsom Road

Guildford

Surrey

GUI 2LD

Electronic mail to: enquiries@sis.maff.gov.uk

Phone: 01483 403660

Fax: 01483 403487

Yours sincerely

DAVID ROSSINGTON

Head, Animal Health (Disease Control) Division

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Cattle Traceability Scheme

***GUIDELINES FOR STANDARD INTERFACE
SPECIFICATION (SIS) USERS AND AGENTS***

Prepared
by:
AH(DC)E

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Document Approvals

This is a controlled document, both author and approval signatures must be present for a full release. Note that version numbers less than 1.0 refer to draft versions.

Author Signature (Team Leader)

Name of Author Date of Signature

Approver Signature

Name of Approver Date of Signature Signature

Change Control

If you find any errors within, or have any comments on this document, please document and forward to Alison Reeves, MAFF, Room C8, Government Buildings, Hook Rise South, Tolworth, KT6 7NF. Fax number 0181 330 8873.

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<http://www.maff.gov.uk/animalh/bse/public-health/traceability-cts.html>

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Contents Page

1. INTRODUCTION

2. BACKGROUND

3. SIS USERS AND AGENTS

4. ROLE OF SIS USERS AND AGENTS

5. WHO CAN BE A SIS USER OR AGENT?

6. ARE THERE DIFFERENT TYPES OF SIS USERS?

7. HOW TO REGISTER AS AN AGENT

8. RECEIPTS

9. ERRORS

10. COSTS

11. CHARGES

12. AGENTS' RESPONSIBILITIES TO FARMERS

13. RESPONSIBILITIES OF ALL USERS OF SIS

1. Introduction

This document deals with the use of the electronic data transfer facility, known as the Standard Interface Specification (SIS), used for reporting cattle movements to the Cattle Traceability System (CTS).

1.1 These guidelines are intended to serve a number of purposes:

- to explain the difference between SIS users and agents in the Cattle Traceability System(CTS);

- to outline the role of SIS users and agents

to explain how to register to use the electronic data transfer facility for reporting movements data;

to outline the responsibilities of SIS users and agents

to provide advice and recommendations on best practice.

1.2 These guidelines do not replace any statutory obligations contained in EU or UK legislation.

1.3 General queries about the content of this document should be addressed to:

Mrs Julie Bott,

Ministry of Agriculture, Fisheries and Food,

Room C62, Government Buildings,

Hook Rise South,

Tolworth, Surrey

KT6 7NF

(telephone 0181 330 8875).

Once CTS is operational in 1998, the contact address will be the British Cattle Movement Service (BCMS) located in Workington, Cumbria.

Technical enquiries about SIS should be addressed to:

SIS Administration Team,

Ministry of Agriculture, Fisheries and Food,

Information Technology Directorate,

98 Epsom Road,

Guildford, Surrey

GU1 2LD

(telephone 01483 403660)

(fax 01483 403487)

(email address: enquiries@sis.maff.gov.uk)

2. Background

2.1 The Cattle Traceability System is a computerised database to register all cattle and their movements.

<http://www.maff.gov.uk/animalh/bse/public-health/traceability-cts.html>

It builds upon the Cattle Passports system, introduced on 1 July 1996, which records the identification details, date of birth, breed, sex and dam identity of all cattle born in Great Britain as well as details of cattle imported to GB since that date. CTS will record each animal's movements from birth to death, including those via livestock markets and to abattoirs. CTS will apply to all new born and imported cattle after a specified date (when the system becomes operational).

2.2 Movement information will be notified to the database in two ways; electronically and by postcards. It is expected that electronic data transfer will account for the greatest number of movement notifications. However, farmers will be able to choose to use post-paid movement cards if they prefer. These cards will be processed by the British Cattle Movements Service (BCMS), a new public sector organisation.

2.3 The electronic data transfer option will be available primarily for those who are required to notify large numbers of cattle movements to the database, such as livestock markets and abattoirs. Others, such as breed societies, recording organisations, agricultural merchants and veterinarians could also use this method to notify movements on behalf of their members or clients. Anyone who wishes to send in movements information by electronic means will have to use a defined data format known as the Standard Interface Specification (SIS), to transfer the data to the central database. This specification is defined in a separate document, ref. SIS(97)4 version 2.0 which can be obtained from the contact addresses shown in paragraph 1.3.

2.4 For the start-up of CTS, only movements data will be notified via the SIS. There may, in the future, be scope for agents to send in passport application details on behalf of farmers.

2.5 Farmers who have their own computers can also, if they wish, use the SIS to send in movements data. They would have to meet the same terms and conditions as other SIS users and agents. However, SIS is primarily aimed at users and agents who are regularly reporting large numbers of movements. For infrequent users and/or those notifying small numbers of movements we would recommend that they use the services of an agent.

3. SIS Users and Agents

3.1 EU regulation 820/97 (on establishing a system for the identification and registration of bovine animals) requires keepers of cattle to notify movements of their animals to a central computerised database (the CTS). Keepers are defined as:

"any natural or legal person responsible for animals whether on a permanent or on a temporary basis, including during transportation or at a market."

This puts a statutory responsibility on farmers, markets, abattoirs and others who are handling cattle to notify movements to MAFF (transporters are exempt from this requirement). These individuals and organisations, who may be reporting large numbers of movements, can choose to use the SIS as the method of sending data to the CTS. For the purposes of this document, keepers who choose to use the SIS will be called **SIS users**.

3.2 There is another category of organisations who may choose to use the SIS. These are organisations (or individuals) who are not keepers of cattle but who wish to offer a service to keepers to report cattle movements to the CTS. These are known as **agents** as they are acting as a third party on behalf of keepers. There is no legal obligation on agents to report movements. It will be the keeper who is deemed to have committed an offence if a third party agent fails to report a movement on behalf of the keeper.

3.3 Some **SIS users** may also choose to offer a service as an **agent** to other keepers.

3.4 Much of the information in this document will apply equally to SIS users and to agents. Where there are differences, these will be highlighted in the text.

4. Role of SIS USERS AND AGENTS

4.1 Both SIS users and agents will play an important part in capturing cattle movements data for the CTS. The data collected via the SIS will reach the database more quickly via electronic means than that from movement cards through the post. The data is likely to be of greater and more consistent quality as SIS users and agents will be required to perform validation checks before transmission, such as ensuring all relevant data fields are completed. This will assist farmers by reducing their paperwork and speed up the process of updating the database.

4.2 However, the EU regulation on cattle identification makes the **keeper** of animals responsible for reporting movements. An agent cannot be made responsible in place of the keeper. Agents who report movements on behalf of farmers will be assuming a voluntary role; but it is an important role which carries certain responsibilities (although a voluntary role, agents are not prevented from charging farmers for this service).

4.3 The agents' main value for farmers is to make the job of movements notification easier. Agents may, if they choose to do so, offer farmers alternative methods of reporting movements to them, for example telephone input. At the same time, however, the farmer/agent partnership must ensure that between them they have a means of communication that they can refer to when changes, problems or disagreements arise. For example, the farmer may wish to prove that he has submitted his return accurately and on time; the agent may wish to prove that he was following instructions accurately. An agent will have to be responsible to the farmer for inputting the returns to the CTS database promptly. EU legislation currently allows up to 15 days to report movements (within 7 days from 1 January 2000). The UK is seeking EU agreement to allow member states to impose a shorter timescale. It is in the interests of maintaining an accurate and up-to-date system that all movements are notified as quickly as possible.

4.4 It should be noted that an agent is acting for the farmer to send in authorised returns. He is not an agent for the Government to collect returns.

4.5 All SIS users and agents must meet certain conformance standards before they are approved to transfer data electronically to the CTS. Only on satisfactorily achieving these standards will a formal 'live' application number, which identifies the originator of the message, be allocated to a SIS user or agent. Information on conformance tests can be found in document reference SIS(97)4 version 2.0 which can be obtained from the contact addresses shown in paragraph 1.3.

5. Who can be a SIS USER OR AGENT?

5.1 Any cattle keeper can potentially be a SIS user. In addition anyone can potentially be an agent. For example, livestock markets, abattoirs and farmers could apply to become SIS users. Cattle breed societies, recognised recording agencies (e.g. National Milk Records, Scottish National Milk Records), software companies and others could all apply to be agents. Some of these organisations may have a dual role; they may have an obligation to report movements as keepers but may wish to offer a service, as agents, to others. Both SIS users and agents will be required to pass the same conformance tests before being allowed to transfer data to CTS.

5.2 Internet Service providers (ISPs) may provide a data entry service to CTS on the Internet. This will be different from most agents as the ISPs will not input or handle the data themselves but provide a 'carrier' service. However, ISPs will have to register to use SIS and pass conformance tests in the same way as users and agents.

6. Are there different types of SIS USERS?

6.1 The difference between SIS users and agents is explained in section 3. In terms of using the SIS, the same conditions will apply to everyone who sends in data electronically.

7. How to register as an agent

7.1 Potential applicants will be asked to complete a SIS application form. The application form can be obtained from either of the contact addresses shown in paragraph 1.3 of this document. It is also proposed to make the form available for downloading from MAFF's Internet site, MAFFweb, in due course. Upon receipt of the application form, MAFF will provide details of how the applicant should go about submitting a test file to demonstrate conformance to the necessary standards. Applicants should note that there is a limited time (35 calendar days) available to achieve success in the conformance test and that they should read the SIS specification and the application form carefully before sending in their application. The time period starts when MAFF issues details to the applicant of the conformance test and the electronic mail address to which to send transmissions. Applicants will, of course, be able to re-apply should they not meet the deadline.

7.2 The application form asks the applicant to sign a declaration of conformance to MAFF's terms and conditions for usage of the SIS. There will need to be a separate registration for each separate originator of electronic data, i.e. where 2 separate cattle markets are supplied with the same piece of software by the same company, each will need to register.

7.3 The intention is that registrations will be reviewed annually, probably by providing applicants with a copy of their registration details and asking them to confirm the details and whether they wish to renew. This will enable BCMS to keep an up-to-date record of SIS users and agents. Changes to the SIS definitions will be notified to users/agents and, as necessary, new conformance tests arranged.

7.4 There will be no charge for registering to use the SIS.

7.5 Applicants who will be agents will be asked at the registration stage whether they wish their name to appear on a list, compiled by MAFF, which will be made publicly available through MAFF's Internet site or on request from the BCMS.

8. Receipts

8.1 The SIS will generate an electronic receipt which will be sent by electronic mail to notify the originator of a message that it has arrived. If there are any errors in the data format an error message will be sent back to the originator instead. Most validation of the data content will be done later by the cattle traceability database.

8.2 It is in the interest of SIS users and agents to ensure that they receive a receipt notification or an error message for each transmission sent; you will need a second email address to receive these. BCMS are not responsible for data which is not received from the originator. It is a requirement of using SIS that the software you use is able to process receipts and error notifications.

9. ERRORS

9.1 Errors arising from data input to the CTS via SIS will be dealt with initially by staff at the BCMS. Depending on the nature of the error, the BCMS may have to contact SIS users and agents to assist in resolving the problem. In a few cases, errors may be passed to MAFF's Regional Service Centres, Welsh Divisional Offices or Scottish Area Offices for further investigation.

10. Costs

10.1 The standard interface specification document will be made publicly available at no cost to software suppliers, SIS users or agents. SIS users and agents and/or their suppliers must bear any costs which they incur in equipping themselves to use the SIS method, such as writing, amending or updating software; installing, upgrading or replacing hardware including communications equipment; rental of telephone lines and/or subscription to Internet services; and call charges.

11. Charges

11.1 Any fee charged by an agent to farmers to whom they are providing a service is a commercial arrangement between the agent and client.

12. Agents' Responsibilities to Farmers

12.1 Agents will provide an important link between farmers and the CTS. They will be in a position to persuade farmers of the benefits of having an up-to-date traceability system and encourage them to notify cattle movements by electronic means to help achieve this.

12.2 Whilst agents will not have the legal responsibility of notifying cattle movements, they will be expected to meet all reasonable service requests they receive from farmers. It is therefore vital that agents make absolutely clear to their clients the services to be provided and the conditions for providing those services. The following are recommended actions:

Agents should make clear to their clients the scope of the service they are offering. For example, the type of transactions they can undertake (NB. currently only movements data), how quickly the transaction will be made, how the client will be notified that the transaction has taken place, what it will cost.

Agents should make clear to farmers the timescale in which they must receive movements information so that the agent can meet the deadline for reporting movements to the CTS (currently 15 days, then within 7 days from 1/1/2000).

Agents should explain to their clients the method of notification to be used, that is, how the farmer tells the agent about cattle movements (e.g. on paper, by telephone, etc.) and how the agent will notify the CTS database. It is recommended that agents obtain written authorisation from clients to act on their behalf.

Agents should consider drawing up a contract or service agreement with clients. This could be a simple document which covers the above points and also includes how disputes will be handled.

Agents should make clear to farmers whether the service they are providing (i.e. notifying movements data) constitutes part of the normal terms and conditions of business (e.g. a clause in membership terms and conditions, conditions of sale, etc.).

Agents should periodically provide clients with a statement of transactions undertaken on their behalf.

13. Responsibilities OF ALL USERS OF SIS

13.1 MAFF consider it very important that SIS users and agents use the SIS properly, adhere to the specification, send accurate and timely data and do not divulge their SIS user/agent number. It is important that agents take the necessary action to deal with receipt and error notifications. MAFF is very concerned that no viruses are sent to MAFF. **Misuse of the system will lead to instant withdrawal of the SIS facility from a user/agent.**

13.2 These responsibilities apply equally to everyone who is using SIS, including those providing a data entry service to SIS via the Internet.

