CONSIDERING THE VALUE OF 'MARGINAL' AGRICULTURAL LANDS

PLANNING ANALYSIS OF AGRICULTURAL RESOURCE LAND PROTECTION IN ONTARIO

by

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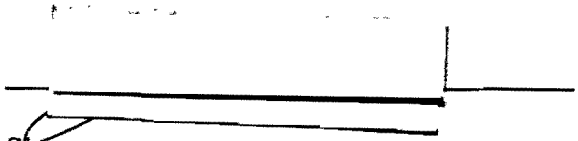

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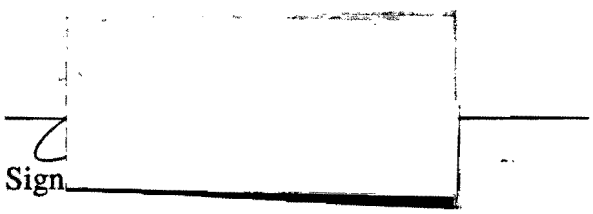

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ABSTRACT

Agricultural land resources are an essential element required to sustain agricultural production. While the Province of Ontario has implemented policies that aim to protect these lands from other types of development, this finite resource continues to diminish as the demand for food continues to grow. At this time the Province is undertaking a review of existing policies related to matters of provincial interest, including agriculture and therefore presents an important opportunity to re-evaluate the policies, in particular as it relates to what lands qualify as prime agricultural land worthy of protection. Historical and emerging agricultural practices have demonstrated that Canada Land Inventory (CLI) Class 4 soils can be productive. The report examines the potential merit of expanding the existing defining criteria of prime agricultural land from just CLI Class 1, 2 and 3 soils to also include CLI Class 4 and attempts to demonstrate the impact this would have on agricultural land use planning in Ontario. To help demonstrate a site specific evaluation of a portion of Peterborough County has been conducted to provide a visual representation.

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1.0 INTRODUCTION

"Nowadays people know the price of everything and the value of nothing"

- Oscar Wilde, *The Picture of Dorian Gray*

Although the level of public interest in food and agriculture related issues has experienced a recent revival in popularity, governments and decision makers have long invoked and implemented policies and programs aimed to strengthen and support the food and agricultural industry. While many of these measures often speak to economic matters such as commodity marketing and/or trade, one area that warrants further consideration are the actions intended to identify and protect the agricultural land resources that possess the specialized characteristics and conditions essential for the successful continuation of agriculture and food production.

In the Province of Ontario, the rules pertaining to land use planning are instituted through legislation known as the *Ontario Planning Act (1990, as amended).* The Acts authority establishes numerous planning powers such as municipalities (local approval authorities) ability to create and implement planning documents such as official plans and zoning by-laws that set local policies and by-laws for consideration during the review of development proposals. However, in a further attempt to effectively manage resources and control development patterns in a sustainable way, the provincial government has exercised additional powers in the *Planning Act* (1990) to develop and enact a provincially mandated, policy-led planning framework known as the Provincial Policy Statement (PPS) 2005.

The PPS is implemented across Ontario and contains additional planning policies on matters deemed to be of provincial interest. The importance of agricultural issues is exhibited through the inclusion of section 2.3 which is exclusively dedicated to agriculture, and includes as the first policy a provision stating that, "Prime agricultural areas shall be protected for long-term use for agriculture", (Ministry of Municipal Affairs and Housing (MMAH), 2005).

In addition to provisions of PPS Section 2.3 that address permitted uses and land division issues, are policies (and corresponding definitions, see glossary) which signify what lands are intended to qualify as 'prime agricultural land' during the evaluation process employed for determining the identification of 'prime agricultural areas'. Once identified these lands may then be designated on the land use schedules of local approval authority planning documents. Generally the PPS states that 'prime agricultural land' are lands that contain Canada Land Inventory (CLI) Class 1, 2, or 3 soils, (MMAH, 2005), and not meant to include other lands possessing soils classified within the remaining CLI Class 4-7 range on the seven point ordinal scale.

