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**WHAT ARE THE PRIORITY NEEDS FOR AGRICULTURAL STATISTICS
AND HOW WELL DO OUR CLASSIFICATION SYSTEMS
SUPPORT THESE NEEDS?**

<u>Submitted by the Australian Bureau of Statistics</u>*

I.   PRIORITY NEEDS FOR AGRICULTURAL STATISTICS

Introduction

1.   This paper outlines the changing priority needs for agricultural statistics in Australia and discusses how well the current industry, commodity and other classifications support the Australian agricultural statistics program.

Changing nature of agricultural statistics

2.   The Australian Bureau of Statistics (ABS) has recognised the emergence of new statistical needs as the agricultural sector grapples with issues such as globalisation, rapidly changing technology, sustainable agriculture, the changing role of government and

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reports of declining living standards in rural communities. In particular, the focus of government policy has been moving away from analysis of specific issues, towards integrated analysis of agricultural industries, rural communities and rural Australia as a whole. In addressing issues such as dryland salinity, governments need to understand the possible implications, not only on commodity production in the area, but on the economic and social impact of families and communities in the affected areas.

3.   The scope of the budgetary response to rural and regional needs and the demand for integrated data from public and private institutions clearly show the need for an integrated and, where possible, holistic approach to data collection and dissemination. Unfortunately there is currently no one major source for such integrated data, yet there will certainly be an increasing audience requiring information. Appropriate use of standard classifications will assist the data integration process.

4.   There is also a widespread need for small area statistics, the geographic areas for which data are needed vary considerably between users, with no one classification system meeting all needs. It is therefore desirable that agricultural statistics be compiled in a way that enables the output to have the flexibility to meet multiple perspectives (ie water catchments, local government areas, remote regions, etc). Ideally, users would be able to customise the rural area for which they request data.

5.   The strategic issues identified in this paper draw heavily on the findings identified in a review of the ABS agricultural statistics program undertaken by Fred Vogel from the National Agricultural Statistics Service in the US Department of Agriculture during 2002. The review was undertaken to obtain an independent evaluation of user needs for statistics, particularly for policy monitoring and formulation, and to assist ABS in developing a national system for agricultural statistics in Australia to service those needs. (Following parts of this paper shown in italics are drawn from the report arising from the Vogel Review, either directly, or in summary.)

International experience

6.   The Vogel report identified several different and emerging forces impacting on agriculture internationally. These include:

"a)   The globalisation of the world economy led by several factors including rising incomes in developing countries, reduction in trade barriers, and large countries moving from planned to market driven economies. For a country's farmers and agribusinesses to compete effectively in the global markets, a competitive agricultural system is needed. More than ever, the competitive structure of agriculture is affected by rules of trade, domestic policies, and new technologies.

b)   The increasing demand for food and fibre has been met by more intensive use of the land with increased use of irrigation and fertilisers, expansion of cultivation to marginal land more subject to erosion, and increased deforestation. The need for a country's farmers to provide food security for a

growing population is leading to concerns that intensive use of land and water resources and the application of agricultural chemicals are having environmental consequences. Policy makers are faced with difficult decisions about appropriate actions to ensure that their agriculture system is competitive in the world markets, yet is sustainable and in harmony with the environment.

c)   The changing structure of the nation's farms into fewer, but larger operations. This is happening to the extent that it is affecting the social structure of rural communities as the displaced farmers move elsewhere. On the other hand, there is a growing population of part-time farmers around urban areas who have employment elsewhere but desire the agricultural life style. While these producers contribute little to the overall agricultural production, they do account for a considerable amount of the land.

7.   The primary issue facing statisticians is that all three forces are happening at the same time. Agriculture is the major user of a nation's land and water resources. Providing an adequate, safe, and nutritious supply of food should be a basic goal of every country. Agriculture is an important part of many countries' trade balances. Agricultural production, more than any other sector, is very volatile as it suffers from the vagaries of weather on top of market and policy driven effects.

8.   A related point has to do with the organisations producing agricultural statistics in most countries. Nearly every country has a National Statistics Office (NSO) that produces statistics about aspects of its population and economy including the agricultural sector. Most NSOs produce agricultural statistics as needed for their national accounts and for policy-making purposes. The problem is that these statistical programs have not kept pace with the changing requirements for agricultural statistics to provide information for competitive markets and to meet concerns about land use and the environment. As a result, Ministries of Agriculture in many countries try to mount their own agricultural statistics programs to obtain the data to administer markets, negotiate trade, etc., that are not being furnished by the NSOs. Data to support environmental and land use issues are being collected by land planning commissions and environmental offices. These needs arise at both local and national levels, with each level duplicating the work of the other. Many of these organisations lack the frames and statistical expertise available in the NSOs."

