



GEORGE MORRIS CENTRE

**Ethanol as Public Policy in Canada:
Understanding the Broader Policy Context**

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1.0 Introduction

It is now obvious that biofuel development, predominantly ethanol, has recast the horizon in North American agriculture; as recently as twelve months ago this was not broadly apparent. Throughout 2005 and 2006, ethanol production margins in the US were very strong, given high oil prices, relatively low corn prices, and an ethanol blend target with lots of room for ethanol to replace MTBE (Methyl Tertiary Butyl Ether - an octane booster and oxygenate used for gasoline blending). This strength led to major expansion in ethanol plants and ethanol production in 2006 and 2007, driving a powerful bull market in corn and feedgrains throughout most of 2007.

However, as the US harvests a historically large corn crop in the fall of 2007, and as corn prices have sharply retreated from last summer's highs, we are now witnessing the long overdue backlash against grain-based ethanol. Voluminous literature has developed suggesting that grain-based ethanol as a biofuel has sharp disadvantages, and is not the panacea many believe. Rather than wade through all of this literature and then summarize its findings, these selected references capture the essential criticisms of grain-based ethanol:

- Ethanol is reliant on massive subsidies and border protection to be economically viable. It does not have economic value without them (Koplow, Rubin and Tal).
- Ethanol does little to reduce CO₂ levels, and is among the more expensive ways of reducing greenhouse gas emissions from automobiles (Klein and Leroy, Forge, Johnson and Runge, Babcock *et al*)
- Ethanol is only marginally energy efficient (Johnson and Runge, Rubin and Tal)
- Ethanol production consumes large volumes of fresh water (Klein and Leroy, Koplow, Johnson and Runge)
- Ethanol growth will drive inflation in food and in the broader economy (Rubin and Tal, Johnson and Runge, Tokgoz *et al*, Westcott), and is generating a food security issue in some countries, such as Mexico (Rubin and Tal, Johnson and Runge)
- Further ethanol growth is being hampered by significant technical and distribution problems (Swanston)
- The ethanol plants' margins have collapsed relative to historic levels and the profit outlook is very tight, both short and long term (Swanston)

The foregoing have been written, primarily, from a US or international perspective, although the energy, emissions, subsidy, and water issues are the same everywhere. However, little has been written about Canada's "me too" ethanol policy. The purpose of this paper is to go beyond the current literature and address Canada's fuel ethanol development in the context of broader Canadian agri-food public policy.

2.0 Ethanol and Canadian Agricultural Policy: Some Context

To get some understanding of how ethanol fits within Canadian agri-food policy, an appreciation of history is needed. Before 1990, Canada was a leading grain exporting country, particularly of wheat and, to a lesser extent, feedgrains. The major agricultural policy instruments applied in this era were Feed-Freight Assistance, which subsidized the cost of moving western grain into Eastern Canada for the domestic livestock-meat segment, and the Western Grain Transportation Act (or Crow Rate freight subsidy) that underwrote the cost of moving western grains into export position.

In the late 1980's and 1990's, with the establishment of trade agreements with the US and Mexico and the signing of the WTO Agreement on Agriculture, Canada's agricultural orientation changed. To avoid issues with export subsidies, the Western Grain Transportation Act and Feed-Freight Assistance were repealed.

Removing these subsidies provided incentives for livestock and meat development, and dual marketing of hogs was undertaken in Western Canada. The effect was to make feedgrains relatively inexpensive at prairie points in Western Canada, rather than subsidizing movement to ports or to other regions of the country, thereby giving cheap grain to those points. At the same time, Canada's prospects for export market access to the US and other countries improved markedly. The rational adjustment that occurred was for Canada (and especially Western Canada) to take advantage of lower cost feedgrains and to export livestock and meat. This resulted in hundreds of millions of dollars in investment for hog and cattle production, as well as processing in Western Canada, and new interest in feedgrains and crops that could provide feedstuffs for livestock. Viewed in retrospect the change was dramatic.

Appendix A provides some context in terms of cropping patterns. In the mid 1980's, Canada seeded about 35 million acres of wheat; this has since fallen to fewer than 22 million acres. At the same time, traditional feed grain crops like barley and corn held steady, while oilseed and pulse crops that provide protein feedstuffs for livestock expanded dramatically. Technological changes played a significant role in this switch, but policy shifts both facilitated, and were consistent with, the changes.

