

# IMPORTING CHANGE: CANADIAN COMPETITION AND THE U.S. FLORICULTURE INDUSTRY

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## ABSTRACT

During the last century American agriculture has undergone a massive transformation from an industry dominated by a large number of small family-owned farms to an industry characterized by a fewer larger scale, heavily-capitalized enterprises. In this paper, we analyze the shifting geography of production with respect to the U.S. floriculture industry. The ongoing transformation of the floriculture industry is being driven by two interrelated phenomena. One is growing Canadian imports, particularly from Ontario. Canadian producers benefit from a fortuitous location with respect to major American markets, operate on a larger scale, enjoy a more favorable institutional setting, and until recently, profited from a favorable exchange rate. Another transformative process has been increasing sales of floricultural products by mass merchandisers in the U.S. The “big box” stores favor large scale operations, including Canadian exporters, due to larger scale demand and more complex sales agreements. As a result of these transformative changes, the U.S. floriculture industry will likely move to a dual market structure, consisting of large scale producers, who can supply the “big boxes” and compete effectively with foreign imports, and another segment of small scale producers who will have to carve out local markets based on higher quality customer service and/or being responsive to specialized consumer demands.

**Key words:** floriculture, Canadian imports, United States, mass merchandisers, global value chains

## INTRODUCTION

During the last century American agriculture has undergone a massive transformation both in terms of scope and scale. It has shifted from being a cottage industry dominated by a large number of small family-owned farms to an industry dominated by a fewer larger scale and more heavily capitalized commercial enterprises (Hart 2003). This consolidation of agricultural production has been driven and facilitated by a number of interrelated factors. These include the evolution of supply chain production models, economies of scale, state intervention in agriculture, and advances in genetic engineering technology, as well as the broader forces of technological change that have transformed nearly all global production systems (Barkema & Cook 1993; Drabenstott 1998, Page 1996; Woods 2005). As this paper demonstrates, the evolution of supply chains in agriculture and the scaling up of production has been driven by both upstream and downstream forces. Agriculture (including floriculture), however, is unique insofar as the re-scaling of retail activities vis-à-vis the expansion of “big box” stores has reconfigured customer expectations in the area of crop/plant quality and product standardization.

The purpose of this research is to document the changes that are occurring in the U.S. floriculture industry. In particular, we focus on the growth in Canadian imports and the reasons driving and implications of this growth. In particular we explore the increasing role of “big box” stores in the sale of floriculture products. Most of the data for the study comes from secondary sources. However, we also use the results of field work done in Ontario in the summer of 2007.

Rural areas and agriculture have undergone substantial change (Evans *et al.* 2002; Lyson and Geisler 1992). Farm operators are

continuously responding to various economic, political, and social stimuli, such as globalization and social modernization (Holloway and Ilbery 1997). Many refer to such adjustments as restructuring. However, Woods (2005) believes that the term “restructuring” has been applied too loosely. Also Hoggart and Paniagua (2001) argued that the concept of restructuring is in danger of being trivialized through its misapplication. This research on the greenhouse industry is not an analysis of restructuring. Instead this paper more narrowly focuses on the impacts of foreign trade as well as changes in the retail environment.

## CHAINS, LINKS, AND SCALE

Until recent years, the global value chain of floriculture largely conformed to the market governance type described by Gereffi *et al.* (2005). That is, most small growers sold to local markets, including through their own retail operations. The complexity of transactions was low, the capability of suppliers was high, and the power symmetry and degree of coordination were low. With the advent of the “big box” stores and their evolving market power, the situation is changing. The industry is experiencing a shift to the captive governance type. The complexity of transactions is increasing, transactions are increasingly codified, and the degree of coordination is increasing, with an asymmetric power distribution favoring buyers over suppliers (Murray 2007). This shift has been accelerated by the growth in Canadian imports which are in part oriented towards the “big boxes”.

Such changes are not unique to the U.S. Hughes (2000) demonstrated how the UK retailers were able to drive changes in the supply chain of Kenyan cut flower producers. Also Matthee, *et al.* (2006) analyzed the challenges to floriculture producers in the

Republic of South Africa resulting from larger numbers of international producers and an increasingly competitive global market.

In concert, these “change” forces have over time contributed to significant change across the agricultural sector. Yet, change has not occurred in a temporally, or spatially even, fashion. For example, the poultry industry production system was reconfigured in the 1960s while the pork industry has only more recently, in the 1990s, changed its structure (Drabenstott 1998). In the case of floriculture, the sector’s transformation would best be described as evolving. More importantly though, as we argue in this paper, one of the primary drivers in the transformation of the floriculture industry has been, and continues to be, the growth, expansion, and altered dynamics associated with Canadian imports.

In an attempt to chart the shifting geography of production associated with the industry, we examine the growing imports of Canadian floriculture products into the U.S. After reviewing the pertinent economic characteristics of the U.S. industry, the Canadian trading patterns are described. In addition, the reasons for the growth in Canadian imports and their impact on the U.S. industry are analyzed.

