USING CLUSTER-BASED ECONOMIC DEVELOPMENT TO ENHANCE THE ECONOMIC COMPETITIVENESS OF NORTHWEST OHIO'S GREENHOUSE NURSERY INDUSTRY

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1. INTRODUCTION

In recent years a large number of communities around the world have adopted cluster-based economic development as a strategy to propel their economies to new levels of economic competitiveness (for example see Lundquist and Power, 2002; SANDAG, 2001). Despite concerns, in some quarters, over the ability of a cluster-based development strategy to deliver its promised economic benefits (Martin and Sunley, 2003) the greenhouse nursery industry in northwest Ohio has adopted this particular approach to retain its competitive edge in an increasingly competitive industry. Like many northwest Ohio industries, the greenhouse nursery industry is facing increasing international competition. In particular, competition from southern Ontario is threatening the future viability of many northwest Ohio greenhouse nursery operations. The northwest Ohio greenhouse cluster is in its formative stages of development. The cluster is being supported by university researchers who function as the Cluster Strategy Team (CST)[1]. The purpose of this paper is to report on the genesis, evolution, and current status of the cluster.

2. CLUSTER-BASED ECONOMIC DEVELOPMENT

Cluster-based economic development is premised on the idea that a geographic region, and the businesses that it contains, can compete more effectively when everyone in the region works together to the common benefit of all the stakeholders. A cluster can be defined as "geographic concentrations of interconnected companies and institutions in a particular field" (Porter, 1998). Clusters, by definition include not only business entities such as companies, but also universities, trade associations, financial institutions, vocational training providers, economic

[1] Dr. Michael Carroll of The Center of Regional Development at Bowling Green State University and Dr. Neil Reid of The Department of Geography and Planning at The University of Toledo function as the Cluster Strategy Team.

development agencies, and any other entity that can be considered "important to competition" (Porter, 1998, 78). Participation in a cluster enables firms to operate more productively. It does so because cluster participants have better access to resources such as information, ideas, technology, suppliers, and markets than they would have if they were operating in isolation. A cluster is much more than just a geographic concentration of interrelated firms. Clustering is really a process whereby competitor firms work together to solve problems and address challenges that, due to the lack of resources, they are unable to address and solve as individual business entities. As noted by Porter (1998, 88) "the mere co-location of companies, suppliers, and institutions creates the potential for economic value; it does not necessarily ensure its realization". Economic value is created through what Schmitz and Nadvi (1999) call *collective efficiency*. Collective efficiency is the competitive advantage that can be attained through the combination of external economies of scale **and** joint action. While external economies of scale are *passive* (and often fall into the producer's lap) joint action is *active* and can only be derived through conscious collaboration (Schmitz and Nadvi, 1999). Collective efficiency is powerful and is the essence and lifeblood of successful cluster-based economic development initiatives. The central focus of any cluster strategy should be getting firms to work together to identify collaborative solutions to commonly shared problems (Diez 2001). Successful clusters promote collective learning that tends to be bottom-up and interactive in nature (Landabaso, 1995). Empowering the business owners and decision makers to identify a collective pathway to higher levels of competitiveness is critical to cluster success. One of the biggest challenges facing cluster-based economic development initiatives is that of getting competitors to trust each other and to agree to make a conscious effort to work together on joint initiatives. Trust is embedded within the concept of what economists term *social capital*. Social capital is those "features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions" (Putnam et al, 1993, 67). Social capital plays a critical role in the development of a successful cluster initiative (Hospers and Beugelsdjik, 2003).

With over five hundred cluster-based economic development initiatives worldwide (Solvell et al, 2003) there is, not surprisingly, a wide array of organizational and morphological forms that clusters take on. Indeed, every cluster-based economic development initiative should be unique and should be designed to reflect the cultural, political, and economic context of the geographic region within which it functions (Diez, 2001; Porter 1998). It is extremely difficult to create successful clusters from scratch and building upon the existing industrial strengths of a geographic region is the foundation of most successful cluster initiatives (Castells and Hall, 1994; Schmidt and Nadvi, 1999; Hospers and Beugelsdijk, 2002).