Information available through Agriculture and Agri-Food Canada (AAFC), describes the CLI classification methodology, including written descriptions about the expected crop capability and potential limitations for each of the seven soils classes (see Figure 1). The methodology indicates that soils with a CLI Class 4 rating are likely to have severe limitations that restrict the range of crops that may be grown and may also require special conservation practices to make these lands productive, (Agriculture and Agri-Food Canada (AAFC), 2008). However despite the challenges that may be experienced if compared to expected capability on lands with CLI Class 1, 2, or 3 soils,

agricultural operations as identified in Caldwell, (1995) and Bray (1980) have demonstrated that lands with CLI Class 4 and other 'marginal' soils, can still be productive and utilized as part of agricultural operations.

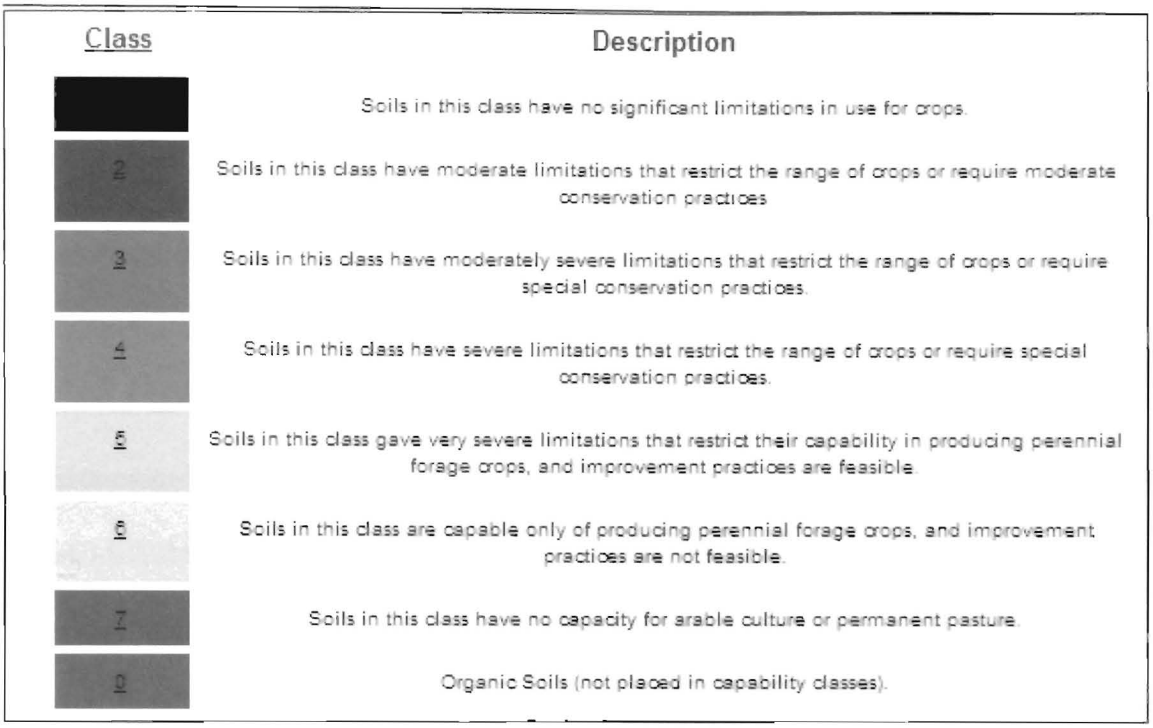


Figure 1. Canada Land Inventory (CLI) Soil Class Descriptions (AAFC, 2008)

Presently the PPS as required by the *Ontario Planning Act (1990)*, is undergoing a mandatory 5-year review to determine if the current policies are achieving their intended purpose and continue to reflect previously established priorities and objectives. This present opportunity to amend the PPS combined with a renaissance of public awareness concerning agriculture and food issues provides an excellent juncture to investigate possible amendments to existing policy or to adapt the document to address issues not previously contemplated in an attempt to better construct a planning environment that further supports and sustains the long-term viability of Ontario agriculture.