Integration of agricultural statistics

9.   "The most serious problem is that there is a growing need to integrate production statistics with land use, environmental, and economic data to provide a complete picture of agriculture. A viable agricultural statistics system needs to provide data to support three basic functions.

a)   Guide the making of government policy decisions as they relate to food security, income security, and economic issues. Governments are also becoming increasingly aware of agriculture's affect on its land resources and the environment. As policy makers grapple with food safety, land use, and environmental issues, they want to know more about how their policies affect

the economic and social well being of farms and farm households. More important, they desire knowledge about the infrastructure and geographic distribution of agriculture so that policy can be made more directly to sub-sectors or geographic regions.

b)   Support an equitable and efficient marketing system for the sale, distribution, and trade of the Nation's agricultural products. The rapid development of the Internet for information exchange along with the shifting of major countries away from planned systems to market driven policies has created a global economy for agricultural products. Price discovery for major commodities is driven by the world supply and demand situation. A key element that ensures markets function fairly and efficiently for both buyers and sellers is basic information on what is produced, where it is produced, and the total supplies including quantities in storage.

c)   Provide information that guides decisions about long-term investment strategies. Investment in capital stock is necessary to sustain any economic activity and more important to foster economic growth. In agriculture, producers and lending institutions have investment decisions to make which includes whether or not to invest in land, irrigation, breeding stock, equipment, and land improvement activities. Basic to these investment decisions are data that allow the producer and/or the lender to determine whether the economic return from making the investment will exceed its cost. Another important investment to agriculture is that by government and private industry. The decision to invest in a new processing plant and where to locate it is best served by detailed local area data and long term trends.

10.   A major issue is that the data needed to support sound policy, efficient markets, and wise investment decisions are no longer independent. Policy makers at all levels of government need information that measures the current and future impacts of their policies. For example, how is a land use or environmental policy affecting the production and the economic profitability of the farms involved? Does the affect differ by geographic area or by kind of farm? Can every farm implement the policy? In other words, there is a growing need for an integrated data system that measures the interaction between the many policy issues and the sustainability, productivity, and demographics of the nation's farms."

The Australian experience

11.   The Vogel review and earlier ABS internal reviews were initiated to address the growing concerns expressed by users of agricultural statistics that the ABS agricultural statistics program was not reflecting all of the most important needs of our statistical users. This is in spite of changes made in recent years such as bringing forward the timing of the Agricultural Census so that it coincides with the Population Census, developing the capacity to geocode the Agricultural Census, and the increasing range of information collected on environmental issues associated with agriculture.

12.   Emerging policy areas for which new and or modified data series are required include the following:

a)   Globalisation of Trade and Markets

This offers new challenges for Australian agricultural producers.   As markets become more world oriented there is a greater need for more information about current supplies, prices and prospects for future demand and supplies for all the major production and consuming regions.

b)   Technology.

The rapid advancement in genetic engineering is resulting in crops being developed for specific purposes and niche markets rather than a set of general purposes. This in turn leads to a range of much finer detail being required.

c)   The changing role of government.

As governments pursue policies to ensure industry self-reliance new information requirements have emerged to satisfy industry needs.

d)   Sustainable agriculture.

Agricultural activities and their resultant effect on the environment are attracting increasing attention. This in turn has led to new statistical demands on patterns of land and water utilisation and management as governments increasingly focus on the needs of the environment and the fostering of sustainable agricultural practices.

e)   The changing structure of the Agricultural Sector.

As the total number of farm holdings continues its long term decline and as the importance of the corporate farming sector continues to grow, the role of the traditional family farm in Australian agriculture is changing. Smaller farms are increasingly part-time, specialising in catering for smaller local and niche markets. Vertical integration is increasing, with significant amounts of agricultural production being provided outside the agricultural sector itself. Governments wanting to monitor these trends require information on corporate structures operating both within and outside the sector.

f)   Rural communities.

Continuing industry adjustment and the decline of the farm population increases the need for information on rural social issues. There is a need to coordinate data collected on farms, non-farm households, farm and non-farm businesses, community infrastructure and services, to provide a more accurate and comprehensive picture of rural and regional Australia (eg the concept of "economic catchment areas").

Shortcomings in the Australian system

13.   The Vogel review identified a number of weaknesses in Australian agricultural statistics, in light of the changing policy issues on agriculture in recent years. Some of the key points are as follows:

a)   A lack of integration across the data provided by the different providers of agricultural statistical information that restricts effective analysis;

b)   Aneed to link data across the various types of units that are relevant to agriculture ie households, farm businesses and land; and

c)   A need for an information model for agriculture, which recognises the roles and responsibilities of the different providers of agricultural data. This model should, among other things, outline the common standards, including data item definitions and classifications, that should be used and identify significant information gaps that should be filled.