SIS users and agents must:

undergo satisfactory conformance testing before becoming authorised to use SIS.

only send known data, not inferred data (i.e. do not guess)

only transfer data which conforms to the SIS format

ensure all mandatory data items are completed.

include optional data items where their customer has requested it.

submit transactions to the CTS database promptly, preferably within 2 working days of receipt of movements information.

put in place the necessary measures to ensure the security/integrity of the systems used to access CTS. For example, only accessed by authorised staff, protection against viruses, etc.

be responsible for the safekeeping of the originator id and electronic mail address used for SIS and must not divulge this information to an unauthorised person.

have a designated person available to deal with technical problems/difficulties that occur during or after transmission of the data.

check for receipt and error notifications from the CTS database promptly, preferably the next working day following submission of the electronic file

assist the BCMS, as necessary, in resolving queries arising from the validation of data sent by the agent

have in place contingency arrangements in case of failure/unavailability of their IT system or the SIS. Options for contingency in case of SIS failure are being considered.

notify changes to software/hardware to MAFF in sufficient time to ensure continuing approval.

The following are recommended practice. SIS users/agents should:

provide training for staff in how to use the SIS software. Consideration should be given to training additional staff to cover temporary absences, etc.

maintain backups/copies of transactions sent in to CTS using SIS.

CATTLE TRACEABILITY

STANDARD INTERFACE SPECIFICATION

Enquiries by email to: enquiries@six.maff.gov.uk

DOCUMENT APPROVALS

This is a controlled document, both author and approval signatures must be present for a full release.
Note that version numbers less than 1.1 refer to draft versions.

Author Signature

Name of Author	Date of Signature	Signature

Approver Signature

Name of Approver	Date of Signature	Signature

Change Control

If you find any errors within, or have any comments on this document, please document and forward to Alison Reeves, MAFF, Room C8, Government Buildings, Hook Rise South, Tolworth, KT6 7NF. Fax number 0181 330 8873.

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1. BACKGROUND**1.1 Cattle Traceability****1.2 Industry Response****1.3 MAFF Approach 2****2. STANDARD INTERFACE SPECIFICATION****2.1 Implementation**

2.2 Originator Registration**2.3 Conformance Testing****2.4 De-registration from the SIS****2.5 Version Control 5****2.6 Electronic Messaging 5****3. RECORD DEFINITION 6****3.1 Movement Data Items Required 6****3.2 File Format 6****4. TROUBLESHOOTING****4.1 No acknowledgement received from MAFF****4.2 Non receipt by MAFF****4.3 Incomplete data received by MAFF****4.4 Errors in the transmitted data 11****4.5 Retransmission of data 12****ANNEX A SIS FILE FORMAT 13****ANNEX B SIS SAMPLE FILE 15****ANNEX C SIS SAMPLE RECEIPT 17****ANNEX D SIS SAMPLE ERROR REPORT 18****BACKGROUND****Cattle Traceability**

A GB Cattle Passports scheme was introduced on 1 July 1996 as one of the preconditions of the Florence agreement to get the ban on UK beef lifted. A feasibility study report was produced in September 1996 that made recommendations for the development of the Cattle Traceability System (CTS), including the proposal for a standard interface. In December 1996 the UK decided to create a computerised CTS to further that aim. The feasibility study had recommended that livestock markets, abattoirs and other businesses be able to report their (large) volumes of movements to the CTS by electronic data transfer by means of a 'Standard Interface Specification' (SIS) established by Government. The CTS database is an expansion of the existing Cattle Passports (CPS) database with movements and additional data on farms and animals being added to the existing birth

and death processes etc. The new CTS database is to be administered by a new organisation called the British Cattle Movement Service (BCMS).

The CTS is capable of accepting data electronically from a variety of sources:

- livestock markets and abattoirs;
- directly from farmers;
- via a third party service provider.

All data is transmitted through a standard interface.

Industry Response

A consultation exercise commenced in December 1996 and reaction indicated that the industry was in favour of the electronic transfer of movement data to the CTS, as opposed to a manual system, e.g. using pre-paid postcards to report movements. Many respondents noted (and MAFF agreed) the benefit of agents submitting movement details on behalf of others. The industry also noted the potential for submitting cattle passport applications electronically but this item does not form part of this specification.

MAFF Approach

Following consultation with industry, MAFF has adopted an email based solution for the development of the SIS to allow electronic transfer of information to the CTS. This solution allows either X.400 or Internet (SMTP) as the underlying protocol.

The batch transmission of data is achieved using client software currently in existence and already identified; a record for a single animal, or a small group of animals, may also be transmitted using world-wide web (WWW) technology to send SMTP email.

It is recognised that the principle of transmitting data to MAFF using a standard interface may be used in the future for other applications. The possibility of using this approach for cattle passport applications has already been mentioned in para 1.2.1 and, as the industry becomes more familiar with the procedures, other applications may be developed along similar lines.

STANDARD INTERFACE SPECIFICATION

Implementation

MAFF have implemented a Standard Interface Specification to enable electronic transmission of cattle movements data into MAFF's central Cattle Traceability System.

Large volumes of data from organisations such as livestock markets and abattoirs will be sent using email (either SMTP or X.400), whereas individual cattle movement records may be submitted using

email via the world-wide web.

Software suppliers to these organisations must therefore ensure that their software is capable of transmitting data via email. This will enable their customers to gain the full benefit of being able to transmit cattle movements data electronically rather than *via* another route (e.g. using pre-paid postcards).

As has previously been stated MAFF is able to receive either SMTP (Internet) email or X.400 email, although it is assumed that the majority of email will be SMTP.

Originator Registration

In order to be able to use the SIS for electronic transmission of data, potential originators will need to register themselves with MAFF.

Having contacted MAFF, potential originators will receive an information pack containing (amongst other things) this document, an SIS application form and the terms and conditions for SIS originators. Upon approval of their application, potential originators will receive details of conformance testing including a 7 character numeric identifier and an email address to be used for conformance testing (see section 2.3 below).

When the applicant has satisfied the conformance criteria laid down by MAFF, they will be issued with the "live" SIS email address for subsequent transmission of cattle movement data when the CTS is introduced.

Originators are simply that - the source of the data transmitted to the SIS. They are not necessarily the owners of the data, indeed it is accepted that some originators will offer a service whereby they will act as agents to transmit details of cattle movements on the behalf of others.

It should be stressed, however, that it is the responsibility of the originator of transmissions to the CTS to ensure where possible that the statutory requirements of the CTS are met, movements should ideally be reported within one day of receipt of the data and should contain (to the best of the originator's knowledge) accurate information.

Originators will need to re-register annually to continue using the SIS for transmission of cattle movement data.

Should an originator consistently fail to meet the terms and conditions of use of the SIS, their transmissions will not be accepted by the SIS until they can satisfy MAFF that their problems have been resolved.

Conformance Testing

Part of the procedure for registration to the SIS is that applicants need to satisfy a series of conformance criteria defined by MAFF.

These criteria are designed to ensure that data transmitted to the SIS is of the correct format, using the correct version of the SIS and using a recognised and approved transmission technology.

This document provides sufficient information on the SIS file format (see Section 3 below) for applicants to be able to satisfy the conformance criteria. However, should an applicant fail at the first attempt, they will be allowed to resubmit data following discussions with MAFF as to the reason(s) they have failed.

Continued failure after a number of attempts will result in the applicant having to re-apply at a later date.

De-registration from the SIS

Should an originator wish to cease transmitting data *via* the SIS, they will need to inform MAFF. That originator will then be de-registered from the system and no further transmissions will be accepted.

MAFF will routinely check logs of transmissions received to confirm that registered users are in fact submitting data *via* the SIS and that the data being transmitted is of an acceptable quality. If this is not the case, the user will be contacted and possibly de-registered from the system.

Should an originator subsequently wish to re-register, they will need to follow the registration procedures laid down in para 2.2 above.

Version Control

Future changes in the content and format of the file to be transmitted *via* the SIS will involve the publication of a new version. Originators will need to satisfy the new conformance criteria in order to continue using the SIS.

MAFF will retain details of the version of the SIS for which a particular agent has satisfied the conformance criteria.

In order to allow agents time to make modifications, MAFF will allow either new or old formats to be transmitted. It should be stressed however, that this is for a **limited time only**. This overlap period will be dependent on the nature of the changes and the timescale for this overlap period will be agreed with originators on publication of the new version of the SIS.

In the event of an originator changing their software and/or hardware (e.g. software upgrades or change of supplier), conformance testing will need to be repeated to satisfy MAFF that the new software/hardware conforms with the SIS. It is the responsibility of the originator to inform MAFF of any such changes.

Electronic Messaging

An electronic message will be generated for all files received. This will take the form of either a receipt (see Annex C) or an error report (see Annex D). The originator must therefore ensure that procedures

are in place to check for these messages.

There are other situations whereby electronic messages will be sent to the originator. For example, if a message is unable to be delivered to MAFF for whatever reason, a non-delivery message may be generated and sent to the agent by third-party email service providers.

MAFF routinely checks all mail for viruses, and, in the unfortunate event of a virus being detected, the message will be rejected by MAFF and the originator will be informed. Should further data files be affected by viruses this will lead to the automatic de-registration of that originator.

In all these cases the originator must be aware and should have procedures in place to check for such messages.

RECORD DEFINITION

Movement Data Items Required

The essential movement data items required are:

- a) Animal Identifier;
- b) Location Identifier;
- c) Date;
- d) Type of Movement.

For practical reasons, and also for a certain amount of 'future-proofing', these basic data items are expanded in some cases, and additional, optional data items are allowed.

A fuller explanation of these movement data items, together with a complete description of the format of the data file to be transmitted to the SIS are found in the following section.

File Format

The file to be transmitted will be a flat ASCII file comprised of a file header plus a body of text detailing *one or more* animal movements. The file is defined in Backus-Naur Format in Annex A and a sample file is given in Annex B together with a full description.

For the purposes of the SIS the following definitions apply:

- a) **CR** - An ASCII carriage return character. (i.e. Octal 15/Decimal 13);
- b) **LF** - An ASCII linefeed character. (i.e. Octal 12/Decimal 10);
- c) **CRLF** - A combination of CR and LF;
- d) **SPACE** - An ASCII space character. (i.e. Octal 40/Decimal 32);

e) **CHAR** - any printable ASCII character except "|". (i.e. Octal 40-173,175,176/Decimal 32-123,125,126);

f) **ALPHA** - any ASCII alphabetic character. (i.e. Octal 101-132,141-172/Decimal 65-90,97-122);

g) **DIGIT** - any ASCII numeric character. (i.e. Octal 60-71/Decimal 48-57).

The file header is comprised of the following data items separated by a vertical bar ("|"). The header is terminated by an optional carriage return followed by a linefeed (*[CR/LF]*):

a) **Application Identifier** - Mandatory. This field is used internally to identify the application using the SIS. It is a constant value and for this implementation of the SIS will be set to CTSSIS.

b) **Version Number** - Mandatory. This field contains the version number of the SIS format being used. It is a constant value and for this implementation of the SIS will be set to 2.00.

c) **Originator ID** - Mandatory. This field is used to identify the originator (or sender) of the file. It is issued by MAFF as part of the SIS registration process and must be 7 DIGITs.

d) **Number of Movement Records** - Mandatory. This field contains the number of cattle movement records present in the file. It must be at least 1 but no more than 4 DIGITs (zero filling is not required).

e) **Timestamp** - Mandatory. This field contains a unique value to identify the date and time that the file was sent to MAFF. The format of this field is 14 DIGITs comprised of a 4 DIGIT YEAR (must be either the current or previous year), a 2 DIGIT MONTH (with a range of 01 to 12), a 2 DIGIT DAY (with a range of 01 to 31), a 2 DIGIT HOUR (with a range of 00 to 23), a 2 DIGIT MINUTE (with a range of 00 to 59) and a 2 DIGIT SECOND (with a range of 00 to 59).

The body of the file contains a number of cattle movement records. Each record contains the following data items separated by a vertical bar ("|"), and is terminated by an optional carriage return followed by a linefeed (*[CR/LF]*):

a) **Eartag Number** - Mandatory. This is the official European eartag number. The official format which eartag manufacturers have to follow for the actual tag is set out in legislation. However, for this SIS, there are 7 possible formats of an eartag number dependent on whether it is a GB eartag, a Northern Ireland eartag, or a non-UK eartag. Animals that originated from outside the European Community will have European tags fitted before they are registered on to the CTS.

i. GB eartags are either "UK" followed by a single SPACE followed by 1 ALPHA followed by 4 DIGITs followed by a single SPACE followed by 5 DIGITs;

ii. or "UK" followed by 2 ALPHAs followed by 4 DIGITs followed by a single SPACE followed by 5 DIGITs;

iii. Northern Ireland eartags can be "UK" followed by 3 SPACES followed by 3 DIGITs followed by a single SPACE followed by at least 1 but no more than 4 DIGITs followed by 1 ALPHA;

iv. or "UK" followed by 2 SPACES followed by 4 DIGITs followed by a single SPACE followed by at least 1 but no more than 4 DIGITs followed by 1 ALPHA;

v. or "UK" followed by a single SPACE followed by 5 DIGITs followed by a single SPACE followed by at least 1 but no more than 4 DIGITs followed by 1 ALPHA;

vi. or "UK" followed by 6 DIGITs followed by a single SPACE followed by at least 1 but no more than 4 DIGITs followed by 1 ALPHA;

vii. non-UK eartags consist of a COUNTRY code followed by at least 1 but no more than 12 CHARs. The only permissible values for COUNTRY code are:

"AT" (Austria); "FR" (France);

"BE" (Belgium); "IE" (Ireland);

"DE" (Germany); "IT" (Italy);

"DK" (Denmark); "LU" (Luxembourg);

"EL" (Greece); "NL" (Netherlands);

"ES" (Spain); "PT" (Portugal);

"FI" (Finland); "SE" (Sweden).

