

# **AGRICULTURE ON PEI: Sunset industry or economic cornerstone?**

Papers from a Symposium presented by

The Institute of Island Studies at the University of Prince Edward Island  
in cooperation with  
PEI Federation of Agriculture  
The Round Table on Resource Land Use and Stewardship  
PEI Department of Agriculture, Fisheries and Forestry

Held on Monday, November 25, 1996, at the Farm Centre, 420 University Avenue,  
Charlottetown, Prince Edward Island

## **Foreword**

As the shift continues in agriculture on Prince Edward Island, several problems have been emerging which will affect the viability and the future of our agriculture industry on Prince Edward Island. These touch first those who are part of the farming community, and then the consumer who relies on "food that is nutritious, attractive, affordable, and, above all, food that is safe," as stated by presenting farmer Vernon Campbell.

The more highly intensive farming practices have brought out public concerns over pesticide use, cropping practices and changing roles for government. All of this comes at a time when farmers are finding increased pressures from diminishing bottom lines. The Institute of Island Studies, in association with the Round Table on Resource Land Use and Stewardship, and the Prince Edward Island Federation of Agriculture, felt the time was right for a balanced examination of these controversial topics in the context of what has happened in the agriculture industry in the past and what may happen in the future.

A Symposium was held on November 25, 1996, at the Farm Centre, 420 University Avenue, Charlottetown. Agriculture on PEI Sunset Industry or Economic Cornerstone? was selected as the theme. The intent of the Symposium was to arouse comment, curiosity and the idea that, although agriculture has been the cornerstone in the past, it perhaps cannot be taken for granted as a cornerstone in the future.

The day-long and evening programs brought together individuals representing governments and special interest groups. The format included farmers, those in leadership roles in national organizations, members of the business community, and elected and government officials. Each spoke fervently, providing background and outlining his/her broad views on the changing role of agriculture and the practices associated with food production.

What follows are the presentations made by all of the speakers during the Symposium. Of course, the words on paper do not do justice to the presence of those who brought their

experience, passion and knowledge to share. Nor are the questions that these presentations inspired reflected in the document. Nonetheless, it is hoped this record will be useful to those interested in the future of the agriculture industry of Prince Edward Island. It was our hope to promote balanced discussions on relevant topics that are the bedrock of our "Million Acre Farm."

Anne Boswall

**Wayne Mackinnon**

## **Historical Trends in Prince Edward Island Agriculture**

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Agriculture has, and continues to be, the number one industry of the "million acre farm." It leads the economy, defines the Island's way of life and even shapes the quality of the landscape. In considering the future of agriculture, it is important to understand some of the major trends which have led the industry to where it is today.

In so doing, I'm reminded of the advice offered by John Kenneth Galbraith on buying an abandoned farm. He said the most important thing to keep in mind is that it was abandoned in the first place. There are, clearly, some lessons to be learned about how to turn abandoned farms into sustainable futures.

Over the past century - even over the past half-century - Island agriculture has been completely transformed. It has gone from a semi-subsistence, agrarian economy, characterized by small, labour-intensive mixed farms, largely self-sufficient and self-sustaining, to an industry which today is characterized by significantly fewer and much larger operations, highly mechanized, heavily capitalized, increasingly specialized and dependent on external inputs.

The history of Island agriculture as a diversified semi-subsistence, agrarian economy reflects what the Canadian economist Harold Innis referred to as the staples theory of economic growth; that is, one based on the exploitation of natural resources - in the case of Prince Edward Island, renewable natural resources. From this perspective, the industry and the collective psyche of those involved in it were conditioned by the lack of control over markets. Agriculture developed - or declined - in response to forces driven from abroad.

That led to a largely conservative, cautious and more or less stable industry. The orientation of farmers was that of the small, independent, individualistic petit bourgeois - with ownership of land, labour and a little capital, but with no influence over the marketplace. Farmers were keenly aware of their dependency on external forces over which they had little, if any, control or influence.

In 1900, agriculture was the way of life in Prince Edward Island. More than 80 per cent of the population lived and worked on farms. The rural community was the centre of their lives. The Island economy was, for the most part, an agricultural economy. Its social and political life revolved around the family farm. Farmers and their families shared a common outlook and common values. A high degree of homogeneity dominated the life of the province.

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The industry has been completely transformed over the last century, even over the past generation. A few numbers hint at the extent of the transformation. First of all, the number of farms has gone from close to 15,000 at the turn of the century to around 2,300 today. The average size of farms has increased from approximately 90 acres in 1900 to around 270 today. The amount of land under cultivation has also varied, from 700,000 acres in 1900, to just over 600,000 in 1950, and to just under 450,000 in the 1990s.

At the same time, there have been major shifts in the production mix. Potato production has risen phenomenally, from around 30,000 acres in 1951 to more than 110,000 acres in 1996. The number of cattle has declined, hog production has increased and grain production has declined slightly. There have been major advances in productivity in all sectors.

Productivity increases, however, have not been achieved without major increases in farm inputs: mechanization, fertilizer and chemicals.

The transformation of Island agriculture has been characterized by a number of factors resulting from the interplay among political, economic and social changes.

The demographic domination by farmers dictated the style and substance of Island politics. Governments recognized that the agriculture vote was crucial to their success, and assuaging agricultural interests was the major preoccupation of successive Island governments.

Government efforts were directed towards income stabilization, subsidies and ad hoc relief programs. On the one side, these provided a degree of social and economic stability. On the other side, they perhaps discouraged innovation and delayed the inevitable change and adaptation required if the industry were to be more successful.

As well, with the province's limited resource base, it could support only so much agriculture. No matter how successful the industry might become, there were absolute upper limits. Because of the dominance of the farm vote, diversification of the economy was not widely supported. "As agriculture goes, so goes the economy" became a self-fulfilling prophecy.

The results were predictable. Successive Island governments, keenly aware of the predominance of the rural vote, put agricultural interests first. The interests of farmers took precedence, so much so that former Premier Walter Jones in the 1940s was able to get away with telling teachers they had to wait for potato prices to go up before getting a raise. The Jones government was also able to outlaw unions and take over the Canada Packers plant to protect the interests of farmers.

Jones was a truculent advocate of the importance of agriculture. He once told the Maritime Board of Trade that "the heart of the province was in its rural districts and that the cities were only a place where people can meet and do their business If the tanners all go foolish like the people in the towns, good-bye Prince Edward Island "

Despite his spirited defence of the industry, however, he admitted that nearly 40 per cent of Islanders were forced to leave the province in their productive years Although the agriculture industry remains an important priority of governments agricultural issues have less resonance than at any other time in our history (As an aside, one indicator of the transformation of Island society away from the farm is that Island license plates used to carry slogans like "Seed Potatoes and Foxes" or the Garden of the Gulf" Now, notwithstanding the continued importance of agriculture, license plates tout the Island as "The Home of Anne of Green Gables ")

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After the Second World War, the industry underwent modernization and cacophony intruded on the pastoral symphony. While the introduction of electricity paved roads and mechanization made life somewhat easier and more convenient average farm incomes failed to keep pace with other occupations. The industry continued to be a "price taker." Meanwhile, higher input costs associated with machinery and external inputs were adding to the strain.

The deepening crisis was seen as a "development problem" throughout the 1960s and 70s. The government strategy of agricultural education and extension, while helpful in dealing with some of the marginal problems, failed to address the structural and external problems which led to the crisis. In spite of increasing productivity farmers did not receive higher returns and became even more dependent because of the higher input costs of machinery, chemicals and debt loads. Farmers continued to be the weak link in the food chain.

And while earlier politicians directed efforts to stemming the tide away from the farm and helping stabilize incomes, the Prince Edward Island Development Plan of the 1970s and 80s introduced an industrialized model of agriculture. According to the Plan, "The historical pattern of land ownership [in the province] is badly adapted to the needs of modern technology...." It was believed the resource could not sustain more than 2,500 viable farms. That objective, along with increasing efficiency and production, underlined the agricultural development strategy. Major efforts, including the Family Farm Program, were introduced to modernize and expand the industry.

All this resulted in major changes in agricultural practices. One was the widespread change to chemicals. Unlike the traditional, sustainable agricultural practices of the past, which relied on more natural controls, the new industrial agriculture which permitted larger operations also become increasingly reliant on the quick fixes" offered by pesticides.

At the same time, soil erosion and soil degradation became major concerns as small fields and farms were converted to meet the requirements of modern technologies.

As more farmers moved off the land as part of the "rural dispossessed " their places in the country were taken by rural non-farm residents, leading to greater conflicts.

With the province's limited land base and the requirements of today's operations, debates about land ownership and use have intensified.

Not only is it more difficult for the industry to get its needs and interests recognized and addressed, it's also more difficult for governments in a time of limited resources to make the required investments in the human and physical infrastructures so necessary for growth and development. And world trade is posing a whole new set of challenges for an industry which traditionally has never looked too far beyond the farm gate.

The history of Island agriculture is a story of significant social and economic transformation. It has gone from semi-subsistence farming as a way of life to an industry which needs to make a living.

Given the Island's finite resources, the industry can only produce so much. Already we are putting tremendous strain on our physical resources - and probably on our human resources as well.

Although the province has the potential to increase production of all commodities, that potential is limited. The future lies, not so much in doing more of the same, but in doing things differently, and exploring new opportunities to grow and diversify.

Traditionally, the province has been an exporter of commodities; the future may lie in the export of products and services with added value.

Differentiation is also one of the keys. The Island can build on its image and reputation, as well as its long experience and growing expertise, by producing safe, high-quality products and services for niche markets around the corner and around the world. Value, not volume, might become the new watchword of the industry.

There is no doubt that agriculture has enormous potential to increase its economic contribution in the future. As John Stewart said as long ago as 1803, "Agriculture is, and will long continue to be, the chief pursuit of the inhabitants of this Island."

**Robert MacGregor**

## **An Overview of Agriculture on Prince Edward Island**

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In his introduction, Wayne MacKinnon gave a good overview of where agriculture in Prince Edward Island has come from and the way the sector has evolved during this century. Now, I will try to give a quick view of where the sector is today in the Prince Edward Island economy.

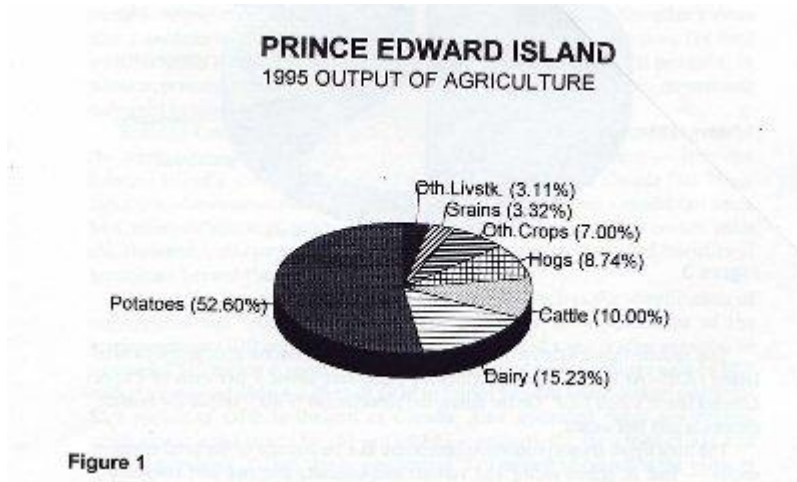


Figure 1

First, I want to show briefly the diversity, and the concentration, of production agriculture. The first figure shows the components and dimensions of agricultural output on the Island.

Although potatoes are the dominant element of Island agricultural output, the figure shows clearly that there is a lot more to Island agriculture than just potatoes.

I think everyone here has an intuitive feel for the fundamental importance of agriculture to the Island economy and way of life. We see this throughout the countryside: in the mix of field and forest that pleases the eyes of Islanders - and helps attract a myriad of tourists as well. This fundamental presence is felt in the economy, too.

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Gross Domestic Product, or GDP, is commonly used to gauge the performance of an economy. It is a type of measure of value-added - that is, the difference between the value of an output and the cost of all its inputs.

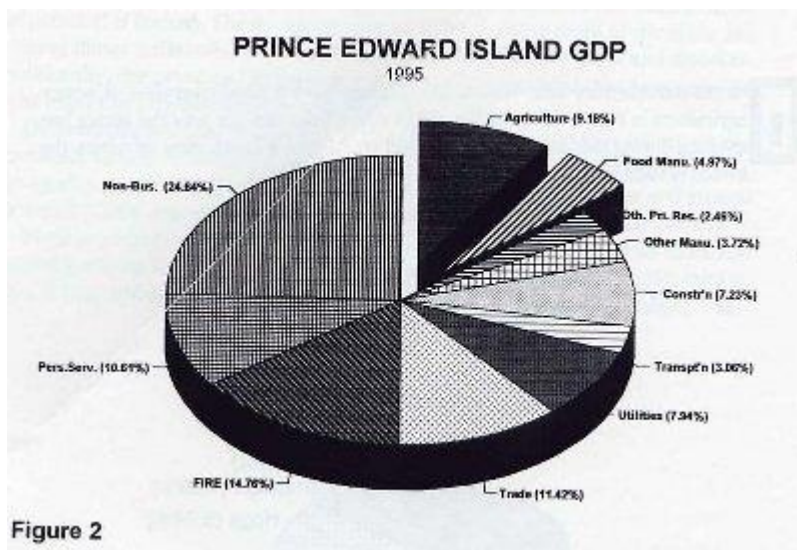
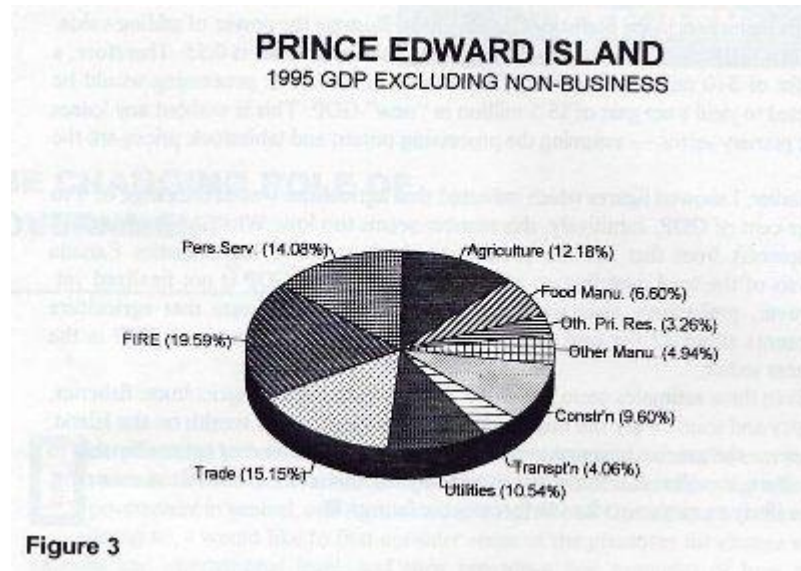


Figure 2

The second figure illustrates the contribution of production agriculture to total Island GDP. At the farm gate, agriculture represents about 9 per cent of Prince Edward Island's total GDP. On the figure, the abbreviation "FIRE" stands for finance, insurance and real estate.

The third figure shows production agriculture as a percentage of the total business sector - that is, public sector and various non-business personal and community services have been excluded.