Appendix B presents the change in the Canadian sow herd. Since 1990, the Canadian sow herd increased to about 1.55 million in 2007 compared with fewer than 1 million in 1990².

The change in the Canadian beef cow herd is presented in Appendix C. Since the mid-1970's, the herd has expanded by about 1 million cows. Part of this change is correlated with the cattle cycle, but it must also be noted that per capita beef consumption in North America declined significantly throughout this period. In other words, relative to the size of the domestic beef market, the Canadian cow herd expanded significantly. This is underlined by the fact that effective meat output per cow and sow both improved

² It is worth noting that sow productivity increased markedly over this period, and that the US sow herd decreased in number

markedly at the same time. The effects have been dramatic increase in value, and a change in the structure of Canadian exports.

Appendix D presents the value of Canadian exports to the US of bulk, intermediate, and consumer-ready agri-food products. Livestock and meat are significant parts of the intermediate and consumer-ready categories. The figure shows that Canadian exports to the US of intermediate goods increased from just over \$Can 1 billion in 1989 to almost \$Can 4 billion in 2006, and that consumer-ready product (including meats) increased from \$Can 2 billion to about \$Can 11 billion over the same period. Exports to the US of bulk products (including grain) has been basically flat at around \$Can 1 billion.

Canadian exports to countries outside of the US, shown in Appendix E, have a different pattern, specifically with respect to the significance of bulk products. However, the structure of exports to countries other than the US has also shifted over time with most of the observed growth being in intermediate and consumer-ready products.

Thus, Canadian agricultural policy evolved in a short period of time from a strategic focus on the exports of grain to a focus on the export of livestock and meat. Canadian export data would suggest that this has been concurrent with dramatic restructuring in the nature of products exported and phenomenal growth in export value. It's hard to avoid the conclusion that the strategic shift from grain exporter to livestock and meat has been a success for Canadian agri-food.

3.0 Ethanol and Canadian Agricultural Policy: An Assessment

Given this background, we offer an assessment of today's ethanol situation. First, to reiterate, the general criticisms of grain-based ethanol referred to in the introduction also apply to Canada. In order for Canada to expand ethanol production, significant subsidies and border protection will be required (some already exist), with an ultimate environmental benefit that is questionable. Encouraging new plant investment right now is likely to put investors in a position for eventual (if not immediate term) losses; one need only look at the negative impact of the government's recent record for encouraging new beef packing plant construction to get a sense of how well they do with industrial engineering (Grier and Martin). And, while the US may be able to argue that ethanol helps it wean itself off foreign oil supplies (which is yet to be proven), Canada is a petroleum exporter, so ethanol development acts against its own petroleum industry.

Secondly, the ethanol boom in the US has sharply increased corn, feedgrain, wheat and oilseed prices in Canada, even with the huge rise in the Canadian dollar. This is clearly a benefit to Canadian grain and oilseed producers. It also provides relief from the effects of US production subsidies. However, with Canadian capacity developing to produce about 400 million US gallons of ethanol (Mussell *et al*), compared with current production in the US of 6.3 billion US gallons (Eidman), it seems hard to imagine that additional Canadian ethanol development will have much effect on the level of world prices.

However, Canadian ethanol production does affect the "basis" for corn and feedgrains, i.e. the level of prices in Canada relative to the US price. Absent an ethanol industry, Canada would be an exporter of feedgrains, and grain prices would be below the US or other points, generally by the amount of freight cost. However, subsidized ethanol production increases the demand for grains and raises their prices above the US and other countries. For livestock producers who purchase feedgrains this means that, rather than having a small relative advantage in feed cost, they have a relative disadvantage. Mussell *et al* estimate this has increased Western Canadian market hog feed costs in 2007 by 23 to 26%.

As a consequence of increasing feed costs, along with a strong Canadian dollar and lower livestock prices, Canadian livestock producers are facing extremely tight margins. At least one provincial government has initiated an estimated \$165 million program to assist cash flow, mainly for livestock producers, and several other governments are reported to be considering programs. Subsidizing ethanol production and further supporting strength in grain prices, thereby exacerbating the livestock margin issue, will only raise the cost of assisting livestock producers (and increase the liability on the treasury).