Examples of valid formats for SIS include:

UK[G7163[00314

UKKG1207[09352

UK[3458[45V

EL[GJVY[9348 ("["=SPACE)

b) **Electronic ID - Optional**. This field is available for keepers of cattle to inform MAFF of the electronic eartag number of an animal (if applicable). The format of this field is 15 DIGITs.

c) **Reference Number** - Optional. This field is included to make it easier to trace the origin of a movement record should a query occur with its content. An example of the data in this field could be the unique reference number given to an animal by a livestock market, abattoir etc. (e.g. lot number). The format for this field is at least 1 but no more than 10 CHARs.

d) **Location ID** - Mandatory. This field is used to identify the location to which this movement relates. There are two possible formats for this field dependent on whether the identifier is a CPH number or a MHS license number:

i. A CPH number is comprised of 2 DIGITs followed by "/" followed by 3 DIGITs followed by "/" followed by 4 DIGITs;

ii. A MHS license number is comprised of 4 DIGITs.

e) **Herd Suffix** - Optional. This field forms part of the CPHH (County Parish Holding Herd) number and is available for the recording of additional information relating to separate herds kept at the same holding. Large farms may have a number of cattle herds (e.g. dairy and beef) which can be identified using this field. The format for this field is 2 DIGITs.

f) **Movement Type** - Mandatory. This field is used to identify the type of movement being reported. The only permissible values for this field are:

"2" (normal on - i.e. a simple movement onto a location);

"3" (normal off - i.e. a simple movement off a location);

"4" (temporary export - i.e. where an animal is leaving UK but it is known that it will return);

"5" (re-import - i.e. where an animal has already been imported but is re-entering UK after either a temporary or permanent export).

NB. It should be noted that the vast majority of movements will be normal on/normal off, (i.e. types "2" and "3").

g) **Movement Date** - Mandatory. This field contains the date on which the movement occurred. The format for this field is DAY followed by "/" followed by MONTH followed by "/" followed by YEAR. The format for DAY is 2 DIGITs with a range of 01 to 31; the format for MONTH is 2 DIGITs with a range of 01 to 12; the format for YEAR is 4 DIGITs and must be either the current or previous year (e.g. 1997 or 1996).

NB. Dates entered must be 'real dates' (e.g. 30/02/1997 or 31/09/1996 are not valid).

TROUBLESHOOTING

No response received from MAFF

MAFF will undertake to respond with an electronic message to the originator of the file.

In the event of a message not being received within 3 working days, the originator of the file should contact the BCMS giving details of their unique originator ID, the date and time the file was sent and how many movement records were present in the file.

The BCMS will then determine whether the file was received by MAFF and if not, request that the file be retransmitted.

Non receipt by MAFF

MAFF will routinely check logs of transmissions received and will be able to identify patterns of use from individual originators.

If this pattern is broken e.g. if an originator who "normally" transmits a file every working day does not transmit a file for a week, the BCMS will query this with the originator.

If necessary, any missing files will need to be retransmitted.

Incomplete data received by MAFF

The **Number of Movement Records** field will be used to confirm that the file contains the correct number of movement records.

If this is not the case, the file will be rejected by the SIS and will need to be retransmitted.

Errors in the transmitted data

The SIS will validate the format of the data transmitted and reject any files which do not conform to the format shown in Annex A. These files will need to be retransmitted.

The CTS database will establish the validity of the data transmitted through the SIS. Errors will be notified to the originator by the BCMS. In this case it may be necessary for all or part of the file to be retransmitted. (See para 4.5 below).

Retransmission of data

It may be necessary to retransmit either all or part of a file following a query or data corruption etc.

It is the responsibility of the originator of the file to ensure that the data is stored in such a way as to make retransmission possible.

ANNEX A SIS FILE FORMAT

(in Backus-Naur Format)

File = File_Header

[CR]LF

1*Movement_Record

File_Header = Application_Identifier ""

Version_Number ""

Originator_ID ""

No_Movement_Records ""

Timestamp

[CR]LF

Movement_Record = Eartag_Number ""

[Electronic_ID] ""

[Reference_Number] ""

Location_ID ""

[Herd_Suffix] ""

Movement_Type ""

Movement_Date

[CR]LF

Application_Identifier = "CTSSIS"

Version_Number = "2.00"

Originator_ID = 7DIGIT

No_Movement_Records = 1*4DIGIT

Timestamp = YEAR MONTH DAY HOUR MINUTE SECOND

Eartag_Number = "UK" SPACE 1ALPHA 4DIGIT SPACE 5DIGIT /

"UK" 2ALPHA 4DIGIT SPACE 5DIGIT /

"UK" 3SPACE 3DIGIT SPACE 1*4DIGIT 1ALPHA /

"UK" 2SPACE 4DIGIT SPACE 1*4DIGIT 1ALPHA /

"UK" SPACE 5DIGIT SPACE 1*4DIGIT 1ALPHA /

"UK" 6DIGIT SPACE 1*4DIGIT 1ALPHA /

COUNTRY 1*12CHAR

Electronic_ID = 15DIGIT

Reference_Number = 1*10CHAR

Location_ID = 2DIGIT "/" 3DIGIT "/" 4DIGIT /

4DIGIT

Herd_Suffix = 2DIGIT

Movement_Type = "2" / "3" / "4" / "5"

Movement_Date = DAY "/" MONTH "/" YEAR

COUNTRY = "AT" / "BE" / "DE" / "DK" / "EL" / "ES" / "FI" /

"FR" / "IE" / "IT" / "LU" / "NL" / "PT" / "SE"

YEAR = 4DIGIT

MONTH = 2DIGIT

DAY = 2DIGIT

HOUR = 2DIGIT

MINUTE = 2DIGIT

SECOND = 2DIGIT

ANNEX B SIS SAMPLE FILE

The example SIS file overleaf has been generated by an originator whose unique ID is 9834765. The file contains 11 cattle movement records and was sent at 18:17:28 on 16th May 1997. The movement records relate to the following **actual** animal movements:-

An animal whose eartag number is UK U0347 90837 has been brought to market in Truro and sold. The vendor's farm has a CPH number of 07/042/7645 and the market also has a CPH number of 07/219/0836. The market was held on 14th May 1997. The market has a lot number relating to this animal of KU96575.

A second animal was brought to the same market late on the next day by a farmer whose farm's CPH number is 07/030/0346. It was not sold until the following day's trading. The animal's eartag number was UKMH7636 98734. The lot number for this animal is KJ92363.

A third farmer whose farm's CPH number is 07/193/8758 brought an animal to Truro market on 16th May 1997 which was sold. This farmer has two herds at the same holding and the herd suffix for this herd is 02. The animal's eartag number is UKTU4579 14987 (this corresponds to an electronic eartag number of 739746927647836). The market again has a lot number - BY 23987.

The same farmer sold a second animal from his other herd (01) four days previously directly to an abattoir. This abattoir has a MHS license number of 4884. The animal in question has an eartag number of UKTU1238 37826 (this corresponds to an electronic eartag number of 234090572727190).

-----START OF FILE-----

CTSSIS|2.00|9834765|11|19970516181728

UK U0347 90837|KU96575|07/042/7645|3|14/05/1997

UK U0347 90837|KU96575|07/219/0836|2|14/05/1997

UK U0347 90837|KU96575|07/219/0836|3|14/05/1997

UKMH7636 98734|KJ92363|07/030/0346|3|15/05/1997

UKMH7636 98734|KJ92363|07/219/0836|2|15/05/1997

UKMH7636 98734|KJ92363|07/219/0836|3|16/05/1997

UKTU4579 14987|739746927647836|BY23987|07/193/8758|02|3|16/05/1997

UKTU4579 14987|739746927647836|BY23987|07/219/0836|2|16/05/1997

UKTU4579 14987|739746927647836|BY23987|07/219/0836|3|16/05/1997

UKTU1238 37826|234090572727190|07/193/8758|01|3|12/05/1997

UKTU1238 37826|234090572727190|4884|2|12/05/1997

-----END OF FILE-----

ANNEX C SIS SAMPLE RECEIPT

The following is an example of the receipt file which would be sent in response to the sample file shown in Annex B. It is an acknowledgement that the file conforms to the SIS format and has been passed on to the CTS database. It does **not** acknowledge that the **data** within the file is valid.

The email subject for this message is: - **SIS Transmission Receipt**

-----START OF FILE-----

CTSSIS - ACKNOWLEDGEMENT OF RECEIPT OF TRANSMISSION

File sent at: 19:58 on 16/05/1997

<http://www.maff.gov.uk/animalh/bse/public-health/traceability-cts.html>

File received at: 20:17 on 16/05/1997

Originator ID: 9834765

Number of records: 11

-----END OF FILE-----

ANNEX D SIS SAMPLE ERROR REPORT

The following is an example of an error report file which would be sent in response to a file which does not conform to the format specified in Annex A.

The email subject for this message is: - **SIS Transmission Error Report**

-----START OF FILE-----

CTSSIS - TRANSMISSION ERROR REPORT

File sent at: 22:43 on 17/10/1997

File received at: 00:19 on 18/10/1997

Originator ID: 1001325

Number of records: 647

The following errors were found :-

Record Error

HEADER Version_Number [2.0] invalid

0018 Eartag_Number [UK Z64092 43BH7] - invalid format

0062 Location_ID missing

0067 Electronic_ID [308456783zz456] - invalid format

0085 Movement_Date [29/02/1997] invalid

-----END OF FILE-----

[\[Back to animal ID and traceability\]](#)

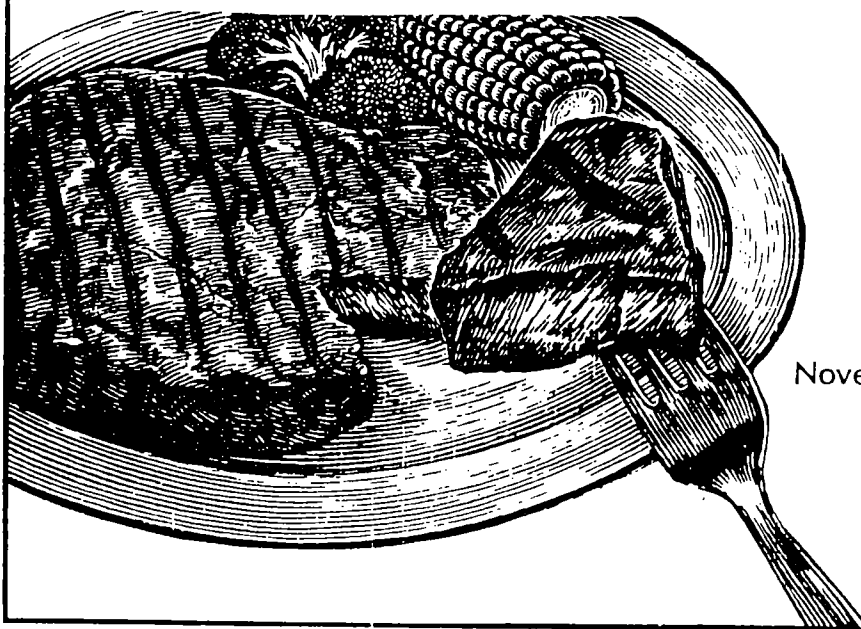
 [\[Public health\]](#) [\[Eradication\]](#) [\[Support to beef industry\]](#) [\[European issues\]](#) [\[Science of BSE\]](#)

A Presentation by:
Coleman Environmental Systems, Inc.
and National Band and Tag Co.

Production Tracking

Farm to Table

A Strategic Approach to Animal
and Food Identification



November 18, 1993

Table of Contents

Introduction	1
Statement of Need	1
Statement of Purpose	1
State of Technology.....	3
Developing for the Future	3
Current Industry Applications	3
Animal Identification Methods	4
Requirements of a System	5
Farm to Table	5
Objections	5
Unified Identification Number.....	7
Considerations	7
Advantages	7
Adaptability.....	8
Specifications.....	8
Benefits to Government.....	10
Animal ID / Trace Back.....	10
Cooperation / Communication	10
Pathogen Tracking.....	11
Hazard Analysis and Critical Control Points (HACCP)	11
Imports	12
Inspection	12
Standardization	13
Certification	13
Modernization.....	13

Benefits to Industry	14
Farmers / Producers	14
Feed Yards	14
Slaughter Plants.....	15
Fabrication Plants.....	15
Distributors	16
Retailers / Food Service.....	16
Benefits to Consumers.....	17
Further Applications of the System	18
Organic Products.....	18
Other Products.....	18
Summary.....	19

Introduction

Statement of Need

For the past 45 years, the agricultural industry has met the challenge of producing low cost food efficiently. However, in obtaining this goal, certain environmental and safety concerns were overlooked. Whether real or perceived, the American people have lost confidence in the food industry's ability to address these concerns.

Recent media coverage of the E. Coli contamination in the Northwest has caused some consumers to question the safety of the food supply. Most consumers have little understanding of the complexity of the food industry. However, consumer expectation is for that of safe food. It is the food industry's challenge to meet those expectations.

Some concerns are even voiced around the world as to the safety of our food products. Products produced in this country should not be hindered from worldwide markets due to invalid safety or quality concerns.

Recent hearings held by the USDA have resulted in overwhelming testimony demanding a tracking system that can provide trace back capabilities. In conjunction with this, Secretary of Agriculture Espy has pledged to introduce a bill empowering the USDA to adopt a system to trace tainted meat back to its source.

The need for the food industry to produce top quality food that can be trusted is very great indeed. It is imperative to have audit trails with trace back capability to reestablish consumer confidence.

