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## WHITHER AGRICULTURAL ECONOMICS:

A Look Ahead to the Twenty First Century

by

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### ABSTRACT

This paper examines the future of *agricultural economics* in the context of recent developments in Canada, the U.S.A. and to a lesser extent in New Zealand and Australia. The conclusion in this paper is that the traditional public interest base for agricultural economics is declining and that therefore our employment in the areas of farm management and other farm related areas such as university and state extension programs will likely continue to decline. It is anticipated that, by the year 2000, some professionals now in universities, in business, and government may find themselves assigned to other areas. However, several new areas of public interest are identified. These include international trade, environment, health and general education. Opportunities for *agricultural economists* in these areas are anticipated.

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## INTRODUCTION

Thank you Mr. President and Members of the Society for this opportunity to share with you some thoughts on where I think our field, *agricultural economics*, is headed in the late 1990's and the early part of the 21st. century. It is a pleasure to be "back home" in New Zealand. Even though I have now lived overseas for more than 25 years, my roots are still here. I am also rooted somewhat in Australia through my experience working and living with four Australians as an undergraduate at Massey in the 1950's and subsequently at the University of Sydney on a sabbatical in 1974. It's good to be with you today.

I would like to address three major trends affecting our profession. These are population growth, economic growth, and environmental concerns. My focus on these three issues comes from a North American perspective, but it includes experience in New Zealand in 1986 and 1990. I regret a lack of recent experience in Australia but hope that my discussant from that country might be able to fill in some of the blanks in my knowledge so that we might together have a rounded discussion of the issues at the end of this presentation.

## POPULATION

The populations of Canada, the United States, New Zealand, and Australia have all doubled in my life time, a period of almost exactly 55 years. Tables 1 through 4 provide details. Further, recent trends suggest the populations of these four countries will increase by a further 6.7, 3.8, 4.6 and 9.3 percent respectively by the beginning of the next century. These changes have several consequences for our profession.

All these four populations provide a market for our traditional market: the farm sector in each of our countries, to supply. Food supplies have had to expand to meet the demands of these expanded populations in the past and will have to do so for the increasing numbers of people projected to be alive in the 21st century. However, there are some significant differences between the past and the future.

The future populations of all four countries will be older. The first "baby boomers" will reach age 60 in the year 2005. Our present populations are already well fed, by which I mean that most already have three or more meals per day. The market for traditional foods in all four countries are inelastic and are likely to remain that way. Farmers are unlikely to increase their incomes from offering significantly more food to these populations. The concern will be largely with the quality and variety of foods available. These changes will require farmers and food processors to become increasingly sophisticated in the tracking of markets and their marketing strategies in these markets. Dealing with the geriatric set will be increasingly important after the turn of the century.

## STANDARD OF LIVING

These people all want access to a standard of living at least as high as that of their parents. This means greater efficiency in the production of traditional foods and agricultural products and increasing sources of wealth generation in each economy. The latter are increasingly hard to achieve. Governments have tried to respond to these desires over the last 20 years but have often failed, leaving major projects, e.g. "think big" projects in New Zealand and in Canada, producing few jobs and large public indebtedness. Service of this public debt is now a major issue, especially in Canada. The level of real GDP per capita is likely to continue to be a major problem in all four countries.

Part of the "standard of living problem" relates to the levels of public debt that have been incurred in the last 20 years. I speak here of the situations in Canada, the U.S.A., and New Zealand. As a result of government expenditures in excess of revenues over the last 20 years in Canada, the total of the public debts of the governments of the ten provinces and those of the federal government now exceed 100 percent of the nation's gross domestic product (GDP). In the U.S., this percentage is about seventy percent. In New Zealand it is about sixty five percent. These are major obligations. Substantial amounts of federal, provincial, and state revenues are now directed to the payment of the annual interest on these debts.

Further, each of these three countries is running another deficit in their current fiscal year. These deficits mean increased debt servicing costs in future, leaving less for current expenditures next year and subsequently.

There are consequences for both individuals and for professions in this financial situation. For individuals it is clear that an increasing level of real disposable income will be harder to obtain in future. For our profession, *agricultural economics*, it is clear that public funding of our activities will also be increasingly difficult to sustain.