Thus, it is hard to see how Canadian ethanol development is a winner for Canada. It will do little to assist the environment. It produces a product that can only be profitable with subsidies, thereby ensuring that there is no added market value for the product. Its effects on the livestock and meat industry threaten hundreds of millions of dollars of investment, and certainly discourage new investment.

4.0 Conclusion

Just because the US is developing ethanol does not mean Canada should. The public policy issues in these two countries are different. Furthermore, it looks more and more like the US policy is just bad policy, so one sees little reason to emulate it. The US is attempting to wean itself off dependence on foreign oil through ethanol; in contrast, Canada is a petroleum exporter. The US hopes to achieve environmental targets through bio-fuel adoption; however, when the amount of water used in ethanol production and energy used in drying distillers' grains is factored in, the environmental benefit is less obvious - particularly when compared with policy alternatives like driving smaller cars and expanding public transportation.

Part of the US policy goal is to drive up farm prices by mandating ethanol blends, but when Canada is so much smaller in ethanol production than the US, the efficacy of further increasing feedgrain prices in Canada through this method is highly questionable. US ethanol development rests squarely on the cushion of a \$US .51/gallon blending credit and a plethora of other subsidies. In order for Canada to seriously pursue ethanol development, we must be willing to underwrite ethanol with the same subsidy, and at much higher volumes. This will compete for scarce tax dollars with other worthy public projects.

In its totality, ethanol should be viewed as a negative for Canada. It undercuts a clear and far-reaching strategy to convert Canadian feedgrains into meat and livestock for export to an increasingly prosperous world, and could hardly be occurring at a worse time for Canada's beleaguered beef and pork supply chains. As it stands, Canadian bio-fuel policy sets us back to the mid-1980's, instead of operating from the current market reality.

In reflecting on ethanol policy, Canadian policy makers should consider the following: Of the three rationales for ethanol identified for the US, the first can be immediately rejected as absurd for Canada. This country does not need to use ethanol to wean itself from foreign oil dependence when it is a net exporter. The other two motivations are weak bases upon which to justify public expenditure. The public funding required for establishing an ethanol industry of sufficient scale to materially drive up grain prices further would be staggering. The environmental benefits of grain-based ethanol are just too modest to be taken very seriously, particularly when considered relative to the costs.