Statement of Purpose

It is important that agencies of Government realize there is a system available that will enable them to address these issues. One such product is Coleman's patent pending tracking system Origen™. Origen™ was first designed to verify Coleman Natural Meats' specific product claims. The Origen™ system utilizes modern techniques of electronic identification and computerized data collection. This system is capable of tracking not only food products, but other products as well. The Origen™ system of tracking provides Coleman Natural Meats with the ability to establish consumer confidence by verifying labeling claims while providing trace back capabilities for its products.

Through the use of a single identification number that is applied to an animal the Origen™ system is able to maintain a reference to the original animal's identification number all the way through to the finished product. As a result, the same number that is displayed on the animal's ear tag is also found on the resulting pieces of meat produced from that animal.

The Coleman Origen™ system is designed to be adaptable to future technologies. It is also designed to be used as an information and food safety resource. In fact, most producers could adopt such a system of product identification as an improvement to their current inventory control systems.

The Origen™ system is also able to coordinate information on live animals and food products. It transcends identification barriers between ranches, feed yards, slaughter plants, processing plants and retail customers. Individual pathogen tests, HACCP, and other procedures are coordinated with the identification number that is attached to each animal. Labeling claims are verified through the resulting information record that Origen™ maintains.

Government agencies that are searching for improved regulatory procedures should adopt a similar unified identification system. A unified identification system has the distinct advantage of being able not only to identify products from "Farm to Table", but it also allows for the coordination of information among agencies.

State of Technology

Developing for the Future

One universal constant is that of change. Changes in technology have produced the ability to record, store and produce information as never before. With these changes has come the ability to identify and track food products. Such tracking capabilities present the possibility of achieving greater control over food safety and production efficiency.

The ability to capture and produce valuable information is the basis of this presentation. Any system created to track food production must be designed with change in mind. The goal is to develop a system that would not be made obsolete within a matter of years. The transition from current technologies to future technologies must be anticipated.

Current Industry Applications

The need for timely information in our society is becoming obvious. For example, it was once considered impossible and impractical to track a package anywhere in the world, at any time, at a moments notice. In fact, some might even question why anyone would even want this ability. And yet, a major source of competition among today's package and letter handling companies is the ability to instantaneously track a packages any where in the world.

Businesses that were once dependent upon the postal service for mail delivery soon found it necessary to rely upon overnight delivery services. Now even this service is not considered fast enough, and as a result, no office today is complete without a fax machine.

In a desire to be able to trace and identify objects a system of identification was developed utilizing a bar-code system. This technology now infiltrates our daily lives. The New York City Marathon employs bar-codes to track runners in its annual race. The health care industry employs bar-codes to track blood donations. Even the components used in automobiles are identified with bar-codes. Although originally designed to track railroad cars, this technology is now used to track almost anything.

A system for tracking food products in a similar fashion may appear ambitious today, but the technology and the ability currently exist. With the aid of modern technology, the ability to identify and trace food products can increase food safety and improve production efficiencies.

Animal Identification Methods

Many forms of animal identification currently exist from hot iron branding to electronic implants. Generally speaking, each one has been designed to aid a particular segment of the production process with specific information. Most of these forms of identification were never intended to possess the capability of providing an information resource among production segments. The result has been a duplication in time and effort in re-identifying animals and re-acquiring information that may have previously been obtained by another segment. A single form of identification that is capable of transferring information from one segment to another would be of great value to business and government.



One such form of identification is through the use of an ear tag imprinted with an electronically readable bar-code. This bar-code is capable of identifying the animal that it is attached to. Information relative to this ID can be collected and retrieved based upon a reference to this identification number. Since most food production animals are currently marked for identification, in one form or another, this approach would not result in a significant change in the industry.

In the future electronically implanted devices may be approved for use in animal identification. Currently, the cost for such devices makes them impractical for commercial use. However, once this identification technology is approved and its cost effectiveness is demonstrated it could be used.

Requirements of a System

Farm to Table

The information requirements for tracking an animal 60 days prior to slaughter are quite different from those tracing a product from "Farm to Table". In the case of meat, tracking an animal 60 days prior to slaughter simply requires an identification number be assigned to each animal, which references the premise. With the addition of a lot number, more information may be added to the identification system. However, this form of identification is still unable to reference the animal's point of origin.

If this same identification device were placed on animals at their place of birth, no additional costs would be incurred. The information record would begin at birth and provide valuable information from there forward. The only additional resource required is the ability to transfer the animal's identification record.

By extending animal identification back to the point of origin an animal can be traced from birth through to slaughter. However, the requirements for a system of tracking from "Farm to Table" insists that the identification process proceed forward with the animal after slaughter and remain through all facets of production and distribution.

The consideration for a "Farm to Table" identification system demands not only a reference to the point of origin, but also identification through to the finished product. The only reasonable way to achieve such a system is to identify each animal and track its identification through to the finished product. The Coleman Origen™ system is presently in use and is capable of identifying products from "Farm to Table".

Objections

The thought of attempting to identify every meat animal in this country may cause some heads to spin. Trying to take into account all of the meat industry's identification needs could potentially become a nightmare in the minds of some people. However, with the aid of computers and electronic identification such a system becomes manageable.

Some people would argue that an identification system would be a burden to small producers. However, nearly all small producers are presently identifying individual animals. Furthermore, the system is presently being used by ranchers of all sizes who raise cattle for Coleman Natural Meats.

Others would argue that the costs of such a system would be enormous. However, most meat companies that employ an inventory control system have already demonstrated a willingness to identify and track their inventories. An animal identification system is simply an enhancement to current inventory control systems.

There are some who would question the need for a new system of identification. The present systems for trace back all utilize a manual trace back process. Records must be found and traced back from party to party. Such a process does not inspire a great deal of confidence or timeliness.

Since many of the current methods and systems of identification were developed prior to current technological developments, no standards exists for a form of electronic identification. Such a new system of identification would modernize current techniques and practices.

Unified Identification Number

Considerations

A system to identify animals must be inexpensive to implement and easy to use. It must be adaptable for use by the smallest animal raiser to the largest meat packer. A unified system of animal identification must be able to adapt itself to future requirements and serve a multitude of purposes. In its simplest form it must be able to identify ownership and in its most complicated form it should be able to trace products from the consumer back to the point of origin.

The system must be designed with foresight toward free trade and global markets. It must also produce benefits that far exceed its cost and effort. Such a system must also be able to adapt itself to existing systems and not be viewed as an additional form of regulation. In short, there should be a good reason for businesses to want to adopt such a process.

Government should be able to use such a system to assure consumers of a safer food supply. The system should also be able to meet today's requirements and future requirements. It must increase government's effectiveness without unnecessary burden.

Advantages

A system of unified animal identification allows for the creation of a dynamic system of data collection and information retrieval. Such a system would transcend individual producers and provide a valuable information resource.

The ability to track animals in such a manner would become the envy of the world. A unified system of animal identification could be developed that will secure and increase the agricultural leadership of products produced in this country as well as consumer confidence.

Another advantage of a unified identification number is the ability to track pathogens and animal diseases back to their point of origin. Animals raised in this country could be tracked. Also with the advent of any foreign trade agreements, the possibility of animal diseases entering this country would become less of a concern with a unified identification system.

Adaptability

A unified ID system should be adaptable. A small producer should be able to use the same type of identification as a large producer.

A unified identification number should be standardized, but also possess the ability to be used for different purposes. If its intent is to simply identify ownership, it should be able to do so without being complicated. It must also be able to track animals by lot number if necessary. Furthermore, it should also possess the ability to identify each individual animal's identity if required to do so.

The identification system should reflect real world situations. Occasionally identification devices may be lost or damaged. As a result, the system must be able to begin identification at any segment in the production process.

Specifications

The following specification for a unified ID number is not intended to be viewed as an absolute. Coleman Environmental Systems does not intend to presume that its solution will fill every identification need for the entire meat industry. However, its research and experience indicate that this is a reasonable approach.



RC3G42 - 2A03L7

The specification for the numbering system would consist of two sequences similar to that used for UPC Codes. The first sequence identifies the point of origin. The second sequence is designed to be used as a reference number. This reference number can take one of the following three forms:

- 1) A lot number
- 2) A premise or point of origin number
- 3) Individual animal/product identity number

The basis of the system is an alpha-numeric identification scheme. One constraint to this numbering scheme, in the case of animals, is that it must be able to fit on an ear tag. Bar-code technology is such that future advances in stacked codes may render this constraint obsolete. However, the best overall form of animal identification today is a bar-coded ear tag.

By using an alpha-numeric scheme, instead of just a numeric sequence, certain advantages are achieved. The following demonstrates the differences between a base 10 and base 36 scheme.

Number of digits	Base 10	Base 36
4 digits	9,999	1,679,616
5 digits	99,999	60,466,176
6 digits	999,999	2,176,782,336

By utilizing a scheme based upon base 36, a 5 digit prefix could identify over 60 million producers. A 5 digit suffix could additionally identify over 60 million individual animals per producer. Of course more digits could be used to dramatically increase the tracking capabilities of the system.

Once an individual producer is assigned a unique identification, that producer may then begin the process of animal identification. An individual producer would assign numbers to his animals in the same way that a bank assigns checks. A producer does not have to identify which animal received which number, he is only responsible for ensuring that the numbers are assigned sequentially.

A record of identity does not need to be recorded unless the producer desires additional information prior to the transfer of his product. As an example, an animal producer might wish to take random pathogen samples of his animals. By referencing the identification number prior to performing any test, individualized information becomes accessible.

As animals are sold, a record of the individual animal identification changes with title of ownership. Individual animal identification is required prior to transfer of ownership to ensure integrity of the identification record. This information is recorded and a complete record of the animal is available for reference.

If an identification tag is lost or damaged, a new tag is attached to the animal using the current owners prefix and the next logical record of the second sequence. Reconciliation of the record is done in a fashion similar to standard inventory control systems.

Benefits to Government

Animal ID / Trace Back

As hearings and debates continue, the need for a system of animal identification is becoming more obvious. Consumer groups have begun to pressure the food industry and government alike for an effective trace back program. Consumer groups have cited the need for a trace back system for tracking residue violations and as means of ensuring food safety.

A system of animal identification and trace back will enable regulatory, private and consumer needs to be addressed. This ability to identify animals provides a system of trace back that no other system can offer.

No other system is capable of identifying sources of contamination for events similar to the E. Coli incident in the Northwest. For a system of trace back to be timely and effective, the product must be identifiable from the consumer back to the point of origin.

A properly devised identification scheme would allow for trace back of all species of food animals. A consistent, unified approach can address many concerns relative to food safety.

Cooperation / Communication

It is becoming more apparent that in order to compete in a global market, greater degrees of cooperation between industry and government are necessary. Establishing uniform goals and systems is the first step. Standardization among various government agencies has certain benefits.

The correlation and comparison of data between agencies would promote a new level of cooperation between individual agencies. Data from one department could easily be transferred and disseminated, cutting research and investigation costs. Many of the complaints regarding duplicity of effort and conflict of interest could be avoided. The same information required by FSIS for food safety could also be coordinated with APHIS and other agencies.

Pathogen Tracking

An animal identification system has the advantage of being able to trace pathogen contamination back to its source. In the case of pathogens that can be traced to a single source or location, a recall of all animals associated with that source could be done. This would immediately identify and halt further exposure of the public's safety to these contaminants.

Since pathogen contamination may not be detected until it reaches a consumer, the ability to trace from the consumer back is imperative. Current claims that pathogen trace back from the packer to the feed yard is sufficient, do not address consumer concerns.

Hazard Analysis and Critical Control Points (HACCP)

With the aid of an animal identification system, control procedures for HACCP could become more complete. Individual tests could be done on samples or on entire groups. Animal identification would aid in the ability to correlate common traits among food products that demonstrate a high incidence of problems.

Tests could be standardized further so that animals of similar origin or other commonality would be tested at specific control points. This would greatly increase the reliability of certain HACCP procedures for conditions that have a high probability of contamination. Such a case may also include animals that are imported into this country.

Slaughter plants using animal identification systems, whose HACCP procedures have proved effective in controlling contamination, could share information with other facilities experiencing similar problems.

Some commentators during public testimony believe that HACCP is of little use without a Critical Control Point that destroys pathogens. However, many of the means for destroying pathogens in this fashion are of concern to some consumers (i.e. irradiation). The ability to trace back, identify, and correct the source of contamination could be used as an alternative to such methods.

A trace back and recall system is one way to ensure consumers that a situation similar to the E. Coli or Alar problems could be more adequately addressed. Had an effective recall system been in place, consumer confidence would have been maintained.

Imports

As the era of free trade and open markets continues to develop, a system of identification across international boundaries will become more necessary. Differences between country's safety regulations and production methods are sure to result in problems.

Potential problems with animal diseases entering this country may result as a consequence of free trade. The sophistication of our current system of food distribution further complicates the issue. Animals may be slaughtered and shipped all over the country. A problem arising in one area of the country would be very difficult to trace through the entire distribution chain. A system of food identification would enable monitoring and trace back throughout the entire distribution process.

International agreements and concerns can be addressed with an animal identification system. Animals coming into this country can be identified and traced by a single system. Information relative to trade and food safety for these imported goods could then be achieved.

Imported foods that make specific product claims are difficult to verify for authenticity and safety. A system of food identification would make it possible to verify the source and claims of any food products entering this country.

Inspection

The inspection process of animals prior to slaughter, and the resulting meat products, are presently under fire from both the public and the media. The USDA is receiving nearly all of this heat at the present time. Government agencies are responding to this criticism as rapidly as they can, considering the current restrictions of manpower and finances. FSIS is also being hindered by powerful industry forces that are justifying present methods and shifting blame to others.