Although the current planning framework and policy includes provisions enabling the identification and protection of resource lands, the quantity of agricultural land

continues to diminish. This is especially true on lands surrounding large urban areas such as the Greater Toronto Area (GTA) where a total of 107, 611 acres of land have been taken out of agricultural production in just a 15 year period, (Walton, 2003). Faced with this reality, it is worth considering not only if the land use planning framework and policies are capable of adequately protecting agricultural land resources, but also if the appropriate range of CLI soil classes are included within existing policy/definitions to ensure that all lands with sufficient potential for agricultural use(s) are protected. As will be discussed, a number of factors beyond just the loss of productive acreage such as; the potential use of CLI Class 4 lands for emerging crops grown as biomass for use in renewable energy systems, the desire to maintain local agricultural systems/ economies, and impacts of changing climate, help validate contemplating the inclusion of CLI Class 4 soils as part of the 'prime agricultural land' definition to further facilitate their protection.

It is intended that the following analysis will provide insight into the capacity of Ontario's planning system to protect agricultural lands and assess the potential productive value of other lands not traditionally considered as 'prime agricultural land' due to soil characteristics alone, to reveal what significance the inclusion of CLI Class 4 soils as part of the PPS 'prime agricultural land' definition may have on the identification and protection of dependable agricultural lands. A site specific analysis within Ontario will also illustrate how the inclusion of CLI Class 4 soils as part of the 'prime agricultural land' definition could influence the potential designation of areas not previously identified perhaps due to the nature of the CLI soils distribution where the presence of CLI Class 4 soils amongst areas with relatively high proportions of CLI Class 1, 2 and 3

soils was sufficient justification to discount the value of these lands, precluding them from receiving an agricultural designation.

Accordingly this paper asks and explores the question as to whether CLI Class 4 lands can be reasonably productive and positively contribute towards the sustainability of agricultural systems. Further, if greater regard is had for the loss of irreplaceable agricultural lands, a wider spectrum of feasible agricultural uses are explored, and the powers facilitated through the Ontario planning framework, supported by the application Geographic Information Systems (GIS), the potential to realize a number of social, environmental and economic benefits possible through the protection of additional lands capable of supporting agriculture could be attained. In the future it will be crucial that decisions are based values that adhere to long-term visions rather than through a short-term lens.

2.0 LITERATURE REVIEW

2.1 The Emergence of Agriculture and its Impact on Our Lives: Transition from Agrarian Lifestyle to Supermarkets in the Suburbs

The value of agricultural lands should not be taken for granted. Borrowing a quote by Oscar Wilde, Patel (2009) in his book "The Value of Nothing", attempts to explain how humans now only understand the price of things and fail to appreciate their true value. Things such as shelter, clothing, water and food are generally accepted as the main necessities. To exist as human beings we rely upon the continued availability of the Earth's wide array of resources in order to sustain our survival and way of life, including essential farmland as expressed by Caldwell, Hilts, and Wilton (2007). Depending on location, some resources can be limited or more readily available than others, but most require some form of processing or manipulation before becoming the product we intend to consume or utilize. Perhaps one of the most prevalent and impressive examples of this would be civilizations venture into wide scale agricultural activity, an undertaking predominately accomplished through comprehensive management and utilization of Earths soils resources.

