Animal health information systems in Australia

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Summary: In order to protect the export eligibility of Australian products, animal health information systems have been implemented on both the Federal and State levels. The paper describes the particular characteristics and interplay of the various systems.

KEYWORDS: Animal health - Animal products - Australia - Data processing - Disease statistics - Information services - International trade.

INTRODUCTION

Diseases causing significant mortalities in animals have largely been brought under control in Australia. But livestock managers, in seeking to improve efficiency on intensely competitive world markets, are also concerned with many less evident diseases. With rising costs and reduced margins, the effect of parasites and diseases on productivity and profitability can be severe.

Australia exports 95% of its wool and over half the beef produced. Animal and plant health services, as well as playing an important role in improving productivity, are charged with maintaining the country's export eligibility. This requires a high level of agricultural health surveillance and quarantine activity to deal with exports of livestock and agricultural commodities; and with imports involving some 23 million tonnes of cargo and the processing of some 2.3 million passengers who arrive in Australia from around the world each year.

Agricultural and animal health services of both Australian Federal and State Governments operate to safeguard the health of domestic, feral and native animals by preventing the introduction and spread of exotic pests or diseases, thereby protecting the export eligibility of the nation. State and Federal animal health information systems have been planned and implemented to assist in fulfilling this objective.

SOURCES OF ANIMAL HEALTH INFORMATION

Animal health in Australia is serviced by private veterinary practitioners; government field, extension and laboratory services; and university veterinary clinical services and laboratories (Table I). It is also monitored through abattoirs. Nationwide disease monitoring and traceback systems are in place for bovine brucellosis and tuberculosis.

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As the role of government animal health services is to protect both animal and human health, legislation (with supporting regulations) exists for the control of scheduled diseases and gives authority to treat, quarantine or destroy animals in order to contain or eradicate specific diseases. The diseases are listed by priority within State and Federal legislation, in a similar manner to OIE disease Lists A and B.

**RECORDING OF ANIMAL HEALTH INFORMATION**

Government field veterinary officers are the primary link in supplying information on animal health and they are required to record and report all disease occurrences in livestock. Laboratory-based information which depends on samples and information received from the field, although important, will be biased unless based on a properly constructed survey. This bias is due to the fact that specimens or disease details are not usually submitted if the cause of the disease can be identified in the field.

The administration of the State animal health organisations is based on geographic districts, which usually coincide with local government boundaries. The districts are combined and report to regions or divisions and these in turn report to the State or Territory headquarters based in the relevant capital city.

District veterinary personnel report routinely on disease occurrences, and on the progress of control or eradication activities. The recording system used and the extent of the reporting varies between States and districts. Recording and reporting systems vary from manual systems based on cards or files to sophisticated computer systems.

Like the veterinary districts, the regional and central veterinary laboratories also employ a range of information systems, although a single, uniform system is used for the national brucellosis and tuberculosis eradication campaign. This system spans eighteen laboratories within the States and the Northern Territory.

### TABLE I

*Number of veterinary and auxiliary personnel servicing animal health in Australia*

<table>
<thead>
<tr>
<th>Personnel</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Veterinarians</strong></td>
<td></td>
</tr>
<tr>
<td>Govt. officers</td>
<td>563</td>
</tr>
<tr>
<td>Univ. &amp; Labs</td>
<td>463</td>
</tr>
<tr>
<td>Private practitioners</td>
<td>2,927</td>
</tr>
<tr>
<td><strong>Auxiliary personnel</strong></td>
<td></td>
</tr>
<tr>
<td>Animal health assts.</td>
<td>661</td>
</tr>
<tr>
<td>Field assts.</td>
<td>157</td>
</tr>
<tr>
<td>Food hygiene</td>
<td>2,100</td>
</tr>
</tbody>
</table>

*Source: OIE Animal Health Yearbook 1985*
ANADIS differs from most systems in that it addresses the dynamic epidemiological situation of each herd, scans that herd’s records and generates the disease status by applying nationally agreed rules to the information.

The data stored on ANADIS are the minimum necessary to assess the herd’s disease status. These include the number of animals tested, the test results and the date. This information is sufficient to allocate one of several strictly-defined disease statuses to that herd.

Milk ring testing and traceback from cattle slaughtered at abattoirs provide a further source of data to assess herd status. The size of the herd and vaccination numbers can also be recorded as well as up-to-date information on the property owner’s name and address.