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When presented in this way, production agriculture is 12 per cent of the business-sector GDP pie. However it is presented, it is important to note how the other sectors that contribute to GDP are entangled with agriculture. The figures show the food manufacturing industry - of which about 70 per cent is agricultural products. In addition, portions of transportation, construction, finance, and, of course, government only exist because of production agriculture.

Statistics Canada is presently in the final phase of a project to estimate the role of the primary resource industries - agriculture, fisheries and forestry - in Prince Edward Island's economy. As part of their analysis, Statistics Canada "ran" their Input/Output economic model of the Island economy. Of course, a model can never be a precise reflection of reality - and, in this case, it is based on data several years. However, it can provide some additional insights into the roots and branches of I 'agriculture beyond the farm gate.

One of the key results of the Statistics Canada work is the identification of employment and GDP multipliers. These multipliers allow estimation of the employment or GDP impact of a change in the output of a sector. For example, an increase of \$ 10 million in agricultural output would translate into a direct gain of \$8.7 million, comprised of \$6.4 million of GDP in Prince Edward Island and an additional \$2.3 million of GDP in the rest of Canada. Also, estimated direct and indirect employment gains would be 161 and 60 FTEs, respectively, for a total of 221 Full Time Equivalents. To put this in perspective, \$10 million of output is the value of output from roughly 8,000 acres of potatoes.

The multipliers in the Statistics Canada model illustrate the power of adding value. The total GDP multiplier for the fruit and vegetable industries is 0.55. Therefore, a transfer of \$10 million of product from the fresh market to processing would be expected to yield a net gain of \$5.5 million in "new" GDP. This is without any losses to the primary sector - assuming the processing potato and tablestock prices are the same.

Earlier, I showed figures which indicated that agriculture was in the range of 9 to 12 per cent of GDP. Intuitively, this number seems too low. What is missing are all the spinoffs from that primary production. Unfortunately, the Statistics Canada analysis of the total contribution of agriculture to Island GDP is not finalized yet. However, preliminary estimates from Statistics Canada indicate that agriculture represents about 22 per cent of total GDP and nearly 29 per cent of GDP in the business sector.

Even these estimates seem somewhat low considering that agriculture, fisheries, forestry and tourism are the major creators, or attractants, of wealth on the Island. Whatever the precise proportion of the Island economy that may be attributable to agriculture, it is clear that this sector is currently a cornerstone of the Island economy, and is likely to remain so for the foreseeable future.

**Ken Ash**

## **The Changing Role of Government**

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I am pleased to be here today and to have this opportunity to contribute to your seminar. I have been asked to speak with you about the changing role of government in general, and Agriculture and Agri-Food Canada in particular. In doing so, I would like to first consider some of the pressures for change at a national and international level, and then provide a few examples of how our Department's response to these pressures might affect you.

Essentially, government's role is changing in response to changes in the nature of the market. Today's marketplace is very much a global one: the players are getting bigger and more competitive and our customers are more demanding than ever. These customers range from domestic households and local processors, to American slaughterhouses, Asian millers, European restaurants, and so on. As a government, our services are designed to help you - the industry - to adapt to the changing needs of a global marketplace. This is a major challenge: our success will be measured by our output, profitability, trade and investment performance.

Canadian agri-food output continues to grow- recently increasing 6 per cent per year. The profitability of the sector has improved considerably; just five years ago, two-thirds of the Canadian net farm income came from government support payments; today, 80 per cent of farm income comes from market revenues and just 20 per cent from government support. Recent export performance has also been very impressive, with total exports expected to reach almost \$19 billion this year. Foreign direct investment in Canada's processing sector is increasing in an



impressive way -this bodes well for the future, and means that the international investment community views Canada as an attractive place to do business.

So far, then, the agri-food sector has responded well to the challenge of a global marketplace. It is important to note that Canada is not the only place in the world where the role of government is being re-evaluated. The changes taking place within the Canadian economy are occurring in countless other countries around the world, including our principal trading partners in Europe, Asia and, of course, North America. Virtually all developed countries also share a concern over high public spending and accumulated debt levels. Fiscal restraint is a global, not just a Canadian concern; and, here in Canada, considerable progress has been made and is expected to continue.

Industries everywhere are increasingly looking outward and are expecting their governments to facilitate international trade and direct investment. All governments are under pressure to remove barriers to trade and improve access to markets - ours and theirs. Traditional approaches to protecting and supporting industries are increasingly costly - both in terms of the public money involved and the consequences for your links to the global marketplace.

One in five Canadian jobs depends on trade with other countries. In Prince Edward Island, the department is now working actively - principally through the Market and Industry Services Branch - with its federal and provincial partners and industry to develop international trade opportunities for Prince Edward Island agriculture and food products. This includes such activities as coordinating incoming and outgoing trade missions involving important Island products, such as processed food and seed potatoes, as well as helping the agri-food sector gain access to timely market information and intelligence. This Team Canada approach to international trade will lead to increased opportunities for small- and medium-sized businesses in Prince Edward Island. It is also a good example of the importance of partnerships - between levels of government, and between government and industry.

The changing role of government also reflects developments among the stakeholder groups themselves. We have changed because you have changed. If there is a constant theme in consultations with groups involved in the food system, it is that stakeholders have both the desire and the capacity to be involved in decision-making and program implementation. Outside of Agriculture and Agri-Food Canada there are many individuals, organizations, institutions and other levels of government who can, and do, play a meaningful role in the design and implementation of policies for the agri-food sector.

Farmer, farm organizations and other parts of the industry consistently tell us that they are meeting change head-on and they are looking to our Department to act as a partner in the effort to secure a better future. The expectation is that we will work together to build a better economic climate by removing unnecessary barriers to doing business, expanding opportunities for trade at home and abroad, and encouraging investment in new technologies and new products. This is true as much in Prince Edward Island as it is in the rest of the country.

The work done so far on the Canadian Adaptation and Rural Development (CARD) Fund is another example of partnerships. The regional component of the CARD Fund departs from the traditional mode of government support, in style as well as substance. Not only are the tools to

adapt to fundamental change going to be in local hands, but these tools will be fashioned here as well.

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Prince Edward Island's share of CARD funding is \$46 million. In broad term, this is to help island agriculture as an industry to deal with changes in government policy and the demands of the global economy. This includes \$1.5 million that is available for specific regional initiatives and the strategic plan for Island agriculture |will essentially come from industry.

The Feed Freight Assistance Adjustment Fund is another example of management of change by both the government and the sector. As you know, the federal subsidy for the transportation of livestock feed was ended in the 1995 budget. The transition from a business environment that features a subsidy to one without it entails adjustment. In this case, the strategy for assistance was developed by a Task Force which was headed by the Secretary of State for Agriculture, the Honourable Femand Robichaud.

The Task Force process featured extensive stakeholder consultation and, in response, there were numerous changes in the design of the program, such as shortening of the pay-out period. The formation of the Prince Edward Island Livestock Adaptation Fund Incorporated as the organization to oversee the administration of the program is a key achievement of the affected commodity groups from around the Island.

Research activities - long a point of pride for the Department and its clients -are being streamlined. This has meant changes in what kind of research we do, where we do it, and how we do it. The federal government remains very much committed to research and technology transfer efforts which protect the safety of our food supply and the sustainability of our resource base. The Charlottetown Research Centre continues to work with industry stakeholders and its provincial counterparts concerning research activities that reflect your priorities and concerns.

The Matching Investment Initiative is another recent response to the need to help the agri-food industry compete globally, and it is a vehicle for strong partnership with industry in this area. With this initiative, industry investment in research projects is matched by the department dollar-for-dollar. The Charlottetown Research Centre is working closely with industry to develop approaches for project funding and setting research priorities under this initiative.

When you have one of the safest and healthiest food systems in the world – as Canada does - it is important to make sure that organizational and regulatory changes maintain the necessary standards. We are centrally involved in the federal government's effort to streamline and consolidate a food inspection service. The new Canadian Food Inspection Agency is being designed to make the food inspection system better - more efficient and cost-effective. The new agency will carry on the commitment to maintaining the health and safety of Canada's food supply.

Meanwhile, the administrative and regulatory changes embodied in a single food inspection agency will benefit both the industry and consumers. Efforts are also continuing, in consultation

with the industry, to introduce cost recovery, cost reduction and cost avoidance initiatives which ensure that an efficient, effective and responsive inspection service is maintained.

Regulatory systems are one of the key links between our economy and those of other countries. Our economic and trade performance is directly affected by our regulatory system, as we are operating in a global business environment. Within this context, there will be a need to arrive at a commonly agreed set of international rules or regulations to ensure fair trade.

The functions performed by our Department are the classic work of government - we deliver programs and services to the public and we develop plans and policies for strategic consideration by government. The way we do business and what constitutes our business is being transformed as the world in which we all operate changes.

The agri-food system is a major contributor to the Canadian economy, representing 8 per cent of GDP and 14 per cent of total employment. And, of course, the sector is much more important as the social and economic mainstay of many rural areas. By continuing to use the considerable natural and human resources available to us, while living within our financial means, and continuing to work together as true partners, the agri-food sector in Prince Edward Island, and in Canada, will be well- prepared for the challenges and the opportunities that lie ahead of us.

**Rory Francis**

## **The Role of Government in Agriculture on Prince Edward Island**

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Good morning everyone. I'm very pleased to see such a great turnout for the conference today. I congratulate the Institute of Island Studies for taking this initiative which provides the absolutely essential conversation/dialogue that must occur among all facets of society in Prince Edward Island to determine our future strategies for improving on economic, social and environmental outcomes for our province. The Round Table on Resource Land Use and Stewardship is another of those important forums for public discussion and consensus-building and I believe we need more.

I'd like to begin this morning by spending a bit of time on several aspects of this "Role of Government" topic, with the hope that it may provoke some discussion later. Discussing the role of government in terms of the agricultural industry requires a brief look at the role of government in our society in a larger sense.

This diagram (Attachment 1), which I adapted from the author, Herman Daley is a convenient way of looking at how our society exists. Governments role in it, whether at the national or provincial level is to use the resource that people agree to provide to government (taxes) to help society get better results in these areas. These are not government's results; they are society's results. Government's results are determined by how well it does in influencing these societal outcomes in a positive sense.

Attachment 2 shows another way of looking at this. As a society, we must try to keep these three circles in balance and, frankly, the more overlap the better. On Prince Edward Island, as Bob MacGregor and Wayne MacKinnon have described, agriculture is more than feeding our people. Here, agriculture is and will continue to be a cornerstone of the economic vitality of our province. The role of government is also determined by context. In my view, governments across Canada have, until recent years, used tax dollars to provide a myriad of programs and services to citizens with the expectation that institutionalized programs could indeed improve social and economic outcomes. And that has been successful; after all, by most yardsticks, Canada keeps coming up as one of the best countries in the world.

But this approach also created a huge dependency on governments to always be there and "fix" our problems, usually with money. For the past twenty years, that has been borrowed money, and with reduced impacts I believe we've reached a point where continuing to improve societal outcomes is going to depend on improving these areas where government has very little influence, and strong, self-reliant individuals and families and communities will have a great deal of influence.

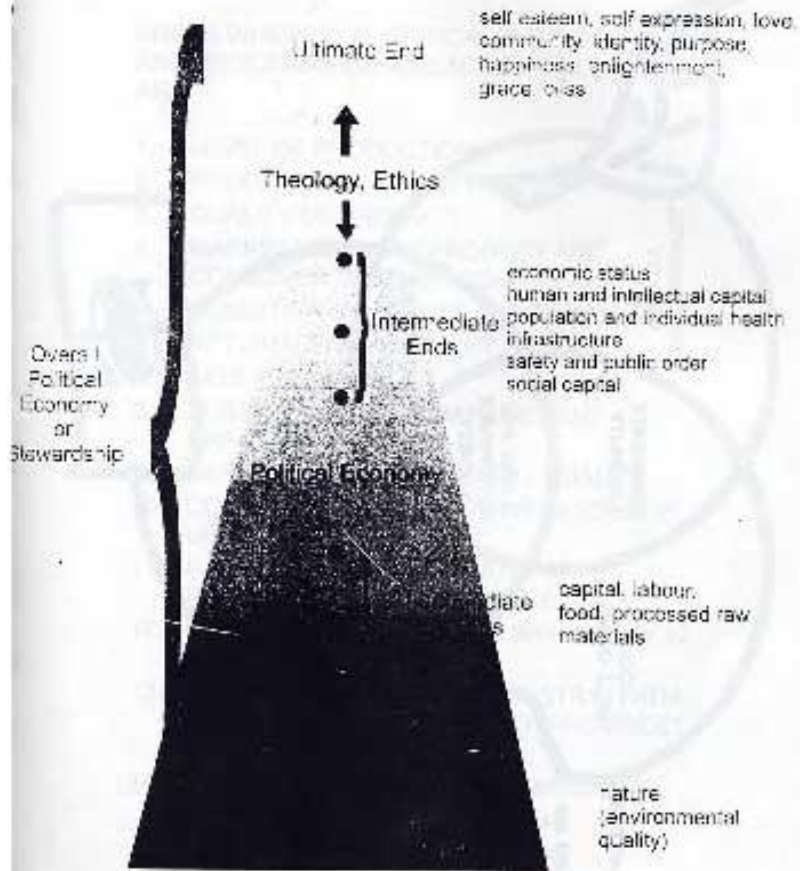
In our provincial government, our approach over the past few years has been, first of all, to understand what results our clients in agriculture must achieve in order to be successful, and then develop plans and strategies in consultation with the industry to achieve these results.

Looking at Attachment 3 we see areas where it is critical that producers and processors have acceptable results. Our role, then, is to work with industry to first of all define their current level of results in each of these areas, determine in which areas results are not good enough, and help industry develop the strategies to improve these having looked at why governments role is changing, HI conclude with three slides which talk about how government's role is changing (Attachments 4, 5 and 6).

For the most part, the change in government's role is toward a more mature relationship between agriculture and government, one that admits that government doesn't have all the answers, and possibly never did. It's a relationship that is built on trust and a shared vision of the future, and that can only be positive.

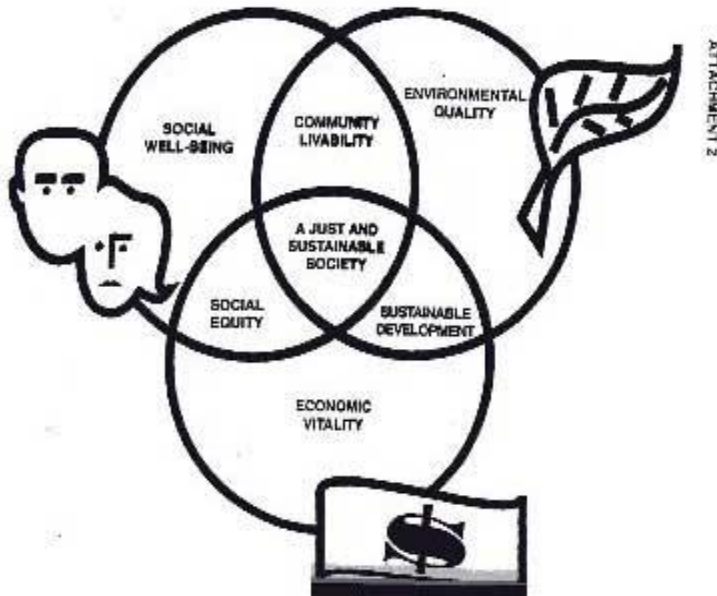
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ATTACHMENT 1



After: Herman Daly, *Toward a Steady-State Economy*, W.H. Freeman, 1973, p. 8.