With Track II, FSIS has created a new approach to inspection by balancing concerns of both industry and consumers. This plan will eventually need a means of animal identification in order to improve procedures, assure food safety to consumers, and provide a means of trace back.

The use of an animal identification system would further aid in the coordination of USDA inspection procedures with plant HACCP procedures resulting in improved efficacy of the inspection process.

Standardization

Throughout the food industry products are identified and labeled by many different producers for a number of reasons. The standardization of this identification system would simplify the current systems.

Standardization is capable of reducing costs. No longer will it be necessary to use conflicting identification methods to determine product ID. Standardization based upon a system of electronic identification further increases the timeliness of information retrieval. Tracking products through manually kept records is inefficient, costly, and time consuming.

Attempts to correlate and collect data from several organizations is also difficult. The problem is further complicated as the number of producers involved with a single product increases. A standardized numbering system for food products would facilitate the identification of individual parties involved in the production process.

Certification

As more and more products seek to differentiate themselves from the competition, the role of government to regulate and certify such claims increases. However, the call for greater regulation with lower budgets presents problems.

A unified system of identification could be used to verify specific claims made by producers. Specifications could be adopted for certain claims and the producers could be required to validate such claims in a computer record.

Modernization

According to Secretary Espy, "We can not continue to run a system based on 1933 standards and procedures in 1993." The present inspection system was not created to take advantages of current technological advances. The time has come to update our present system to take advantage of all useful technology that is available.

An observation of other industries should demonstrate to the food industry that the future lies in information systems. Identification of food products will happen sooner or later.

Benefits to Industry

Farmers / Producers

Each and every farmer and stockman is proud of his product and is eager to know how his products compare with others. He is also interested in methods that can improve his product. A system of food identification will allow him to make informed conclusions about his products.

A system of animal identification can provide stockmen with valuable data as to the genetic performance of their breeds. This data can be scientifically compared to other breeds for desired performance characteristics. Producers could also be further rewarded for incremental efficiencies they are able to achieve.

A farmer would be able to differentiate his products, for example, based upon production methods. A problem such as the Alar incident could be averted by a producer's ability to demonstrate by record that his product had never been sprayed with Alar.

Feed Yards

Animal feed yards are places where congestion is the greatest. As a result, disease is more rapidly transmitted. It is also the place where residues of unwanted microbial or other materials are closer to the actual meat supply. Individual or lot identification is imperative should a problem arise in the resulting food produced by these animals.

Feed yard operators are anxious to make use of any information that can improve efficiency. This information may be relative to genetics, rates of consumption, or tracking actual feedstuffs back to their origin.

It is now possible sort animals more effectively in order to achieve a more uniform product. This information, when correlated with production data from a slaughter plant or processor, can be instrumental in determining the types and characteristics of animals that are most efficient for meat production. Changes can further be implemented to reward those producers who fit these characteristics.

Slaughter Plants

The slaughter plant occupies a key position in the food production industry. It is the point at which live animals are converted to food. Here, important discoveries are made in relation to animal disease as well as pathogens. At no other point in the meat production process is there a greater danger of contamination from outside substances.

Inspection procedures can be greatly enhanced by correlating organoleptic inspection with HACCP. Some animal diseases are not found until the slaughter process. Animal identification would be able to assist slaughter plants in identifying and tracing the source of dangerous pathogens.

Slaughter plants could also achieve increases in production efficiency through the ability to control purchasing based upon desired animal characteristics. Since animal identification is transferred from the live animal to the meat product, slaughter plants could change their purchasing practices from the purchasing of live animals to the purchasing of meat.

Fabrication Plants

Good fabrication and processing plants of all types are constantly searching for improvement in production methods. Good companies which manufacture foods ask themselves daily if their products are safe, of the highest possible quality, and if they satisfy consumer demand.

A food identification system has the ability to control inventory, provide production information and assist quality control. Purchasing decisions can be benefited by taking into account products that have a beneficial yield to price ratio. A number of other accounting and production control measures would benefit as well. Quality control would benefit by improved HACCP procedures based upon individual identification.

A food identification system would also allow fabricators the ability to recall problem products. As consumer demand for safer foods increases, fabricators could assure their customers of greater product integrity.

Distributors

Distributors everywhere deal mostly in packaged products. Inventory control can be enhanced with a food product identification system. This is especially true when dealing with commodity products where the source of origin is difficult to determine.

Since the animal identification system would take advantage of electronic identification, distributors could use such a system to improve inventory control of their products.

Retail / Food Service

At the retail or food service level, the greatest amount of responsibility is assumed in dealing with the ultimate consumer. These entities are at the front of the firing line should a problem arise. They are also the ones who are best able to educate and inform consumers. In the event of any food safety problem, these parties will be the first to be approached.

In the event of a problem, the ability to identify and trace back a food product before it becomes a significant public food safety concern is important. Jack in the Box would probably consider a system of product identification very worthwhile considering the bad publicity that they received for their association with the E. Coli problem.

Benefits to Consumers

Consumers are concerned about food safety. A system of food identification would assure consumers that the production process of food products from animals can be traced. This tracking system would ensure to them that at each stage of the food production process the food is being checked and monitored for safety.

In the event that any problems escape the safety controls of the production process, the product can be quickly identified. Once a product is identified as a potential problem to public safety, a recall of similar products can be done. The ability to recall tainted products will ensure that other consumers are not effected by the same problem.

Further Applications of the System

Organic Products

The 1990 Farm Bill contained the National Organic Standards Act which mandated the National Organic Standards Board to set growing standards and production procedures for organically grown foods. Certification of farms and processing plants has distinct guidelines; however, actual product identification on a day to day basis is lacking.

Many organic farms sell products across state lines as well as to foreign countries. Many organic producers also have conventionally grown products. Consumer confidence can be maintained by the identification of each shipment with trace back abilities for products making specific organic claims.

Other Products

The Coleman company believes that a great number of products need an audit trail tracking system for reasons other than safety or authenticity of claims.

Dietary supplements, for instance, can presently be traced back to a manufacturers batch number but fail to go farther into the ingredients within the supplement. Cosmetic products for body care frequently make claims which may or may not be accurate and may or may not be legal. A tracking system offers a solution to product claims.

Summary

In conclusion, a unified system of animal identification, such as Origen™ has numerous benefits to consumers, producers, and government. By adopting such a system valuable information can be maintained and utilized to improve food safety and production efficiency. No other system possesses the ability to monitor food products from "Farm to Table".

A system of food identification as described allows for the trace back of animal disease and pathogens. Sources of contamination can be traced and corrected before they become a serious public health hazard.

The ability to share and coordinate information among industry and government can be achieved with an identification system that takes into account the needs of all parties. Further cooperation can aid in this country's ability to capture market throughout the world for its agricultural products.

Certification of unique product claims can become much easier to verify with the aid of an identification system. Specific claims are recorded and maintained through to the end consumer. Question or concerns regarding product claims or production methods can be verified against the production record.

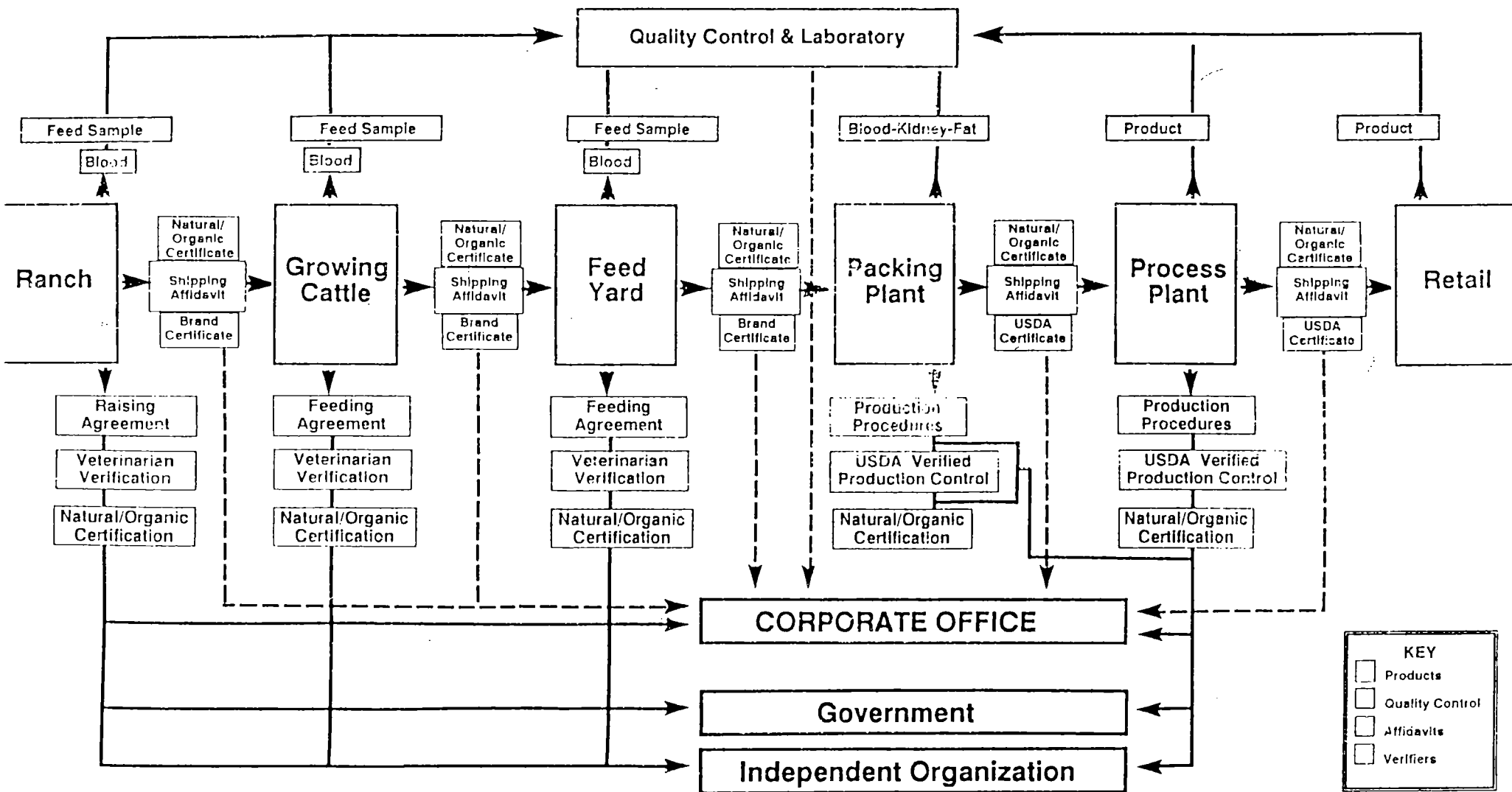
Private industry will benefit from this system by the additional information and control that it will gain of its products. Additional value is inherent with products using an identification system.

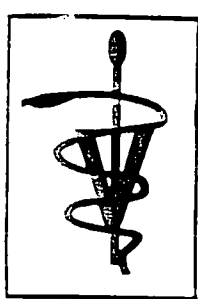
Consumers and food safety groups who are demanding increased confidence in food safety can be assured of a valid recall ability for tainted products.



Certification Process

AUDIT TRAILS and QUALITY CONTROL





CVM UPDATE

Center for Veterinary Medicine

Issued by: Office of Management, Communications and Education Branch, HFV-12

January 17, 1996

REGULATION OF ANIMAL ELECTRONIC IDENTIFICATION PRODUCTS

CVM has received a number of inquiries about how the Agency regulates implantable electronic identification devices for use in animals. The following is an update on this subject. This applies only to implantable electronic identification products intended for the sole purpose of animal identification.

Implantable electronic identification device (EID) products which are used to identify individual animals are being developed by several companies. The products consist of a very small transponder which is implanted in the body of the animal (in the ear, for example), and a component (reader) that interprets the transmission from the transponder.

Under the Federal Food, Drug, and Cosmetic Act (the Act), FDA may regulate implantable EIDs intended for use in animals as food additives. A food additive is defined by the Act as "any substance, the intended use of which results or may reasonably be expected to result, directly or indirectly, in its becoming or otherwise affecting the characteristics of any food." Also, under the Act, food includes animal feed.

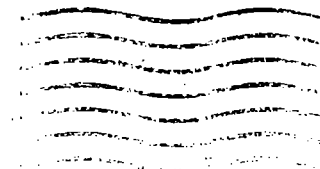
To ensure public health and the safety of the food supply, FDA has determined that EIDs must not be implanted in an edible portion of an animal unless a human food additive regulation for this use has been published. Noncompliance with this requirement would render the food product adulterated and subject to FDA regulatory action. Currently, no human food additive petitions have been approved for EIDs intended to be implanted in an edible portion of any animal. In addition, considering the component materials currently present in EIDs, FDA does not anticipate approving human food additive petitions for EIDs intended for implantation in edible tissue.

Nonedible portions of slaughtered animals are routinely rendered to become part of animal feed. Unless the implanted EID unit is removed and properly discarded prior to rendering, it likely will become part of animal feed. Therefore, implantable EID products that might become part of feed are regulated by FDA's Center for Veterinary Medicine (CVM) as animal food additives.

In some specific cases, CVM may exercise enforcement discretion and not take action against the use of an animal food additive that is not covered by a food additive regulation. With regard to EIDs intended for implantation in nonedible portion of animals, CVM may exercise its enforcement discretion and not take regulatory action if manufacturers

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- 2 -

provide safety information on each implantable model intended for marketing. The information must be adequate to assure that there are no human food safety concerns arising from the consumption of products (meat, milk, or eggs) from animals that have consumed feed containing EID component material. Further, the information must be adequate to assure that there are no environmental concerns associated with the proposed use. If, the human food safety and environmental safety concerns are satisfactorily addressed, the Agency will notify the manufacturer in writing that, as a matter of regulatory discretion, sale of the specific model EID may take place without an animal food additive regulation.