Developing an ideal system

14.   To develop a system which can satisfy the requirement for data ranging across the full spectrum of needs outlined earlier in the paper is a major undertaking requiring significant resources over several years in its development. Users will want to be able to assemble data from diverse sources to focus particular issues and would expect the data so assembled to be reliable, relevant, relatable and timely.

15.   From a statistician's perspective, to provide this type of high quality service to these diverse users and uses would require the development of a statistical system with the following key attributes:

a)   The gradual development of a series of separate but linked data bases which would hold information on:

-       land use and environmental impacts;
-       agronomic data on crops and livestock;
-       economic and financial activities;
-       social characteristics of farm households;
-       regional and rural community data.

b)   The capability of being able to integrate diverse sources of information both within and between these data bases requires a sound and well developed statistical infrastructure characterised by standard data item definitions and classifications to allow common categorisation of data from a range of sources. Thought will need to be given to how best the development of common concepts, definitions and classifications can be made and how these will be promulgated to both providers and users of data.

c)   A well developed IT infrastructure.

ABS Vision for Agricultural Statistics

16.   Ultimately, the ABS wants to provide users with detailed integrated agricultural economic, social and environmental statistics. We aim wherever possible to provide geographic detail that is sufficiently fine to enable analysts to define the area that data are extracted for. It is our objective to make maximum use of statistics collected by the ABS and other organisations to reduce the burden on data providers. New technologies will be used to full advantage.

17.   These objectives will not be achieved quickly, given the degree of change required and the need to build collaboration between key Federal and State/Territory agencies.

18.   In order to achieve this vision, the ABS Agriculture Program has as a first step, commenced work on drafting an Information Development Plan (IDP). This will be a collaborative process with the aim of producing a plan for developing a national agricultural statistics system. Development of the IDP will require extensive consultation and gathering of intelligence from stakeholders. Negotiations with key stakeholders will be undertaken to determine which agencies will create the information.

19.   This work is currently underway with a series of consultations with key stakeholders planned to be completed by the second half of 2003. It is envisaged that the main outcomes from this process will include:

    a)   Formulation of an information development plan incorporating an information demand/supply model. To achieve this ABS needs to establish exactly what agricultural statistics users require and how they might be assembled in an integrated framework of data output. While we expect that much of the data would be available from within the ABS, there will be some data which the ABS does not collect. Where these data are collected by another organisation, the ABS will approach them for access. Where these data are not collected by another organisation, we may consider their addition to existing ABS surveys or encourage others to gather the relevant information consistent with the national statistical system infrastructure.

    b)   Constructing a conceptual model of agriculture and related statistics. To enable integration of data across various types of units that are relevant to agriculture it will be necessary to link data for farm households, farm businesses and land.

    c)   Developing the statistical infrastructure to support the information development plan including:

        -       high quality and current population frames;
        -       standard data item definitions;
        -       standard definitions for units from which data is collected;
        -       standard classifications to allow common categorisation of data;

- information on concepts, sources, methods utilised in the information;
- gathering process to assist in the subsequent analysis of data.

II.   THE IMPORTANCE OF CLASSIFICATION SYSTEMS

20.   The use of relevant classification systems is an important component of a National Statistical agency and also important where other data providers take responsibility for key sets of data to maintain consistency and comparability.

Implications for the Central Product Classification (CPC)

21.   The main purposes of the CPC are to provide a framework for international comparisons of statistics dealing with goods and services and to serve as a guide for developing or revising existing classification schemes of products in order to make them compatible with international standards.

22.   While there is growing demand for statistics relating to the non-production aspects of agriculture, information on commodity production is no less important. The need for a standard product classification remains.   One area of growing need is for information on GM commodities and organically produced commodities. Consideration needs to be given whether these aspects should be incorporated into the CPC or dealt with in some other way.

23.   In terms of Australian agricultural production, there is a need for a detailed classification of a large number of individual raw products produced by farmers, including varietal information for some commodities such as apples, citrus and grapes. At the 5 digit level the CPC provides a framework from which the ABS has developed a derived classification (the Australia New Zealand Standard Product Classification - ANZSPC) to accommodate its needs at the detailed level (see Annex 1).

24.   The ANZSPC satisfies ABS requirements for a production classification well, and it links well to the existing CPC. There are no significant changes required to the agriculture component of the CPC from the Australian point of view, given the existence of the more detailed ANZSPC.

25.   It is worth noting however, that the CPC is not well suited to the requirements of many countries in the Asian and South Pacific region, which do not have the resources and infrastructure to develop their own versions of classifications based on the international models. They rely on the International standard classifications for use directly in their collections which are often too high level for effective local use.

Implications for the International Standard Industrial Classification (ISIC)

26.   ISIC serves as a guide for countries to develop national activity classifications and has become an important tool for comparing statistical data on economic activities at the international level.