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### ATTACHMENT 3

Areas where it is crucial that producers and processors have acceptable results are:

1. Level of production
2. Productivity and efficiency
3. Quality of product
4. Marketability of product and consumer satisfaction
5. Condition of assets and finances
6. Return on Investment
7. Self-reliance
8. Sustainability of management practices
9. Impact on environmental issues
10. Compatibility with other resources users/neighbours
11. Public satisfaction with producers/industry image
12. Health and safety, and satisfaction of employees
13. Relationships within industry, with governments, with other provinces and countries
14. Quality of life (family, community)

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### ATTACHMENT 4

Department of Agriculture Fisheries & Forestry

Goal #1

- To improve the quality of advice, assistance and information to clients in agriculture, fisheries and forestry

Goal #2

- To improve the satisfaction of department clients with programs and services

Goal #3

- To improve the cost effectiveness of department programs and services

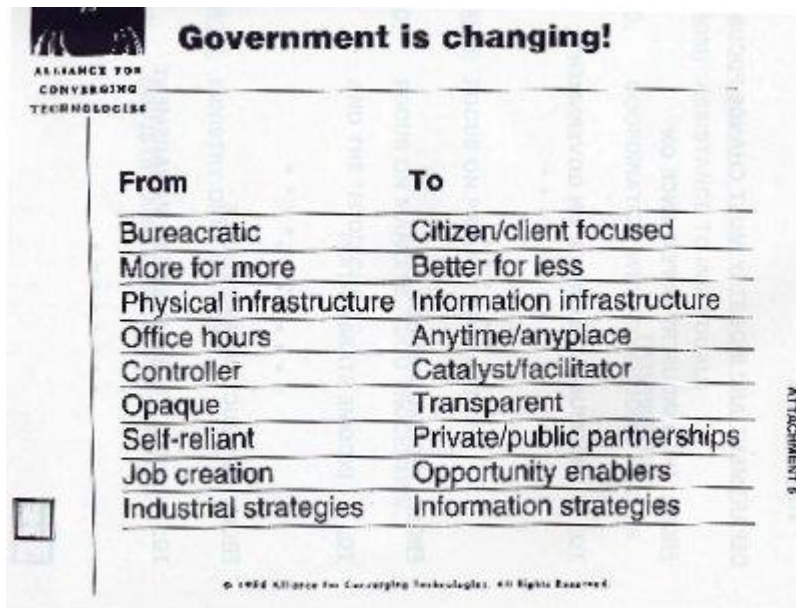
Goal #4

- To increase the department's influence on other governments and agencies affecting department clients

Goal#5

- To improve staff morale

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From	To
Bureaucratic	Citizen/client focused
More for more	Better for less
Physical infrastructure	Information infrastructure
Office hours	Anytime/anyplace
Controller	Catalyst/facilitator
Opaque	Transparent
Self-reliant	Private/public partnerships
Job creation	Opportunity enablers
Industrial strategies	Information strategies

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DEPARTMENT AND INDUSTRY MUST CHANGE FOCUS:

FROM: HIGH INDUSTRY DEPENDENCE ON  
GOVERNMENT

TO: MINIMUM DEPENDENCE ON GOVERNMENT

\* \* \* \* \*

FROM: INCOME SUPPORT

TO: INCOME STABILIZATION

\* \* \* \* \*

FROM: PRODUCTION ASSISTANCE

TO: WHOLE FARM BUSINESS MANAGEMENT

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**FROM: ASSISTANCE TO INDIVIDUALS**

**TO: COORDINATION WITH COMMODITY GROUPS**

\* \* \* \* \*

**FROM: FOCUS ON PRIMARY PRODUCTION**

**TO: FOCUS ON MARKETS, FOOD PROCESSING,  
AND THE "FOOD CHAIN"**

\* \* \* \* \*

**FROM: MINISTRY ONLY DELIVERY**

**TO: INDUSTRY AND AGENCY PARTNERSHIPS**

**Sally Rutherford**

**Changing Expectations of Government**

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Good morning and thank you for the invitation to speak to you.

I read the Round Table on Resource Land Use and Stewardship's Interim report with great interest. The report is a clear example of how government is changing and how citizens are reacting to the changes. An example is the make-up of the Round Table itself. Not many years ago this kind of body would have consisted of, quite literally, "a few good men." They would consider and issue their finding to government which would then implement those that were politically acceptable—and didn't cost too much.

The Round Table you have a present represents a fairly broad range of interests and experience. The positions it puts forward are not always the accepted wisdom. Times are changing.

The issues, the Round Table's interim report, and government's response are not what we would have expected even a few years ago. What we are experiencing is a changing system, a work in progress, that is having to take into account at least two currents.

*In the first place:*

-- Expectations of what government can and should do are changing. It is clear that government cannot do everything and that many people do not want it to.

-- People are better educated and more sophisticated, and in an information age, are better able to compete for 30-second sound bytes with politicians and interest group representatives.

There are down-sides to these developments:

-- It is the flashiest story which most often hits the news, not the most newsworthy. This cannot only be frustrating but can be detrimental to encouraging those involved to participate in a good cause.

-- Related to the first point is that the squeaky wheels, and there are more and more of them, get the grease. This can mean that the most important issues do not always get the attention they deserve, especially when they are not representing an organization with a definable membership.

*In the second place:*

-- At the same time, government has run out of easily attainable money to fund the lands of projects it used to support.

-- There is a move toward streamlining and downsizing leaving government incapable of doing as much as previously.

-- There is a concurrent move to "businessize" government; within the federal government, this means setting up units which have separate budgets user fees and business plans that are run on business principles, not necessarily addressing public good or public need.

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I have three concerns about the way that the role of government is changing and the way in which the impact of citizen input is being minimized. The first is that, although government now proudly claims to adhere to business principles, the fact is that it is not a business. Many of the things which government does cannot or should not be carried out according to strict business principles.

Secondly, although streamlining has brought some greater levels of efficiency now government is looking to streamline not only its services and operations but also its decision-making processes. This is leading to a loss of influence by private citizens and a loss of accountability to the general public and electorate.

And thirdly, recent international agreements (trade, environmental covenants) also have removed some of the decision-making power of national governments. How do we bring the two streams together so that the changes in the role of government achieve something better than we had before?

Despite the down-sides, I believe that there is a real for Canadians to affect government. People like those on the Round Table and you and I here in this room, need to use government in a way in which most of us have not used it before.

We must not accept but work with the fact that government does not always know best. Government may have a broader grasp of some issues, but on others the move to streamlining, downsizing and cost recovery has left some knowledge gaps which government must look outside to fill. We must be prepared to fill those gaps, to take charge of the issues and to define them. And we must work at this collectively through our farm organizations.

We need government to be supportive of the roles and activities that we want undertaken. In the case under discussion, the role is to support a reasoned, collective approach to accommodating agriculture, tourism and the environment on Prince Edward Island, not to react in a knee-jerk way to the latest fads, either of government policy or market development.

In relation to the issues under discussion within the Round Table report, agriculture does find it objectionable that government should point a finger on environmental issues. Most often, the base practices which are under scrutiny are those which extension services actively promoted two decades ago. The reality is that no one then knew the impacts of some of the products and practices which were encouraged. Harming an industry which employs (read feeds, clothes and houses) a large proportion of the population by significantly curtailing its activity is not a socially or economically productive way to proceed into the future. Our challenge is to work with government to identify what needs to be done and the ways to do it, not to wait for government to develop the solutions on its own, or with others who offer themselves first.

In recent months the Canadian Federation of Agriculture (CFA) has been involved in a number of issues which have brought the importance of this new way of operating home with a vengeance.

### *Biotechnology*

As the population moves further and further away from the farm, the level of understanding about agriculture and food production becomes more and more negligible. The discussion about biotechnology within the Canadian Environmental Protection Act unleashed every horror story and stereotypical anecdote imaginable about the dangers of modern science from interest groups and politicians alike. Only by making strong statements supported by the scientific community, and thereby providing legitimacy to government scientists and policy makers, were we able to obtain a rigorous but appropriate level of regulation of biotechnological processes.

### *Endangered species*

In this case, the battle may just be starting. Proposed legislation aims to enforce activity on landowners, of which farmers represent a significant proportion, which, by being detrimental to their operations, will almost inevitably drive some to ignore the right thing and to take the economically expedient action. The truth is that a piece of legislation will never save an endangered species, at least not by itself. The opportunity in the Bill for the recognition of and encouragement of voluntary action is almost nonexistent. The issue is important. Farmers must continue and expand their work on accommodating wildlife, and in particular endangered species habitat, within their operations in ways which will benefit all concerned. We may not be able to significantly alter the legislation but we can avoid its sting by working on a voluntary basis with government and groups involved in endangered species management.

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### *Cost recovery*

This issue has taken on a life of its own during the fall of 1996. Although many departments in federal and provincial governments have been working at implementing cost recovery and user fees for a couple of years, no one, I believe, was prepared for the storm which began to brew this fall. The reason for the change in political weather at the national level was a government system which did not understand the business principles it claimed to be instituting. By the fall of 1996, businesses big and small, of all types, were looking at increases in costs and reductions of bottom lines and a growing feeling that they were paying for declining services. In only a very few cases has there been any real input into the level of cost recovery or the type and level of service provided. Specifically through the lobby on our concerns about the Pest Management Regulatory Agency and cost recovery and accountability, the farm community has contributed to a growing demand for changes in process. From resource to service industries, groups have come together to demand that government recognize that while it must streamline to provide better service for cost, government itself is not a business. There are services and levels of service which are necessary for the smooth functioning of business... and government. They have demanded that government recognize that those who pay must have a say. Working with clients, not in spite of them, is one business principle which it is necessary to instill within government. In this case, business took some ownership and responsibility for the implementation of government services.

In all three of these issues, the winning approach has been different from that which we have been used to. We have had to partner, to support government and not to rely on it to support us, and to take charge and responsibility. We have done this in partnership with our member organizations and as an organization that represents its members. We are not all the way there yet, but there are positive signs. In the end if we do want government "out of our face" we must be willing to invest the energy which it is going to take. The roles and responsibilities are definitely shifting.

The role of government is changing. Although the lack of available funds is a problem in many ways, the fact that a lack of funds is forcing new ways of governing and doing business is not necessarily a bad thing. While we must guard against attempts to streamline public participation and, indeed, political participation, in decision making, we can take advantage of the changes.

The new role for government must be one which is supportive and flexible It must be to work with Canadians and Canadian businesses to find the best possible ways to address their issues. By taking advantage of the two currents of change which I identified at the outset -- greater public ability to participate and government requiring change -- I believe that we can create a better and more responsive system than we have ever had before.

**Vernon Campbell**

**View From the Farm Gate**

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I graduated from the University of Guelph in 1979, during boom times in Canadian agriculture. Gene Whelan was the Minister of Agriculture at the time and Canadian farmers were exporting food all over the world. Most of my classmates had several job offers to choose from upon graduation. Government was hiring, feed and chemical companies were hiring, banks and other lending institutions were hiring. But they didn't hire me? I couldn't get back to Prince Edward Island fast enough to start farming. I bought land, put in a crop and put up my first potato warehouse during the summer of '79 after graduation.

I chose farming as a career over several other opportunities. At that time I was extremely proud to be a farmer, proud to be a producer of food -- food that is nutritious, attractive, affordable, and above all, food that is safe.

Lately, however, I have felt as if our industry has been under siege. Everything I do, with regards to land use or pesticide and manure application, is under intense scrutiny by the general public.

This past growing season has been especially trying. Allegations and allegory have run rampant. The debate over pesticide use has raged across the Island, in the media and through other venues. This debate has been a highly charged one, in which emotions and logic often run out of control.

People sometimes don't want facts to interfere with their opinions. If a person is convinced that a cancer case is caused by pesticide use, then all the tests and studies in the world will not convince him or her otherwise.

I am not here today to minimize or trivialize the dangers of chemicals (herbicides, fungicides and insecticides). These chemicals are by their very nature and design poisonous to their target; otherwise, they would be ineffective. There are risks when using these chemicals in the production of food, risks that we as users and consumers are very aware of but there are risks in almost all aspects of life and I feel that these risks must be put in perspective.

Years of scientific research, backed by government regulatory bodies, must take place before a chemical can be registered for use in Canada. It is unfortunate that the general public is unaware of all the precautions taken to ensure the safety of these products when used properly.

The public must be made aware that we as farmers are not running "willy-nilly" throughout our fields soaking the soil with chemicals, fouling the ground water and poisoning the food supply with agricultural pesticides. Any users of agricultural chemicals must take and pass a pesticide safety course in order to be licensed to apply these crop protectants. We have to be judicious using these products and work towards the production of safe and wholesome food. It is simply economic suicide to act otherwise. Agricultural crop protectants, automobiles, pharmaceuticals, electricity and many other products must all be used properly; but, if this is the case, they play an important role in our lives and lifestyle.

### *Another issue from the farm gate*

Next, I will turn my thoughts to some of the ways in which we can conserve and enhance our soil. There are many land management practices which we can use to reduce erosion -- three-year rotation, residue management, strip cropping, grassed waterways and diversions, cover cropping and hay or straw mulching. I have found that none of these practices on their own is a complete cure-all for soil erosion. But all of them in concert can play a tremendous role in conserving our soil.

In a recent conversation with an urban cousin I was informed that I do not, in fact, own the land that I farm, but that it has been given to me to hold as a trust. I replied that if it was indeed the case that I do not own the land that I farm, then I have been the only one making the payments on it for some time; and that if he now wanted to help out some, it would be greatly appreciated.

The public seems convinced, with justification, that agricultural land is a provincial resource and now appears willing to legislate its use. If land use legislation is introduced, then I believe there will have to be some level of monetary relief for farmers through land tax relief on other avenues.

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I personally believe that good crop rotation and soil conservation measures yield their own rewards. However, if land was taken out of production, then I don't know how we would make up the difference.

I have found that we have to run faster and faster each year in order to just stay in the same place. We are under constant pressure to increase productivity, efficiency and competitiveness. What this constant pressure has done for me at my farm gate is increase my headaches?

The status quo is not an option -- there is no such thing as a "holding pattern" in modern agriculture. If you do not start to adapt to or adopt the latest technology, then you will be unable to compete and, hence, survive.

When I started farming in the 1970s, the emphasis was on production -- hundredweight per acre (cwt/ac), lbs of milk/cow, A.D.G. in the feed lot, that sort of thing. This focus seems to have led towards specialization. Large farms have now become the norm. More and more is being produced by fewer and fewer people. This specialization and expansion have made most farms

extremely vulnerable to markets and production shifts and cycles. With the increased size and associated debt-loads of most Island farms, financial management has become the key to survival. The "current margin" is the one factor on our farm that is most closely monitored.