While each cluster initiative should be unique and designed to accommodate the specific cultural, political, and economic realities of the region it is possible to learn from successful cluster projects in other geographic locations. To learn more about how a successful cluster-based economic development strategy works the Cluster Strategy Team (CST) spent four days in the West Midlands region of England in August 2004. The CST chose the West Midlands for a site-visit because the region has a similar economic history to that of northwest Ohio. Both regions have a legacy of traditional manufacturing industry and, in recent decades, have experienced the ravages of deindustrialization. Today, however, both the West Midlands and northwest Ohio are experiencing an economic renaissance. Combining traditional economic strengths (e.g. both regions have a strong automotive sector) with newer emerging industries (e.g. medical technologies in the case of the West Midlands and alternative energies in the case of northwest Ohio) each region is laying the groundwork for a healthier economic future. The six-county, 8,000 square mile West Midlands region is located approximately 120 miles northwest of London. The region 's cluster strategy is coordinated by the region's development agency, Advantage West Midlands (www.advantagewm.co.uk/index.html). Major cities within the region include Birmingham and Wolverhampton. While there, the CST met with approximately twenty-five individuals involved in the region's cluster-based economic development initiative. This included a day spent with Paul Butler, the Champion for the Advanced Engineering Cluster. Cluster Champions play a critical role in success of the West Midlands' clusters. The primary tasks of the Champion are to spend time in the field, visiting firms, identifying opportunities for inter-firm collaboration, and organizing networking events. Identifying and helping to implement collaborative opportunities are central goals of the West Midlands' cluster initiative. Knowledge and information gleaned from the CST's visit to the West Midlands were used in the development of the northwest Ohio greenhouse cluster.

3. NORTHWEST OHIO'S GREENHOUSE NURSERY INDUSTRY

The greenhouse nursery industry[2] has a significant presence in northwest Ohio[3]. Lucas County, the region's most heavily urbanized county, ranks 4th in the state and 94th in the nation in terms of the dollar value of nursery and greenhouse crops sold. These rankings place Lucas County in the top 5 percent of counties statewide and the top 4 percent of counties nationwide for sale of nursery and greenhouse crops. In 2002 Lucas County generated $18.2 million in nursery and greenhouse sales, while sales in the five-county region were $39.8 million (USDA 2005). The industry is responsible for generating over 750 jobs in northwest Ohio and has an economic impact of almost $100 million in the local economy (Table 1, Figure 1). The industry has a rich history in northwest Ohio and can be traced back to European immigrants who settled in the region during the 19th and 20th century.

TABLE 1
ECONOMIC IMPACT OF THE GREENHOUSE NURSERY INDUSTRY
ON THE NORTHWEST OHIO ECONOMY

Impact	Employment	Economic
Direct	441	$67,601,000
Indirect	163	$18,808,589
Induced	160	$12,459,743
Total	764	$98,869,332

Despite the national prominence of northwest Ohio as a greenhouse nursery-producing region there is very little systematic knowledge about the nature and structure of the industry. This lack of knowledge has become particularly evident in recent years, as the industry has come under pressure from competing regions that have been able to use technology, investment, and policy levers to bolster their industry. This highly competitive environment within which the northwest Ohio greenhouse nursery industry competes has attracted the attention of the region's U.S. Congressional Representative, Marcy Kaptur. In August 2004 Congresswoman Kaptur announced the dedication of over $6 million in federal funds to establish a National Center for Greenhouse Industry Research to be based at The University of Toledo (Blake, 2004). The announcement of federal funds to support a greenhouse industry research center recognizes not only the importance of northwest Ohio as production center, but also current faculty expertise at The University of Toledo. The university is home to the Plant Science Research Center that

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[2] The greenhouse nursery industry corresponds with the North American Classification System (NAICS) code 1114 and is defined as "establishments primarily engaged in growing crops of any kind under cover and/or growing nursery stock" (U.S. Census Bureau, 2002 NAICS Definitions).

[3] For the purposes of this paper northwest Ohio is defined as a five-county region – Erie, Fulton, Lucas, Ottawa, and Wood counties (Figure 1)

has a research focus on plant genetics (Laidman, 2004). In recent years, however, it has become increasingly apparent that understanding the economics of northwest Ohio's greenhouse nursery industry is necessary if the industry is to remain competitive. As a result

FIGURE 1
NORTHWEST OHIO

The University of Toledo received two U.S. Department of Agriculture (USDA) grants[4], the purpose of which are to assist the northwest Ohio greenhouse industry identify and overcome barriers to competitiveness. The starting point for increasing understanding of the challenges facing northwest Ohio's greenhouse industry was to conduct a census of greenhouse nursery operations in northwest Ohio.