Thousands of centuries ago during the Pleistocene Age, the epoch ranging from 2,588,000 to 12, 000 BP, was the time period that covered the Earths most recent series of repeated glaciations, (Hilgen, Laskar, Lourens, Shackelton and Wilson, 2004). At this time humans were considered to have lived as 'hunter-gatherers'. As described by Parson (2009), populations were scattered in relatively low concentrations and essentially relied on the plant and animal life found in close proximity to sustain nutritional and other resource needs. Despite the emergence of modern man nearly 250, 000 years ago the eventual discovery of agriculture, emerging from the domestication of plants and animals

and the development of farm implements (Parson, 2009) is not credited to have occurred until roughly 10, 000 years ago. Arguably this event can be considered as having been extremely influential in helping form the foundation for modern civilization. The prevailing settlement arrangements constructed at that time differed considerably when compared to Canada's current population distribution as revealed by the 2006 Canadian Census indicating that 80% of all Canadians lived in areas labelled as urban (Statistics Canada, 2008). In today's society, food is now transported to stores where food products are stockpiled to be purchased and consumed as required.

The Industrial Revolution of the 18th and 19th centuries incited a period of great technological innovation and advancement that helped spur on new ideas for how and where communities would be developed. As described in Hodge (1998), the Industrial Revolution broke down the centuries old connection between town and countryside and led to a series of new development schemes such as the utopian designs proposed by the rich English industrialist, Robert Owen. One example was Owens proposal for the new settlement of New Lanark that would be built on 480 ha of agricultural land intended to accommodate 1200 people, (Hodge, 1998). During this time as expressed by Fisherman (2000), many citizens who lived in urban areas portrayed living conditions as chaotic and intimidating, which further encouraged the pursuit of alternative settlement patterns based upon the large scale conversion of agricultural land for urban uses. While the impacts of the Industrial Revolution were definitely not limited to agriculture, the effect of this event played a significant role in guiding the locations and manner in which agriculture is practiced.

At the time of the Revolution, agriculture heavily relied upon manual labour to carry out activities involved in agricultural production and was a relatively big component of local economies. The economic importance of agriculture still holds true in contemporary times as the Ontario farm receipts totalled $ 9.15 billion dollars in 2001 alone, (McGee, 2002). As technological innovation flourished it was becoming more possible to quickly make use of larger land areas for crop production, (Parson, 2009) however the innovations also reduced the demand for farm labour. Over time this would play a role in persuading growing proportions of the population to migrate from rural areas to growing cities. People were attracted by the new businesses and industries being built for the employment opportunities and better wages that they offered when compared to what was available working on a farm. As farming became more mechanized, jobs that previously required manual labour declined and the reduced demand for farm labour made cities a desired destination (Parson, 2009).

With the flux of people moving into urban areas and away from the agrarian way of life, the natural connection that people had with the food they eat diminished. Prior to moving into cities people either through their direct involvement in a farm operation or simply by witnessing the farm activities occurring around them, gained a deeper appreciation and understanding of how crops and food were grown. As generations past and more and more people became less exposed to rural lifestyles and activities, the understanding of where food is grown and how it gets to from field to table dwindled. As argued by Patel (2009) in his book "The Value of Nothing", people have become too focused on the market price of goods and services and have lost a solid understanding about the true 'value' of things such agricultural land resources.

2.2 Urbanization, Sprawl and its Impact on Agricultural Land

Most often when people think about characteristics that illustrate the Canadian landscape many perceive a country with a vast land mass and considerable open space. While this may be true much of the land mass is uninhabited and unused, remaining in its natural state due to severe climatic and logistical constraints such as road access and availability of public services which restrict the establishment of permanent human settlements. Even with such a large portion of the country essentially unsuitable for development, large segments of rural lands capable of accommodating further settlement, typically adjacent to urban centres remain. Despite this supply of rural land reasonably capable of being developed, trends reveal that Canada is rapidly becoming more urbanized. According to the results of the 2006 Canadian Census, (Statistics Canada, 2008) the Canadian population is becoming increasingly urbanized with numbers steadily increasing from 76% in 1986, 78% in 1996 and have risen to 80% in 2006.