I'm just about out of time and material, yet I've only mentioned a few of the issues facing today's farmer. I haven't touched on things such as the financial requirements of our labour force, the need for highly skilled, trained people with a grasp of the science of agriculture, the need to adapt to the unpredictability of Mother Nature, and external forces such as trade agreements, transportation, exchange rates, the financial role of federal and provincial governments, the loss of services and/or imposition of user fees for items like inspection and ice-breaking.

But even with all of these concerns, I am still optimistic about the future of agriculture here on Prince Edward Island. I honestly believe that agriculture will continue to be the economic engine that drives the province. That is why I take every opportunity I have to talk to farmers and encourage them to adopt soil conservation; and every opportunity I have to talk to the media to tell them the farmer's side of the story; and every opportunity I have to meet and talk with the public, like I'm doing right now.

I seize those opportunities, not for personal glory, but because I truly believe in our farming industry. I think there is an onus on each and every one of us in this room likewise to accept any opportunity to set the record straight and inform the public. It cannot be left to a few producers to change the tide of negative attitudes that have become so common. If we collectively want to ensure that agriculture does not become a sunset industry, then this I believe must be our course of action.

Thank you.

**Jeff Wilson**

### **Shrinking Margins, Bigger Volumes: The Farmer's Dilemma**

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As a fruit and vegetable farmer from north of Toronto, who grows 65 of 250 acres in potatoes, I feel that I may have little to offer you in regards to margins and volumes, particularly of potatoes. However, in my usual fashion I will take a foray into the subject. I personally feel that there is a trilogy involved in what constitutes a successful farmer: one part science, one part business and one part way of life. The three must be kept in somewhat of an equal balance, but there is always the question of how do we define the "way of life" component.

I also often mention what I call the 80-20 rule, that is that 80 per cent of the food and fibre consumed in the country is produced by 20 per cent of the farmers, and the rest by farms whose focus is not production agriculture. In the questions that you are asking yourselves, you need to examine how Prince Edward Island deals with the 20 per cent of producers who in essence are the visible production-oriented farmers. This will affect how you decide to move forward.

There are also other questions to be asked. How important is community to you? What would any changes mean to your community and the life in which you take pride? What is your philosophy as to Prince Edward Island's role as a source of food for the world? Do you want to be major exporters or do you want to service the local or national needs? What are the opportunities for value-added products? Do you want to change the focus of your industry here to capture some of these specialty markets?

These and several other nuances and questions surround the topic you have asked me to speak about. But I would like to consider it in the paradigm of what the next panel

will speak about, sustainable agriculture -- perhaps I will form a bridge between the two. The whole focus of this forum is on the future of agriculture in this province, whether it is a sunset industry or an economic force. I can't answer that question, but I can pose or suggest some other questions that you can ask yourselves.

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### *Economics*

One of the pillars of sustainable development is economics, and margins and volumes naturally lead us to think of marketing and economic issues. As business people, we have to keep our eye on the bottom line and on the margins of profit; otherwise, what are we doing in business? Therefore, we must maintain a balance that ensures that input and management costs result in a profitable bottom line.

And you need to examine whether or not you have a natural advantage to grow a particular commodity. For example, does Prince Edward Island have a natural advantage to grow potatoes? If the answer is yes, then you need to look at some basic facts before you make decisions: is there a demand for more production which would probably result in enhanced margins? If the market is stable, then margins will probably drop to provide better access to the available market. You need to assess weaknesses and strengths.

Have you looked at the potential and opportunities for diversity? What have Maritimers been doing in this regard? Is it more economical to produce it here or to import it from the west? What is the future of the vegetable industry in the province, in the country, worldwide? You need to ask these questions.

We are told about economies of scale, and we are told to be efficient in how we use and manage our resources and inputs. If the operation is bigger, then the cost gets spread around a bit more. You may also want to factor into this picture the trends in equipment development, and the issue of continuity of being a supplier. Economic considerations can be a positive thing.

I come at this question with a bit of a bias, of course. I produce potatoes in Ontario. If Prince Edward Island increases its volume and ships them to Ontario, then my profit, my margin, probably decreases -- unless, of course, Ontario people have been influenced by the Ontario Foodland ads and buy local produce. If my volume is lower, then my ability to drop my price



will be less and Prince Edward Island potatoes may end up being a better buy. The marketing of Prince Edward Island potatoes still holds a strong attraction for Ontarians and of course all those transplanted Maritimers. While there is an increase in consumer wishes to buy local and support the local farmers, if the price is right.... It is nonetheless interesting how consumers can suddenly become blind to the signs above the bins that indicate the origins of the produce.

### *Social/Community/Consumers*

There is also the social aspect to sustainable development. Normally, in the context of sustainable development language, the focus is on the intergenerational equity. The adage here is that we must leave our farms and the world in general in a good state for future generations, Farming communities have used this adage for years and have tried to do their best. That does not mean that they have not made mistakes; management schemes once thought to be good and hailed as the way to go have now been bypassed for other ways that are more sustainable.

I like to look at sustainable agriculture not as a goal, but as an evolutionary process, an iterative and learning process that can take on board new and old ideas as they fit my farm. Another aspect of the community responsibility not usually emphasized in sustainable agriculture, but at the forefront of social issues in general, is public perception. Farmers need to do a better job with the look and feel of farming.

Awareness in general about farming and what it entails is very low amongst urban dwellers. We need to consider making them aware of the care and love which goes into getting that package of milk, that head of broccoli, that can of pea soup, that tofu, or that steak or chop to their plate.

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### *Environment*

This leads me also to the final leg of the three-legged sustainable development stool, the environment. A farmer runs a "margin" with "bigger volumes" in more than the economic sense. Larger volumes of a particular commodity may mean an increase in acreage of that crop. Then a farmer needs to carefully consider the potential for environmental impact. Prince Edward Island is very aware of this with respect to pesticide use. What can farmers do to alleviate this? Larger acreages may mean that you are out on the tractor more often, possibly spraying pesticides in one corner today and another tomorrow, even with the use of Integrated Pest Management (IPM). The visibility of you hauling the spray tank around will probably increase as you increase your acreage.

I feel that we need to build awareness campaigns on good environmental stewardship, to educate ourselves and the public. We cannot sit back on the laurels of good old-fashioned values and fresh country air and "we are the stewards of the land" for much longer. People are not buying that without demonstration that is convincing. We need to show them; and show them we are willing to change now, more than ever before.

We all need to check carefully, as we change our cropping practices, whether our management capabilities have also kept pace. Have we researched the available techniques adequately? Have we considered whether we could move to IPM or to another way to apply nutrients, or whatever? Or, have I thought, well that's what I did when I planted that last and that should be good enough. The attitude of "good enough" isn't, frankly, "good enough" anymore. In our drive to be more efficient and ensure that we have a margin to provide for our families and ensure a vibrant rural community, are we asking the right questions about the environment and consumer demands? There needs to be an honest examination by farmers of the value of adopting change.

The time is coming when farmers need to work with the environmental groups and to be truly aware of each other's concerns. I was at a meeting in October with a group of environmentalists to talk about biodiversity. We discovered at that meeting that we really were not that far apart in our goals relative to the environment, but that we both often hide behind misconceptions and misspeaking. At that meeting, we urged the environmentalists to get their facts up to date and not continue to use data about farming from the 1960s or even the 1970s, or from a source out of the province or the country that may not be relevant to the question or issue at hand. A lot has changed since then; there is still a lot to do, but we can reset the baseline and move together from there. We also discussed the fact that inflammatory language often used by environmental groups is not helpful to progress. Nor is some of the rhetoric to which we ourselves are sometimes prone. You can make a strong statement that will get someone's attention and will either engage them or will repel them. I suggest that we all work towards the former rather than the latter. Take the high road.

Have we examined, with the support of such groups, possible value-added large margin products? Or have we gone on our merry way without considering their suggestions?

This brings me finally to a few words on policy. We as farmers need to keep vigilant on federal and provincial policies that may affect the economy and the environment surrounding our farms. We must be the watchdogs to ensure that the different levels of government do not build systems that conflict with each other or confound and confuse issues and that run counter to the principles of sustainable agriculture. We can help here, and we should take up the flag and carry it for a while.

Is Anne of Green Gables and tourism the economic future of Prince Edward Island or will the Island maintain its position in the marketplace, in for example, table and seed potatoes? As I said at the outset, I cannot answer those questions. Only you can decide.

**Gerard Fitzpatrick**

**Shrinking Margins, Bigger Volume: The Farmer's Dilemma**

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As reported in FCC's Business Contact publication. Dr. Lockwood Smith, Minister of Agriculture for New Zealand, states, "For New Zealand farmers relying on State handouts is a thing of the past. The removal of subsidies has meant huge gains in productivity and innovation

from producers." Dr. Ralph Ashmead, a Calgary-based researcher, has stated, "Rather than resist change, they accepted the need and became pro-active to encourage the diversification and integration of New Zealand agriculture." This is in a country where farmers' land had to be taken by lenders and leased back to them under favourable terms.

While discussing the sustainability of farming and the future of farming in general, a farmer provided me with a somewhat different philosophy when he said, "People cannot eat their cars." As a general position, this is true; but whether farming, as we know it today, will survive and grow will depend on a lot of things, not the least of which is the attitudes of farmers -- and consumers.

The old attitude -- we will produce and the consumer will consume -- is no longer true. As has long been the case in other businesses, the needs and wants of the consumer have to be anticipated and responded to; in fact, should be exceeded.

Although the consumer is boss, he/she is not normally willing to accept much additional cost in satisfying his/her needs. It was once said that farming is the only business in which you purchase all your inputs at retail and sell all your outputs at wholesale.

A review of Prince Edward Island farm cash receipts shows that crop sales in 1989 were \$147 million and steadily declined to the 1993 level of \$124 million. Yet, in 1994, they jumped to \$194 million due to potato prices. Livestock and livestock products increased from \$94 million to \$100 million, a mere 6 per cent in six years. Subsidies remained constant over the same period at \$16 million.

Over the years, there has been increasing pressure on margins in the farming industry. This can be the result of anything from downward movement in prices and/or subsidies to increased commodity input costs such as fertilizer, chemicals and labour. There have also been increases in costs of capital items such as land construction materials and equipment. As well, costs have increased in non-traditional areas such as compliance with government regulations, whether it be land holdings environmental, inspections, etc. There is also pressure on the farm to produce a standard of living on a cash basis similar to other sectors of society. The retirement age of farmers appears, from my point of view, to be lowering; therefore the costs of retirement are going to be higher, thus intergenerational farm transfer prices are going to nose sharply, which will add costs to the next generation farmer.

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If you look at particular sectors of the agricultural industry, you can appreciate the changing environment and have some indication of what the farmer might be facing. The average dairy farm on Prince Edward Island in 1994 had \$65 000 invested in land, \$65,000 in buildings, \$4,000 in quota and the farmer had 67 per cent equity in his farm operation. Average milk sales were \$139,000 plus a subsidy of \$15,000. The resulting return for unpaid labour, return on equity and profit was \$37,000. Yet in 1996, the number of dairy farmers on Prince Edward Island dropped by 28 to 428' which is more than a 6 per cent drop in one year. In the last number of years it is not uncommon to see dairy farmers invest \$350,000 in buildings and equipment and

\$200,000 in quota. The previous restriction on the maximum amount of quota you can hold was removed in 1996 and quota is still trading at approximately \$26/kg. With the anticipated effects of GATT and the items we mentioned above, it would not be hard to imagine the number of dairy farms being fewer but larger. This is one sector that has invested heavily in maintaining consumer demand for its product but has been forced to become much more efficient in order to survive and to continue to survive.

Presently, the dairy sector has found itself under pressure from a sister industry potato production. As indicated in the attached charts, farmland values have more than doubled between 1991 and 1995. At \$1,958 per acre, it's not only the highest in the country by \$600 per acre, but is way over double the national average of \$854. As well, the six-month increases in the price of land is pretty astounding. In a report prepared by Janice Murphy in July 1996, it states that potato acreage increased from 75,000 acres in 1990 to approximately 108,000 acres for the 1996 crop year a 44 per cent increase in six years.

The potato sector is facing ever shrinking margins along with the other farming sectors, and this is further fuelled by increased rents, land prices, etc. Its markets are not only price-sensitive but highly volatile as well. For example, you might invest \$300,000 in a size for baker potatoes and find out next year that the price and demand is for poly-washed and therefore your investment might be under-utilized for a year or two. This segment of farming has responded to increased demand by increasing individual sizes of farms. This has put a lot of pressure on the operations by way of debt, management, capital, investment, etc. The potato industry is facing global competition, environmental issues, rotation issues, and saleability and intergenerational transfer issues caused by size and other factors.

It is my opinion that agriculture is and will be the economic cornerstone of Prince Edward Island's economy for the years to come. In order to achieve this, the farming community will have to embrace change and react quickly and responsibly to an ever-changing marketplace. This, however, does not mean that all farms on Prince Edward Island have to be large farms. There will be a need for larger farms in certain sectors as they will be the base of the sector. Smaller units will survive and prosper but not necessarily in mainline farming. Their operations will be in organic (there are now 1,000 acres being organically farmed on Prince Edward Island) or other niche specialty markets, as driven by consumer demand, where larger margins can support small operations.

It is my opinion that all farming, large and small, will have to move towards the next generation a lot faster in areas such as market responsiveness, cost efficiencies and computerization (i.e., the Internet as a tool, the Global Positioning System as a tool, etc.).

As reported by the Canadian Farm Business Management Council, globalization is extremely important to all farmers. One has to know that when the world fish harvest fell from 90 to 80 million tons, five million tons of protein were lost which grain and meat sectors had to replace. One has to know what the have-nots will want; for example, China's 1.2 billion people will see their income rise from under \$1,000 to \$3,000 by the year 2000. Farmers will have to diversify, a change which will take place through vertical integration by horizontal alliances. Strategic alliances, joint ventures and contract production will become increasingly common. Farmers will

have to deal with political uncertainty as well as a change in government's role, from support, mainly financial, to what it now has come to perceive itself as: a catalyst for change.

In conclusion, farming will be one of the fastest-changing industries in the future and it must embrace and respond to change. The pressure on margins and profitability will not be decreasing. The farmer who recognizes the consumer as boss, and who is prepared to meet or exceed the consumer's needs at a profit, will survive.

**Daryl Guignon**

### **Sediment in Island Watercourses: A Symptom for of Poor Land Stewardship**

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The recently released interim report by the Round Table on Resource Land Use and Stewardship is an excellent review of the current issues, and it should provide a solid basis for upcoming discussions of potential solutions to Island land use concerns. While strongly endorsing both the above document and approach taken, I would like to offer additional information, especially about some off-farm effects of soil erosion. As part of a team conducting research on streams, impoundments (ponds) and springs over the past few years, I have been thoroughly appalled at the effects of pollution by sediment.

Sediment is now widely recognized as the most significant pollutant in North American streams. Certainly, on Prince Edward Island we have to acknowledge that practically every watercourse has a problem with pollution from sediment. Streams are inundated with sand and silt, spawning and nursery habitat for salmonids has deteriorated and many holding pools have disappeared.