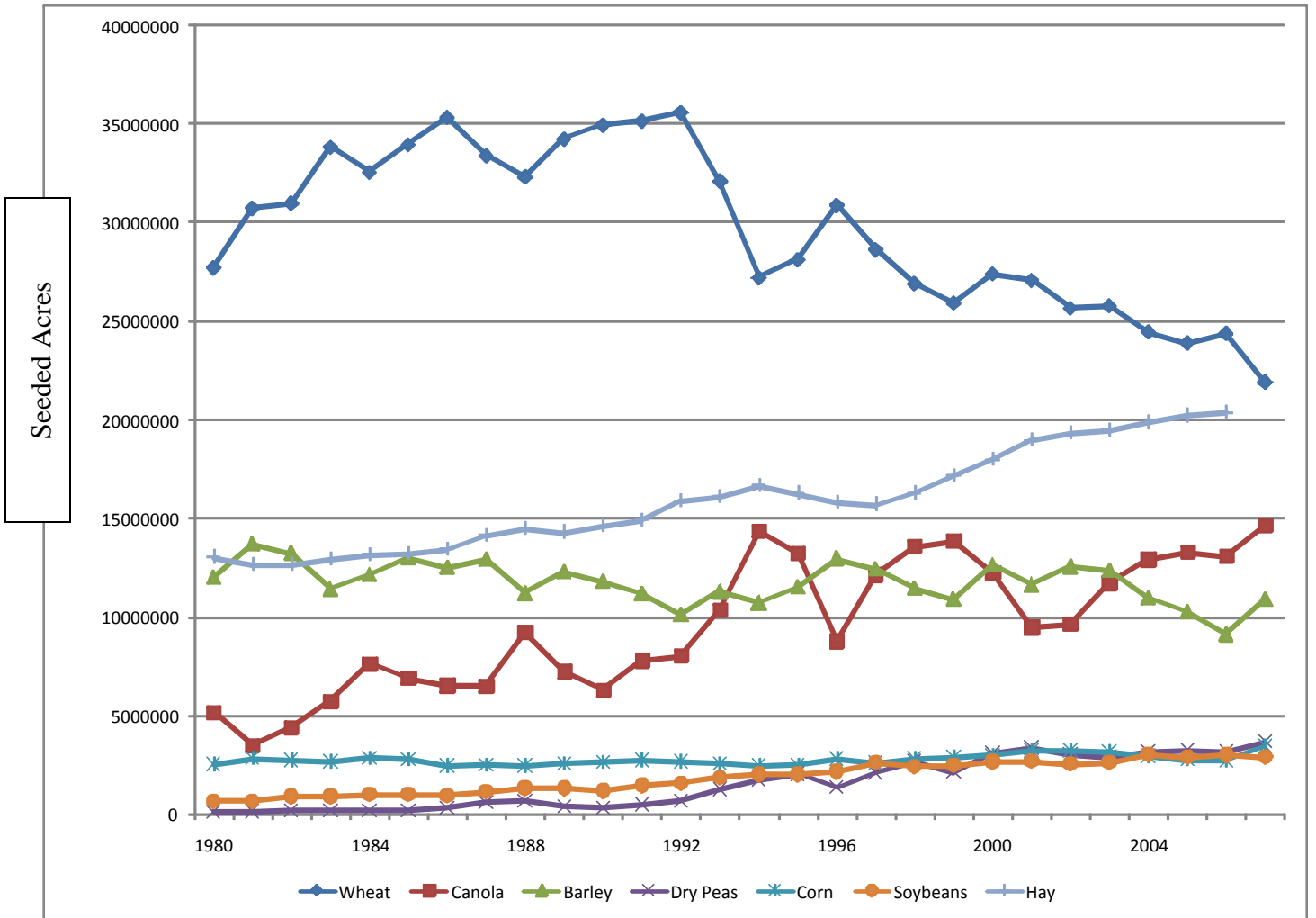
Rather than attempting to drive ethanol as a solution to both farm marketing and environmental problems, governments should consider working within established agricultural marketing policy. The policy goal of improving farm product markets could better be achieved through existing strategy by assisting the livestock and meat industry with its current difficulties, and by recapturing its historic competitive advantage with renewed investment, rather than by exacerbating the industry's problems with policies that further drive up feed costs. The environmental issues that grain-based ethanol purports to address could more easily be solved by focusing conservation efforts through innovation, such as more fuel-efficient engines, or bio-fuels that are not injurious to our

strategy as a meat exporter. In this regard, Canadian firms are already leaders in cellulosic ethanol production technology, and their further success might be leveraged as part of a uniquely Canadian biofuel strategy.