Lands with suitable capability for agricultural uses are essentially a finite resource, and their quantity is constantly diminishing as a result of non-agricultural development pressures. Urban sprawl experienced in Ontario and most other jurisdictions across North America was greatly influenced by rapid population growth that occurred between 1946 and 1964, a period that has become known as the 'baby boom'. Additionally this shifting development pattern of sprawl was escalated by the number of households who were able to afford a personal automobile. This newfound luxury satisfied transportation needs and enabled people to commute further distances and created new opportunities allowing people to live greater distances from their workplace and everyday shops and services (Pim, 2005). Ultimately this lead to the proliferation of

low density developments such as Erin Mills located just west of Toronto. Purchased in 1955, the site was located on 8700 acres of farmland, (Sewell, 1995) and contributed to inflated urban footprints that were rapidly expanding onto surrounding rural lands.

Irreplaceable lands capable of agricultural and food production are being lost in favour of residential, commercial and industrial developments that are typically more appropriately found in urban areas where services exist and where they are more likely to be compatible with uses on adjacent lands. Frequently these productive agricultural lands surround an expanding urban centre which is a consequence of historic settlement patterns that chose certain locations for their availability and proximity to quality agricultural lands (Caldwell, Dodds-Weir, 2003).

The Statistics Canada Rural and Small Town Canada Analysis Bulletins have been regularly reporting on changes in the inventory of agricultural lands. One of the key highlights of its January 2005 bulletin as revealed by Hofmann, Filoso and Schofield (2005) was that between 1951 and 2001, the supply of what they term 'dependable' agricultural land has declined by 4% at the same time the demand for cultivated land increased by 20%. This statistic supports other evidence produced through the Canadian Census, as reported by the Ontario Farmland Trust – Farmland Preservation Research Project (n.d.) illuminating that the amount of productive agricultural land in Canada had reached its historical peak in 1951 and has been declining ever since. Despite perceptions that Ontario and Canada as a whole possess an abundant land supply, the fact remains that only 11% of Canada's land mass is capable for agricultural use, of which only 0.05% is composed of the highest quality CLI Class 1 soils (Walton, 2003).

Initially this flux of people moving into urban areas may seem to benefit the protection of agricultural land resources by reducing the demand for land to be developed for residential and other not-agricultural uses in rural areas, however the reality is urban areas have a limited holding capacity and inevitably expand outwards onto 'greenfield' lands regularly home to agricultural operations. In the GTA, 20% of the land has been classified as Class 1 soil (Walton, 2003) and as a result much of the GTA's urban expansion occurs onto these highest ranked CLI soils that possess a high capability for agriculture and little to no limitations requiring special practices to improve yields.

This growth trend is especially disturbing when looking at the situation unfolding in the four Regional Municipalities of Halton, Peel, Durham and York that combine with the City of Toronto to make up the GTA. As highlighted by Marbek Resource Consultants (2009), in their report on sustainable community planning in Canada which focused on current status and best practices, of the 6386km^2 that encompass the four regional municipalities, 2861km2 or 44% was classified as farmland by Statistics Canada in 2001 down nearly 7% from the 51% found just 15 years earlier in 1986.

With these changing demographics and new widespread suburban lifestyle that was being permitted, came new challenges and new problems to address. Over this period land use planning was facilitating the proliferation of these problems by failing to have adequate policies and/or technical knowledge to properly address the long term negative impacts this development pattern has and is likely to continue to produce. Alternatively the decisions may have also been a reflection of the political will of the day. As this unfolded citizens were becoming interested in issues beyond the economy and opposition was mounting over the way their communities and environment were changing. This

opposition helped push for revised planning system that placed greater emphasis on establishing a more holistic, sustainable planning framework that better addressed social and environmental issues as well.