## ENVIRONMENT

The increases in population referred to above (and those taking place elsewhere as well) have given rise to major increases in consumption of both renewable and non-renewable resources. By-products of industrial and other human activity and resource depletion are now major issues for citizens and governments in all four countries. However, no one to my knowledge, government or other, has yet been willing to address the significance of unrestricted increases in population (except the government of the People's Republic of China). As this is, in my opinion, a major cause of the environmental problems we are now encountering, I expect that this will increasingly be an issue in the future.

Resource depletion raises the spectre of having to do without in the future. Further, by-products present both pollution and waste disposal problems.

Accordingly, management of population growth and the economics of steady state populations both need now to be examined. It may be that sustainable development in an environmental sense requires static populations and that the consequences of this possibility for the economics of developed nations needs to be carefully examined.

## THE PROFESSION

Our profession consists largely of university trained economists specialising in agricultural aspects of the national and international economies of the countries in which they practice, in government departments (in agriculture particularly, but others such as forestry as well), in business (mostly agri-business and farming), and in education (in schools and universities).

Our strengths are that we tend to be practical. We are solution oriented and we generally succeed in devising solutions to the problems we tackle.

Our weaknesses are that we can easily become enamoured of our models and historic data and thereby lose touch with the need to address today's decisions and their consequences for tomorrow. To the extent that we ignore the latter in times of tight budgets, we affect our sources of funding (McLachy, Sumner).

We also tend to fragment into three user groups: academics, government agricultural economists, and industry economists. The academics tend to set high standards of performance related to intellectual development of the field; the government economists struggle with the practicalities of economics in a political context; and industry economists struggle for survival through attempting to (correctly) anticipate the future consequences of current choice alternatives. The rewards differ according to the field in which we practice.

## WHERE ARE WE GOING?

In my opinion we are going to increasingly leave behind our traditional markets and increasingly service niche markets. Whether there will continue to be a coherent body of economists known as *agricultural economists* in the 21st century, is debatable. Let me explain. First a word or two about where we're coming from.

### Where from?

Our traditional markets have focused on farmers; people who husband crops and livestock as their principal source of livelihood. The numbers of these people now involved in primary agriculture in all four countries considered in this paper are few; under three percent of the total population in three of the four countries for which I have data (Canada, the U.S. and Australia, see Tables 1, 2, and 4 for details). Farmers represent a small and declining market. The technological improvements which have allowed fewer and fewer people to service with food

and fibre larger and larger populations throughout the history of each of these four countries is not going to stop. However, public funding for our work with these traditional markets is going to decline, at least relatively, leaving us with fewer resources to address these markets.

There are consequences for academic and extension economists particularly. Fewer will be needed and funding for their work is unlikely to increase. Some government positions related to the direct servicing of farmers will also decline. This has already happened in New Zealand where several previously government functions of the Ministry of Agriculture and Fisheries have, effectively, been privatised. The situation in Canada is one of no budget increases, of some spending cuts (Alberta), and of possible budget cuts in both government operations and university activities focused on these traditional roles for agricultural economists. Reports from the U.S.A. suggest similar developments there (Ayer). Traditional farm management, the interest by the public sector in on-farm economic efficiency, will, I expect, increasingly become a victim of this trend.

All this reflects the fact that the public interest (and therefore public funding) in increased food supplies for growing nations has run its course in each of the four countries. There is now enough food available in each country for the existing populations which now, typically in North America, spend less than 20 percent of their disposable income on food in all forms, and for the populations anticipated and projected for the future. Accordingly, it is not surprising to me that the tradition of the Land Grant College of Agriculture system of teaching, research, and extension in the U.S. is in trouble and that universities programs elsewhere which continue to focus on these traditional areas are suffering financially (Just and Raussler, McLatchy). The job of serving the public need in these areas is done and it time to move on.

### Where to?

In the public sector at least, we are going to move to where the public interest now is. In my opinion, this now lies in five areas close to agriculture and two other areas. The four areas close to agriculture are international trade, food safety, biotechnology, environmental protection and conservation, and animal welfare. The other areas are health and general education.