4. INDUSTRY SURVEY

To better understand the nature and structure of northwest Ohio's greenhouse nursery industry a questionnaire survey was administered by mail. The survey was sent to 82 growers in the five-county northwest Ohio region (Figure 1). The survey was administered using the Dillman method (Dillman 1978). A total of 27 responses were obtained, giving a response rate of 32.9 percent. The survey was conducted during the months of March, April, and May of 2004.

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[4] This research is funded by USDA grants CSREES 2003-06230 and CSREES 2004-06222. The research team comprises faculty and staff from Bowling Green State University, Indiana State University, The Ohio State University, The University of Toledo, and Toledo Botanical Gardens.

The survey comprised seventy-five questions. The questions asked were broad ranging and covered a wide variety of topics including size of current operations, modernization and expansion plans, continuing education interests, use of technology, perception of competition, competitive strategies employed, and thoughts about the future health of the industry in northwest Ohio.

5. INDUSTRY PROFILE

As noted above, the greenhouse nursery industry has a long history in the northwest Ohio. This longevity is represented in the current greenhouses located in the region. Over half (52 percent) have been operating at their current location for over 40 years. The industry is also highly seasonal with less than half (46 percent) of the greenhouse nurseries operating year round. This high level of seasonality is reflected in the employment patterns, with 62 percent of employees hired on a seasonal basis. Full-time and part-time employees account for 18 percent and 22 percent of employees respectively. The industry has a strong family orientation, with 63 percent of full-time employees being members of the owner's family. Labor (along with fuel costs) represents the most significant incurred by growers. Northwest Ohio's greenhouse industry is dominated by floriculture production. Floriculture products comprise over 90 percent of the sales of surveyed growers.[5] The markets for these sales are very local in nature with 71 percent being sold on-site and 78 percent being sold within the state of Ohio. The average size of northwest Ohio greenhouses is 45,000 square feet. The northwest Ohio greenhouse industry remains very labor intensive with less than 10 percent of essential functions (e.g. fertilizer application, irrigation, media mixing, ventilation, etc) being fully automated.

6. INDUSTRY FORECASTS AND SOURCES OF COMPETITION

The survey asked a number of questions about the challenges, both current and future, facing the greenhouse nursery industry in northwest Ohio. For this paper we are particularly concerned with how northwest Ohio growers perceive the short-term (five-year) health of their industry and from where they perceive the main competition emanating. The survey revealed that many of the growers in northwest Ohio are concerned about the industry's short-term health. 40 percent of those surveyed feel that the region's greenhouse industry is going to be less profitable over the next five years. As a result, 15 percent of those surveyed are planning to either downsize of close their greenhouse operations during the next five years. This pessimistic forecast is not surprising given the increasingly competitive environment within which the growers are operating. The northwest Ohio greenhouse growers are particularly concerned with competition from Canada. When asked to rank the extent of competition from various geographic regions the highest level of perceived competition was identified as coming from Canada. Half of the growers surveyed ranked competition from Canada as being high (Figure 2).

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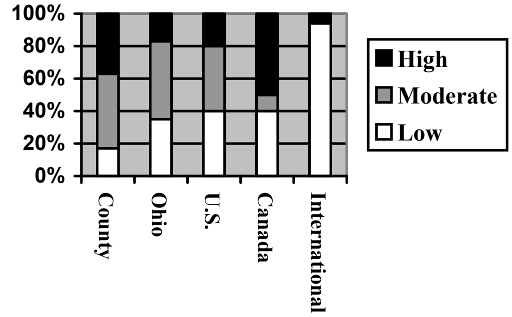
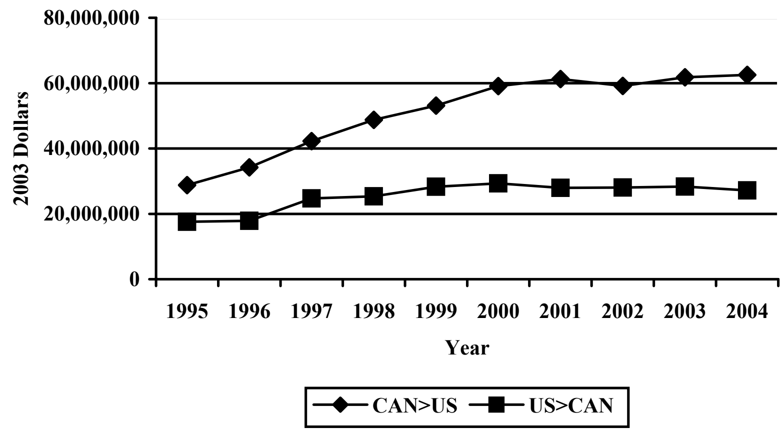
[5] Floriculture production corresponds with the North American Classification System (NAICS) code 111422 and is defined as "establishments primarily engaged in growing and/or producing floriculture products (e.g. cut flowers and roses, cut cultivated greens, potted flowering, and foliage plants, and flower seeds) under cover and in open fields" (U.S. Census Bureau, 2002 NAICS Definitions).