During the past five years, there have been many community groups working diligently to restore the quality of streams in their regions of the province. The Morell River Management Co-op, for example, has worked for over two decades attempting to curb sources of erosion and encouraging good land stewardship. Although the Morell River watershed has a limited amount of row cropping in comparison to other regions, and is partly protected by a greenbelt, it now bleeds red with sediment after heavy rains. This occurs in spite of hundreds of thousands of dollars spent on enhancement work and a tremendous amount of volunteer effort. The Co-op feels that the traditional erosion problems have been compounded by recent forestry activities involving clear cutting, questionable extraction methods and expansion of agricultural fields. There is a widespread perception that, in spite of the additional efforts being put into watershed management, we are losing the battle.

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Sediment in our rivers is either suspended (usually various sizes of clay particles) or deposited on stream bottoms where it moves as bed-load (primarily sand-sized particles). It is widely recognized that infilling of streams, ponds, estuaries and bays has continued unabated since the forests were cleared for agriculture. However, the infilling is not particularly noticeable to people, as it normally occurs rather slowly, though persistently, in a camouflaged, insidious

manner. Red water is now generally accepted as the "norm" rather than an indication of pollution. It is only when benchmarks are considered, such as today's shallow estuaries where ships were built and sailed in the 1800s, that the actual rate of infilling hits home.

On various branches of the Morell River, instream sediment traps have been excavated with heavy equipment in an effort to protect downstream habitat. Sediment traps have also been dug on upland sites to minimize the amount of material reaching the stream. In all cases, we have been astounded at the rate with which these sediment traps have infilled. Moreover, our studies on suspended sediment infilling rates in impoundments show that heavy concentrations of fine particles are being carried throughout watercourses, especially in watersheds with extensive and intensive row cropping.

Let me give you two examples. When we cleaned out Mooney's Pond in Peakes to create our semi-natural rearing pond for Atlantic salmon, we had to remove 1,200 tandem truck loads of sediment. Still more impressive is the 44,000 tonnes of soil removed from Marchbanks Pond on the Wilmot River over the past two summers.

When viewed from the air, it appears doubtful if more than one-third of the original pond has been excavated. If all of the sediment from this pond was dumped on Route #2 in a pile one metre wide, it would be waist deep and extend from Charlottetown to Mount Stewart. Had the pond been completely cleaned, the sediment trail would likely reach Souris.

There are about 600 impoundments on Prince Edward Island and most of them are heavily infilled. These many ponds have served as gigantic traps, helping to protect the estuaries and bays from even more devastating loads of sediment. Many of our ponds are now shallow and no longer trap much silt; they are also less important as habitat for a variety of wildlife species.

Impoundments that should have survived for hundreds of years have infilled in decades. For example, the Maritime Electric Pond on the Valleyfield River has water approaching four metres in depth near the dam. However, at the upper end of the pond, so much deposition has occurred that over half of the original pond has less than a metre of water, when a comparison is made between the 1968 and 1990 aerial photos, it becomes evident that, in 22 years, about 30 per cent of the original water surface has infilled with sediment.

We do not have a problem with sediment -- it would more correctly be termed a crisis. Sediment is not only destroying stream and pond habitat; it is already having a major impact in coastal regions such as Bedeque Bay. In future, if we wish to have any semblance of a sustainable shellfish industry, quality angling opportunities or the potential for expanded coastal zone ecotourism, we had better "get our act together" and take more aggressive action to keep the soil on the land and out of the water.

**Julia Langer**

**Ecology and Community: Reducing Risk and Reliance**

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There are public concerns about pesticides in the air, water, and in our food. Scientists and policy analysts are trying to gain further insight into the effects these chemicals have on wildlife and humans alike. The limitations of analytical techniques for assessing presence, risk and costs is an area of concern. The media coverage reflects the local, national and international level of awareness of pesticide issues.

The promotion of environmental quality and environmental marketing of green" produce and products are priorities for Canadian agribusiness: unfortunately neither business as usual, nor tinkering at the edges, is going to achieve sustainability and satisfaction.

The World Wildlife Fund (WWF) has concluded that species cannot be saved unless the habitats they live in are protected. Contaminants undermine the basic biological processes and the diversity that keeps ecosystems going. Pesticides happen to be one very large group of contaminants which affect wildlife and people.

We need to stress the need for and the importance of establishing clear and far-reaching goals, goals which build on what has been accomplished already. One goal would be implementation of practical programs which will assist large numbers of farmers, pest control operators and individuals to move away from heavy reliance on pesticides. The need to reduce the risk posed by pesticides to occupational users, consumers and wildlife is of utmost importance.

However, risk assessment is inherently fraught with difficulties, including the cost and time involved in monitoring, data review and assessment, and the inevitable differing opinions regarding data. The fact is that we cannot, ever, fully document the risks a pesticide might pose - how do we untangle multiple pesticide and chemical exposure?

And what of the new evidence that is always coming forward? Take, for example, the increasing evidence that many chemicals, including many pesticides in current use, are big opportunities available when reducing the reliance on and the risks associated with pesticides. This has been demonstrated by reduction goals and programs which have now been developed and implemented across the country.

There is no question that linking pesticide risk reduction and reduction in reliance on pesticides, and vice versa, will be a challenge and will not happen without some concerted effort. Developing ambitious goals, setting specific timetables and establishing reliable monitoring of progress towards reducing reliance on pesticides are ways to achieve these goals.

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Integrated Pest Management (IPM) is one way to help achieve the above stated goals. The IPM "community"- - the folks in extension, farm organizations farmers academics, environmentalists, etc. -- need to use IPM as a strategic tool for reducing reliance on pesticides, and for protecting environmental and public health. But IPM cannot be a "safe" use in disguise. The environmental benefits of various kinds of IPM systems must be clear; there should be clear market recognition and therefore consumer support for IPM which represents a significant improvement for

environmental and public health. And, IPM should help to mobilize public and private-sector resources.

To achieve this support, IPM must be defined more clearly, that is, distinguishing between a system which still relies heavily on chemical pesticides and one that maximizes the opportunities for pest management in a well-balanced biological system. WWF has outlined a spectrum of IPM which does not discount this chemically intensive/reliant approach to IPM but recognizes that there are IPM systems which are less, or much less, chemically dependent and more reliant on biological systems and preventative measures. As well, WWF has also developed a methodology for measuring adoption of IPM -- a ratio of dose-adjusted acre-treatments and preventative IPM practices (for particular crops). The goal we imagine is one which moves a substantial number of acres and/or farmers and others along the spectrum -- all IPM is good, but bio-intensive IPM is best.

WWF is actually participating in this process. In early October WWF USA and the Wisconsin Potato Growers' Association signed a memorandum of understanding which will guide a three-to-five-year collaboration towards reducing reliance on pesticides and the risks posed by pesticides.

In addition to the ambitious health and environmental goals, other goals are to develop working relationships among farmers, consumers and environmentalists and to bring more resources to bear on implementation of IPM and pesticide reduction. The first phase of the collaboration involves a multi-stakeholder process to set measurable goals for the adoption of IPM. Using WWF's spectrum analysis measurable goals for reducing and eliminating the use of high-risk products and measurable goals for other kinds of ecological improvement, including wildlife habitat protection and enhancement will be set. The second phase is implementation -- moving many growers and acres along the spectrum from pesticide-intensive practices to bio-intensive IPM systems. The next phase comes if goals are met -- WWF and the Wisconsin Potato Growers Association will go to market together with a high-profile marketing program, thus ensuring public recognition and support for the efforts of all concerned.

WWF Canada is in the process of developing a partnership with a major food processing company and the growers they contract with, which will result in a bio-intensively grown product on the shelves for consumers.

WWF is not actively pressing for 100 per cent elimination of pesticides, although we do see organic agriculture as a leading-edge approach. Nor does WWF have expectations that there can or will be an overnight transition to bio-intensive IPM. As an environmentalist, a parent, consumer and Canadian, I am looking forward to ecologically sustainable agriculture being a cornerstone for Prince Edward Island.

**John A. Bukowski**

**Pesticides: The New Mythology**

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We use many chemical tools in modern society. We run our cars on gasoline; use resins, glues and plastics as building materials; clean our homes and use solvents; protect our wooden decks with petroleum dilates; pave our roads with tars; and many more. We've generally learned to accept our low level exposure to all these tools and to put up with their odours, irritating properties, and unknown/unquantifiable risks because we enjoy the benefits that they provide. All that is, except pesticides. We tend to mythologize pesticides as the "great evil, and assume they are much more toxic, carcinogenic and "risky" than other common chemical exposures.

I will address just a few of the myths about pesticides, including.

- 1) Pesticides are all similar and all equally dangerous.
- 2) Pesticide poisoning is commonplace and only requires casual or incidental exposure.
- 3) Pesticides readily evaporate, exposing nearby residents to toxic air levels.
- 4) Pesticides are well-recognized causes of cancer, and carry much higher risks than other common pollutants.
- 5) Many pesticides cause breast cancer by mimicking female hormones,

#### *Pesticides are not all the same*

Pesticides are not all one chemical or even one group of chemicals. The term pesticide is actually a catch-all for a wide range of chemicals and chemical classes that kill or inhibit such pests as insects, weeds, molds/fungi, rodents and disease-causing organisms. This represents hundreds to thousands of different chemical entities that vary widely in their characteristics and potential toxicity. Hospital disinfectants are pesticides, as are pool cleaners, as are rat poisons. Some insecticides, such as phorate and carbofuran, are highly acutely toxic. Many herbicides and fungicides, such as mancozeb, glyphosate, chlorpropham and thiabendazole, carry little risk of acute intoxication. Atrazine has potential to leach into ground water, while glyphosate doesn't. These distinctions are lost in the new mythology.

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#### *Pesticides and acute poisoning*

Many people believe that pesticide poisoning is commonplace and that only casual or incidental contact is required. Even when no physical contact with the application has occurred, the odour is thought to be sufficient evidence of exposure to the active agent. Subjective health complaints, such as headaches, sniffles and coughs, are then attributed to pesticide poisoning. But what are you really smelling when you smell a pesticide application?

The pesticide formulations that are applied on farms are made up of several components. The pesticidal properties of the formulation reside with the active ingredient. Traces of sulfur byproducts may also contaminate the active, an unfortunate (and smelly) consequence of

pesticide manufacture. Solvents are included to dissolve the active agent, along with emulsifiers, dispersants, etc., so that it can be mixed with water. The solvents are common chemicals that can be found in paints, glues, polishes, polish removers, mineral spirits, driveway or deck sealers, fuels and other petroleum-based products. Finally, the vast majority of the applied formulation is water. The parts of the formulation other than the active ingredient are called "inert," since they carry no pesticidal properties.

Table 1 lists a few of the active and inert ingredients that may be found in pesticides typically applied on Prince Edward Island, along with their approximate vapour pressures. The vapour pressure of a chemical is a measure of its ability to evaporate; the higher the number, the more volatile the chemical. One can see that the vapour pressures of the solvents and trace contaminants are thousands to millions of times higher than the active ingredients. It is these "inerts" that you smell following pesticide applications.

The inerts are generally mild irritants similar to paint fumes, which may cause nasal irritation, eye irritation and headaches, especially in unventilated spaces. More importantly, however, these solvents and sulfur byproducts have a low odour threshold, meaning that they are readily smelled, even at low levels. The chemical odour of the solvents is displeasing to some people and the sulfur byproducts, also found in skunk spray, are universally unpleasant.

**TABLE 1. THE RELATIVE VOLATILITY OF DIFFERENT COMPONENTS OF PESTICIDE FORMULATIONS.**

<b>Chemical</b>	<b>Approximate vapour pressure (mm/Hg)</b>
<b>Active Agents</b>	
Chlorpyrifos (Lorsban®)	0.00002
Paraquat	0
Endosulfan	0
<b>Solvents</b>	
Xylene	10
Cumene	5
Kerosene	1
<b>Sulfur Byproducts</b>	
Disulfides	1
Mercaptans	100

Bad odours have been shown to make people feel bad and are associated with symptoms such as headaches, nausea, general malaise and tightness in the chest. In 1992, Dr. Dennis Shusterman of the California EPA published a critical review of the health significance of environmental odour pollution.<sup>1</sup> He noted that environmental odours can cause symptoms by a variety of physiological and psychological mechanisms. Speaking about investigations that his department has made into pesticide-related health complaints, he states that:

A common feature of studies conducted in California is that measured or modelled exposures to airborne toxicants occurred at levels well below those known to cause acute symptoms by recognized toxicological mechanisms. The odorants identified in each of the California studies were reduced sulfur gases — compounds with

<sup>1</sup>Shusterman D. Critical review: The health significance of environmental odour pollution. *Archives of Environmental Health* (1992); 47(1):78-87.

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This does not mean that the people reporting these symptoms are crazy, neither does it mean that they are hypochondriacs. On the contrary, they had a real physiological response to pungent

odours. They might have a similar response to paint fumes, skunk spray, bus exhaust or hot tar, which are essentially similar exposures. However, the mythology of pesticides has led them to believe that the application-related event is more dangerous. They believe that they are pesticide poisoned, with all the potential for chronic problems that pesticide poisoning calls to mind. There is a danger that their transient physiological response may be heightened through fear, worry and anger to a much greater and longer-lasting psychological response. It should also be noted that the symptoms reported following pesticide applications are relatively common and occur for many common reasons. They may be caused by colds, sinus problems, eye strain, exposure to other chemicals, dry environments or pre-existing conditions such as hayfever or asthma. However, the new mythology assigns them to a pesticide application, if one is nearby. Since pesticide applications are relatively common, especially in agricultural areas, there is frequently a nearby application to feed the myth.

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### *Pesticides and cancer*

Many people readily believe that pesticides are proven causes of cancer in people, and pose much higher cancer risks than other common chemicals. However, human data on this issue are scarce and the vast majority of evidence comes from studies in laboratory animals. In these animal studies, rats and mice are fed lifetime doses of the maximum amount of a chemical that they can tolerate without getting extremely ill. This is done in order to maximize the effect of the chemical on a relatively small number of animals (generally 50 to 60 per group).

Rodent studies offer worst-case estimates of the carcinogenic potential of chemicals. These tests assume that the results from high-dose rodent studies can be translated to low-level exposures in people. The accuracy of this assumption is very much in doubt. Several investigators have suggested that high-dose studies may often cause cancer by mechanisms that are related more to the dose than to the chemical.

About half of the man-made pesticides tested in rodents have demonstrated at least some evidence of carcinogenicity. However, Dr. Bruce Ames of the University of California at Berkeley points out that natural pesticides, which impart pesticide resistance to fruits and vegetables, make up over 99 per cent of the pesticides people ingest per day. Fewer of these natural pesticides have been tested in rodents, but when they have been, about half caused cancer --just like their manmade relatives. Does this mean that fruits and vegetables cause cancer? On the contrary, diets rich in fruits and vegetables have been shown to prevent cancer in people, an unlikely outcome if pesticides (natural or manmade) were major risk factors for cancer.

Direct human evidence for an association between current pesticides and cancer is primarily limited to one class of pesticides: the phenoxyherbicides. It has been shown that farmers who use large amounts of phenoxyherbicides, such as 2,4-D and MCPA, have slightly higher rates of non-Hodgkin's lymphoma (a relatively rare cancer that occurs in about 15 Canadians out of every 100,000 per year). However, no one has been able to show definitely that these excess lymphomas are due to phenoxyherbicide exposure, rather than some other aspect of farming.

Furthermore, farmers have fewer cancers overall, even though their pesticide exposure is orders of magnitude greater than that experienced by the general public.