### International Trade

All four countries considered here produce surpluses of at least some agricultural products (wheat, meat, and wool in Australia; butter, cheese, meat, and wool in New Zealand; grains, oilseeds, beef and hogs in Canada; and grains and oilseeds in the U.S., to mention only the well known ones). A new general agreement on tariffs and trade has just been established and will soon be signed. This new agreement includes major changes to the provisions relating to agriculture. There will be work for economists in sorting out the implications of this agreement and in dealing with the settlement of disputes which arise in international trade between the partners to this agreement. However, whether these economists will

be identified as agricultural economists or as trade economists is moot. In my opinion, the term trade economist is more likely to be applied.

### Food Safety

With most of the people in all four countries satisfied with the quantity of food available, increasing attention is being paid to food quality. Most of this attention comes out as concerns over food safety. In recent years, there have been "scares" about spray residues (alar) on apples in the U.S., about synthetic hormones in fluid milk (bovine somatotropin) (in British Columbia, Canada), and with sanitary standards in slaughter houses in New Zealand (relative to sales of meat to the European Community), to mention just a few. I expect more of these concerns.

### Biotechnology

The current concern for the use of bovine somatotropin (BST) to increase milk production is a good current example of concerns in this area. Research has shown that the daily injection of a synthetic form of this naturally occurring hormone of lactating dairy cows increases their milk production by up to 40 percent in mid lactation and by between 10 and 25 percent over the full lactation (Cyanamid 1986). However, because the material injected is produced using a bacterial gene cloning biotechnology, consumers are concerned about residues in the milk produced by cows so injected. Instant media coverage, particularly from television, informs millions of people in seconds of the point of view of the reporter charged with covering the issue.

Clearly the dairy industry wants to use this material. Equally the biotechnology industry wants to produce it and have dairy farmers use it. The economics favour this product's production and its use. However, because BST occurs naturally in all milk, the problem of consumer concern cannot be addressed by the regulation of the quantity of the residue. Dual labelling of milks is being considered in Wisconsin in the USA (Western Producer 1993b), but whether or not this approach is a solution will depend upon the integrity of the systems of separation of milk from BST supplemented cows from that of un-supplemented cows.

The role of economists in dealing with issues such as this one is clear only to the extent that our interests in production economics (both BST producer and BST user) apply. There may be some policy analysis of opportunity costs of not using the product, but I doubt there is a growing field for economists in what are more nearly issues of consumer belief about food products.

### Environmental Management and Resource Conservation

This is an area of great possibility for agricultural economists, although, again I doubt that we will be known as *agricultural* economists in this field. There is much concern, a good deal of it by special interest groups, in environmental management and resource conservation. Governments will increasingly be in need of adequate assessments of costs and opportunity costs of alternate policy options.

These evaluations will be needed to establish the value of the opportunity or opportunities foregone and in some cases to establish compensation where previously existing rights are extinguished or reduced. These are major issues in forest policy in British Columbia, Canada, and will, I expect, become increasingly important in areas of agriculture where problems of manure disposal and of ground water contamination are already significant in some areas. Other issues of land use are also likely to be involved.

The opportunities in this area are not without their challenges. Externalities are likely to be encountered in almost all areas. However, I do see major opportunities in this area for both theoretical and practical developments. As people well experienced with addressing practical issues, I expect *agricultural* economists to do well in these areas.

### Animal Welfare

This is another issue which is increasingly of consequence. Urban consumers, and special interest groups, again encouraged by media attention, will continue to raise issues of animal welfare. This may be more of an issue in the North American agriculture where confinement rearing is more prevalent. Under the "free range" conditions of pastoral agriculture in New Zealand and Australia, this may be less of an issue.

Either way, I am not sure that I see major opportunities for economists to address this issue. Of course, there will be an opportunity cost to alternative systems of livestock husbandry, but the evaluation of these costs is very much in the area of our traditional market in farm management and production economics. Beyond this, I see little that is new in this area.

### Other Areas

There are two other areas of public interest that I want to discuss briefly. These are health and general education.

It appears to me that, in terms of Maslow's hierarchy of needs (Maslow 1954), that we have, in the four countries considered here, substantially satisfied the basic needs for food, safety, and shelter. Accordingly, consumers are increasingly shifting their attention to higher level needs. These include health and general education.