FIGURE 2
PERCEIVED SOURCES OF COMPETITION FOR NORTHWEST OHIO'S GREENHOUSE NURSERY INDUSTRY



Grower perception that Canada is a significant competitor region is supported by data. During the period 1995-2004 a growing trade gap between the U.S. and Canada in floriculture products emerged (Figure 3). In 1995 the U.S. floriculture trade deficit with Canada was $11.2 million. In 2004 it stood at $35.3 million.

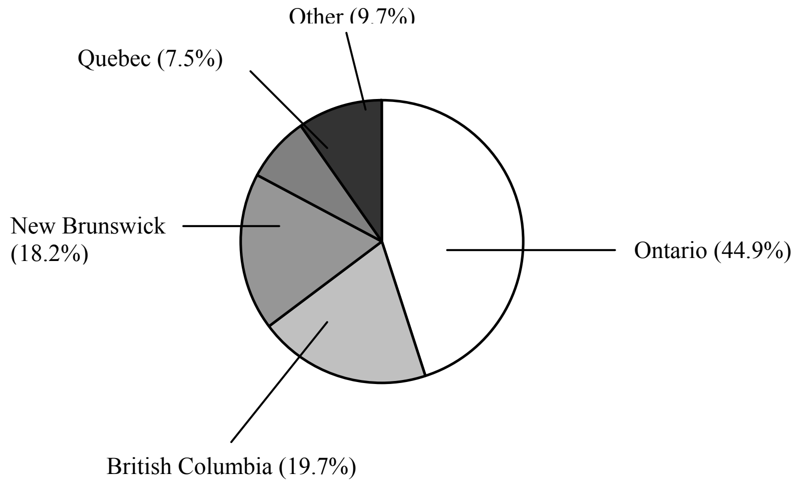
FIGURE 3
CANADA-U.S. FLORICULTURE TRADE, 1995-2004



Source: (Compiled from data available at www.strategis.gc.ca)

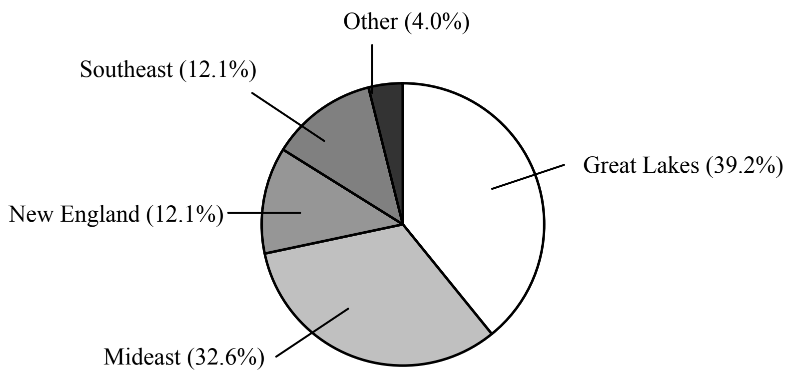
The primary source region for U.S. floriculture imports from Canada is Ontario. Ontario accounts for nearly half (44.9 percent) of the value of Canadian floriculture exports to the United States (Figure 4). The most important single destination region for Ontario floriculture exports to the United States are the Great Lakes states (Illinois, Indiana, Michigan, Ohio, and Wisconsin). Great Lakes states receive 39.2 percent of Ontario's floriculture exports to the United States (Figure 5).