## **INDUSTRY CONTEXT**

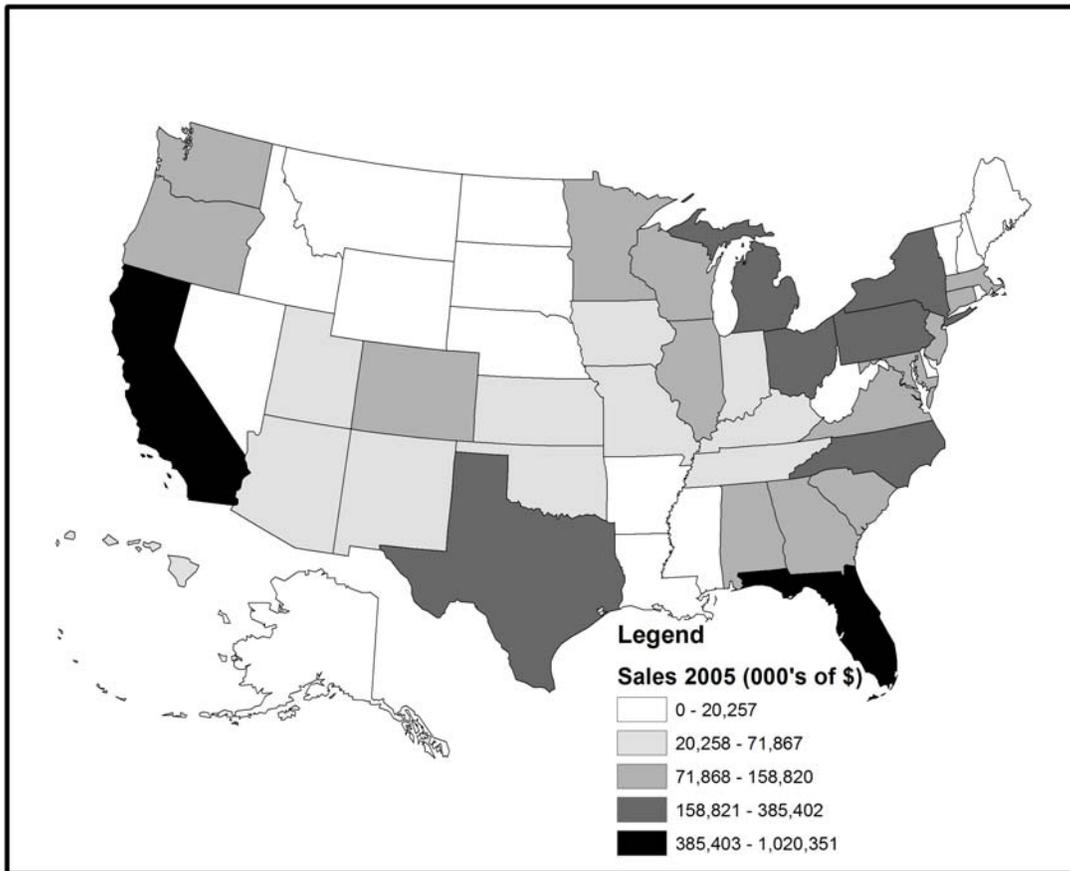
The U.S. floriculture industry comprises establishments primarily engaged in growing a variety of floriculture products such as bedding plants, cut flowers, hanging baskets, and house plants. Floriculture is the largest component of the greenhouses and nurseries industry, accounting for 74.6% of total establishments and 74.8% of the area under cultivation in 2002 (U.S. Department of Agriculture 2002).

The greenhouse industry is a major agricultural sector in the U.S generating almost \$16.9 billion of market value of production in 2006 (U.S. Department of Agriculture 2007). To measure the importance of greenhouses and nurseries, Hart (2003) used a different yardstick. He computed the gross value per acre of a variety of farm outputs. The average gross value of nurseries and greenhouses was \$8,864 per acre in comparison to \$3,489 per acre for the second highest crop - tobacco (Hart 2003 p. 242).

U.S. floriculture production is widespread. The 2002 Census of Agriculture reports 78.1% of counties as having at least one floricultural operation. While floriculture production is geographically dispersed in the U.S., most production occurs in a few states. The leading production states in 2005 sales volume were California, Florida, Texas, and Michigan, which collectively produced 49.3% of the U.S. total (Figure 1; all values are in US dollars unless otherwise specified).

Traditionally greenhouses have been viewed as being associated with urban areas. In part, the urban orientation of greenhouses underscores the industry’s high value/productivity per acre, historically intensive production regime, and the continued relevancy of basic economic rent models for agricultural production. In empirical terms, greenhouses continue to reside at the urban-rural fringe, and as Hart (1991 p. 48) observed, “greenhouses are the last rural use that remains in an urbanizing county, because apparently they can cohabit more or less comfortably with built-up areas.” Production of highly perishable products explains the historical need to be in close geographic proximity to urban markets. This pattern continues today with approximately 63.2% of the floricultural operations being located in Metropolitan Statistical Areas (U.S. Department of Agriculture 2002).