The herd is the basic unit, and information on individual animals is not routinely kept. The eighteen laboratory sites each manage information for between 10,000 and 20,000 herds, which amounts to an average of approximately 5.5 million characters stored at each site. About 1.7 million characters are sent from these sites to Canberra each week, where they are held on a master file by the Bureau of Rural Science.

ANADIS has been maintaining records and generating reports on approximately 150,000 herds for the past ten years and its role is to record, maintain and report information on disease monitoring and management of the brucellosis eradication campaign. The underlying epidemiological approach used in ANADIS for data structures, report types and computer programmes can be readily expanded to include other diseases if required.

The basic report generated by ANADIS is the “HERDREPORT” which gives details of:

- owner’s name, phone number and address
- animal numbers
- whole herd testing
- abattoir monitoring
- milk ring testing
- vaccinations
- changes in disease status of the herd.

Other reports, such as “SCAMP”, can be prepared for regions, districts, shires or sub-areas within a shire and include:

- numbers of herds of each status
- summary of herd testing activity
- summary of abattoir and other forms of disease monitoring
- classification of herds by their disease status at the start and end of the report period.
Another report, "ACTIONLIST", lists herds according to the criteria specified by the user. For example, a user may wish to list herds that have had no vaccinations over the last year, or herds that have had milk ring tests during the last six months, or that became infected during the last three months.

ANADIS data are recorded and stored on computers within the State regional veterinary laboratories and are routinely transferred to the Bureau of Rural Science in Canberra to be stored on a master file. This data is used to generate national reports on activity and progress of disease eradication and for epidemiological studies, as required.

National statistics are produced each quarter by the Bureau of Rural Science which also supplies a summary of the information on a modern data base management system. This enables detailed epidemiological studies to be made by the States on their data using a fundamental query manipulation system.

The data base management system which is used for fundamental query manipulation is established on a nationwide computer network available through the telephone system. It is thus available to authorised persons anywhere in the country. The system also includes OIE data which can be referenced, appended or edited as required.

In Australia, it is common for cattle to travel some distance before slaughter, so a necessary function of the central system operated by the Bureau of Rural Science is to sort and redirect information on disease surveillance to the laboratory computer maintaining the records on the herds of origin.

ANADIS was established in 1978. At that time it operated on 22 minicomputers distributed around Australia. The system has recently been modified so that the regional laboratories now require only a standard IBM XT, or work-alike, with a 20 Mbyte hard disk. If the system is required to accommodate information on more than 12,000 herds, a computer with a larger capacity hard disk is required.

STATE ANIMAL DISEASE INFORMATION SYSTEMS

NEW SOUTH WALES

VETLINK

VETLINK is based on AGNET, the Department of Agriculture’s private network of nine PRIME computers which are located throughout the State. This network has links with AUSTPAC, a national network, and local networks within the Department.

The objectives of VETLINK are to assist in the areas of:
- identifying significant diseases in commercial livestock;
- developing programmes to reduce production losses;
- managing and evaluating existing and proposed programmes.

The basic principles used were to:
- integrate data from a variety of sources to satisfy reporting and analysis requirements;
- define disease in a broad way so that all professional views are represented;
- as far as possible classify each disease outbreak as an event, stored as a record;
- relate disease events to location by property identifiers;
- have all terms represented in a thesaurus;
- have management packages to provide real time management of physical programmes and activities;
- provide fundamental query manipulation of the data.

Contact officer: Mr D.C. Rolfe, Director, Animal Health Services, Division of Animal Health, Department of Agriculture, P.O. Box K220, Haymarket, N.S.W. 2000, Australia.

VICTORIA

AHDIS

Animal Health Disease Information System (AHDIS) is similar in concept to the N.S.W. Department of Agriculture VETLINK system. It includes microcomputers based at District Veterinary Offices linked to Regional Offices and each of these to a central system within the Head Office in Melbourne.

This system has also been designed so that each record is a disease event and includes such items as the presenting signs, species and location. It also characterises the diseases in a broad way to permit all professional views to be represented.

Contact officer: Dr I.R. Morgan, Veterinary Officer (Epidemiology), Veterinary Research Institute Attwood, Department of Agriculture, 475 Michleham Road, Attwood, Vic. 3047, Australia.

QUEENSLAND

VADIS

Veterinary Services Animal Disease Information System (VADIS) is based on regional microcomputers with central statewide collation of data in the Head Office. Case histories are recorded from conditions diagnosed in the field, abattoirs or laboratory.