We have seen that the scientific evidence relating pesticides to cancer is not well-established, to say the least. However, what about the second part of this myth, that pesticides pose much higher cancer risks than other common chemical exposures? That doesn't hold up either. Commonly used petroleum distillates, such as gasoline and mineral spirits, contain benzene (a proven cause of leukemia in people) and other carcinogens. Benzene is highly volatile, and some exposure occurs to anyone pumping gasoline. The combustion of fuels, such as coal, gasoline and wood, produces high levels of polycyclic organic materials, which represent the largest single contribution to human cancer risk from air pollution. Environmental tobacco smoke, something to which we are all exposed when we enter a bar, a restaurant or the home of a smoker, contains over 3,800 chemicals and at least 40 known carcinogens. Smoked foods contain cancer-causing nitrosamines. Even simply grilling or broiling food adds numerous animal carcinogens, such as benzo(a)pyrene and other combustion products. These are all present at levels that are much higher than routine pesticide exposures.

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### *Pesticides and breast cancer*

Over the past 20 to 30 years, breast cancer rates have steadily risen in the industrialized world. Rates in Canada have increased from 78 per 100,000 in 1969 to 102.2 per 100,000 in 1991. This has prompted some investigators to speculate that pesticides in the environment have caused this increase, by mimicking estrogen, a hormone associated with breast cancer risk. The main culprits are thought to be early organochlorine pesticides, such as DDT.

The early organochlorines migrated to body fat, where they were stored for years. They also bioaccumulated, which means that animals who ate other animals accrued high body burdens, because they retained the accumulated dose from each animal they ate. People also accumulated fairly high levels in body fat, through the ingestion of meat and dairy products.

Reproductive effects in wildlife from accumulated levels of organochlorines were suggested by Rachel Carson in her landmark book *Silent Spring*, written in the early 1960s. She noted that birds of prey, such as eagles and owls, were developing reproductive problems that could be due to accumulated DDT levels. High-levels of DDT may have caused a disruption of the female reproductive hormone cycle, because the chemical structure of DDT physically resembles estrogen (a reproductive hormone).

When *Silent Spring* was written in 1962, DDT and other organochlorines were widely used in huge quantities throughout the world, for everything from malaria control to agricultural pest control. However, DDT was banned in North America around 1970 and the other long-lived organochlorines soon followed suit. Since that ban, total DDT levels (DDT plus metabolites) in human fat have fallen from an average of about 8 ppm in 1970 to less than 2 ppm in 1983, with this trend continuing into the present. Those organochlorines that remain in use, such as endosulfan, are different from DDT in that they are eliminated from the body fairly rapidly (days

to weeks). No currently used pesticides accumulate in the body to nearly the extent that DDT and the early organochlorines did.

Although DDT has been shown to bind to estrogen receptors and mimic estrogen in the laboratory, it has at least 1,000 times less estrogenic activity than natural estrogen. Furthermore, there is no clear-cut evidence that DDT in women is a risk factor for breast cancer or any other ailment. The best epidemiological study done to date noted no overall difference in DDT levels between breast cancer cases and other women. Furthermore, breast cancer is more common in white and affluent women, whereas DDT levels are highest in poorer people and people of colour. Several investigators have suggested that past exposure to organochlorines has had little influence on national or international breast cancer rates.

The new mythology blames pesticides for rising breast cancer rates, ignoring other more probable reasons. There has been an increasing tendency for women to delay pregnancy until later in life and to have fewer babies, both of which increase their natural estrogen exposure and risk of breast cancer. Induced or spontaneous abortions may cause a similar effect. The unopposed estrogen in early birth control pills may also be responsible for part of the increase. Finally, some of the increase may be illusory, since improved diagnostic methods, screening and cancer reporting make it more likely that breast cancer cases are recorded in national statistics.

#### *Concluding remarks*

It is not my intention to suggest that pesticides are all safe or carry no risks. On the contrary, pesticides are potentially hazardous materials that need to be used judiciously. However, I hope that I have shown at least three things. First, as a group, pesticides are not really more hazardous than other chemical tools used in industry agriculture and in the home. This is especially true for the extremely low levels to which the general public is exposed. Second, they need to be evaluated on a case-by-case basis. Pesticides encompass too many chemical classes to be evaluated as a group. Third, the evidence for cancer in people from pesticide exposures, including breast cancer, is speculative. Positive animal studies present only a worst-case suggestion of carcinogenic potential and human data are scarce and inconclusive. Furthermore, most people are exposed to so little material that the risk is probably not measurable.

Certainly we should be continually striving to use pesticides more wisely and safely, and to reduce their use when feasible. Perhaps more regulation concerning the use of pesticides is needed. Perhaps certain pesticides have outlived their usefulness or present unacceptable risks in modern society and should be removed from the market. The debate on these issues needs to be pursued vigorously. However, when we accept the myths and elevate pesticides to the "great evil," we move away from a logical debate on the risks and benefits of pesticides, as compared to other pest-control approaches, and into mysticism. Further, we risk focusing so much on pesticides that we may ignore other major risk factors that are more important in our daily lives.

**R. Elmer MacDonald**

**Sustainability Issues of Ecology and Community**

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It's a great pleasure for me to address the topic of Sustainability: Issues of Ecology and Community. This theme is quite relevant to the work of the Provincial Round Table on Land Use. I am also struck by the overall theme of the conference: Agriculture: Sunset Industry or Economic Cornerstone? If you want to bring a farmer's blood to the boil, just refer to farming as a sunset industry. Daryl Guignon, Julia Langer and John Bukowski are well-qualified to speak on this topic and they can point to scientific evidence to support their arguments. We must look to science for answers to these complex questions, but scientists, as smart as they are, don't always agree. Islanders place great trust in scientific opinion, as long as it's accompanied by a healthy dose of common sense.

### *Round Table on Land Use*

I'd like to speak to you briefly about the organization which I have the honour to chair. We are sixteen Islanders, representing a cross-section of Island society: agriculture, aquaculture, forestry, environmental groups, tourism, municipalities and rural non-farm residents. We are dealing with a broad range of issues -- a number of which pertain to agriculture, for example, soil quality, water quality, pesticide use, loss of farmland to other uses and maintaining biodiversity. Government has asked us to examine the issues, consult with Islanders on appropriate solutions and to develop a Resource Land Use Strategy. Our interim report was released in September; 1,500 people have picked up a copy. There is considerable interest in what we're doing, although, I must admit, this interest is accompanied by a healthy dose of skepticism in some quarters. Will government act on our recommendations?

We have begun our consultations and these will continue over the next four months. We also await instructions from the new government regarding our mandate. As it is now, our work plan calls for us to release a draft strategy in the summer of 1997 and our final report by the end of 1997. Rather than repeat what's in our interim report, I'd like to talk about current and future trends affecting agriculture. Much of what I have to say to you today pertains to potatoes. There are two reasons for this: first, I am a potato producer and, second in terms of issues before the Round Table, potatoes are #1.

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### *Trends in world food demand*

I think the explanation for what's happening on our Island is best found by examining trends in world food demand. We're told that world population will peak in the next 50 years at eight to ten billion people -- that's almost double what we have now. We also know that China, India and the developing countries of Southeast Asia and Latin America are becoming more affluent. More income for these people translates into demand for better food and more of it. This greater affluence and population growth will place more pressure on the food production system. World food production will have to increase two to three times the present level, and much of this increase is expected to come from the temperate countries: Canada, the United States, Eastern Europe, Northern Asia and Argentina.

The alternative -- expanding food production in the tropical countries -- would have drastic environmental consequences. Imagine the threat to the tropical rain forests from global climate change. This is an opportunity for development that the Island cannot afford to ignore.

### *The dominance of the potato industry*

Let us think for a moment about what this increase in demand means for Prince Edward Island agriculture. French fries are one of the fastest-growing food products in the world. Our two processors, McCain's and Cavendish Farms, are well-positioned to take advantage of these expanding markets. Potatoes are the single most important agricultural commodity produced on the Island and acreage has expanded by 40 per cent since 1990.

Nature has blessed us with a favourable climate and good soil; our knowledge and infrastructure are second to none, and we have a viable seed industry. Now, the question becomes: can we do this in a sustainable manner? What will it do to our environment? Can farmers make a decent living? Is it good for the industry to put so much emphasis on processing?

Maybe it's time to take stock of where we are. Islanders are still adjusting to the expansion in potato production; the jobs are great but there are other consequences to consider. Before the dialogue begins in earnest, we must understand why farmers behave the way they do.

### *Factors which influence farmers' behaviour*

The sociologists tell us that human behaviour is a function of needs and environment. Let me tell you, in no uncertain terms, that farming today is a business. The day of the small family farm is past and the corporate farm is here to stay. Also, today's farmer is no different from any other member of society; the farmer wants a decent standard of living the farmer expects a good return on investment, and the farmer needs to be accepted as a respected member of the community. But, let me also share with you that many of today's farmers don't feel good about themselves and what they do I know of farmers who are ashamed to drive their sprayer down the road they worry about spreading manure; the organizations that speak for them are weakened their communities are in decline; they are constantly battling against government cutbacks pressure from the environmental movement, pressure from the competition and pressure from their neighbours. Much of the pride is gone. Just 3 per cent of Canadians are farmers; they feed the other 97 per cent as well as many people in other countries, too numerous to mention. This tremendous accomplishment is the result of the green revolution." And, let us all understand that the main beneficiary of intensive, high-yield agriculture is the consumer, ladies and gentlemen, not the producer. Today's consumers demand high quality and low price. Producers have adjusted by reducing input costs, increasing efficiency, increasing yields and increasing quality. They have done this to survive. As a result, less than 10 per cent of Canadians' income goes toward food.

As a farmer, I can testify that producers are price takers, not price setters the consumer calls the tune, not the producer. So you see, the farmer's behaviour is no accident. Before we start talking about the future and solutions, we must understand why things are happening as they are today.



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*A few thoughts for the future*

What does sustainability look like and how do we get from here to there-? First you can't talk about sustainability without talking about dollars and cents. The average farmer is not getting rich - he's just getting by. No one has more to gain by reducing pesticide use than the farmer, no one has more to lose by destroying the soil than the farmer. If the farmer can't afford to grow food in a sustainable manner then we all lose -- period. The cheap food we're so proud of comes with a hidden cost. As you will learn today, the farmer cannot afford to pay the extra cost. So, who will pay?

Second, society must decide what it wants to achieve in terms of results. Many slanders are several generations removed from the farm. They must take the time to learn more about our most important industry if they want to participate in the discussion. Farmers must take advantage of every opportunity to tell their story and conferences such as this one are a start. The media must present a balanced view of the issues. Finally, we must place our faith in the safeguards and systems in place and take care not to abandon what we have until we find something better.

Third, Governments must build more balance into their economic development strategy. To illustrate what I mean, here are just a few questions being put to the Round Table:

-When taxpayers' money was being spent to expand potato production why weren't some funds set aside for soil conservation and research in alternative pest control methods?

-- What is going to happen to our seed potato industry?

-- What will happen to our drinking water?

-- Why is government transferring so much of the cost for food inspection to the producer?

People see these things occurring and they wonder whatever happened to good old common sense?

Fourth producers must take the long view. In our interim report we state that 20 per cent of potato producers are doing things right,- another 50 per cent are moving in the right direction, and 30 per cent will continue farming as they always have. Society is telling producers that the status quo is not good enough. The Round Table has challenged producers to come up with a plan that's long on individual initiative and short on legislation. The Hon. Pat Mella asked me a question a short time ago, before the election: "How will government know whether or not voluntary compliance is working?" That is a dam good question, and one the Round Table will attempt to answer in the coming months. The agricultural industry must also contemplate the answer to this question and develop a strategy for compliance, because the public will accept nothing less.

What I do know is that producers are becoming more conscious of the consequences of what they do. We know that most of them will do the right thing but, at the end of the day, rules may have to be put in place for those who won't.

### *Conclusion*

In summary, those of us who have had the honour of serving on the Round Table on Land Use have discovered that Islanders are very interested in what's happening to the land. World food demand will double or triple over the next fifty years--and french fries are definitely on the menu. Our agricultural systems are designed to produce cheap, high-quality food, and the consumer is definitely in charge. Farmers' behaviour is a function of their needs and the nature of the environment in which they operate. Today's farmers are under pressure from all sides and farming is a competitive business. Sustainability will cost money, but society hasn't yet dealt with the question of who will pay for it. Governments must do more than build plants and create jobs -- they must set aside money for conservation and environmental monitoring. And, finally, producers have a responsibility too. While there is evidence of progress being made, at the end of the day stronger legislation may be needed to protect the environment from those who refuse to practice good stewardship.

**Wayne Easter**

### **Future of Agriculture: Sunset Industry or Economic Cornerstone?**

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Or topic tonight is "Type and scale of change needed to maintain agriculture an economic cornerstone on Prince Edward Island." The first question must ask is do we have the right? Do we have the ability -- and as a community--do we have the fortitude, to institute the kind of change necessary to achieve the stated goal?

I will endeavour to put into perspective the current political thinking and offer some options for the future.

What would you say is the greatest rallying cry of the Business Press these days--and certainly, as well, of the so-called economic "Think Tanks"? It's "Give the market more power" or "Get government out of industry." As contradictory as it may seem those who are pushing for this change by suggesting that we get rid of Marketing Boards, eliminate all subsidies, privatize and deregulate, and, finally, get government out of agriculture--are not talking about "futuristic change" at all. They are falling back in time--to a time when government had to institute such policies to prevent economic havoc in farm communities.

Oh! The discussion is not as I've outlined. We use nicer terms in the 1990s. We speak of "adapting" and "adjusting." To what? To people's needs? No! To the market.

Let us review what Ken Ash said earlier: "Government's role is changing in response to the marketplace. As a government, our services are designed to help you--industry and stakeholders--in adapting to a global market place."

But, if the global marketplace wants to exploit Prince Edward Island commodities, how will we know? And what power have we retained to prevent such exploitation? My point is that we have to look at how far we should go. If we only adapt, it will mean that the community will have little or no say. The market will decide -- and in its purest form the market doesn't care about the land base, and the Market doesn't care about poverty.

We did not make this industry what it is today (and you heard the figures) by just allowing the market to make the decisions for us. The policies that have come out of sixty years of farm struggle are not based on adapting. When the market didn't work in the interests of several commodity groups in the late 1960s, we challenged it -- we took action to make it work in our interest. We did so to give balance among the economic players. We did so through collective action based on OUR needs. Oh yes, with the reality of today -- with globalization, downsizing and privatization - it is a different world. True, I accept that. But change is constant and today's change will be tomorrow's past. We must be more futuristic in our own thinking. As we look to the future, let's realize the danger of throwing out all we've built.

Robert Carlson with the N.F.U. in the United States said it best when he appeared before the House of Representatives Agriculture Committee, and I quote:

From a competing farmer's perspective, we in the U.S. do not have a vehicle like the Canadian Wheat Board to create producer marketing power in the international grain trade. We basically sell for the best price among our elevator companies and lose our interest in our grain after that point.

Our export trade is dominated by a few large corporations, who are in buying low and selling high to enhance the earnings of their owners, who are not generally the same people who produced the grain traded.