### Health

In my opinion, health is to the economies of the 1990's and beyond what the provision of food, shelter, and household utilities were to our parents. This is a consequence of successes the physical and biological sciences in agriculture and of medical sciences in health since the 1950's. The results of these developments are increased life times and increased life expectancies. Further, the people of each of these countries tend to have difficulty facing their own demise. Accordingly, health services have become the number one public issue in at least three of the



four countries considered here (I do not know about Australia) and will, I believe, become increasingly important to the populations of all four countries in the late 1990's and beyond.

As a result, there are currently great debates about occurring about alternative mechanisms for health service delivery. In New Zealand, user fees have been imposed, and are being tried. Some, such as a user fee for hospital use, have failed politically. In Canada, persistent tax revenue shortfalls are threatening "universal" public health care coverages and user fees are being debated. In the U.S., the insured user pays policy is being judged as inadequate (in terms of coverage) and a compulsory payroll tax approach to the problem of extending health service delivery is being debated.

There are lots of opportunities in this field for economists with a practical bent. Governments are "between a rock and a hard place" on this one and will continue to search for competent and practical advice on all aspects of health delivery well into the next century, in my opinion.

### General Education

There are major opportunities for agricultural economists in this area too, I believe. However, I am not talking so much about education in the traditional sense of grade (primary) school, high schools, and universities. I am thinking more of supplying the evolving sources of lifelong learning. These include the traditional sources but I would add to those sources, educational television, continuing education programs of high schools and universities, and effective use of the broadcast and computer media. The challenges of the last are considerable.

There will be a continuing need for instruction of the young in matters related to the food and fibre supply of nations in grade and high schools. Undergraduate instruction in the economics of agriculture and other primary industries will need to continue. However, I expect the number of graduates specialising in the *agricultural economics* option as such, to the extent that programs by this name continue to exist separately, to reduce over time. I expect there to be major debates and indeed, political struggles, as these parts of our traditional education industry, make adjustments to the declining size of our traditional markets and the funding of the traditional public interest in these matters.

For people who can master the video medium and provide informed opinion in future, there will, I think, be significant rewards from both the private and public sectors. We have now produced a full generation of video oriented people. They represent a substantial market for information about their environment, their food supply, and their country's natural resource management and conservation policies. In this context, some mastery of the 30 second video bite for television and the quotable "one liner" for a radio "sound bite", will also be very useful skills for all members of the profession in future.

There is also a market for informed opinion of the kind that can carry the "op ed" (opposite the editorial) pages of major daily newspapers (McLatchy).

## IMPLICATIONS

Substantial changes are occurring in the markets in which we agricultural economists do business whether it be teaching, research, or extension in the public sector or in providing other services to the private sector. As noted above, I believe these changes reflect the substantial fulfilment of the original public interest in agriculture of supplying an increasing amount of food for each of the nations considered here. New public interests have arisen and we need to adjust to both what has already been done and what now needs to be done. Accordingly, I see the following implications for our profession.

University departments of agricultural economics will be under continuing financial and administrative pressures to move in the new directions I identify above. This may give rise to consolidations of activities with others on university campuses. Changes in the names of departments will be made to reflect the new focuses of continuing and consolidated departments. (Appendix A provides an indication of changes already made.) "*Agricultural*" economics is already less used than heretofore and I expect this trend to other names to continue. Further, surviving titles are likely to be in the faculties of commerce and business administration, economics, and natural resources. I also expect that there will be some consolidation of *agricultural* economics departments by location.

In government, I expect that there will be increasing privatisation of extension services and that, as a result, fewer services will be provided. There will be an emphasis on trade, particularly in New Zealand, Australia, and Canada. Agricultural economists may, however, be employed in ministries and government departments of international trade rather than in ministries of agriculture. Ministries of agriculture and food will be increasingly concerned about food safety and environmental management and conservation. Ministries dealing specifically with the latter two may become more evident.

In the private sector, I see an expansion of the market for farm management extension. However, this will increasingly be financial in orientation with a challenge in delivery coming from accounting and other financial sector firms. There will be some opportunities for specialised consulting to governments, farmers, and farm institutions, although their needs are increasingly going to be met from large consulting organisations capable of reaching major data sources quickly and processing these data effectively in a timely manner.