To assure that the implant will not enter human food, the implantation site should be in an area that will minimize potential for migration to edible tissue. The EID manufacturer must receive concurrence from U.S. Department of Agriculture (USDA) as to the acceptability of the implantation site(s).

At this time, there is no acceptable implantation site for swine. This is because all portions of the pig may be used for human food. An alternative for swine would be to incorporate the EID in a plastic ear tag that could be removed at slaughter.

CVM does not require data (human food safety or environmental safety) from firms marketing implantable EID products solely for pet animals (e.g., dogs, cats, pet birds), including horses that will not be used for food purposes, and laboratory animals. These products may be marketed at this time.

Questions about CVM's electronic identification device policy may be directed to Richard E. Jewell, CVM Division of Compliance, Case Guidance Branch, 7500 Standish Place, HFV-236, Rockville, MD 20855, or by calling (301) 594-1785.



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REPORT OF THE COMMITTEE ON LIVESTOCK IDENTIFICATION

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J.E. Thomas, ID; G.D. Wilkerson, SD.

The committee met Wednesday, October 27, 1993, at 1:30 PM in the Sahara Hotel Room 5, Las Vegas, Nevada. There were 11 members and 25 guests present.

The first topic for discussion was, *Preharvest Food Safety*. Five different agencies' perspectives addressing this issue were presented.

1. Dr. Joe Annelli, USDA, APHIS, Swine Health Staff, National Swine Epidemiologist, reported the following to the committee:

The United States Department of Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), has accepted the leadership role in Preharvest Food Safety.

Supplying the American public with safe food involves many participants and several stages that are linked together in a complex chain. Every link in this chain is vulnerable to disease-causing pathogens. The first link is the farmers/ranchers, who raise crops and livestock. Next come the transporters, who move these products to markets and then to slaughtering plants and processors. These links compose the preharvest area of the U.S. food chain. Animal identification plays a vital role in linking the animal from the consumer to the producer.

2. Dr. Robert Brewer, USDA, FSIS, Deputy Director, Slaughter Inspection Standards and Procedures Division, reported the following to the committee:

The National Academy of Sciences 1985 report, "Meat and Poultry Inspection, The Scientific Basis of the Nations Program" made an excellent set of recommendations to modernize a system that would be scientific and meet needs of consumer public health and benefit producers.

One recommendation was to establish an animal identification system that would allow animals to be traced from the producer to the consumer table.

A system has to be initiated immediately with current technology. We can't wait for the ideal system to be developed before we mandate a livestock ID program. If a mandatory plan was started, it would accelerate technical developments and hasten improvements in ID devices.

Finally, the ID plan initially should in part be financed by USDA in much

2

the same way as are the tuberculosis and brucellosis programs. These programs are supported as public health measures. A permanent traceable ID device unique to each animal used for food is ever bit as much a public health benefit as tuberculosis and brucellosis were at their inception.

The time has come for all agencies to close ranks and expedite universal adoption of permanent, unique ID for all potential food animals.

3. Dr. G. A. Mitchell, Director, Office of Surveillance and Compliance, Food and Drug Administration (FDA)/Center for Veterinary Medicine, reported the following to the committee:

The FDA encourages producers, livestock dealers, and haulers to identify animals that are administered drugs. Electronic identification is one technique that holds great promise of assisting in proper identification of animals in certain classes.

The FDA Center for Veterinary Medicine (CVM) has determined that implantable electronic identification products are food additives under the Federal Food, Drug, and Cosmetic Act because there is a reasonable expectation of these products directly or indirectly becoming or otherwise affecting the characteristic of food. For instance, these products may reasonably be expected to become a component of rendered animal byproducts such as meat and bone meal.

Manufacturers of implantable electronic identification products have contacted CVM seeking information on how to obtain a food additive position approval.

4. Dr. David Meeker, Vice President Research and Education, National Pork Producers Council (NPPC), reported the following to the committee:

The ability to identify the source of swine and traceback to their origin is critical for food safety, disease control, and product improvement.

A NPPC task force began work on swine identification (ID) in 1984 following a pork producer delegate resolution which called for its formation. In 1985, delegates approved ID standards. In 1986 the NPPC delegates moved to support mandatory identification of all slaughter hogs back to the last farm of ownership, with encouragement for sharing of health and carcass quality information with pork producers.

The push for mandatory ID came from several other NPPC task forces working independently on other issues. The first Pork Value Task Force requested mandatory swine identification because the success of their Pork Value program hinged on the flow of information on the composition and merit of market hogs or carcasses which can only be accomplished through identification and traceback. Successful efforts to prevent food-borne illness such as trichinosis, require the ability to traceback to the herd of origin infected hogs and carcasses. Disease control programs such as the eradication of pseudorabies can only be effective with identification and traceback. The NPPC Quality Assurance Committee has taken the lead in developing a producer program to reduce sulfamonomelic acid violations. It is critical to the success of their efforts that violators can be identified and the problem corrected.

3

The USDA published their proposed rule for mandatory swine identification in the Federal Register on February 3, 1988. The proposal provided the legal mechanism to require that all hogs bought and sold into interstate commerce have identification consisting of a tattoo, ear tag, back tag or some other suitable method and that records be kept on such transactions for two years.

Electronic ID shows great promise to be useful for better production records and management, as well as for slaughter ID and traceback. This method is still in the research stage and could be quickly implemented when costs become low enough to ensure payback.

The NPPC's ID Task Force examined the proposed rules and recommended minor changes to assure they serve the needs of the industry without unfair burden on any one segment. Mandatory swine identification rules are now in force and affect all slaughter hogs going to federally inspected slaughter plants, and breeding stock and feeder pigs in interstate commerce.

The NPPC continues to support swine identification for the long-term benefit of the pork industry.

5. Mr. Gary Wilson's, National Cattlemen's Association (NCA), Director, Animal Health/Inspection, Research and Food Policy, topic was the "The Status of Beef Cattle Traceback Systems." A summary of his report to the committee follows:

Results of the National Cattlemen's Association's Traceback Capabilities report indicate that current marketing systems allow 95% traceability of all fed cattle from packer to feedlot. Cattle purchased directly from the feedlot were 100% traceable. Results of the cull cow/bull segment of the study indicated a traceback rate of 77%. Identification was highest where cattle were double backtagged. In these cases, traceability was nearly 100%.

Mr. Wilson also reported that the NCA policy supports the establishment of traceback systems. The NCA does not support the establishment of a mandatory individual animal identification system. It is NCA's belief that cull cow traceability can be improved by utilizing existing backtagging procedures with a minimum amount of cost.

Five additional topics were addressed. The topics covered were:

1. Dr. James P. Davis', USDA, APHIS, Senior Staff Veterinarian, Cattle and Diseases Surveillance Staff, topics were: *Backtag Cement A Hazardous Waste Product and Official Swine Tattoos..* A summary of his reports to the committee follows:

a. **Backtag Cement A Hazardous Waste Product:** The backtag cement used by the Animal and Plant Health Inspection Service (APHIS) in its animal identification program is considered a hazardous waste product in accordance with the Hazardous Waste Regulations 40 CFR 261, of the Environmental Protection Act (EPA) because of its high flammable rating. This backtag cement is supplied to livestock markets, stockyards and slaughter establishments for use in APHIS's Market Cattle Identification (MCI)

4

and Market Swine Identification (MSI) programs. These programs have the markets maintain a supply of backtag cement and tags and apply the backtags necessary for animal identification. These backtags are used by the markets to record sales information on the animals sold in their market.

To reduce the use of backtag cement that is a hazardous waste product APHIS is requesting information on self-adhesive and non-hazardous glues that could be used in our MCI and MSI programs.

A backtag cement conference is scheduled for early December 1993, to give the adhesive industry an opportunity to help APHIS find new options for backtagging livestock.

There exists a need to evaluate new products in search for a better backtag cement.

b. **Official Swine Tattoos:** The use of official tattoos for sows and boars has provided the Animal and Plant Health Inspection Service (APHIS) with a method of swine identification that in the past met most of the needs for sow and boar identification. The approved tattoos for sows and boars were one of the primary means of identifying slaughter sows and boars, provided that the tattoo was retained on the carcass after slaughter. Because many of the sows are skinned at slaughter the official tattoo is lost and we are unable to identify the blood sample. The need for usable identification when collecting blood samples for pseudorabies and brucellosis has created a policy of not sampling animals that are not identified with an official backtag.

There exists a need to standardize the identification of slaughter sows and boars to provide uniformity in the collection of blood samples. Blood samples should be collected only from sows or boars identified with an official backtag. Slaughter sows and boars identified with tattoos should not be sampled.

We need to consider amending the present regulation 9 CFR, Part 78.33 (a)(3), the use of official tattoos for slaughter sows and boars. The amendment should require slaughter sows and boars to be backtagged when in interstate commerce. Official swine tattoos could still be used as a supplemental form of swine identification.

2. Dr. Ralph Knowles, (veterinary consultant) reported the following to the committee: Destron-Fearing (manufacturer) advises that, the development of commercial applications for electronic ID (EID) of certain livestock is proceeding using external means of attachment. Application initially targeted are those where EID is used in conjunction with automation of data collection and retrieval in the barn or the corral. One of the first is, for records management in sow breeding, which is particularly "data intensive".

A combination handheld computer/scanner has been developed that allows the farmer or rancher to automatically record the identity of the animal, then record data about the animal by punching it into the handheld terminal. Data is then uploaded to the main records system on the PC or mainframe, and fresh batch data can be downloaded to the handheld unit as well, so records in the field are always up-to-date. This method replaces ID by tattoo

or conventional eartag and writing down information by hand in the barn or corral for later keying into a main computer.

An "electronic eartag" has been developed for use with the computer/scanner. The eartag consists of a transponder embedded in a specially-developed eartag which attaches in the same way as a conventional eartag.

The advantages of automating data collection and identification as described include labor savings, avoidance of error, and availability of information in the barn or corral that is always organized and up-to-date.

Electronic I.D. Inc. (a distributor for Dextron-Fearing) advises that they are on the threshold to launching a program under the authority of the Louisiana Livestock Sanitary Board; each horse sold through Louisiana Auction Markets or gathered for entertainment or athletic endeavors, is tested for equine infectious anemia and identified by one of the following methods: implanting an electronic ID transponder in the ligamentum nuchae or permanent individual ID such as a lip tattoo, freeze/hot iron brand. This is the first broad application of electronic identification of animals in an animal health control program in the United States.

3. Dr. James Lindstrom's, Assistant Executive Director, Texas Animal Health Commission, topics were *Backtagging Cattle for Interstate Movement and Mexican Eartags for Cattle*. A summary of his reports to the committee follows:

a. **Backtagging of Cattle for Interstate Movement:** The State of Texas backtagged in FY 1993 1.2 million test eligible cattle. Seven major Texas packing plants slaughtered 3/4 million eligible head or on average 62000 head per month. During March 1993 through September 1993, the State of Texas received from three states complaints about improperly placed backtags on cattle (they were not tagged a few inches from the midline, just behind the shoulder). They were in violation of 9 CFR 71.18 "(1) cattle, when moved in interstate commerce, are identified by a Department-approved backtag affixed a few inches from the midline and just behind the shoulder of the animal..." The source of the complaints were: 1. Colorado: Excel slaughter plant (five complaints) 2. Michigan: Murco slaughter plant 3. Iowa: Tama slaughter plant.

The State of Texas concluded that the problem could be resolved by the affected states by their implementing procedures such as: 1. Pulling backtag off prior to shackling the animal. 2. Providing elevated platform for removing backtag and collecting blood sample after shackling 3. Using "rake like" instrument to remove the backtag.

The suggestions were based on the small number of slaughter plants collecting blood samples for the State of Texas compared to the number of cattle being backtagged in Texas livestock markets. The State of Texas also suggested that 9 CFR 71.18 be reviewed for possible changes in tagging regulations.

b. **Mexican eartags for Cattle:** This issue has been partially addressed by the publication of a proposed change in the CFR (9 CFR Part 92,

6

Docket #93-063-1) that requires Mexican cattle to be tagged with Mexican eartags to enter the United States.

Increased tracing of Mexican-origin diseased or exposed cattle would be aided by requiring identification to be recorded for Mexican cattle, anytime a certificate of veterinary inspection is required. Presently, steers and non-test-eligible cattle are generally not required to be individually identified on certificates of inspection. The collection of all man-made identification for tuberculosis tracebacks needs to be emphasized.

Also needed is the entering of identification onto a central data base that would be readily accessible on a national basis.

The committee acted to approve the following motion: The Livestock Identification Committee of the USAHA respectfully requests that the Administrator, USDA, APHIS, investigate the legal ramifications of making the retention of the official Mexican eartag on Mexican steers and spayed heifers be retained on the animal until its final destination at slaughter in the United States.

It is the committee's opinion that tuberculosis control and eradication can only be accomplished through identification sufficient to trace an infected animal to the herd of origin, whether it be in the United States or Mexico.

It seems reasonable to the committee that such an import requirement relating directly to an animal from a foreign country does not constitute a violation of "States'-Rights" nor fall under federal constraints of interstate commerce.

The committee acted to approve the following motion: That USDA consider eartags as the official form of identification for cull sows and boars (not market hogs) rather than backtags or tattoo. In the correct form, these eartags could be applied and used for record keeping on farms before serving as slaughter ID. Other forms of ID could be permitted if traceback could be accomplished.

There being no further business to come before the committee, the meeting was adjourned at 5:00 PM.