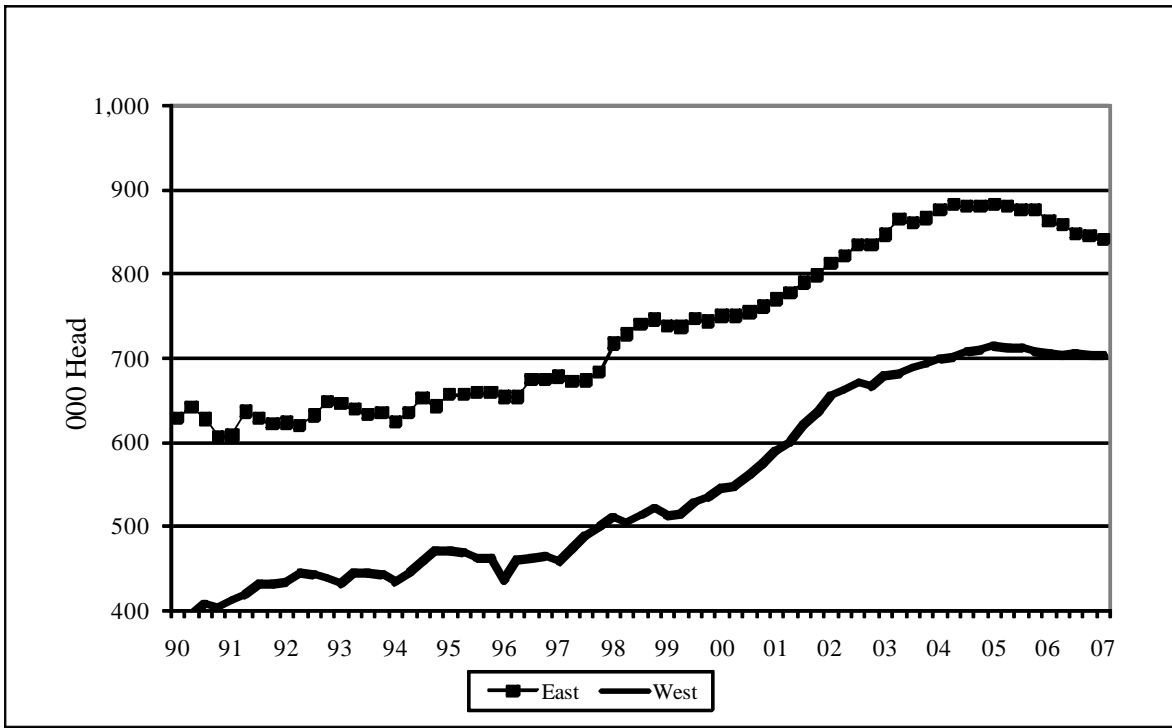
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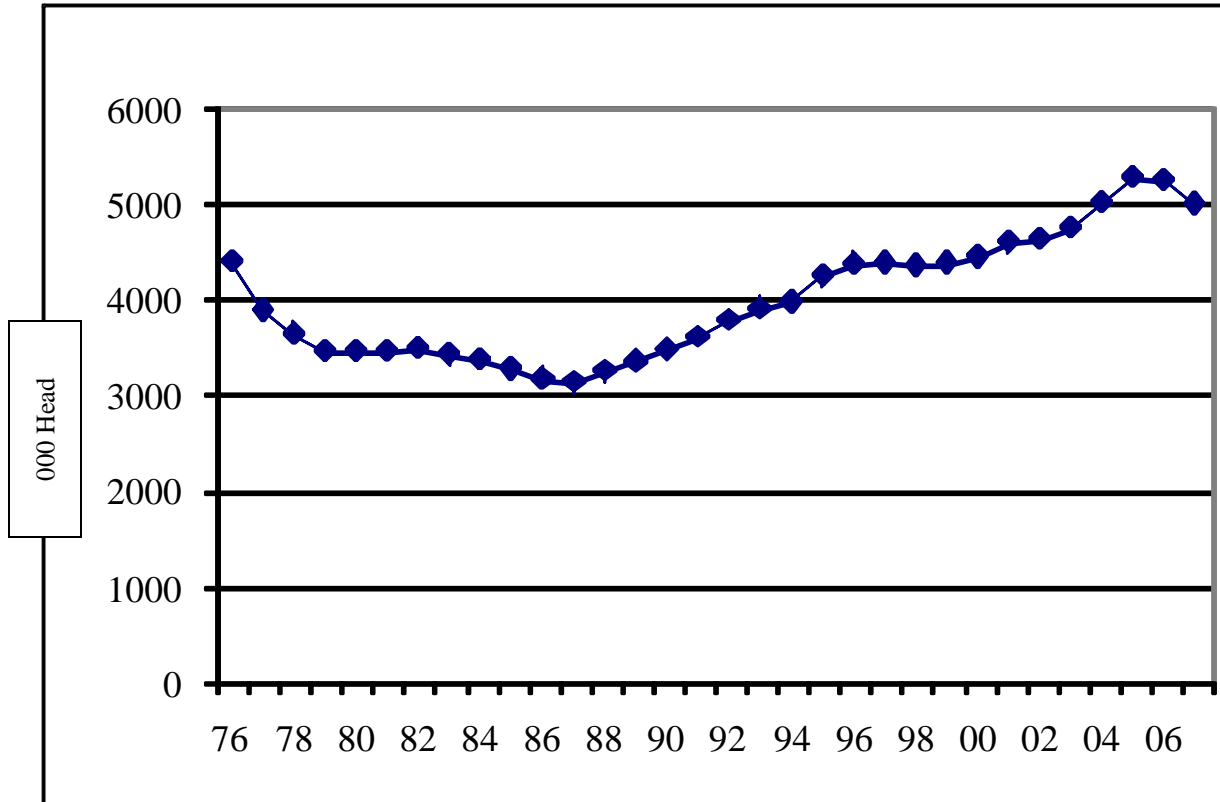
Appendix A Canadian Seeded Acreage of Major Field Crops, 1980-2007