Another implication of these changes lies in what they mean for our professional associations. The present confusion in the American Agricultural Economics Association provides an example of some of the current activity in this area.

There has been a debate taking place in the American Agricultural Economics Association (the AAEA) for some time regarding the name of the association. A survey of members was conducted in the (northern hemisphere) spring of 1993. Over 1,100 responses were received and were analyzed. Highly preferred names were "Agricultural Economics" (no change) 26%, Applied Economics (17%), Food, Agricultural, and Resource Economics" (13%), and "Agricultural and Resource Economics" (12%) (AAEA 1993b). These preferences reflect the perceptions and preferences of those of the 1993 membership of the Association who chose to respond.

These results were discussed at the AAEA Annual Meeting this (northern hemisphere) summer. The conclusion reached was that "Neither survey results nor interested members comments give a clear signal to the AAEA executive Board regarding follow-up action." (ibid.) I expect further debates of this type.

## CONCLUSIONS

This review of trends in the economies of Canada, the United States of America, New Zealand and Australia has identified several factors affecting the future of our profession. It has also identified some opportunities for future action as we move towards the 21st century. More particularly,

1. Populations in all four countries have increased by a factor of about two over the last fifty years. This population increase is expected to continue, although hopefully at reduced rates. This population increase will provide a continuing market for the outputs of agriculture and to a limited extent, continuing work for some agricultural economists.
2. Population increase is a major cause of many of the so called environmental problems governments and others are now being asked to address. In this context, it is now time to address the issue of the place of unconstrained population increase in a sustainable future and the related economics of steady state population.
3. The public interest has moved on from the provision of an increasing food supply for a growing nation in all four countries. There is now sufficient food at relatively attractive prices available to consumers in these countries who, in North America at least, now spend less than twenty percent of their disposable income on food. The public interest in a sufficient food supply has been satisfied. It is no longer a useful basis for continuing publicly funded research and development in government or in universities; nor is it a useful area for further development by agricultural economists. Maintenance, yes; but development, no. The public interest, and therefore, public funding is no longer there.

4. International trade is an area of importance of all four countries. The recently established 1993 GATT agreement presents the possibility of increased global trade under more favourable trading conditions than in the past. Accordingly, this area is seen as a growth area for economists with qualifications, experience, and a willingness to "get their hands dirty" in this area.
5. There are public interests in the areas of food safety, biotechnology, environmental management and conservation, and animal health.
6. The area of environmental management and resource conservation is full of opportunity for economists. Sustainable development needs much additional work and clear thinking about this concept and many others in the area is needed. Agricultural economists can play a major part.
7. It is not immediately obvious that there are opportunities for economists in the food safety, biotechnology, and animal welfare areas. While these appear to be areas of increasing regulatory intervention in future, major opportunities for economists are not immediately apparent.
8. Traditional areas of agricultural economics, such as farm management, are unlikely to be as well supported publicly as in the past. They are therefore likely to decline in importance in relative terms.
9. There will continue to be opportunities for agricultural economists in the general education field. Some of these opportunities will continue in traditional areas of the public school and university systems. However, these are not seen as growth areas; rather as service areas. The real opportunities are in video and computer media.
10. *Agricultural economics* as a recognisable area of specialisation may or may not survive into the 21st century, as its proponents turn to broader issues and new channels of delivery. However, I do expect that the practical interests of *agricultural economists* will find opportunities for service and reward in many of these new areas.

Thank you for this opportunity to share these thoughts with you. After the discussants complete their presentations, I will be happy to entertain questions and comments.