Keeping Track

Coleman Beef's "Origen" system may be the farm-to-table tracking program the industry's been looking for.

by Steve Bjerklie



THE LARGEST PRODUCER and marketer of natural and organic beef in the U.S. may have developed an animal-and-meat tracking system to answer USDA's call for an effective farm-to-table trace-back program to help control bacterial and residue contamination in the nation's meat supply. Called "Origen," the system, developed by Coleman Natural Meats, Denver, Colo., identifies and tracks meat by animal, producer, feedyard and slaughter-date through the packinghouse, through the distribution chain, and into retail stores. Additional information tracked by Origen includes weight, grade, lot number, date and time of processing, and other pertinent data. Under Origen, it's possible for a consumer buying, say, a Coleman tri-tip anywhere in the U.S. to find out where the animal the meat came from was raised, who raised it, when it was slaughtered, and what other cuts of meat came from that same animal and where they were shipped.

"It's just a wonder for inventory control," says Mel Coleman Sr., founder of Coleman Natural Meats. "But more important, it fits right in with what USDA's trying to do with HACCP and pathogen control." A year ago, Coleman described his system at a hearing in Oakland, Calif., on FSIS's proposed strategic plan for inspection reform. Origen "virtually guarantees the ability to track a piece of meat—or, for that matter, ground beef—back through the production system from which it came," Coleman told agency representatives at the hearing. "With this animal tracking, testing and trace-back system, the pathogen-reduction program as described in both Track I and II of Dr. Cross' [then-] new FSIS inspection program can pinpoint the source of any *E. coli* or other contamination before it ever reaches a consumer."

Later, at another USDA hearing on the production of "organic" livestock, Coleman told members of the National Organic Standards Board: "The point I would like to stress here is that this total process from breeding to packaging is documented. We can trace each animal through each step of the production and retail process. If a consumer has a question about a package of Coleman Organic Beef, we can tell exactly which animal the meat came



Opposite Page, Top:

Bar-coded data on this ear tag follows the meat from individual animals through Coleman's plant and into the distribution.

Opposite Page, Bottom:

Tags carrying the bar-coded data are applied to each beef side, and generate more tags applied to primals and subprimals.

Left:

Data from each side is tracked prior to fabrication at Coleman's plant.

from and its entire history—within hours.”

Coleman, whose company does about \$25 million worth of business annually in beef, ground product and processed meats (Coleman Natural Franks are sold in special walk-up stands at Colorado Rockies games), admits the system has some drawbacks for high-volume operations. “Excel came and looked at it and didn’t think it would work for them,” he says. “But really, what we’ve got is an object-tracking system, and it’s got so much adaptability. I think it’ll work for just about anyone with some modifications.” Origen presently has patent-pending status. The software was written by a Coleman employee, Dan Montinari.

Origen comprises a program ahead of its time. Although fully developed, the system isn’t in full implementation at Coleman because of market factors such as end-point pricing and retail willingness to absorb Origen’s cost. However, the technology is full and present. What follows is a description of Origen’s capability as developed by Coleman.

The heart of Origen is numbers, of course—numbers, and following them through the links of the meatpacking chain. Every animal raised for Coleman’s natural and organic programs is stapled with a special ear tag, shortly after birth at branding time, that carries a bar-coded animal tracking number (ATN). The number is entered into a database Coleman tracks from its offices in Denver. When the steer enters a feedyard, the ear tag is scanned and a feedyard record for that animal is established to track days on feed, market weight, and feed sources. The tag is scanned again at slaughter after removal from the ear.

Scanning at slaughter produces four tags that also carry the bar-coded ATN. These tags are placed on each quarter of the carcass resulting from that animal. From slaughter the carcasses move on to the Coleman processing facility, “where the computer and scanning capability become of critical importance,” according to Coleman.

At entry to processing, a scale-printer generates a production control tag for each quarter, again carrying the bar-coded ATN, as well as weight of the quarter, time of entry into the plant, and USDA quality grade. This production tag is scanned when the quarters are moved from Coleman’s holding cooler into the production area. The scanned data goes into the database, and the scanning also generates 22 additional production-control tags, four each for the two front quarters and seven each for the two hindquarters of each carcass. All of the information, including the ATN, contained in the original, primary production-control tag is bar-coded on these 22 additional tags.

The quarters are each weighed, scanned, time/date-stamped, with all of that information going into the database under the

original ATN record. The 22 tags are, according to Coleman, “separated and affixed at strategic places on the quarters so that when the carcass quarters are fabricated the ATN follows the primals and subprimals throughout the production process.” A tag is placed on the outside of each vacuum-packaged primal and subprimal.

At boxing, another printer generates a box-identification label referencing the ATN-identified meat inside, and each package in the box is likewise scanned so that a set of retail tags is generated that identifies the ATN of the meat inside each box. These retail tags are for use by distributors, retailers or processors to identify the meat as they wish. Finally, the boxes are sealed and shipped from the Coleman plant.



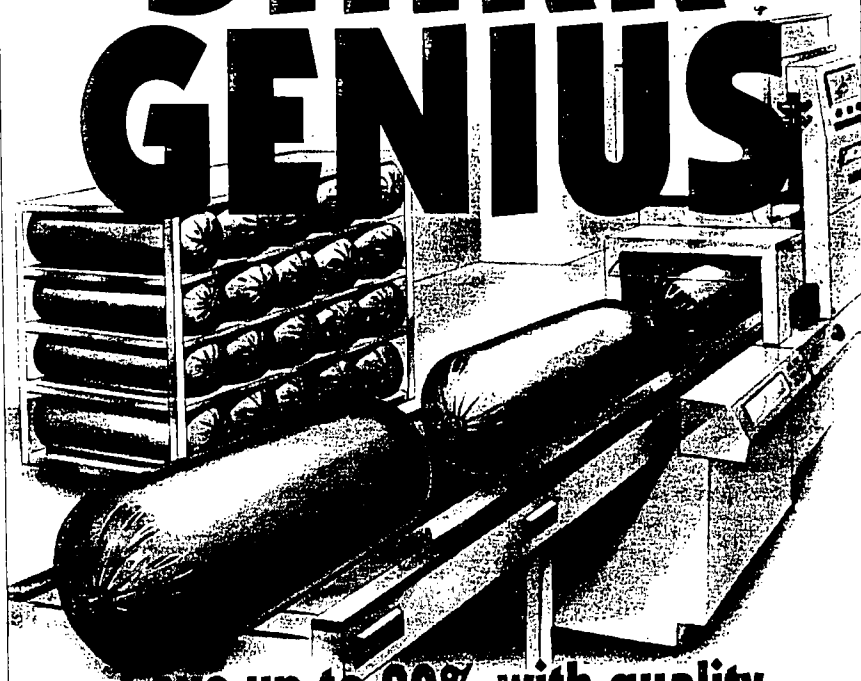
Bar codes are read by laser scanner prior to distribution of the meat. The data recorded allows shipments to be tracked by lot number, source, and individual animal.

“I’ve heard from some retailers that they think consumers aren’t going to like all this animal identification,” says Mel, “and so the last part of our system isn’t really being used to the extent that it could be. But the program’s all there if they want to use it.” Without doubt, if the Food and Drug Administration, which nominally has jurisdiction once meat and poultry has left the plant, or some other government agency mandates a retail tracking program for meat and poultry products, some variant of the Coleman system will be considered, if not Origen itself.

In addition to retail whole-muscle cuts, Coleman processes and ships ground meat, which is also tracked by the company’s

Continued

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Continued

KEEPING TRACK...

Origen program Ground from chucks and rounds (Coleman uses no trimmings for its own ground meat), each piece prior to grinding comes with its bar-coded tag carrying the ATN. All of the ATNs going into a particular batch of ground product are scanned and tracked! Shipping containers for bulk-packed ground meat are labeled with serial numbers referencing all of the ATNs in a particular batch. Ground meat processed into patties and other products is identified by production lot, and that identity carries within it all of the ATNs of the meat used in that lot.

“With Origen, the pathogen-reduction program as described in Track I and II can pinpoint the source of any contamination before it ever reaches a consumer.”

Trimmings sold in combos to other ground-meat processors also carry labels referencing ATNs. Trimmings produced by the boning lines are placed in a combo bin; when the bin is full it's weighed and time/date-stamped. This time-stamp identifies the carcass-quarters that were fabricated in the period the bin was being loaded, and the ATNs of those quarters are coded into a label affixed to the side of the bin. Coleman sells these combos of trimmings to other processors, but it's up to them to utilize the ATN and in-plant-tracking data Coleman provides.

Two hallmarks of the Coleman family's 115-year tenure on Colorado ranch-land — honesty and credibility — were the mothers of invention of the Origen system. The company began tracking animals from producers to the plant back in 1979, when Coleman embarked on his “natural beef” program. Mel, a third-generation rancher (two generations after him are also involved in ranching the family holdings, making the Colemans a five-generation ranching presence), could guarantee for himself that his own cattle were raised without antibiotics or hormones — the definition of “natural” Coleman used at the time —

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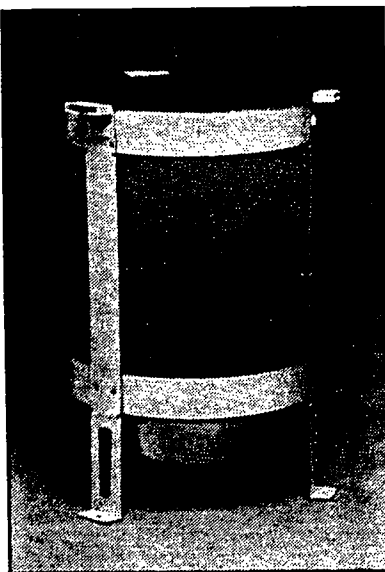
KEEPING TRACK...

but as the business of Coleman Natural Beef grew and he required cattle from other producers, he needed a way to guarantee that those other producers met his strict, drug-free standards. A paper trail—affidavits signed by the producers and their veterinarians, as well as by feedyard operators—was one way, but Coleman wanted to track individual animals, too, so that he had an objective, verifiable means to support his marketing claims. Thus, the original Animal Tracking Number concept was developed.

When Coleman took a step further and began to produce organic beef after USDA weakened the definition of "natural" in 1983, the ATN concept proved invaluable. Though USDA had no standard for "organic" (and still doesn't, much to the chagrin of the organic-foods industry, though hearings were held on organic livestock production earlier this year; see "Organic producers want drug-use clarification" in MEAT&POULTRY, May 1994, p. 8), Coleman sought to have certification by the Organic Crop Improvement Association of his grassland, feeds and feedyards, as well as of those used by his suppliers. The Origen system proved to be ideal for management of the tracking and follow-up paperwork.

Mel agrees that the number of tags Origen generates can be a problem in a big, high-volume plant. Plus, there's the manpower to devote to making sure the right tags follow the right carcass, quarters, primals and subprimals. However, even if Origen isn't ideal in its present form for large packers, a government-mandated farm-to-table tracking system for meat and poultry products would likely embrace the concept, if not the actual technology and software, of Origen. Coleman can always count himself as a pioneer.

"But there's just so much adaptability," Mel enthuses again, uncharacteristically displaying a bit of pride in the accomplishment of Origen. "Just the system for our little company has the capacity to track 2 trillion objects from 2 trillion sources. Now, that's a lot of cattle. That ought to be enough for anyone, don't you think?" □



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potassium, for movement of these sugars into the kernel. Knowing more about how these mineral nutrients regulate starch synthesis by corn seeds could help in developing varieties which use mineral nutrients more efficiently.

Source: Research Notes, Illinois Agricultural Experiment Station, University of Illinois at Urbana-Champaign

Dark Hives for Bee Survival

Dark-colored hives help protect bees against honeybee tracheal mites. That's because those nasty mites can't take the higher temperature inside the dark hives, which absorb more sunlight. In field and lab studies, a temperature of 102°F (39°C) didn't harm bees but killed the mites. Tracheal mites have caused the loss of 50,000 honey bee colonies each year since 1988. After a three-month study, researchers found only one in twelve mite-infested colonies in dark hives still had mites, while ten of twelve colonies in white hives remained infested. Lab tests confirmed that exposure for forty-eight hours at 102°F (39°C) significantly cut populations of mite larvae and eggs. Scientists say the reason may be that when hive temperatures rise, bees try to cool the hive by fanning their wings. This causes heat inside the bee to rise because of the action of wing muscles located near the bee's breathing tubes, where the mites live. One recommendation from the study: If honeybees are being bred for tracheal mite resistance, they should be kept in white hives or in the shade, so that heat and other environmental effects do not mask genetic resistance to the mites.

Source: Quarterly Report of Selected Research Projects, July 1 to September 30, 1993. U.S. Department of Agriculture, Agricultural Research Service.

Microchips to Track Animals

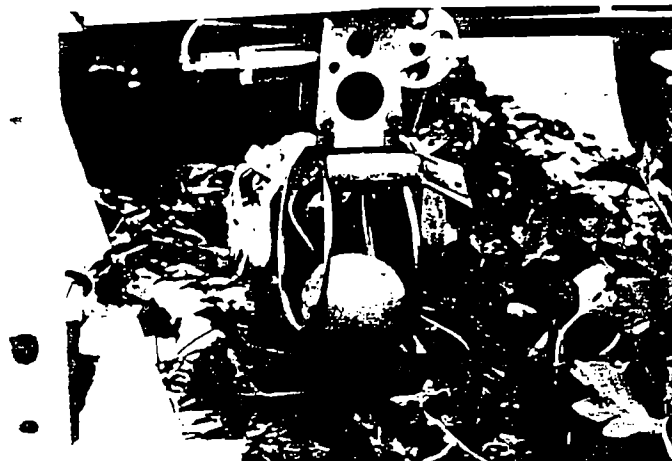
Scientists are implanting computer microchips in cows' ears to track them from farm to supermarket. Inside the chip is an identification number that allows producers to access the animal's performance stored on a separate laptop computer.