**Figure 1.** Floriculture Production in Volume of Sales, 2005

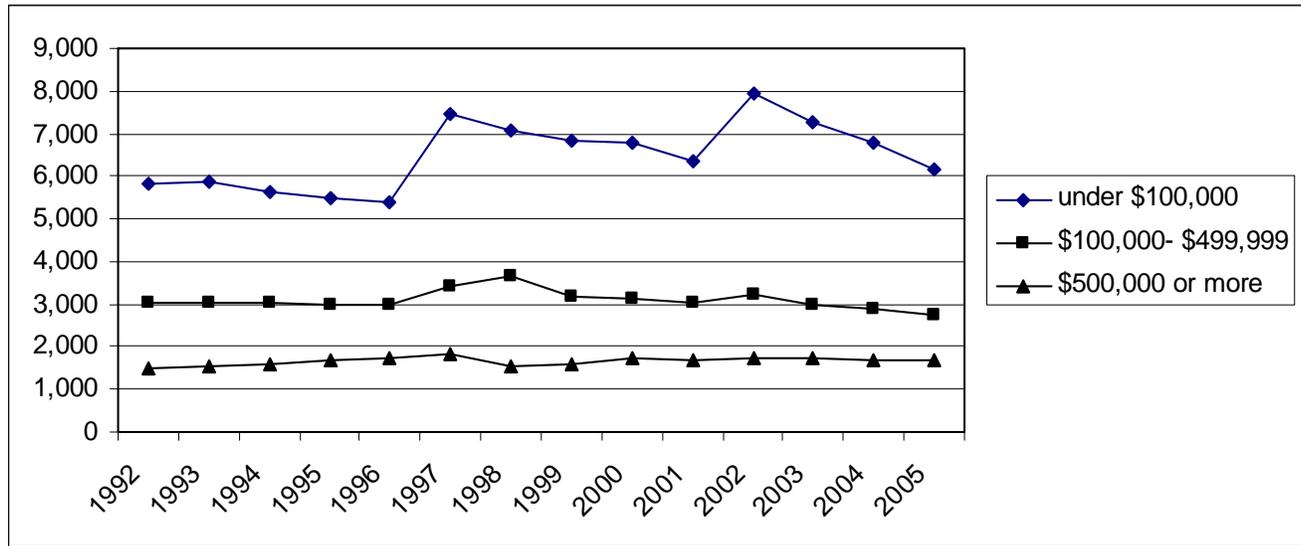


Source: U.S. Department of Agriculture 2007

The U.S. floriculture industry has been characterized by fluctuations in the number of greenhouse businesses (hereafter referred to as “growers”) (Figure 2). In recent years the number of growers fluctuated between a low of 10,070 in 1996 to a high of 12,916 in 2002. Much of the grower fluctuation is attributable to the coming and going of small growers, i.e. those selling less than \$100,000 per year. In contrast, the number of growers selling over \$100,000, particularly those selling over \$500,000, has been more consistent. Growers on the lower end of production scale are more likely candidates to exit and enter the industry than large scale production growers.

Fluctuations in the numbers of growers, especially small growers, are attributable to various phenomena. For example, Gale (2003) characterized floriculture operations as one of a group of farms which he termed “hobby farms”, i.e., small, part-time farms located on the urban fringe. The number of such farms fluctuates widely year to year since their operators do not have a strong commitment to farming. Hart (2003) identified another cause of turnover in the industry, at least in the case of the northeastern U.S. According to Hart, the urban orientation results in owners selling their land for urban development and then using the profits to move to another, larger site farther out from the urban area.

**Figure 2.** Number of Floriculture Growers by Size of Operation, 1992 to 2005



Source: U.S. Department of Agriculture 2007

Klingaman and Robbins (2004) noted that the failure rate of start-up greenhouses is very high, with close to 80% not staying in business five years.

The financial stability of smaller growers is also more precarious. The productivity of smaller growers, when measured by sales per acre, is substantially lower than larger growers, and has been decreasing over time. For example, in terms of prices adjusted for inflation, growers producing less than \$100,000 in sales per year sold \$42,913 per acre in 1993 as compared to \$85,384 for those operations selling over \$100,000 per year (U.S. Department of Agriculture 2007). By 2005, the smaller growers' sales per acre had declined by 26.9% to \$31,361 per acre. In contrast, the larger growers' sales per acre had increased by 13.0% to \$96,481 per acre (U.S. Department of Agriculture 2007).

These changes in the supply side of the U.S. floriculture industry have occurred while the consumption of floriculture products has been increasing. Between 1992 and 2005,

per household consumption of floriculture products increased, in real terms, by 25.7%, from \$44 to \$55 (U.S. Department of Agriculture 2007). Furthermore, the United States was the second largest market in the world for floriculture in 2002, following Germany, and is approximately six times larger than the Canadian market (Agriculture and Agri-Food Canada 2004). These market characteristics make the United States a very attractive target for exporters of floriculture produce from other countries, including Canada.

### FLORICULTURE IMPORTS

Prior to the 1970s, floriculture products tended to be produced for a domestic market or a nation's immediate neighbors (Matthee *et al.* 2006). With the advent of reliable and frequent air transport, as well as distribution facilities, the industry has become more global in nature. U.S. floriculture imports increased in real terms by 84.1% between 1992 and 2005 to reach