FIGURE 4
GEOGRAPHIC SOURCE REGIONS OF CANADIAN FLORICULTURE
EXPORTS TO THE UNITED STATES, 2004



Source: (Compiled from data available at www.strategis.gc.ca)

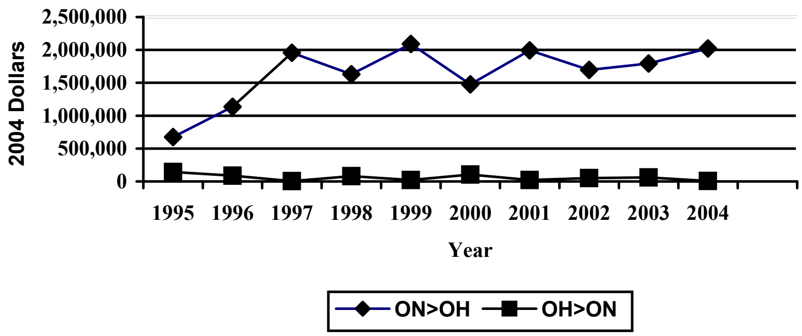
FIGURE 5
GEOGRAPHIC DESTINATION REGIONS OF ONTARIO FLORICULTURE
EXPORTS TO THE UNITED STATES, 2004



Source: (Compiled from data available at www.strategis.gc.ca)

Ontario has a positive and growing balance of trade with Ohio in floriculture products. In 1995 the trade gap between Ontario and Ohio was $531,186. By 2004, this trade gap had increased to $2,014,171 (Figure 6).

FIGURE 6
ONTARIO-OHIO FLORICULTURE TRADE, 1995-2004



7. ONTARIO'S FLORICULTURE INDUSTRY

The Ontario floriculture industry has experienced considerable growth during the last twenty years. Between 1991 and 2001 Ontario's acreage devoted to floriculture increase 97.8 percent from 507 acres to 1,003 acres. During the same period the number of floriculture greenhouse operations in Ontario increased by 23.5 percent from 1,100 to 1,359. Much of this expansion has been driven by an increase in both domestic and foreign demand. Ontario floriculture production is geographically concentrated is the southern region of the province, particularly around the western end of Lake Ontario and the northern shore of Lake Erie. The average greenhouse operation in Ontario is approximately 32,000 square feet and employs between six and ten people. However, in the main production areas (e.g. Essex County) the average size is much larger at over 87,000 square feet. The floriculture industry directly employs more than 9,500 people province-wide (Brown 2004).

Ontario's floriculture industry is dominated by second-generation Dutch and Danish immigrants. Like their fathers, these youthful business owners are risk takers and are well versed in successful business practices. Adoption on new ideas and technologies, particularly from Europe, is commonplace, and in recent years the Ontario floriculture industry has become increasingly technologically intensive. Computers and other technologies are used in a wide range of applications including climate control, seeding, transplanting, pot filling, irrigation, and harvesting

With over half of the U.S. urban population located within an 8-12 hour drive, southern Ontario growers are geographically well positioned to access the U.S. market. In recent years, Ontario growers have aggressively pursued an export strategy, with the United States as the primary target destination. Success in accessing the U.S. market has allowed Ontario growers to take advantage of unprecedented economies of scale. Over time the Ontario floriculture industry has taken on the characteristics of a cluster. Following deregulation of Ontario's natural gas industry in 1985 the province's floriculture growers formed a co-operative for the purpose of achieving volume discount pricing. Suppliers of a wide variety of inputs, including fertilizers, plastic trays, and disinfectants (e.g. see www.sylvite.ca/index.html), to the industry have also located operations in the region and the province has become a leader in greenhouse design. Supporting the development of the Ontario greenhouse cluster is The Ontario Greenhouse Alliance (TOGA). Established in 2003 one of TOGA's main objectives is to " bring together the historically silo operations of various greenhouse industry stakeholders onto an equal playing field to achieve those outcomes which they less effectively achieve by their current independent approaches" (www.theontariogreenhousealliance.com/whoweare.htm). It is against this competitive backdrop that the decision was made to establish the northwest Ohio greenhouse nursery cluster.

