

Towards LUMIS – an agreed national Land Use Management Information System

(A multi-level framework for collecting, collating and using land management practices information in Australia)

Summary of the outcomes of a national workshop - 'Land management practices: Information priorities, classification and mapping' Canberra, 11-12 May 2004.

Background

Improved land management practices have been identified by the National Land and Water Resources Audit as a key pathway for Australian agriculture to enhance on-farm productivity and landscape-scale natural resource benefits. Land management practices may be described as the 'how' of land use. Other related terms describing land occupation include land cover (the observed physical surface of the earth), commodity (an agricultural or mining product for processing), tenure (the form of an interest in land), and of course land use itself (what we want to do with land – its purpose).

Land management practices are important mechanisms for improving the condition of Australia's land, water and biodiversity resources and the profitability and sustainability of agriculture.

The Bureau of Rural Sciences hosted a two-day workshop on 11 and 12 May 2004 to examine how and for what purposes a nationally-agreed land use management information system might be developed. Such a system would be the third step in national land resource use data development – following land cover and land use mapping. Workshop participants included State and Territory agencies (all States and NT), NRM and rural research and development corporations (RDCs), land resource research scientists, the National Land and Water Resources Audit (Audit), Murray-Darling Basin Commission (MDBC) and the Australian Government (Department of the Environment and Heritage, the Australian Greenhouse Office and Department of Agriculture Fisheries and Forestry). Most members of the Technical Advisory Group on Land Use Mapping (TAGALUM) participated as well

Workshop objectives

The objectives of the workshop were to:

1. Identify key land management practice **information needs** for dryland and irrigated agriculture;
2. Identify priority **data collections and information gaps**, and
3. Develop principles for an agreed national **framework for land management practices information collection and collation**.

The first day of the workshop focussed on objectives 1 and 2 - information needs, data collection priorities, information sources and gaps, in particular user demands for (a) national policy and programs, (b) state agency, regional natural resource management applications, (c) primary Industry, and (d) land evaluation science.

The second day of the workshop dealt with objective 3 – the development of principles for an agreed national framework for land management practices information.

Why collect land management practices information?

The workshop identified that land management practices are important mechanisms for improving the condition of Australia's land, water and biodiversity resources and the profitability and sustainability of agriculture.

Identifying patterns in the adoption of land management practices, and changes in practices over time, can assist in monitoring and measuring natural resource condition and trend, and progress towards agricultural sustainability.

Improved land management practices have been identified by the National Land and Water Resources Audit as a major way forward for Australian agriculture to enhance on-farm productivity and natural resource benefits at a variety of scales from farm to catchment.

Key drivers for the collection of land management practices information include:

- Monitoring and reporting natural resource condition and trend for processes such as the NAP/NHT and State of the Environment,
- Targeting and guiding investment in high priority natural resource management issues,
- Performance information for agricultural industries, assessing the effectiveness of investment in national programs with natural resource management and business management objectives, and Environmental Management Systems, and
- Modelling landscape processes that affect the natural resource base and generate problems such as salinity and water quality.

Currently, information relating to land management practice is collected or collated by State, Territory and Australian Government agencies, research institutions, community groups and industry. Specific research projects, such as the MDBC Landmark Project, are also identifying current recommended land management practices and best management practices for a range of broad acre land uses. Such information is at various scales, accuracy and in different, not necessarily compatible, formats. Few sources, individually or in combination, provide information that is sufficiently comprehensive or systematic to meet the needs of the key drivers outlined above.

Challenges facing the development of a framework for the collection and collation of land management practice information include:

- The absence of any formal or agreed system for classifying and reporting land management practices,
- A wide range of phenomena may be considered land management practices,
- Land management practices can apply concurrently and in complex combinations, and are thus not amenable to a dichotomous classification, and
- Land management practices can change from season to season or year to year.

The workshop was informed by a series of background papers.

Outcomes

The workshop showed that there is a clear demand for the collection of land management practices information in a nationally consistent way. Participants strongly endorsed the forward agenda outlined below.

Outcomes of the workshop have also contributed to development of the Audit's socio-economic workplan.

The workshop agreed that:

1. A nationally-consistent framework for classifying land management practices (LMP) and collating LMP data needs to be developed.
2. The policy and practical drivers for such a framework must be clearly articulated.
3. The framework should include the range of uses to which codified LMP data could currently be put at property, catchment, state/regional and continental scales.
4. The linkages between the policy drivers for the framework, the uses to which LMP information could be put and sources of LMP data need to be better defined and understood.
5. The framework should apply both to government program investment (eg regional investment through the NAP, NHT and NLP) and to industry directed expenditure through the rural research and development corporations.
6. An operational framework is likely to take some years to collectively develop, however, it is expected that useful products will emerge during the process.
7. Policy and technical leadership will be required to co-ordinate development of the framework and manage its testing and implementation.
8. A network and working group need to be established to take this work forward. TAGALUM, comprising State/Territory and Australian Government representatives, is best placed to do this, particularly since they have some experience in developing nationally-agreed classification frameworks and information standards (eg for land use mapping).
9. Senior State/Territory and Australian Government policy makers need to be informed about the potential uses and applicability of LMP information and a national classification framework for such information. The most likely conduits are the Executive Steering Committee on Australian Land Use Mapping (ESCALUM), the Audit and the Natural Resources Management Steering Committee (NRMSC).
10. It is desirable to establish a series of pilot projects in each state (probably based on representative agroecological zones) to test the framework and learn how to collect and interpret data on land management practices.

Key issues to be resolved in developing a framework include:

1. The management of scale (spatial: paddock to property, local, regional state and national; and temporal: frequency of collection) and aggregation issues.
2. The linkage between detailed information about particular sites and broad scale spatial data for catchment, regional and national reporting.
3. The need for a flexible framework so as to allow for future innovation in production practices and systems, and consequently changes in the information required and in the policy and other drivers for collecting LMP information.

4. How to incorporate and use historical information and old data, which are in a variety of formats, at different scales and were collected over different timeframes and intervals.
5. Understanding current sources of data and their accessibility, cost, quality, reliability, utility and application; and exploring opportunities for data collection via farmers, regions and industry collections.
6. The development of common data standards, classifications, guidelines and database structures.
7. Understanding the linkages between land management practices information and the requirements for modelling resource conditions and socio-economic factors.
8. Funding and responsibility questions; will there be funding from across a range of stakeholders, who will run pilot studies and where; who will collate and analyse the results?