The stated goal of free trade proponents in agriculture is to have a grain trade without national borders, without internal subsidies, without quotas or tariffs and without pooling or price enhancing mechanisms like STEs. That would be a great world for grain buyers but a grim world for the producers, who would be fully at risk economically.

Too often [he added], producers in various countries tend to "attack each other in the name of free trade" whenever they feel producers elsewhere have an advantage.

If we destroy the various institutions that farmers in many countries have built to help themselves survive economically, we will have nothing left but producers standing bare among the ruins of structures that once empowered and protected them in a marketplace dominated by giants.

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So where do we go? Basically, there are two Policy Directions:

-- We can leave farmers to cope with market risk on their own and let the so-called market determine the structure of our farming sector.

-- We could go the path that we traditionally tend to travel by publicly assisting the agricultural sector to cope with risk in the marketplace and risk that comes from factors beyond farmers' control.

I believe we must challenge current thinking and follow option #2, if we are to achieve the goal of agriculture remaining Prince Edward Island's economic cornerstone.

There are a number of programs put in place by the federal government that accommodate option #2:

-- Interest-free cash advances to enhance product getting to the market in an organized way;

-- NISA Program and Safety Net Agreements with provinces to limit the impact of commodity pricing;

-- Canada Agri-Food Trade Service to help agricultural products;

-- The TEAM CANADA approach with the Prime Minister as leader of trade missions;

-- Canadian Adaptation and Rural Development Fund which is \$60 million annually to support diversification, value-added processing and innovation;

-- New Farm Debt Mediator Act and Farm Consultation Service.

But I also recognize the impact Cost Recovery could have on farmers and we must keep a watchful eye on that and ensure the checks and balances are in place to protect the farm community's interests. However, beyond these programs we must recognize certain limitations. W. Kymlicka stated on policy options in his book. Whither the Nation State?, and I quote:

The way domestic and international policy is developed and debated seems to be changing. In the past the policy process was guided by the national interest. With increasing globalization, however, the national interest must be redefined and balanced against transnational interests.

As the Canadian experience suggests, when the promotion of transnational interests conflicts with measures aimed at protection of local interests, the former incline toward the elimination of these measures in order to promote greater overall equality or efficiency.

Professor Grace Skogstad has also outlined the danger of going to the "open market":

The pattern of agriculture in the U.S. would become more and more the pattern of agriculture in Canada. This would mean you would have larger farm units and you have a shift of some sectors of agriculture to those regions of the country where the consumer markets and processing facilities are. So it seems to me you will get a depopulation in some parts of the country.

Obviously, both Skogstad and Kymlicka feel external pressures and open market policies will have a great impact on farmers, our local communities and rural areas. However, regardless of what we are up against, stakeholders must determine what kind of farming sector we want, and is viable for the Island, and then set about through the use of public policy to set the course toward that economic activity.

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Madam chair, I would suggest adopting the following policy options:

- Preservation of an orderly marketing system -- supply management and the Canadian Wheat Board. We have to recognize that the concept of a collective effort at controlling or influencing what occurs in the marketplace is not something which we should move away from when our competitors are currently examining ways of developing initiatives toward it. This would mean setting forth principles similar to those which served as the foundation for supply management: productive controls, effective import controls, and the ability to establish prices. These principles are very important in terms of any development programs.
- Recognition as a nation that the priorities of provinces can differ, so that we must ensure that public marketing policy allows for distribution of products across Canada.
- Creation of an Agricultural Program Review Commission. The Australian government has in place the provisions whereby a legislative program is automatically reviewed by an independent commission before it can be shaped by government. This Commission helps to focus the debate before change rather than after. The commission, whether federal or provincial or both, could have a mandate which would allow it to periodically review all agricultural policies and programs, for example, the use and impact of cost recovery programs upon the agricultural communities in a cumulative sense.
- Presentation to the international community of a strong defence in trade negotiations. In future negotiations there will be a number of options open to us.
- Promotion of rural development and agriculture. The European Union devotes structural funds to rural areas with a specific policy toward maintaining both a population and an agricultural presence in those regions in order to ensure the survival of rural society. France and Germany have developed certain types of specific initiatives.
- The need, as mentioned in the Federal Throne Speech, to express our ideas. There is great opportunity here locally in central Prince Edward Island for potential intellectual property development, as well as specific new product development. The following institutions should work together in a kind of cluster to foster such development Agriculture Research Station; Atlantic Veterinary College; Diagnostic Chemicals, the new laboratory, the centre for Animal and Plant Health, Holland College; University of Prince Edward Island; Food Technology Centre; Island Tel; farm organizations.

In conclusion I believe agriculture can continue to be the economic cornerstone of this province. But for it to remain so, we must challenge the current trends to allow the market, and only the market, to make all of the decisions. We must recognize that our resource base is our land and its people and ensure that this base is maintained and strengthened.

I've outlined a few options, Madam Chair, but my options are not what is important. What is important is that the community must decide, and having decided what we want, then collectively we must drive it - make it real: we must take and build that strong "Agricultural Economic Cornerstone."

**Rob Paterson**

## **Creating Wealth for Prince Edward Island: Agriculture in the Information Age**

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### *Crisis or opportunity*

When the underlying technology of a society changes, everything changes. The introduction of stone tools, the wheel, the printing press and fossil-fuel-based machines all heralded turbulent times for mankind. For many people, such transitions are experienced as a crisis. We are living through one of these transitions again. This time, the shift is from a machine-based technology, the Industrial model, to a cell-based technology, the Information model.

In each of these transitions, there is also the opportunity to become a leader and to benefit from the change. In the past, this opportunity has gone to those who were not too deeply embedded in the old technology, those who had a good reason to shift and embraced the new principles early.

I think that Prince Edward Island has an opportunity to become a leader in the new era and this short paper will explain why.

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### *What is the context for this shift? The Prince Edward Island perspective*

We are reminded daily of the growing economic and fiscal crisis that is affecting all governments and institutions. In Prince Edward Island, we often look to government for help. Figure 1 shows the extent to which Islanders have become dependent on government. Only about a third of the income earned by Islanders comes from the private sector. Further cuts are coming from Ottawa that will affect us all on Prince Edward Island. For Islanders, cuts in government will have a very significant impact on our standard of living. Cuts will provide a strong stimulus to drive change on Prince Edward Island.

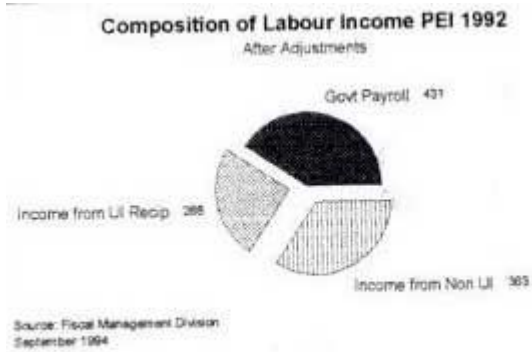


Figure 1

So we are faced with a choice, create more wealth for ourselves or face a lower standard of living.

Since agriculture is the foundation of Prince Edward Island's economy, this task places a great responsibility on those who work in the agricultural sector.

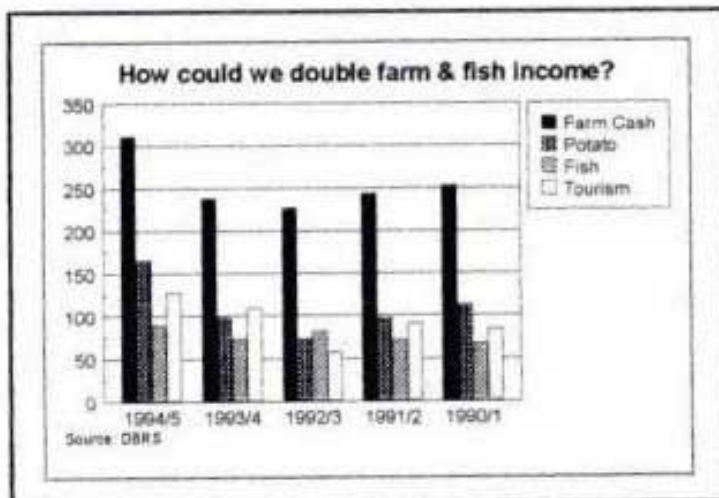
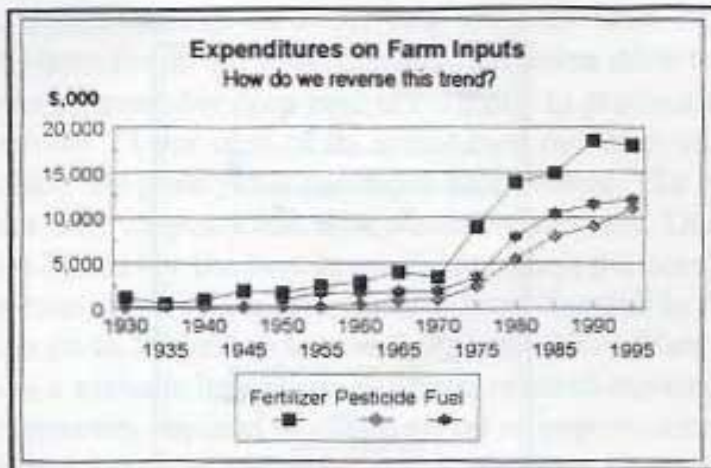


Figure 2

If we are to create more wealth on Prince Edward Island, agriculture will have to play a key role. Figure 2 shows the impressive gains made by agriculture in the past five years. To offset the reduction in the public sector, we need to see a doubling of farm income in the next 10 years. This is an aggressive goal, but how can we achieve it?

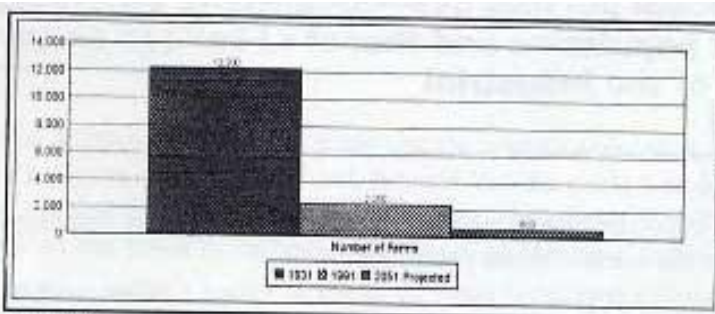
Can we do this by doing what we have done in the past, by concentrating on production?



**Figure 3**

To achieve maximum results, we have become dependent on the use of external inputs. Figure 3 shows the trend in input costs which are squeezing margins. Most of the past increase in productivity over the last 20 years has come from the use of these inputs. But we seem to be reaching the limits of their effectiveness. In 1996 input costs exceeded revenues for many farmers. The use of pesticides is also becoming a source of rising tension in our society. There is now general agreement on Prince Edward Island that we need to reduce dependency on these inputs but no agreement on possible alternatives.

Figure 4 shows the trend for concentration of ownership. Rising input and capital costs are driving ever larger unit size and are relentlessly reducing employment on the land. The rising capital costs are making new entry and inheritance very challenging. Few of us on Prince Edward Island wish to see a continuation of this trend towards more concentration and urbanization.

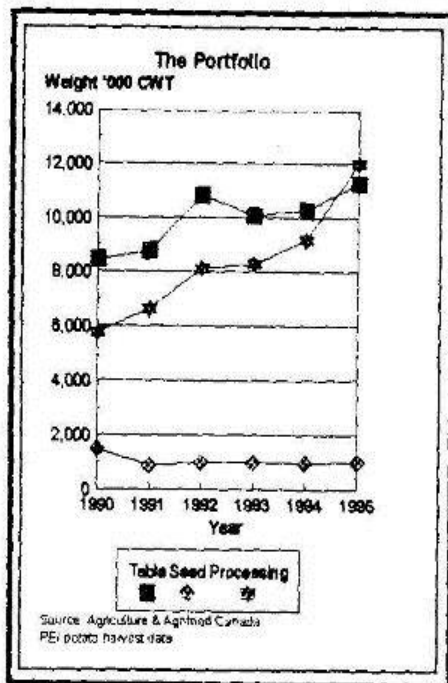


**Figure 4**



Prince Edward Island has made a very large commitment in the area of production, but is vulnerable to the commodity price for the potato. We do not have enough leverage with those who buy from us. We are price takers rather than price setters.

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**Figure 5**

Figure 5 shows the present trend in the potato portfolio. The impressive gains in the processing sector are overshadowed by weakness in the seed sector and by price vulnerability in the table stock sector.

A more balanced portfolio is needed to provide stronger price support. In particular, a stronger seed business would supply a stronger foundation.

How then do we approach agriculture so that it can deliver twice as much value? How do we break out of the concentration and input costs trends? How do we develop a stronger seed sector?

We need to find a new way of seeing ourselves, our problems, and our world. We need a breakthrough. What are the major trends in the world today that may help us find some answers?

*The global perspective--global population and the limits of the industrial model*

The most important underlying trend in the world today is the unsustainable rate of increase in the world's human population.

The world's population currently stands at around 5 billion, with all the major growth occurring in the last century, driven by the success of the industrial model for agriculture. Conservative estimates show the population will grow to at least 8 billion by the middle of the next century. Nearly all of this increase will occur in the developing regions of the world, resulting in the greatest food crisis in history.

Can we address his problem by becoming even more efficient I don't think so for we appear to have reached the global capacity limits of the industrial model? First there is a physical limit to the underlying resource: land. Seventeen per cent of all arable land has been lost in the west to industrialization since the Second World War and 82 per cent of available crop land is currently in production in Asia today China proposes to take 25 per cent of its arable land out of production for use in power generation. Rice and grain yields per capita have peaked. The aquifer that feeds the US prairies has only 25 years left at current levels of use. Grain yields in Asia would have to reach 7 tons (or the best Iowa yields today) per acre by 2030 to keep up. They currently manage 2.8 tons. The current food shortfall in Africa, 12 million tons is predicted to go to 50 million tons in 2,000 and 250 million tons by 2020.<sup>2</sup>

Second, there is a systems limitation. We have reached the stage of diminishing returns, where the resources required to obtain a level of improvement cost more than the benefit. The industrial process of farming requires an ever larger and ever growing capital investment in land, plants, machinery, chemicals and money - all of which are increasingly beyond the resources of the family farm or of developing countries. Only agribusiness and the most developed economies can operate in this model now This brings with it social and wealth concentration, for it takes people off the land and drives mega-urbanization, putting yet more pressure on agriculture and weakening local communities. It drives wealth concentration by increasing the gap between the haves and the have nots on a local and on a global scale.

Finally, the drive for efficiency leads to over-exploitation of resources. We can see this effect most clearly in the fishing industry where the spiral of applying ever larger more expensive and more efficient capital equipment has led to the ultimate destruction of the underlying resource and the impoverishment of thousands of people who used to depend on the fishery for their livelihood.

This is the challenging global context for Prince Edward Island and the agricultural community in the 21st century.

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*What are the new principles? The information economy as applied to food*

In the 1820s, Malthus looked at the growth of the world's population, looked at agriculture as it was then practised, and deduced that the world was doomed to experience a global famine. What he had not taken into account was the shift in technology from man-power to machine-power,

from the Mediaeval to the Industrial model. This led to the opening of the prairies and use of industrial technology to harvest and distribute this new source of food to the world.