8. NORTWEST OHIO'S GREENHOUSE NURSERY CLUSTER: FROM CONCEPT TO IMPLEMENTATION

If a cluster-based approach was going to be successful in northwest Ohio it was critical that the growers themselves accept and take ownership of the strategy. In October 2004, to begin the process of obtaining grower buy-in the CST made a PowerPoint presentation on cluster-based economic development to a small group of eight growers. The growers attending this presentation were carefully chosen as they were recognized as being among the region's most open-minded and innovative. This was a critical presentation and discussion. Rejection of the cluster concept by these growers at this early stage would have probably signaled the death-knell for the initiative. Fortunately, the growers present recognized the utility of the concept and decided that they would like to further explore the possibility of developing a greenhouse cluster in northwest Ohio. A subsequent meeting (December 2004) between the CST and the small group of growers was used to further explore the cluster concept and, more importantly, to continue the process of developing mutual trust and respect between those at the table. In January 2005 the cluster concept was presented to a larger number of northwest Ohio growers. The forum to do this was the annual winter conference of the Toledo Area Flower and Vegetable Growers Association (Carroll and Reid 2005). This presentation had the desired impact and brought additional grower support for the cluster initiative.

Having successfully presented the cluster concept to a large number of the region's growers the next step was to establish the infrastructure that would be necessary to operationalize the strategy. The CST determined that successful implementation of the strategy would require the establishment of an Advisory Board and the appointment of both a Project Manager and a Champion for the cluster. The Project Manager identified, Mr. Joe Perlaky, had experience working in both the public and private sectors. His private sector experience had been as owner of a small business (a dry cleaning service). He, therefore, understood the challenges of running a business of a size similar to many of the greenhouse nursery operations in northwest Ohio. His public sector experience comprised of holding the position of Commissioner of Economic Development for the City of Toledo, Ohio, as well as being Executive Director of a non-profit development foundation for the city of Oregon, Ohio. Mr. Perlaky is also a graduate of The University of Oklahoma's Economic Development Council. The role of the Project Manager is to provide administrative and strategic visioning support to both the cluster Advisory Board and cluster Champion. He also chairs Advisory Board meetings. A 14-member Advisory Board was established. The board comprised seven growers and representatives from academia, the Regional Growth Partnership, the U.S. Department of Agriculture, the Ohio Florists Association, and Congresswoman Kaptur's Office (Table 2). The Advisory Board, officially established in January 2005, agreed to hold 9 to 10 meetings per year[6]. Its main function is to work with the Project Manager and the Champion to identify and implement solutions to challenges facing the greenhouse nursery industry in northwest Ohio.

TABLE 2
NORTHWST OHIO GREENHOUSE CLUSTER ADVISORY BOARD

Name	Position	Affiliation
Dick Bostdorff	President	Bostdorff Greenhouse
Bill Dearing	Owner	Dearing Greenhouse
Mark Hecklinger	President	Hecklinger Greenhouse
Tony Keil	Co-owner	Louis Keil & Sons
Walt Kreuger	Owner	Lakewood Greenhouse
Alan Schmidt	Co-Owner	Schmidt Bros., Inc.
Tom Wardell	Owner	Wardell's Farm Market
Michael Carroll	Assistant Professor of Economics	Bowling Green State University
Steve Carver	Manager, Technical Education	OFA (Ohio Florists Association)
Mary Donnell	Extension Agent	The Ohio State University
Charles Krause	Research Leader	USDA Agricultural Research Service
Claudio Pasian	Associate Professor of Horticulture and Crop Science	The Ohio State University
Joe Perlaky	NW Ohio Greenhouse Cluster Project Manager	The University of Toledo
Lindsay Potts	Staff Assistant	Congresswoman Marcy Kaptur's Office
Neil Reid	Associate Professor of Geography and Planning	The University of Toledo
Lee Springer	Director, International Business Development	Regional Growth Partnership

The first task facing the Advisory Board was to identify a Champion for the cluster. The choice of cluster Champion was decided upon not by the whole Advisory Board, but by those members who were growers. If the cluster was going to be successful it is necessary that the growers take ownership of the cluster. They are, therefore, given the privilege of making certain key decisions, such as choosing the cluster Champion. The growers' first choice for Champion was a retired Ohio State University extension agent. The position of Champion is a half-time position (20 hours per week) and seemed suited to an individual who was retired. Having a retired extension agent function as Champion also fit the profile of the position. He was known and respected by all the growers in the region. Furthermore, he had an in-depth knowledge of the industry. The individual identified was initially enthusiastic about the opportunity that this position potentially afforded him. However, as he learned more about the nature of the position he decided, in February 2005, to decline the offer. This was a setback for the cluster. The Advisory Board was keen to get the Champion in place and to have him get