Table 1: AUSTRALIA: POPULATION AND NUMBER OF FARMERS

Year	Popln (1)	Farmers (2)	Farmers /Popln
	000's	000's	
1939			
1940	7,078		
1950	8,308		
1955	9,312		
1961	10,548	449.9	4.3%
1966	11,600	424.7	3.7%
1970	12,731	407.8	3.2%
1971	13,067	414.4	3.2%
1972	13,304	407.2	3.1%
1973	13,505	396.3	2.9%
1974	13,723	389.4	2.8%
1975	13,893	385.6	2.8%
1976	14,033	384.0	2.7%
1977	14,192	373.0	2.6%
1978	14,359	364.8	2.5%
1979	14,516	362.9	2.5%
1980	14,695	379.4	2.6%
1981	14,923	381.2	2.6%
1982	15,184	379.2	2.5%
1983	15,394	389.3	2.5%
1984	15,579	382.3	2.5%
1985	15,788	376.0	2.4%
1986	16,018		
1987	16,254		
1988	16,518		
1989	16,803		
1990	17,045		
1991	17,292	374.1	2.2%
1992	17,595		
1993	17,747		
1994	17,985		
1995	18,223		
1996	18,460		
1997	18,698		
1998	18,936		
1999	19,173		
2000	19,411		
2001	19,649		

- 1940-55. Aust B. of Stats. Yearbook Australia 1977/78 p 99.  
1960-71. USDA. Ag Stats of Australia 1960-86  
1972-80. Aust B. of Stats. Yearbook Australia 1992 p. 144. June 30 est  
1981-92. Aust B. of Stats. Yearbook Australia 1994, p. 116. June 30 est.  
1993-2001. Proj. of 1980-1992 linear trend
- 1960-85. USDA. Ag Stats of Australia 1960-86 p 8. Total labour force.  
1991. Aust B. of Stats. Yearbook Australia 1994 p 359. Total labour force  
Pop. 1994/1940. 2.5. Incr 1994-2001. 9.3%

Table 2: CANADA: POPULATION AND NUMBER OF FARMS

Year	Popln (1)	Farms (2)	Farms /Popln
	000's	000's	
1939	11,267.0		
1940	11,381.0		
1950	13,712.0		
1960	17,870.0		
1970	21,297.0		
1971	21,568.3	366.1	1.7%
1972	21,801.3		
1973	22,043.0		
1974	22,363.9		
1975	22,697.1		
1976	22,992.6	n.r.	n.a.
1977	23,272.8		
1978	23,517.0		
1979	23,747.3		
1980	24,042.5		
1981	24,341.7	318.4	1.3%
1982	24,583.1		
1983	24,787.2		
1984	24,978.2		
1985	25,165.4		
1986	25,353.0	293.1	1.2%
1987	25,617.3		
1988	25,909.2		
1989	26,223.2		
1990	26,584.0		
1991	27,037.0	280.0	1.0%
1992	27,437.8		
1993	27,393.3		
1994	27,681.9		
1995	27,967.6		
1996	28,245.6		
1997	28,516.2		
1998	28,779.1		
1999	29,034.9		
2000	29,284.2		
2001	29,527.5		

1. 1970-1990: Stats. Can. Cat. 91-210. 1990. T-1.

1991-1992: Stats Can. 91-002. V.7., No. 1. p.10

July 1 estimates

1993-2001: Projections from Stats. Can. Cat. 91-520. Proj. 3.

2. Stats. Can. Cat. 93-348 T-2B, p 13.

Pop. 1994/1939

2.5

Incr. 1994-2001:

6.7%

Table 3. NEW ZEALAND: POPULATION AND RURAL POPULATION

Year	Popln (1)	Urban (2)	Rural (2)	Rural /Popln
	000 s	000's	000 s	
1939	1,641.6			
1940	1,633.6			
1950	1,927.7			
1960	2,403.6			
1970	2,852.1			
1971	2,898.5	2,329.9	528.0	18.2%
1972	2,859.7			
1973	3,024.9			
1974	3,091.9			
1975	3,143.7			
1976	3,163.4	2,614.1	511.0	16.2%
1977	3,133.4			
1978	3,165.2			
1979	3,163.9			
1980	3,176.4			
1981	3,194.5	2,693.2	479.0	15.0%
1982	3,224.8			
1983	3,254.8			
1984	3,293.0			
1985	3,302.1			
1986	3,313.5	2,766.8	497.7	15.0%
1987	3,342.1			
1988	3,345.2			
1989	3,369.8			
1990	3,410.4			
1991	3,439.7	2,916.4	555.2	14.9%
1992	3,455.4			
1993	3,478.2			
1994	3,500.9			
1995	3,523.7			
1996	3,546.4			
1997	3,569.2			
1998	3,592.0			
1999	3,614.7			
2000	3,637.5			
2001	3,660.3			

1. Data for December 31. NZ Yearbook 1993, p 64.

1992-2001 Proj. of linear trend 1970-91.