So we, too, face a Malthusian crisis of our own. We cannot see how we can use our existing system to create the wealth that we need and to feed the world's growing population. Fortunately, as with Malthus, a replacement system is emerging which may enable us to do both.

What are the principles of the alternative system and what is the opportunity for Prince Edward Island?

As the industrial system was driven by 'things' so the new system is driven by information.

The old tools applied energy to things. The new tools manipulate information. In agriculture, the true value will come from what we know about growing food and handling it post-harvest.

In particular, the required agronomic breakthrough will come from learning how to use the laws of nature. Biotechnology will be an important new tool. Biotechnology, or the changing of the information inside life forms, will enable us to accelerate the process of adaptation. By utilizing it, we have the potential to adapt species to use natural processes to become resilient to disease and predators and to acquire new performance attributes.

This is a controversial arena. As with all new technology there are risks. But, if used with understanding, biotechnology represents the foundational new tool, like the wheel or the use of steam, that will be underpinning for the new agronomic system.

The new technology will not just change some details of what we do--it will change our society. Just as the foundational technology of the Industrial era changed how we lived and worked, so will the foundational technology of the Information era. Indeed, there is a potential for this technology to unwind much of the damage of the Industrial model. It gives us the potential to customize and diversify our food sources, thus reducing our need for more and more expensive external inputs. It may enable us to reduce scale and to live off small holdings.

It therefore gives us the potential to stop the process of concentration--to regenerate community and to create wealth at the personal level. By reducing the need for chemical inputs and reducing our need for scale and concentration, it has the potential to restore our ecosystems.

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*Where could we start? The role of the potato and the developing world*

How could we begin to apply some of these principles. How could we on Prince Edward Island solve our own problems and help solve this global crisis?

We need to find something that we know a lot about already, something that has the power to drive the new system and provide the breakthrough for Prince Edward Island and the world. What is this catalyst?

It is the potato? The potato has momentum. In 200 years it has developed from an exotic plant to become the fourth most important source of food in the world. No other food source has grown so fast. It took wheat thousands of years to become the primary crop.

## **INSERT TABLES**

More important still, the potato is the fastest-growing food source in the developing world where the population pressure is the greatest. Nearly 80 per cent of the world's potatoes are currently grown outside of North America and the European Union. It is in Asia where the growth is most impressive.

Not only does the potato have forward momentum, it has breadth to it as well. This is because of two factors: its need to be rotated with other crops, and its need, because of its weight and vulnerability, to be stored, processed and sold locally. As such it has the potential to change the entire agronomic system and to provide local food security.

What is the opportunity for Prince Edward Island that may help transform our own economy and resolve the world food crisis?

I believe that our greatest opportunity will be to custom-design potatoes and their full supporting agronomic systems for use by the developing world. We can do this by teaching the world to grow the potatoes they need, which fit their own environment and which are supported by appropriate technology and processes. This requires developing the knowledge to grow potatoes without the heavy use of capital equipment and external inputs such as pesticides; and the developing of the knowledge to operate a post-harvest system that will enable the capture of the full value of the crop.

This will not be the only way for Prince Edward Island to respond to what is occurring. We will also need to develop new strategies for adding more value, selling directly to customers, changing how we transport them, and so on. But the knowledge needed to grow potatoes for the world will be at the core of Prince Edward Island's future.

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*What is the required capability to do this work?*

The global market is too challenging to enter without good intelligence and strong long-term relationships. So we will need to develop a coordinating global marketing capability that will serve the entire industry on Prince Edward Island. Prince Edward Island is already the second most important exporter of seed in the world today after Holland. We have much of the required expertise to build on as a foundation for such a marketing body.

The core of the new approach will be our ability to design new seed so that it can be customized to local conditions and preferences, be naturally resistant to the main pests and diseases and be able to contain many useful attributes such as needing less fertilizer. We therefore will need to develop a centre for biotechnology on Prince Edward Island so that we can attract partners and

individuals who have developed this technology. We already have a considerable amount of research infrastructure on the Island providing us with the necessary foundation for this.

A critical requirement will be to produce quality seed. The early generation seed will need to be grown by experts under ideal conditions and sold using a brand name that stands for quality. Prince Edward Island already has a fine reputation for quality. If we can deal with the virus issue, which may be possible through the use of the virus-resistant Shepody, we will have the potential to grow the highest-quality early generation seed in the world.

But it will not be enough simply to grow and sell seed. We will need to be able to sell the knowledge of how to use it. For once shipped to the grower in the developing world, the potatoes will need to be grown in a new way. The customer will need advice on production, equipment, rotation and post-harvest issues such as storage, processing and distribution. Therefore, we will need to develop a strong agronomic consulting capability. We have a number of individuals on the Island who could start this work and provide the core for such a venture.

This consulting work will require a global service capability that operates 24 hours a day, 7 days a week. This implies the development of a global information network. As this business builds, it will require many specialists in agronomy and biotechnology. We will therefore need to stimulate our educational system and our research infrastructure so that they can respond to the potential demand.

My sense is that there are no impossible technical or financial barriers to any of these requirements. The hard work will be to pull all the pieces together into a coherent plan and to find a way of organizing the work so that the ownership and the potential rewards are widely distributed throughout the Island.

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*If we did this, would we solve our problems?*

The industrial agricultural model depends on monoculture and the replacement of people by capital and machines. This in turn drives a competitive race to own and control the world's physical resources, which are now all at their physical limits. The resulting rising capital costs have led to a negative spiral of ever larger units, forcing people off the land into the cities. The largest and fastest-growing cities are now located in the developing world.

If we consider the value in agriculture to be information, it enables us to challenge every aspect of the Industrial model, for there are no effective limits to knowledge. This is the big underlying idea which provides the potential for breakthrough. Using information, we can overcome the shortage of physical resources.

The use of natural defences and appropriate technology will enable the negative cost spiral to be broken. It will enable us to break through the barriers of limited resources and capital. It will break the dependency on aid and government. It will break the cycle of social and wealth concentration. It will reduce the pressure on the world's ecosystem.

Specifically on Prince Edward Island, increasing the relative value of seed production in the Prince Edward Island potato portfolio will provide growers with more choices and a stronger pricing position.

Creating the supporting marketing, consulting, educational and research infrastructure will create the centre of the new economy on Prince Edward Island. For just as the factory, or the mine, was the centre of the Industrial economy, so the Knowledge Cluster is the centre of the Information Economy. Once this cluster reaches a critical mass, like "Silicon Valley," it will attract more resources to the island and create additional employment.

As they add more customers, the franchise strengthens, as does the lead in knowledge. Being at the centre, the industry on Prince Edward Island will always know more than my one customer, thus preserving our value and market position.

The potential Canadian impact is broader than Prince Edward Island. The scale of the potential market provides room for others, and a requirement for infrastructure that is beyond Prince Edward Island's own capacity. Prince Edward Island will need partners. It will need international partners who have the expertise in biotechnology. It will need educational and research partners such as the Nova Scotia Agricultural College and New Brunswick's Biotechnology Centre and the University of New Brunswick. It will need grower partners in the developing world and in Atlantic Canada. It will need to partner with the Federal Government in the diplomatic and regulatory fields. These partnerships will also bring with them spin-offs where further value will accrue to Prince Edward Island and to Canada.

Viewing the opportunity this way could therefore provide Canada with a national agricultural strategy for the 21st century.

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*Why Prince Edward Island? The value of being on the periphery*

Is it presumptuous to think of Prince Edward Island being a catalyst for changing the world's agricultural system? Is it the stuff of dreams to think of Prince Edward Island potentially being a world scale economic power of this kind? History tells us that the Island could be these things.

At the dawn of the Industrial model, a small island off a major continent, where all the power of the world of that time was concentrated, broke away from the mainstream model and became the richest and most powerful country in the world since ancient Rome.

The rise of England as a great power is the story of an Island that broke away culturally from a mindset for a society based on the social implications of owning land: an absolute monarchy and a feudal system of agriculture. After two civil wars, England became a significantly more libertarian society than France, Spain or Russia. Unlike the rest of the world, which valued only aristocratic position and saw land only as the basis for this status, England began to value the ingenuity of men from all classes and to mobilize financial capital to increase the value of its inherent natural resources such as coal, its fishery and iron ore. Land was transformed from a

social to an economic resource; property now included financial capital as well as land. The marketplace was redefined as being the world rather than the next village.

After England had built up a commanding lead, the rest of Europe, and eventually the world, followed.

The point of this example is to illustrate that great change often happens, not at the centre where the old ideas have their greatest power, but at the periphery where they are weakest. The great change that we need in agriculture is unlikely to come by definition from the United States, Europe, or even Ontario; the old model is too strong there. It also illustrates that breakthroughs come from societies that value freedom and that can see themselves in the context of the world.

Prince Edward Island is a logical place where the new model can emerge. We have the need, we have the social cohesion and we have the knowledge.

No one knows the future. But the patterns of history suggest that Prince Edward Island has a great opportunity. All we need to do is to reach for it.

**Larry J. Martin**

## **The Future of Agriculture on Prince Edward Island**

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This presentation has two parts. In the first, the changing nature of agri-food markets is addressed. The second relates the implications of the changes in agri-food markets to changes in the opportunity for agriculture on Prince Edward Island.

### *Changing nature of markets*

Four factors are fundamentally changing the nature of the markets into which farmers and food processors are selling. The first is the set of trade agreements that have been initiated and will continue to be pursued in the future. These remove barriers to trading between nations. Our estimate at the George Morris Centre is that after the phase-in of the World Trade Organisation (WTO) commitments, Asian countries will have lowered their tariffs by between 40 and 50 per cent. This substantially reduces the cost of moving products into Asian markets. This means that the already overwhelming pressures to move toward global markets have become even stronger. People in the agri-food sector are beginning to think of countries around the world as much a part of their customer list as they're already existing domestic customer list. This will mean, since most Asian countries are relatively short on arable land, that the demand for North American products will expand.

The second factor is the rising levels of incomes, especially in the Asian countries. Recent data show that real incomes in several Asian countries have increased by between 15 and 40 per cent

over the past three years. When real income growth is combined with population growth, it means the size of their economies has increased by between 20 and 50 per cent.

Since many of those countries began their income growth from a relatively low level, this rapid growth in income will mean that there will be substantial changes in their consumption habits. History has shown that as people become richer, they move their consumption away from grains and toward livestock and fresh vegetable-based diets. Particularly for countries such as China, where the amount of arable land is relatively constrained and productivity is relatively high, this means there will be a very substantial demand as change in final demand will change toward a more concentrated animal product base. Therefore, international demand will change toward providing those lands of products or feed grains for growing those kinds of products. Therefore, the value and quantity demanded by countries will increase because of the change in demand, because of the change in incomes, and because of the reduction in trade barriers.

The third source of fundamental change is the increasingly specific nature of consumer demand. We call this market segmentation. As the world grows in income, the demand for "commodities" is giving way to the demand for products that have specific characteristics. People are concerned about taste, ingredients, flavour and other sensory attributes, packaging, consistency, etc. Moreover, there are alternative segments associated with different market channels. One can easily see variability in the nature of products sold to households through grocery chains. Some are aimed at selling low-cost commodities, some offer a wide variety of value-added products and a wide variety of qualities, while others increasingly offer prepared or partially prepared entrees that provide quick meal solutions in the home. Similarly, it is easy to see the wide variety in the main characteristics of products sold by food service purveyors when one thinks about the variety of restaurant chains that encompass Burger King at one end and Ruth's Criss Steak House at the other end. Finally, there is growing demand for products produced under particular conditions that affect the environment, food safety or animal welfare.

The implication of all of this is that the demand for food is no longer a demand for commodities. It also means that those in agriculture who will prosper will prosper because they have responded to very specific demands and are able to create additional value for doing so.

The fourth factor is technology. As consumer demand becomes more specific in terms of the characteristics required, technology is changing to allow farmers and other members of the supply chain to respond to those demands. We see this in the form of specialized varieties with specialized characteristics (for example, high oil corn, edible soybeans, corn with high lysine for particular feeding applications), in genetically altered products, in the growing use of global positioning systems for specific control and rotation of specific types of soil on a farm, to chemistry that is focussing on the chemical attributes of products and extracting both attributes for specific end uses in nutraceuticals or industrial areas, etc. -- the list goes on and on. Technology is simply becoming much more of a factor in everyone's life in responding to market opportunities.

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*Implications for Prince Edward Island*



There are at least four implications of this changing market situation for Prince Edward Island agriculture and for its future. The first is that as markets expand and grow, Island agriculture will be well-served by those who can anticipate demands, or at least respond to those demands by being quick to develop the appropriate products. As one looks at, for example, the potato industry, one sees a growing set of particular end uses that require very specific characteristics. Some of these are in the food service industry where purveyors, especially up-scale purveyors, want prepared products that taste as if they are freshly prepared and are consistent. Being able to provide such product will certainly mean the opportunity for value-adding on potato farms. Similarly, there is an increasing market around the world for seed stock and in many cases those requirements include seed stock with specific characteristics. Once again, this means that those who can do identity preservation and ensure the characteristics are bred into and produced by the seed stock will be able to attain a premium.

The second implication is that none of this is particularly related to the scale of operation. In fact, the growing view of many farmers is that responding to segmented markets, doing something to value-add and improving the marketing ability of operations, is a substitute for size. One of the leading gross income producers of agricultural products in Canada is a farm that only has 2.5 acres. Those 2.5 acres happen to be covered with glass and they produce an amazing array of somewhere in the neighbourhood of 1400 varieties of perennial flowers. None of them is inexpensive. The marketing capability of this farm is phenomenal and it, as indicated above, has absolutely nothing to do with scale.

The third implication is that, quite clearly, farmers who are going to be successful in this developing venue will necessarily become more adept at marketing. Whether this marketing be marketing consumer products or understanding the use of techniques such as futures and options, those who take the time and have the talent to learn will reap substantial rewards.

The final implication is that there will be increasing requirements for good vertical coordination in supply chains. Many of the emerging opportunities for differentiation, whether they be at home or abroad, require identity preservation from the farm to the end user. Identity preservation means that the end user has the ability to go back to any stage in the supply chain and ensure that the characteristics that are to be supplied or preserved by that stage are actually doing their job. This kind of identity preservation occurs only if there is a premium paid for it. In many cases, since the processes involved may be supplied by input suppliers, farmers, processors, handlers and those who are involved in international trade, it means that the ability to put together good cooperation in a supply chain that drives out cost and drives in value will be one of those things that will provide a great deal of prosperity to those in the sector.

As an overall ending comment, it should be underlined that the emerging markets offer agriculture very substantial opportunities for good supply chain management and for making the best use of resources that are inherent in the people, organisations and physical resources in the system. In almost no case do they depend on great extent because scale is often aimed at producing low-cost commodities. Taking a value-added approach to marketing means that one has a ready substitute for scale where cost considerations are important but not the most important aspect of being able to do business.

## ENDNOTES

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1. Shusterman D. Critical review: The health significance of environmental odour pollution. *Archives of Environmental Health* (1992) 47(1):76-87.

2. These statistics have been taken from *Preparing for the Twenty First Century* by Paul Kennedy, *The Ecology of Commerce* by Paul Hawken and from the work of Tad Homer Dixon at the University of Toronto.

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