[6] During months that were particularly busy for the growers (e.g. May) advisory board meetings will not be held.

into the field and to start visiting and networking with growers. The growers were asked to identify another individual to fill the role of Champion. Their next candidate identified by the growers was an interesting one and presented both challenges and opportunities for the northwest Ohio greenhouse nursery cluster. Dean Krauskopf is a Michigan State University (MSU) agricultural extension agent who has over 20 years of experience in working with the greenhouse industry in southeastern Michigan. He also holds a Ph.D. in horticulture from North Carolina State University. Before Dr. Krauskopf could commit to the position of Champion, however, he had to obtain the necessary permission from MSU extension. Would they be willing to let one of their extension agents spend twenty hours per week assisting the greenhouse industry in another state? Would they view this activity as a conflict of interest? Or would they (as some northwest Ohio growers had) view this as a window of opportunity that had the potential to blossom into potential future collaborative relationships between southeast Michigan growers and northwest Ohio growers? After all, many southeastern Michigan growers were facing the same competitive challenges as their counterparts in northwest Ohio. Certainly, the potential for developing a greenhouse cluster that extended across state boundaries was intriguing. As it tuned out, permission was granted and Dr. Krauskopf assumed the duties of the northwest Ohio greenhouse cluster Champion on May 1, 2005.

Having established the infrastructure (Project Manager, Champion, and Advisory Board) for the northwest Ohio greenhouse cluster the next phase of the project was to move towards implementation. As a result of discussions that occurred at Advisory Board meetings it has been agreed that the first collaborative project undertaken by the cluster would focus on the branding and marketing of the northwest Ohio greenhouse cluster. There were a number of reasons why this was chosen as the first collaborative activity. First, the survey of northwest Ohio growers had identified the lack of knowledge with respect to marketing as a critical competitive challenge facing the industry. Second, it was felt that this would be an initiative that growers would be willing to come together and collaborate on. Developing an identifiable brand and marketing strategy for the northwest Ohio greenhouse industry has the potential to allow growers to increase market share, charge higher prices, and secure larger profit margins (Lindsay, 2000). Discussions are underway with a northwest Ohio branding and marketing firm to begin the process of developing a brand and comprehensive marketing strategy for the industry. By the end of the summer 2005 it is hoped that this initial collaborative project will provide benefit to the industry and will assist in the process of building up trust between the region's growers.

9. CONCLUSION

This paper has described the genesis, evolution, and current status of the cluster of the northwest Ohio greenhouse cluster. The decision to utilize a cluster-based approach to secure the economic future of the industry is a response to a number of stark realities facing greenhouse growers in northwest Ohio. First, competition is increasingly international in nature. Second, many of these international competitors (e.g. southern Ontario) are becoming increasingly sophisticated in terms of their competitive strategies. Coming together, forming a cluster, and facing the future together seemed to be a promising way forward for the industry. The cluster is in its formative stages. A Project Manager and Champion have been hired, and an Advisory Board has been established. The first cluster project, branding and marketing, is underway. The Champion is in the field meeting and talking with growers. As the Champion continues his interactions with growers other opportunities for collaboration between growers will be identified and explored.

Despite the progress made by the northwest Ohio greenhouse cluster to date there are numerous challenges ahead. At present, only a fairly small number of growers are intimately involved in the initiative. Participation by larger number of growers is necessary if the cluster is going to be ultimately successful. However, as the Champion meets with more and more growers and educates them on the benefits of the cluster it is anticipated that more growers will come on board. Also, if the branding and marketing initiative is successful it is hoped that this will bring more growers to the table as they see the benefits (e.g. increased sales) of collaborative branding and marketing. There is also the challenge of identifying ongoing funding for the cluster. The cluster and its activities are currently funded by a grant by the U.S. Department of Agriculture (USDA). While USDA funds may be available to continue funding the cluster in the short-term there is a need to identify a mechanism to provide long-tern sustainable funding for the cluster.

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