2. NZYB 1993, p 66/67

Pop. 1994/1999

2.1

Incr. 1994-2001

4.6%

Table 4: UNITED STATES. POPULATION AND NUMBER OF FARM EMPLOYEES

Year	Population (1,2,3,4)	Farm Empl (5)	Empl/ pepln
	000's	000's	
1939	130,880		
1940	132,594		
1950	152,271		
1960	180,671		
1970	205,052	4,523	2.2%
1971	207,661		
1972	209,896		
1973	211,909		
1974	213,854		
1975	215,973		
1976	218,035		
1977	220,239		
1978	222,585		
1979	225,055		
1980	227,726	3,705	1.6%
1981	229,966		
1982	323,188	4,043	1.3%
1983	234,307	3,749	1.6%
1984	236,348	3,405	1.4%
1985	238,466	3,115	1.3%
1986	240,651	2,912	1.2%
1987	242,804	2,897	1.2%
1988	245,021	2,954	1.2%
1989	247,342	2,863	1.2%
1990	249,900	2,891	1.2%
1991	252,671	2,877	1.1%
1992	255,402	2,810	1.1%
1993	256,466		
1994	258,338		
1995	259,138		
1996	261,872		
1997	263,543		
1998	265,157		
1999	266,730		
2000	268,266		

- 1 July 1 est Incl armed forces abroad
- 2 1940-60 USDC Stat Abstr of the US 1972 T-2 p 5
- 3 1970-1992 USDC Stat Abstr of the US 1993 T-2
- 4 1993-2000 Proj USDC Stat Abstr of the US 1991 T-15
- 5 USDC Stat Abstr of the US 1992 T-1073 & 1993 T-1092  
Incl self employed and unpaid workers & hired workers

Pep 1994:1939 20                      Incr 1994:2000 3.8%



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Appendix A

## MAJOR INSTITUTIONS AND THEIR RELATIONSHIP TO AGRICULTURAL ECONOMICS

<u>Institution</u>	<u>Name/Emphasis</u>
<u>CANADA</u>	
McGill University (Quebec)	Department of Agricultural Economics
Nova Scotia Agriculture College	Department of Economics and Business
University of Alberta	Department of Rural Economy
University of British Columbia	Department of Agricultural Economics
University of Guelph (Ontario)	School of Agricultural Economics and Business
Universite Laval (Quebec)	Department d'Economie Rurale
University of Manitoba	Department of Agricultural Economics and Farm Management
University of Saskatchewan	Department of Agricultural Economics
<u>USA</u>	
Colorado State University	Department of Agricultural and Resource Economics
Cornell University (New York)	Department of Agricultural, Resource and Managerial Economics
Iowa State University	Department of Economics
Kansas State University	Department of Agricultural Economics
Michigan State University	Department of Agricultural Economics
North Carolina State University	Department of Agricultural and Resource Economics
Ohio State University	Department of Agricultural Economics and Rural Sociology
Pennsylvania State University	Department of Agricultural Economics and Rural Sociology

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Purdue University (Indiana)	Department of Agricultural Economics
Texas A & M University	Department of Agricultural Economics
University of California - Davis	Department of Agricultural Economics
University of Florida	Department of Food and Resource Economics
University of Georgia	Department of Agricultural Economics
University of Minnesota	Department of Agricultural and Applied Economics
University of Wisconsin	Department of Agricultural Economics
 <b><u>NEW ZEALAND</u></b>	
Lincoln University	Department of Economics
Massey University	Department of Agricultural Economics and Business
 <b><u>AUSTRALIA</u></b>	
Australia	Bureau of Agricultural and Resource Economics
LaTrobe University	Department of Agricultural and Resource Economics
Monash University	Department of Economics
University of Melbourne	Faculty of Agriculture and Forestry
University of New England	Department of Agricultural Economics and Business Management
University of Queensland	
University of Sydney	Department of Agricultural Economics
University of Western Australia	