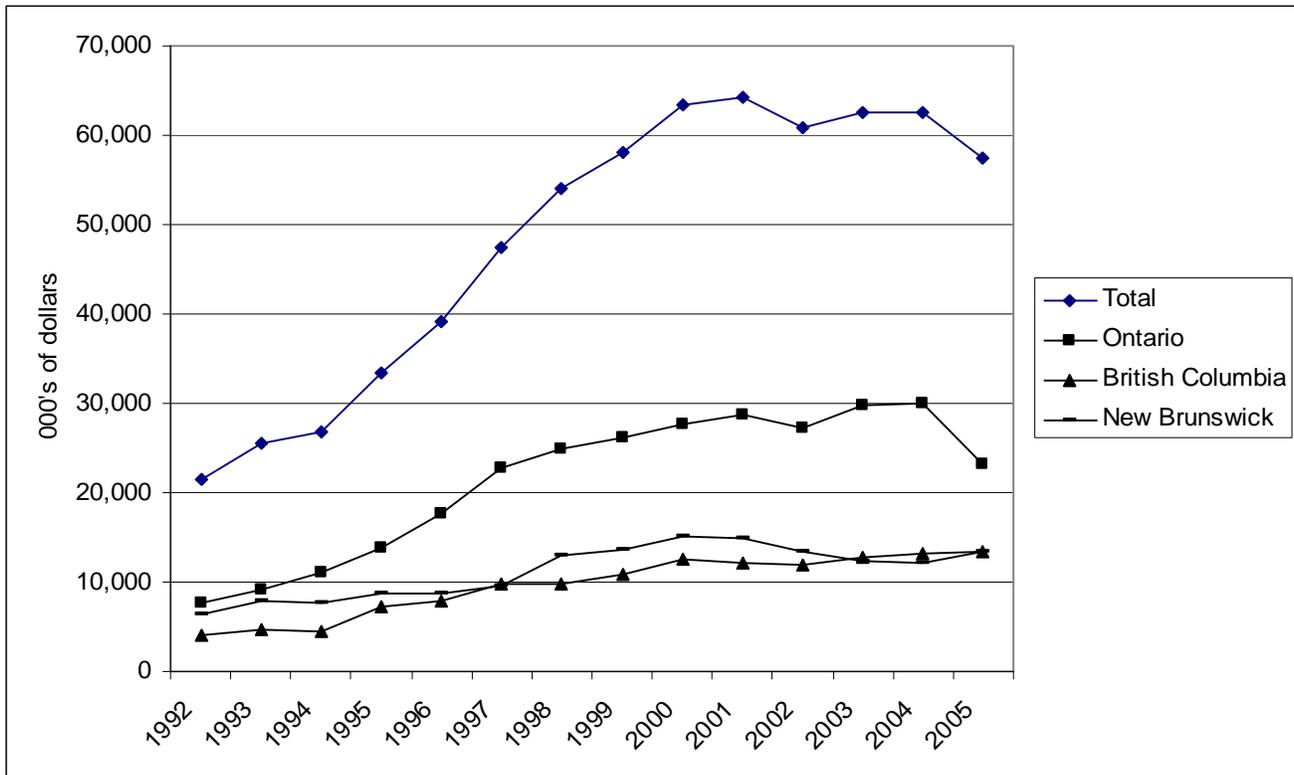
\$1.4 billion (U.S. Department of Agriculture 2007). In terms of imports, the floriculture industry is composed of two primary segments - cut flowers and nursery stock. In 2005, \$709 million of cut flowers were imported along with \$678 million of nursery stock (U.S. Department of Agriculture 2007).

The origin of imports for cut flowers and nursery stock differs somewhat (U.S. Department of Agriculture 2007). In 2005, the major sources of cut flowers were Columbia, Ecuador, and the Netherlands, with each contributing 59.0%, 18.2%, and 9.1% of the total respectively. In the case of nursery stock, the major countries of origin were Canada, the Netherlands, and Costa

Rica, with each accounting for 42.2%, 27.3%, and 5.3% of the total respectively.

In terms of imports of nursery stock, one of the notable trends has been the comparatively recent growth in imports to the U.S. from Canada. Between 1992 and 2005, Canadian imports of floricultural products, primarily nursery stock, increased by approximately 166% to reach \$57.9 million. The main provinces involved in exporting floriculture products to the U.S. in 2005 were Ontario (40.6% of the total), New Brunswick, (23.3%) and British Columbia (23.2%). Of these provinces, Ontario has the steepest growth trajectory (Figure 3). The decline in both total imports and Ontario

Figure 3. Origin of Floricultural Imports to the U.S. from Canada



Source: Industry Canada, Strategis.

imports between 2004 and 2005 is primarily attributable to changes in currency exchange rates.

The expansion of the Canadian imports not only occurred in volume, but also in terms of their spatial footprint within the U.S. (Figures 4 and 5). In 1992, four states accounted for 65% of Canadian floriculture imports. New York was the leading importer (23.2% of Canadian imports), followed by Massachusetts (16.6%), Washington (16.1%) and New Jersey (9.1%).

Beyond these four states, the import of Canadian floriculture products was relatively small.

By 2005 there was a considerable expansion in the geography of Canadian floriculture imports into the United States. Six states accounted for over 65% of the Canadian imports in 2005. In order of importance these were New York (16.5%), Washington (13.7%), Massachusetts (13.4%), Michigan (9.4%), Maine (6.8%), and New Jersey (5.8%). A comparison of the 1992 and 2005 maps shows the spatial expansion of Canadian floriculture imports into the Midwest, South, and Far West.

To better understand the spatial distribution of imports by state, regression analysis was used in a gravity model-type formulation to assess the relative importance of U.S. market size and production characteristics, as well as distance (see Roy & Thill 2004). To measure production, the number of large growers in each state was used. Market size was measured by the number of households. Distance was the mileage from a state's centroid to the Canadian border (Tables 1 and 2). As is conventional in gravity models, the equation was estimated in log-linear form (Helmerts & Pasteels 2005).