The information in chips will be valuable to livestock producers, processors, and consumers. "With these computer tools, it may be possible someday to keep records on most of the livestock in the world," according to Jack Whittier, animal scientist at the University of Missouri-Columbia.

Researchers at Missouri are comparing microchips implanted in cows' ears vs. those inside ear tags.

The microchip inside the ear tag has a unique eleven-digit number. Eventually, those numbers might go as high as thirty-two digits so each cow, pig, and sheep around the world would have its own number—and that number could be read by almost any electronic recording device. Farmers and processors dealing with livestock would have complete health and production history on every animal. Processors would benefit by being better able to select animals best for their use. Consumers could check on quality and history by reading it on meat labels in the store.

Source: Extension and Agricultural Information, University of Missouri-Columbia.



By the year 2000, farmers should be able to buy their own agricultural robots for the price of a new pickup truck—and those robots will bring more high-quality melons to consumer's tables.

"For a farmer with only a few acres of vegetables, the robots will become as useful and versatile as tractors," according to Gains Miles, a Purdue University agricultural engineer. "Because they have sensors, the robots will harvest only vine-ripe fruit, thereby reducing waste and improving quality." Farmers will also reap higher yields because, unlike traditional mechanical harvesters, robots can go through fields many times, picking only ripe fruit on each pass without destroying melon vines.

Miles and his graduate students developed a prototype robot that looks like the skeleton of a large utility trailer. They added an electronic camera for sight and a computer to analyze images and locate fruit. A clam-shell type gripper gently grabs a melon; and electronic sensor sniffs it for ripeness; then the robot lifts it, cuts the vine, and places it on a conveyor or in a box.

They are testing the prototype at the Volcani Institute in Israel. "With continued engineering and decreases in the price of computer components," Miles says, "we're likely to see robots in every Indiana county by the end of the decade."

Source: R. Goetz, Purdue Agriculture 1993-1994, Purdue University, West Lafayette, Indiana.



The Cattle Industry's Trace-back Capabilities

A Status Report

January, 1990

**National
Cattlemen's
Association**

Beef Safety Assurance Task Force

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EVALUATION OF EFFECTIVENESS OF THE CURRENT BEEF CATTLE TRACEBACK SYSTEMS

**A FINAL REPORT TO THE
NATIONAL CATTLEMEN'S ASSOCIATION
BEEF SAFETY ASSURANCE TASK FORCE**

**FROM THE:
Meats and Muscle Biology Section
Department of Animal Science
Texas A&M University**

Principle Investigators:

Dr. Jeff W. Savell

Dr. Davey Griffin

Dr. H. R. Cross

Dr. Dan Hale

Randal P. Garrett

Brad Morgan

The Status of Beef Cattle Trace-back Systems

.....

Executive Summary

Recent research shows that, under current marketing systems, the beef industry's ability to trace carcasses back to the previous owner is extremely good. This demonstrates that those persons responsible for producing violative drug residues - albeit a very, very small number - are likely to be identified, and can be reprimanded. Further, it shows that mandatory individual identification of all cattle is not necessary in order to advance the pursuit of beef safety assurance and residue prevention.

Certain inadequacies do exist for some classes of cattle, and for certain marketing practices. However, these deficiencies can be easily corrected, and should be corrected by industry action as soon as possible.

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Contents:

1. Background
 2. Traceback studies
 3. Results
 4. Recommendations
-

A Report from the NCA Beef Safety Assurance Task Force

1990 - NCA Convention
Nashville, Tennessee

EVALUATION OF BEEF CATTLE TRACEBACK SYSTEMS

Background

As public concerns about food safety have escalated, livestock producers have come under increased pressure from government and consumer groups to ensure that all animals are identified throughout the marketing chain. Comprehensive animal identification systems would assure the public that, should violative residues be found in meat, the responsible party could be located and corrective action taken.

The USDA has been criticized by Congress for its inability to trace the origin of individual animals sold for slaughter. In its 1985 report entitled "Meat and Poultry Inspection", the National Academy of Sciences stated that the absence of a national animal identification system prevented the reduction of human pathogens in food animals.

Although legislation mandating individual identification has not been passed, the Senate and House Agriculture Committees have held hearings over the past several years on the necessity and feasibility of such a system. The concern about safety also prompted support for mandatory identification systems from FDA's Center for Veterinary Medicine, and USDA's Food Safety and Inspection Service.

Since 1985, the National Pork Producer's Council has been working with USDA to develop and implement a comprehensive swine identification system. If the system works, researchers have suggested that other species of livestock will follow.

Consumer groups have also placed pressure on industry groups and policymakers for effective traceback programs. Groups like Public Voice for Food and Health Policy have testified before Congress in favor of mandatory identification. As with other critics, consumer groups have cited the need for tracing residue violations to their source as a key element of ensuring safe meat supplies.

Government and consumer group criticisms of the lack of a national animal identification program have created a vulnerability in the industry's beef safety assurance effort. Without evidence to indicate that current beef marketing systems allow for traceability of individual animals, the credibility of the beef safety assurance program is at risk. Further, the longer critics are able to publicly question the measures, or lack of measures, taken by the beef industry to ensure a safe product, the greater the risk of a public backlash that damages beef demand and the image of the industry.

Since the beginning of the debate on animal identification, the beef industry has maintained that mandatory identification is not necessary to ensure traceability. To resolve questions about the industry's traceback

ability, NCA's Beef Safety Assurance Task Force commissioned a study of current beef marketing systems. The study was designed to determine 1) the accuracy with which beef animals can be traced from the packing plant back to their point of origin; 2) weaknesses in the present system, and 3) solutions to any weaknesses.

The project was funded through the Industry Information Program of the \$1 beef check-off.

Traceback Studies

The study was conducted in two parts. In the first part, Texas A & M University¹ researchers evaluated the traceability of fed cattle from packer to feedlot. Data were collected from ten packing facilities— three large plants that process in excess of 1,000 head per day and purchase fed cattle directly from the feeder, two medium and two small plants that purchase cattle from feeders, and five plants that purchase cattle from several different sources. At each plant, data were collected on the number of cattle processed the previous day, the number in each lot, the owner of the cattle, and the feeder. It was also determined whether the plants kept records for the previous 60 days. A total of 22,781 carcasses were traced.

The second part of the study, conducted by South Dakota State University², determined the traceability of cull cows and bulls from packer to point of origin. Seven packing plants representing various geographic locations, were sampled to determine method of cattle procurement (central public market, auction, dealer, or direct), sex, animal type (beef, dairy), and origin of cattle purchased. A minimum of 20 lots were sampled from each plant. A total of 2,979 cattle were surveyed.

Results

Results of the fed cattle segment of the study indicate that current marketing systems allow for 95% traceability of all fed cattle from packer to feedlot. Cattle purchased directly from the feedlot were 100% traceable. (Although an isolated incident of untraceability may occur, none were detected in this study.) Cattle purchased through auctions or terminal markets have a low traceability rate and accounted for most of the untraceable fed cattle. In fact, the traceback rate on cattle sold through auction may not be greater than 10%. Cattle marketed in this manner generally are not backtagged and often are mingled after purchase so that their only identification is a lot number and the market where they were purchased. However, because nearly all fed cattle are purchased directly from the feeder, the overall traceability is very high.

Results of the cull cow/bull segment of the study indicated a traceback rate of 77%. Identification was highest where cattle were double backtagged. In these cases, traceability was nearly 100%.

The primary cause of untraceable cattle was lost backtags (which helps explain why cattle tagged twice were so easily traced).

Slightly over 5% of the cattle never received a tag or other form of identification. Proper backtagging would eliminate this problem.

A few individuals were unwilling to release information about cattle sold through their business. However, the researchers believed that most of the cattle sold by these individuals were traceable.

Dealers tended to be unwilling to share information about their business. It is likely that few complete records are available from dealers. Therefore, the researchers concluded that dealers would be the "weak link" in the traceback system.

FED CATTLE

Traceable	95.3%
Untraceable	
Auction/Terminal Market	4.4%
Speculator/Commission Firm	.2%

CULL CATTLE

Traceable	76.6%
Untraceable	
Lost Backtags	10.3%
No Record of I.D.	5.1%
Non-cooperative	1.9%
Dealers	5.9%

Recommendations

Under current marketing conditions, the industry's ability to trace cattle is strong, particularly for fed cattle. However, improvements can be made in several potentially weak areas. The researchers have suggested that the most important steps that can be taken are:

- 1) Proper identification or backtagging of fed cattle sold through auction or terminal markets;
- 2) Double backtagging of cattle;
- 3) Improved compliance with backtagging regulations;
- 4) Development of a permanent identification system for use by dealers, speculators, and commission firms; *etc*
- 5) Cooperation from packers to transfer tags to carcasses.

Most of these recommendations are simple activities that can easily be implemented within the existing marketing system. However, special attention will need to be given to the identification of cattle purchased and sold through dealers, speculators, and commission firms. These cattle are generally traded in odd lots and may be owned for varying lengths of time. Often, traders of these cattle do not affix any form of permanent identification. To complete the industry's efforts to ensure traceback ability, a form of permanent identification must be developed and used by dealers, speculators, and commission firms. This may be as simple as special ear tags or as technologically advanced as implanted electronic chips. Either way, an educational effort may be necessary to demonstrate the importance of permanently identifying animals.

The results of the studies indicate that new beef cattle marketing and identification systems are unnecessary to assure traceback ability. Current systems are resulting in a high degree of success and, with a few improvements, could approach 100%.

-
1. Savell, J.W., D. Griffin, H.R. Cross, D. Hale, R. Garrett and B. Morgan. Evaluation of Effectiveness of the Current Beef Cattle Traceback Systems. Texas A & M University, 1989.
 2. Gee, D.H., J.R. Males, D.M. Marshall, and B.J. Johnson. Evaluation of Cull Cow Traceback. South Dakota State University, 1989.

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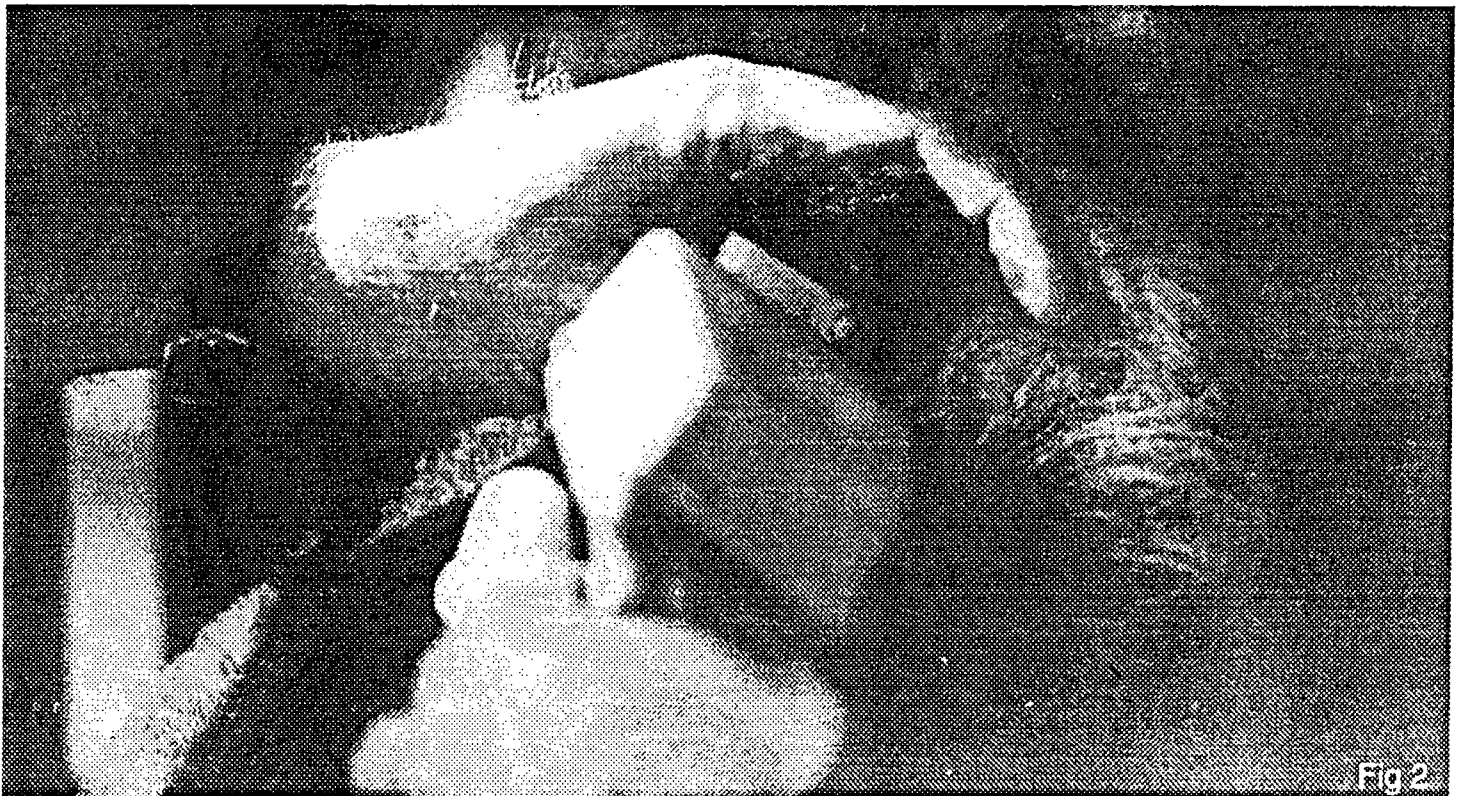


Fig 2



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