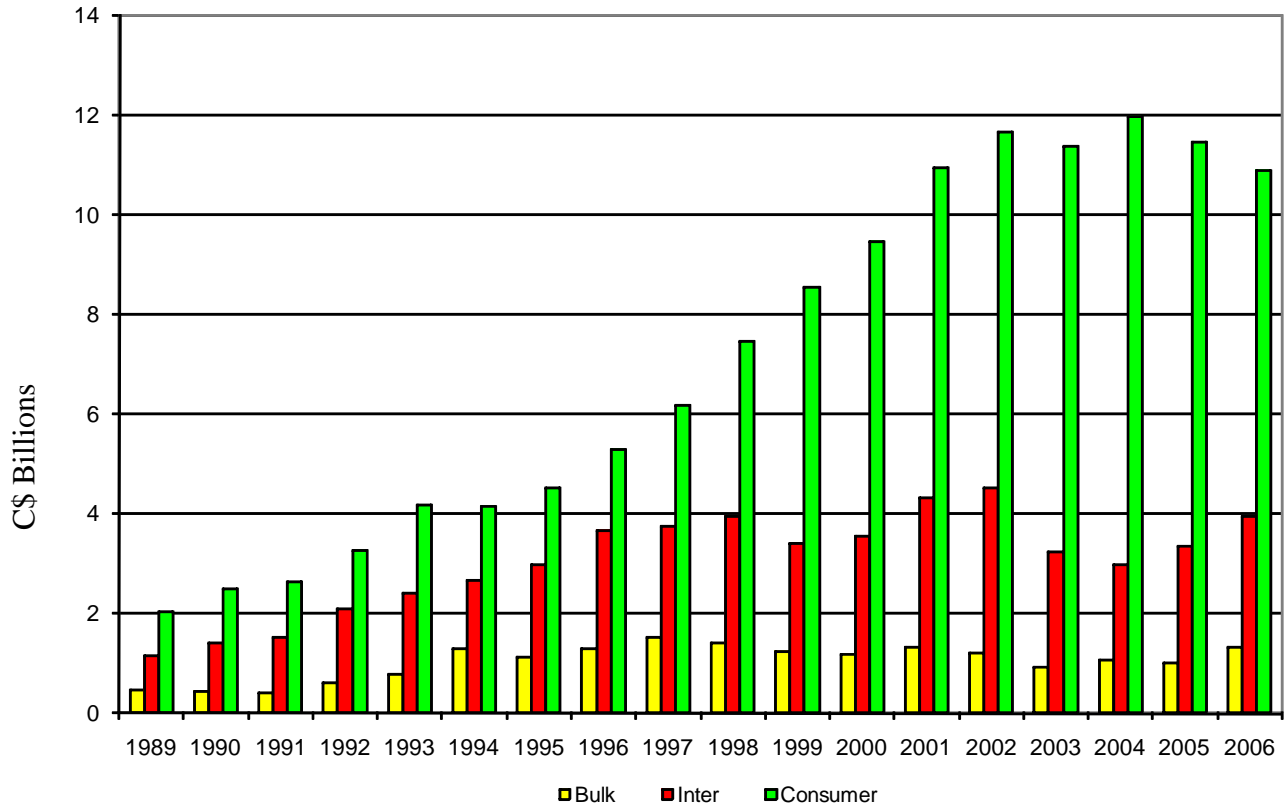
Appendix B Canadian Sow Inventory



Appendix C Canadian Beef Cow Inventory



Appendix D Composition of Canada's Agri-Food Exports to the United States



Appendix E Composition of Canada's Agri-Food Exports to the Rest of the World