The model is expressed as:

$$\ln I = \beta + \beta \ln D + \beta \ln G + \beta \ln H + e$$

Where

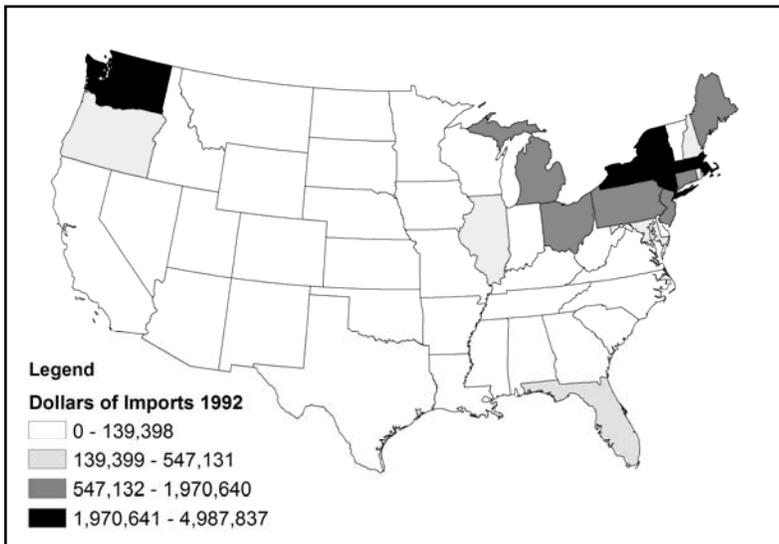
- I = total Canadian Imports
- D = distance from U.S.-Canada border
- G = total producers or growers
- H = total households
- e = error term

The R-square values were significant at the 0.05 level in both years, being 0.79 in 2005 and 0.76 in 1992. In 1992, the only significant independent variable was distance, whereas distance and the number of households were both significant in 2005. This would suggest that the geography of Canadian imports were driven more by market size in 2005 than they were in 1992.<sup>1</sup> In 1992, the correlation coefficient between growers and households was 0.89 and 0.83 in 2005. Given the tendency of floriculture operations to be located in metropolitan areas, this result is not surprising. What is notable is the fact that the simple correlation between the number of growers and imports was positive and significant in both years, being 0.49 in 1992 and 0.41 in 2005. This suggests that the Canadian imports are penetrating the major producing states in the U.S. Moreover, the coefficient of distance diminished between 1992 (-2.64) and 2005 (-1.40). It is apparent that distance was less of a barrier to Canadian imports in 2005 than had been the case in 1992.

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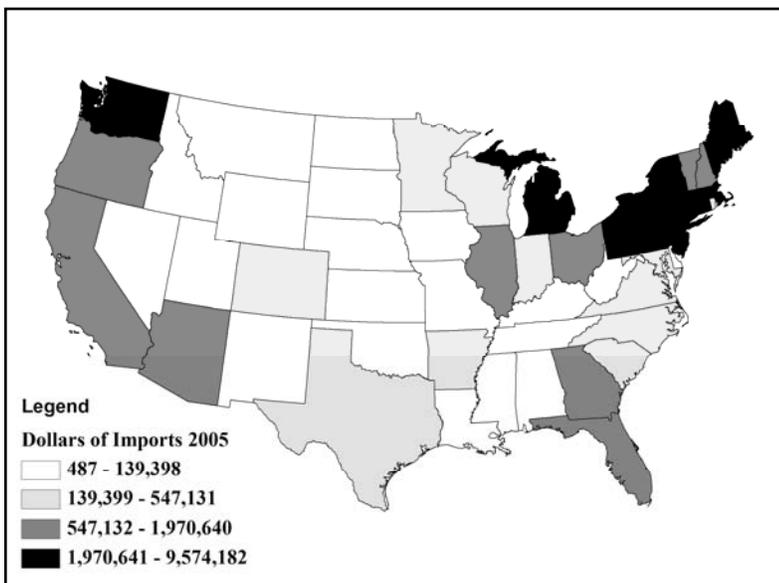
<sup>1</sup> A variance inflation factor (VIF) was calculated for each variable in the estimated equations. The obtained VIF values are well below the critical levels of 10 which *may* suggest the existence of multicollinearity and/or the potential for poorly estimated equations.

**Figure 4.** Destinations of Imports from Canada, 1992



Source: *Industry Canada, Strategis.*

**Figure 5.** Destinations of Imports from Canada, 2005



Source: *Industry Canada, Strategis.*

### REASONS FOR GROWTH IN U.S. IMPORTS OF CANADIAN PRODUCTS

The Canadian ability to compete in the U.S. is attributable to a number of factors. A key geographic advantage of the Canadian

floriculture industry is its proximity to the U.S. market, particularly the Ontario segment of the industry, which produces over 50% of the Canadian total (Brown & Murphy 2003). Approximately 50% of the U.S. urban population is within an 8 hour drive from Ontario (Reid & Lindquist 2005). Viewed from a different perspective, Ontario is the third largest producer of floriculture products in North America in terms of value of production behind California and Florida (Brown & Murphy 2003).

The average floriculture operation in Ontario is approximately 32,100 square feet (Brown & Murphy 2003). However, the average size of operation is much larger in those areas located closest to the U.S. For example, the average size in Essex County, which borders Detroit, Michigan, is 87,457 square feet. In the Niagara Municipality, which borders Buffalo, the average operation is 71,300 square feet (Reid & Lindquist 2005). These sizes compare quite favorably with the average size of many operations in the U.S. For example, in Ohio in 2002, the average size of greenhouse was 29,000 square feet (U.S. Department of Agriculture 2002). This differential size provides Canadian producers with a significant cost advantage.

Schumacher and Marsh (2003) found that there were substantial scale economies in floriculture. As growers increase their scale of operations and automate, they will experience a cost advantage over smaller producers.

The large concentration of growers (and wholesale distributors) in southern Ontario

has allowed individual growers to specialize in particular product lines. A product line from a particular grower is shipped to distributors who combine it with product lines from other growers. In this way Canadian growers are able to supply a full line of floriculture products to “big box” stores in the United States. Product line specialization has been a key competitive strategy for Canadian growers as it has allowed them to achieve significant economies of scale (Brown 2007).