2.3 History and Development of the Planning Framework in Ontario

The *Ontario Planning Act (1990)* is the central piece of legislation that establishes the rules for land use planning by indicating how land uses are to be controlled and who may control them, (MMAH, 2010). Originally passed in 1946, the *Planning Act* of today differs considerably from the inaugural *Act* as it has been amended in response to changing demographics, new suburban development, the proliferation of the automobile, as well as many other factors that have created new challenges and problems to address. These issues and the subsequent development that has followed helped expose a host of other matters that were not adequately addressed in the initial *Planning Act* legislation because various situations were not contemplated or expected.

As the Ontario planning system continued to adapt to the issues of the day, concerns mounted about the adequacy of what was in place. Questions about the effectiveness and efficiency of the policy approach that was being implemented were being raised and it was decided that an enquiry (The Commission on Planning and Development Reform in Ontario) was necessary to evaluate the state of provincial land use policy and to make recommendations to enhance its function. Instigated in 1991, the enquiry resulted in the production of a Comprehensive Set of Policy Statements which eventually received Cabinet approval in 1994, (Penfold, 1998).

The Comprehensive Set of Policy Statements was the first of its kind in Ontario. They identified particular issues deemed to be of provincial significance and set

corresponding policies to regulate development. The maturing of Ontario's land use planning system has fashioned the direction of current land use decisions. The evolution continued as new governments were elected and priorities shifted. This progression helped construct the framework employed today, by focusing on the development of policies that where intended to address matters deemed to be of provincial interest.

Today land use planning in Ontario is subject to the policies of the Provincial Policy Statement (PPS) 2005, and all decisions made with respect to planning applications under the *Planning Act* such as consents for lot creation, zoning amendments to change permitted uses, and Official Plan amendments to create or update Official Plan documents, must demonstrate how the proposed development or plan is consistent with the policies of the PPS (MMAH, 2005).

Although Ontario's Planning Framework has proven to be relatively effective and has created a structure and policies with the intent of pushing land use planning decisions so that they are made with the public interest in mind, there are still instances where what may seem to be the most appropriate decision is not fulfilled. This may simply be the result of a gap in sufficient information to inform decision makers or a conflicting political will to adhere to policy.

2.4 a) The Role of the Provincial Planning Process Related to Agricultural Land Protection in Ontario

In the Province of Ontario, a provincially mandated policy-led planning system has been established in an effort to properly manage resources and control development patterns. A prominent provincial contribution to the land use planning system is the Provincial Policy Statement (PPS), 2005, which provides planning policy on matters deemed to be of provincial interest. These policies are applied in conjunction with other plans and by-laws that have been created and implemented at the municipal level (local approval authorities) however despite what policies may be found in local plans, the intent and authority of the PPS is such that development proposals still need to demonstrate consistency with PPS. The importance of agricultural issues as a matter of provincial interest is exhibited through the PPS inclusion of a section exclusively dedicated to agriculture, which includes as the first policy a provision stating that, "Prime agricultural areas shall be protected for long-term use for agriculture" (MMAH, 2005).

Among the *Planning Act's (1990)* many functions are provisions that facilitate (as mentioned above) the creation and implementation of other land use planning documents that are the centre pieces of the planning framework at the local level. Part III of the Ontario *Planning Act* allows the creation, adoption and implementation of Official Plans while Part IV of the *Planning Act* allows the creation, adoption and implementation of Zoning Bylaws (Ontario Planning Act, 1990). The provisions of the *Planning Act* permit flexibility for plan creation allowing the local approval authorities to construct documents that cater to their own unique conditions and aspirations. While local approval authorities have this opportunity to create their own plans, it is important to understand that the eventual approval of their plans rests with the Ontario Ministry of Municipal Affairs and

Housing (MMAH), and in order to receive that approval, must produce a document that demonstrates consistency with the overall goals and objectives that have been established in the PPS, including the requirement to identify and protect prime agricultural land resources. Therefore as part of the process to update or create a new official plan, local approval authorities are responsible for evaluating lands within their jurisdiction and designating lands that meet the PPS definition of prime agricultural area on their official plan land use schedule.