The objectives of this system are to:
- provide reports on the geographic and seasonal distributions of disease;
- assist in supplying early warning of emergency disease problems;
- assist in identifying the cost of disease occurrences;
- assist in designing, managing and evaluating programmes.

Private practitioners also contribute to VADIS, their information being coded and entered by the Department. Cooperating practitioners receive quarterly disease summaries and special reports on areas or properties when requested.
Contact officer: Mr F.J. Keenan, Principal Veterinary Officer, Queensland Department of Primary Industries, G.P.O. Box 46, Brisbane, Qld. 4001, Australia.

SOUTH AUSTRALIA

The South Australia Department of Agriculture has based its data recording on property files, with event-orientated records containing the standard epidemiological data fields. These are keyed-in off a laboratory form.

The South Australian Department has modified ANADIS so that it can be included within a private computer network. This renders details on property locations and owners more accessible to departmental staff.

Contact officer: Dr M. Reid, Deputy Chief Veterinary Officer, Department of Agriculture, G.P.O. Box 1671, Adelaide, S.A. 5001, Australia.

WESTERN AUSTRALIA

WALDIS

Western Australian Livestock Disease Information System (WALDIS) is a field-orientated computer system. This system records sixteen data fields of basic information and includes estimates of reliability and prevalence for all events brought to notice.

This system was designed to be compatible with the local laboratory data base, the State property register and the national data base (ANADIS). It is used for providing routine and ad hoc reports at the property and regional levels, and to supply the Head Office with summary information. It is also used to notify diseases within the First Schedule of the Enzootic Disease Regulations and supply data for epidemiological studies.

Contact Officer: Dr J.L. Anderson, Principal Veterinary Officer (Livestock Control), Western Australian Department of Agriculture, Baron-Hay Court, South Perth, W.A. 6151, Australia.

TASMANIA

VETDEX/MISTA.G

The VETDEX data base system was developed wholly within the State Department and resides on a central minicomputer. All veterinary pathology laboratory accessions are entered into the system. Along with individual reports given to the person submitting the specimens and ad hoc reports generated on demand, monthly reports are sent to District Veterinary Officers to consolidate information pertaining to their district for that month.

Rural holdings are identified by a unique property number so that a continuous history of the property is maintained irrespective of changes of ownership. This number relates to map co-ordinates so that diseases — as well as soil and pasture
data, which are also recorded – can be geographically plotted by the computer system. MISTAG is a project and staff management system which records property visits and diagnoses made in the field.

Contact officer: Dr Roy Mason, Senior Veterinary Officer, Department of Agriculture Tasmania, Mount Pleasant Laboratories, P.O. Box 46, South Launceston, Tas. 7249, Australia.

NORTHERN TERRITORY

ERIC

ERIC is a data base used in the bovine brucellosis and tuberculosis eradication campaign which links property management data to disease and to the financial data associated with the implementation of the campaign. The financial data includes payments made to the producers under the financial agreements of the campaign.

The tailtag system is used to identify cattle back to a discrete parcel of land, which may be the whole or part of a property. Each tailtag is linked to owner, manager and property information (including the identification of the responsible stock inspector and veterinary officer).

Contact officer: Dr B. Radunz, A/Deputy Chief Veterinary Officer, Department of Industrial Development, P.O. Box 4160, Darwin, N.T. 5794, Australia.

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SYSTÈMES D'INFORMATION ZOO-SANITAIRE EN AUSTRALIE. – L. Andrews.

Résumé: Afin de permettre aux produits australiens de satisfaire aux conditions requises pour leur exportation, des systèmes d'information zoo-sanitaire ont été mis en place au niveau fédéral comme au niveau des Etats. L'auteur décrit les caractéristiques propres à ces différents systèmes et leurs modes d'interaction.

MOTS-CLÉS : Australie - Echanges internationaux - Produits animaux - Santé animale - Services d'information - Statistiques de maladies - Traitement des données.

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SISTEMAS DE INFORMACIÓN ZOOSANITARIA EN AUSTRALIA. – L. Andrews.

Resumen: A fin de que los productos australianos cumplan con los requisitos de exportación, se han creado sistemas de información zoosanitaria tanto a nivel federal como de cada Estado. El autor describe las características de los diversos sistemas y sus modos de interacción.

PALABRAS CLAVE: Australia - Comercio internacional - Estadísticas de enfermedades - Procesamiento de datos - Productos animales - Sanidad animal - Servicios de información.