27.   However, the current version of ISIC does not serve countries in the ASEAN region very well and some further work needs to be undertaken to better reflect the activities undertaken in specific regions.   For example, in some developing countries mixed activities such as aquaculture and rice farming and cattle and rice farming are not uncommon. This is also true in the Australian context where mixed farming activity is undertaken on a significant scale particularly in the grain growing, sheep farming and beef cattle farming industries. There are also a number of other issues that need to be considered in the current review of ISIC; these include the treatment of aquaculture, GMO's and organic farming.

28.   Australia has a very diverse farming industry with a wide range of climate conditions and soil types allowing for the production of a very large number of different commodities. To enable industry data to be informative in this context, a more detailed classification is required than that provided by ISIC, and the Australian and New Zealand Standard Industrial Classification (ANZSIC) has been developed to meet this need. For the most part the concordance between ISIC and ANZSIC is straightforward. The main exception is that ANZSIC has a class of 'Vegetable Growing' which includes the growing of potatoes and sugar beets (in class 0111 Growing of cereals and other crops n.e.c. in ISIC) as well as the other vegetables which are included in class 0112 in ISIC.

29.   The future directions for agriculture statistics will have some impact on industry classifications. The main concern relates to the increasing incidence of 'vertical integration' which causes problems when industry coding is based on primary activity. However, it is unlikely that changes to industry classifications can solve this problem.

Need for other classifications

30.   One of the main deficiencies in the ABS' agricultural statistics system currently is our inability to provide data by user defined regions.

31.   There is a strong need for integrated agriculture data, broken-down to a fine geographic or regional level. In identifying rural issues, statistical data users rely heavily on comparisons between rural and urban Australia; but when targeting and assessing rural programs, rely on regional or small area statistics. This is particularly so for environmental programs where, for example, there may be a need for data on income per unit of land by current land use to determine whether or not it is viable to undertake environmental repair work in a particular catchment area. This need for small area statistics varies considerably between users, with no one classification system meeting all needs. It is therefore desirable that rural statistics should be compiled in a way that enables the output to have the flexibility to meet multiple perspectives (ie catchments, Statistical Local Areas, remoteness, etc). Ideally, users would be able to customise the rural area for which they request data.

32.   To address this issue, the ABS has been undertaking work associated with geocoding agricultural properties in Australia for several years. A number of government and industry organisations support this initiative, and have already undertaken some work in this area on a localised basis. The ABS is investigating a number of options to undertake this task at a national level, which would allow data collected from the Agricultural Census to be published at a more detailed small area basis than is currently possible.

33.   Geocoding data from the Agricultural Census involves recording digitised farm boundaries for each agricultural establishment included in the census. Digitised land parcel boundary information is available from State Government Land offices but has to be matched to farm establishments from which data is collected. In most cases, establishments are combinations of various land parcels, some of which may be operated by persons other than the owner of the land parcel. Use of geocoded farm establishments will be a significant challenge for the ABS agricultural program over the next two to three years.

34.   Another important issue in the Australian context is land use. In agricultural terms, information is needed on the use of land for various agricultural activities, but in the broader environmental context, information is needed on land use for all purposes. A number of attempts have been made in Australia to provide a land use classification. The Australian and New Zealand Standard Product Classification (ANZSPC) includes a Division on land but the categories are quite broad. It may be suitable as the basis of an extensive land use classification. Another classification that has been developed in Australia is the Australian Land Use and Management Classification (ALUM). ALUM is quite detailed, and contains the types of categories that might suit most applications, but does not follow classification principals very well as it contains categories that are a mixture of land cover, land tenure and land use. Despite these deficiencies, it is currently filling a need. An appropriate Land Use Classification is probably the highest priority need in terms of classifications related to agriculture.

Sources and References

Vogel, F.A. (2002), "Framework For Agricultural Statistics In Australia", Australian Bureau of Statistics, Canberra, Australia.

ANNEX 1

**Comparison of CPC and the Commodity Classification
used for Australian Agriculture**

This table uses "Other fruit, fresh n.e.c." to illustrate the difference in level of detail between what is provided by the CPC and what is needed by users of agriculture statistics in Australia. It shows that the CPC is a 'broad' classification.

CPC Sub-Class	CPC Descriptor	ANZSPC Sub-class	ANZSPC descriptor

01349	Other fruit, fresh n.e.c.	01311	Pome fruit, fresh
			
			01311 Pome fruit, fresh
			
			    01311.10 Apples (26 varieties listed)
			    01312.20 Pears (13 varieties listed)
			    01311.30 Quinces
			    01311.90 Pome fruit nec

Where applicable the ABS would classify individual fruits according to whether fresh or dried and then identify the types of fruit grown and their varieties.