**Table 1.** Model Results

Variable	1992	2005
Constant	5.36	2.83
	2.11	1.33
Distance	-2.64	-1.40
	-5.39	-5.62
Total Growers	0.39	0.08
	1.16	1.11
Households	1.59	0.95
	1.92	2.79
R-square	0.76	0.79

Given their larger size of operations, one trend favoring Canadian floriculture is that an increasing percentage of sales of floricultural products are made by mass merchandisers, home centers, and other “big box” stores. In fact, White *et al.* (2002) noted that the expansion of the larger growers in Canada is linked to the expansion of the chain stores in the U.S.

As shown in Table 2, home centers and mass merchandisers are the primary retail outlets for lawn and garden customers in 2004. Anecdotal evidence substantiates the role of home centers and mass merchandisers in the growth of this industry. For example, mass merchandisers accounted for 44% of lawn and garden sales in 2004 as compared to 30% in 1999. Home centers share grew from 36% in 1996 to 50% in 2004 (Hinson & Navajos 2004). Also, a 2001 Green Industry survey in Ohio found that between 1996 and

2001 wholesale sales, some of which go to large retail outlets, grew at an annual rate of 32.8% while retail garden center sales declined at an annual rate of 1.2% over the same period (Gao *et al.*, 2002 p. 6).

**Table 2.** Lawn and Garden Retail Customers, 2004

Retail Outlet	Customers (Millions)
Home Center	42
Mass Merchandiser	36
Independent Garden Center	34
Hardware Store	25
Supermarket	16
Feed/Seed Store	11
Mail Order	7

Source: National Gardening Association 2004

The demand for floriculture products has been transformed from being primarily oriented to elite classes to mass consumption (Lee 2000), which in part has been stimulated by and benefited mass merchandisers in the US. Growth in the “big box” retail sectors creates substantial demand in the floriculture industry. For example, Sanford (2005) estimated that for every new Home Depot that opens, the growth in demand creates a need for an additional three hectares of floriculture production. Since the opening of its first store in 1979, Home Depot has expanded to 2042 stores in 2005 (Home Depot). This suggests that “big box” stores, perhaps through advertising and competitive pricing, are increasing demand from current consumers and/or creating new demand by creating new consumers.

Mass merchants privilege large growers for various reasons. The most obvious is that only the larger growers can provide a large volume and varied selection of competitively-priced products (Hinson 2005). To meet that demand, floriculture is becoming

increasingly capital-intensive. Large producers are able to make the necessary capital investments. Moreover the retailers often impose price restraints that reduce profits and profit margins, which smaller growers may not be able to accommodate (Campbell 2004). In addition, the large wholesalers and retailers often impose stringent conditions on the sales agreements with growers, including minimum order specification, bar code stickers, and on-time delivery (Hinson 2005). Some retailers, such as Home Depot and Lowes, use “Pay by Scan” which means the grower is paid for the product only after the consumer has purchased it (Herndon 2006). In general, these stipulations favor larger growers since they can bear the additional costs. Growers selling to mass merchants are, in a sense, facing the same Faustian bargain that Morgan and Murdoch (2000) described for organic farmers selling to supermarkets in the United Kingdom. They will have access to a large market but they give up control over some of their production decisions.

While many American growers supply mass merchandisers, the fact that Canadian producers tend to be operating at a larger scale gives them a potential edge in this growing market. White and Bills (2004) argued that the increase in Canadian imports is linked to the growth of the major chains. Somewhat related to the size issue is a difference in attitudes of the growers in the respective countries. While objective evidence of differential attitudes has not been acquired, there are indications that at least some Canadian growers are more aggressive than their American counterparts. In their profile of the Ontario greenhouse industry, Brown and Murphy (2004) noted the youthfulness of the growers, many of whom are second generation operators of businesses started by immigrants from the Netherlands and Denmark in the 1950s. They are characterized as risk takers, who rapidly

adopt new technologies in order to stay competitive in the global marketplace. The Ontario growers operate as an industrial cluster, the Ontario Greenhouse Alliance, with their goal of being a world leader in greenhouse operations (Ontario Greenhouse Alliance 2004). One example of their proactive stance is that they formed a cooperative to purchase natural gas at lower prices in order to cope with rapid increases in natural gas prices, a major expense in the industry (Brown & Murphy 2004). Also, they partner with the Canadian government to obtain research and development support (White *et al.* 2002).

Some characterizations of American growers by industry observers are not as positive. Brumfield and Martin (2006 p. 42) chided growers with the observation that “a typical grower was doing “business as usual” for two generations. This grower invested little profits back into the family business. He was complacent, neglecting peeling paint, broken glass and potholes in the parking lot. His greenhouse looked old and unkempt. He had halfhearted promotions and short hours. The greenhouse layout, lighting, displays and merchandising were virtually unchanged since construction. The signage was poor. He was slow to incorporate new trends and follow customers’ changing needs and preferences.” In an article aimed at highlighting the increasingly important role of women in making greenhouse purchases, Pohmer (2005 p. 62) observed, “let’s us face facts . . . we’ve been a production-driven, male-dominated industry since time immemorial.” U.S. producers with these attitudes will not be competitive in an increasingly buyer-driven industry in which mass merchandisers play a major role in shaping the future of the industry. In essence, the institutional arrangements of growers in Ontario have adjusted more rapidly to the realities of a global supply chain than has been the case in many parts of the U.S. As Maskell (2001 p. 935) pointed

out, institutional change is important because institutions assist firms in meeting the challenges or opportunities caused by changes in the outside world.

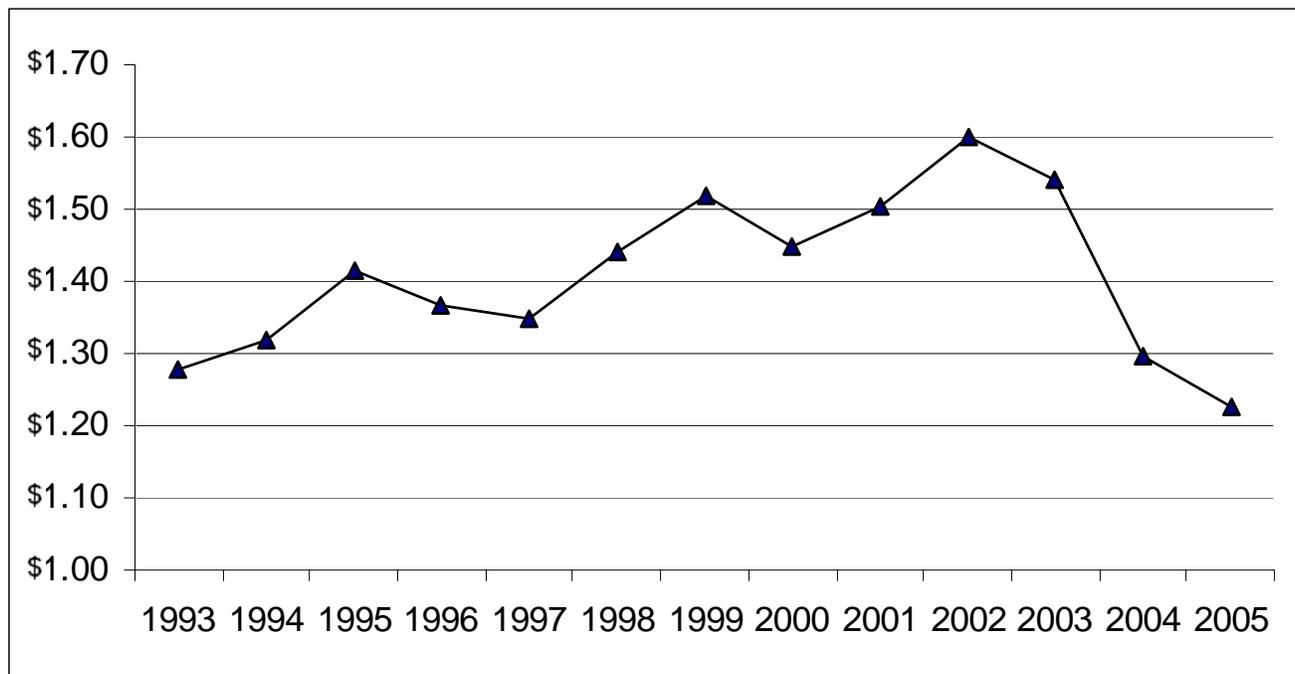
Another advantage for the Canadian producers has been a favorable exchange rate, which has kept the price of their products relatively low in the U.S. market (Figure 6).

For most of the study period, the U.S. dollar has been stronger than the Canadian dollar. In most years between 1992 and 2002, the U.S. dollar gained strength. However, it has declined in value since 2002, diminishing the price advantage of Canadian imports. The strengthening of the Canadian dollar since 2002 has been one reason for the slowing of the growth of Canadian floriculture imports (Figure 3) (Ontario Greenhouse Alliance 2006). Indeed, the increase in transaction costs associated with currency exchange rates is often cited as a determinant of cross

border trade by individual Ontario growers (Ontario Greenhouse Alliance 2006).

One of the events fostering greater trade between Canada and the U.S. was the implementation of the North American Free Trade Agreement (NAFTA) in 1994. Various researchers have suggested that NAFTA has promoted trade in greenhouse products (White and Bills 2004; LaFary *et al.* 2006). However, the extent to which the rapid growth in floriculture imports is attributable to NAFTA is not clear. The data in Figure 3 suggests a continuous upward trend in imports between 1992 and 2002, with no unusual increase after the inception of NAFTA. In their analysis of the impact of NAFTA on various components of the New York State horticulture industry, White and Bills (2004) suggested that exchange rates and the fortuitous location of Canadian production near major U.S. markets are more influential in fostering trade than is NAFTA. They posited (2004 p. 422) that,

**Figure 6.** Value of U.S. Dollar Relative to Canadian Dollar, 1993-2005



Source: *Industry Canada, Strategis.*

“the fact that trade is growing so rapidly has to be attributed to the influence of factors other than NAFTA.” Moreover, in their analysis of the impact of NAFTA on agricultural trade between the U.S., Canada, and Mexico, Zahniser and Link (2002) argued that factors such as population growth and exchange rates have a much greater impact on the growth in agricultural trade than did NAFTA, except in the case of a few commodities (although not floricultural products). Thus, while NAFTA no doubt has contributed to the growth in floriculture imports, it alone does not explain the rapid increase between 1992 and 2004.

In more recent years, other border issues have assumed a greater role in impacting trade, especially those changes which have accompanied the U.S.’s growing concern with homeland security. Since much of the floricultural products are trucked into the U.S., the slowdown in border crossings after September 11, 2001 has been a challenge for the Canadian exporters (Ontario Greenhouse Alliance 2006). Starting in the fall of 2004, changes in the inspection of cut flower imports also affected the flow of Canadian imports (Brown & Murphy 2004). Such problems are particularly acute given the fragility and perishability of the product with the result that slow-downs in the supply chain can generate sizeable losses. A study by MacPherson (2008), on the topic of border delays, is potentially insightful. Analyzing the impact of the U.S. Bio-terrorism Act upon Canadian food exports to the United States, MacPherson found that there was a greater likelihood of border delays if the exported product was perishable and if the exporter was a smaller company. The extent to which MacPherson’s findings are applicable to Canadian floriculture products will require more research.

Finally, the geography of Canadian growers themselves is becoming more complex as

growers are increasingly acquiring facilities in the United States. Based on interviews with Ontario growers in the summer of 2007, an increasing number of entrepreneurs are taking advantage of currency rates to purchase U.S. production facilities. In addition to the currency issue, Canadian direct investment also yields transportation and logistical benefits in a post-9/11 security environment.<sup>2</sup> As a result of new Canadian investment in the U.S. industry, the production practices of Canadian growers will continue to alter U.S. production systems. Indeed, the experiences of previous industries—most notably the automobile industry (see Reid 1995)—suggest that targeted foreign direct investment promotes structural change in production systems.

## **TRADE FUTURES**

The future of Canadian floriculture exports to the United States depends upon a number of factors. These have already been highlighted in this paper. Currency fluctuations will be an important influence. According to one study, the critical value at which Canadian floriculture exports to the United States are likely to be severely compromised is \$U.S1. to \$C1.25 (Ontario Horticultural Crops Research and Services Committee 2003). This critical threshold was surpassed on 20 October 2004 and the exchange rate has remained above that level through at the time of writing (November 2008), with the exception of a brief four day period in October 2008 (Bank of Canada 2008). Going forward it is difficult to predict

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<sup>2</sup> Interviews were performed during the summer of 2007. Project researchers met with a variety of southwest Ontario greenhouse growers with production facilities in both the U.S. and Canada. The objective of the interviews was to identify the scale and scope of production as well as the export activities and practices (and attitudes) associated with product export.

the future of exchange rates. They will be dependent upon a number of macro economic factors including central bank policies, relative trade balances, and global commodity markets such as petroleum.

The extent to which border delays, currently being experienced by Canadian exporters, will be a salient issue in the future is also subject to uncertainty. Much will depend upon how the regulatory environment evolves. Regardless of that environment there is strong evidence that Canadian exporters who approach the challenge of border delays in an aggressive and proactive fashion are less likely to experience disruptive border stoppages. For example, Canadian exporters of perishable products who invest in understanding the compliance environment (e.g. attending compliance seminars, conducting compliance research) are less likely to experience border delays than those not investing in such activities (McPherson 2008).

In other industries unfavorable terms of trade has resulted in foreign direct investment (FDI) as a strategy for accessing foreign markets. The extent to which the Canadian floriculture industry might respond in this fashion is uncertain. FDI as a strategic response only makes sense when there is some certainty that unfavorable terms of trade are going to exist for a prolonged period of time. Furthermore, FDI requires capital. In Canada, the cost of entry into the industry is prohibitive. A new, state-of-the-art greenhouse can cost upwards \$C200 per square meter (Brown 2007). As a result, gradual expansion of existing greenhouse structures is the path chosen by the majority of Canadian greenhouse operations. Investment in the U.S would also result in the geographic dispersion of Canadian production capacity. Currently, the Canadians enjoy some significant competitive advantages from the economies of scale that are the result of

much of their industry being geographically concentrated in southern Ontario. Together, these factors make it unlikely that there will be significant Canadian investment in U.S. production facilities in the foreseeable future.

## CONCLUSIONS

The dynamics of the floriculture industry and the global value chain are impacting the geography of floriculture production. The value chain is shifting from the market type governance described by Gereffi *et al.* (2005) to the captive governance type. One major force in this change is the increasing sales of floricultural products by mass merchandisers. The “big box” stores privilege large scale production over smaller growers. The large scale operations not only realize economies of scale but also they can better respond to the mass merchandisers’ more complex sales agreements, such as minimum order specification, bar codes, on-time delivery, and pay-by-scan.

Closely linked to the growth of “big box” sales is increasing imports from Canada, especially Ontario. Between 1992 and 2005, Canadian imports grew both in volume and spatial extent. Much of the Canadian imports are directed toward the U.S. mass merchandisers. Canadian producers experience the benefits of a fortuitous location with respect to major American markets, larger scale operations, and until recently, a favorable exchange rate. Moreover, the Ontario producers, at least, operate within a more favorable institutional environment, including an active industrial cluster, aggressive entrepreneurs, and government research and development. A less favorable exchange rate and post-9/11 security issues have dampened the rate of growth in Canadian imports. One response to these trade barriers has been greater Canadian direct investment in U.S.

production facilities. Based on the experience of other industries, the targeted direct foreign investment can be expected to promote further structural changes in the production system.

Because of changes in its operational environment, the U.S. floriculture industry will likely move to a dual market structure. One component will be the large scale producers who can meet the demands of the mass merchandisers and compete effectively with foreign imports. The other segment will be small scale producers who will have to carve out local markets based on greater service. Small growers may generate a local market building on Lee's (2000) concept of the geography of regard. He suggests growers build social relations with consumers who share their specialized interest in particular floriculture products. Following Lee's (2000 p. 138) logic, producers may be able to "identify spaces of production *within* the market but *outside* the norms of capitalist evaluation and that these spaces are sustained by the mutual interest and support generated by knowledgeable participants on both sides of the market."

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