At this time the identification process and ultimately protection of agricultural areas is directed by PPS policies, especially the corresponding definitions for 'prime agricultural land', and 'prime agricultural area'. The first definition mainly speaks to the specifics about the soil quality needed to qualify as 'prime agricultural land'. The qualifying attributes are based upon the Canada Land Inventory (CLI) soils information/mapping which classifies soils according to an ordinal scale system ranging from 1-7, with 1 representing the highest quality soils as they have been determined to have no significant limitations for common crop production, (OMAFRA, 2011).

Traditionally and under the current language of the PPS, lands containing CLI Class 1-3 soils have been considered as 'prime agricultural land'. 'Prime agricultural area' as defined by the PPS is intended to denote areas where 'prime agricultural land' predominates. The 'prime agricultural area' definition can be distinguished by broader language denoting that they are areas where 'prime agricultural lands' (CLI Class 1-3 soils) predominate (which is a key distinction) but also through further specifics indicating that 'prime agricultural areas' may also include additional areas of poorer soils

(not CLI Class 1, 2, or 3) and/or where a concentration of farm infrastructure or activities are present, (MMAH, 2005).

While it is this 'prime agricultural area' definition that is ultimately utilized to justify the identification or disregarding of areas for agricultural land use designations, it is important to understand that the precise wording of the 'prime agricultural land' definition is a dominant factor during the evaluation of agricultural resource lands that are considered candidates for an agricultural designation. The degree of explicitness integrated into the pertinent agricultural PPS definitions varies as the 'prime agricultural area' definition is less rigid and induces some ambiguity that needs to be weighed by those undertaking the identification process employed to map agricultural designations. As the evaluation methodology is not overly rigid and open to flexibility it is important that a review of the agricultural policies for qualifying as 'prime agricultural land' and the procedures/criteria for identifying 'prime agricultural areas' be carefully examined to ensure that agriculturally productive lands are protected.

In Ontario, an additional layer of planning legislation has been enacted and implemented to protect a substantial amount of predominately rural land. This endeavour has been incorporated through the passing of the *Greenbelt Act (2005)*. Emerging from the powers made possible through the *Greenbelt Act* was the eventual creation of the Greenbelt Plan, 2005. This was a controversial move on part of the Ontario government who had the foresight to recognize the immense importance of protecting these lands from rapidly encroaching development. The vast land area covering 1.8 million hectares and stretching across the Greater Golden Horseshoe and extending to the tip of the Bruce

Peninsula was acknowledged for the invaluable social, environmental and economic benefits that are derived directly and indirectly by all citizens of Ontario (MMAH, 2010).

This additional protection measure enhances the prospect that society may continue to reap the benefits long into the future from this vast, relatively undeveloped land resource. The lands under Greenbelt jurisdiction are home to some of the best agricultural land in all of Canada and it took such progressive action to rigorously control development options upon these lands that were rapidly being eroded by constant development pressures as a result of the proximity of these lands to the City of Toronto and the Greater Golden Horseshoe where significant growth has and will continue to be experienced (MMAH, 2010).

2.4 b) Key Data Source Used to Identify and Protect Agricultural Lands (Canada Land Inventory (CLI) Soils Mapping

The Canada Land Inventory (CLI) is a comprehensive collection of mapping information covering more than 2.5 million square kilometres of land and water, that provides and inventory of land capability related to a number of disciplines such as forestry, wildlife, and recreation (Agriculture and Agri-Food Canada, 2011). This inventory also includes mapping that specifically specifies the land capability for agriculture purposes. This extensive undertaking has supplied data covering a considerable amount of Canada's land mass, especially in areas home to the vast majority of Canada's population. The data has been collected and organized into map sheets of a standard size. The distribution of this data and can be observed on the CLI coverage map (see Figure 2).

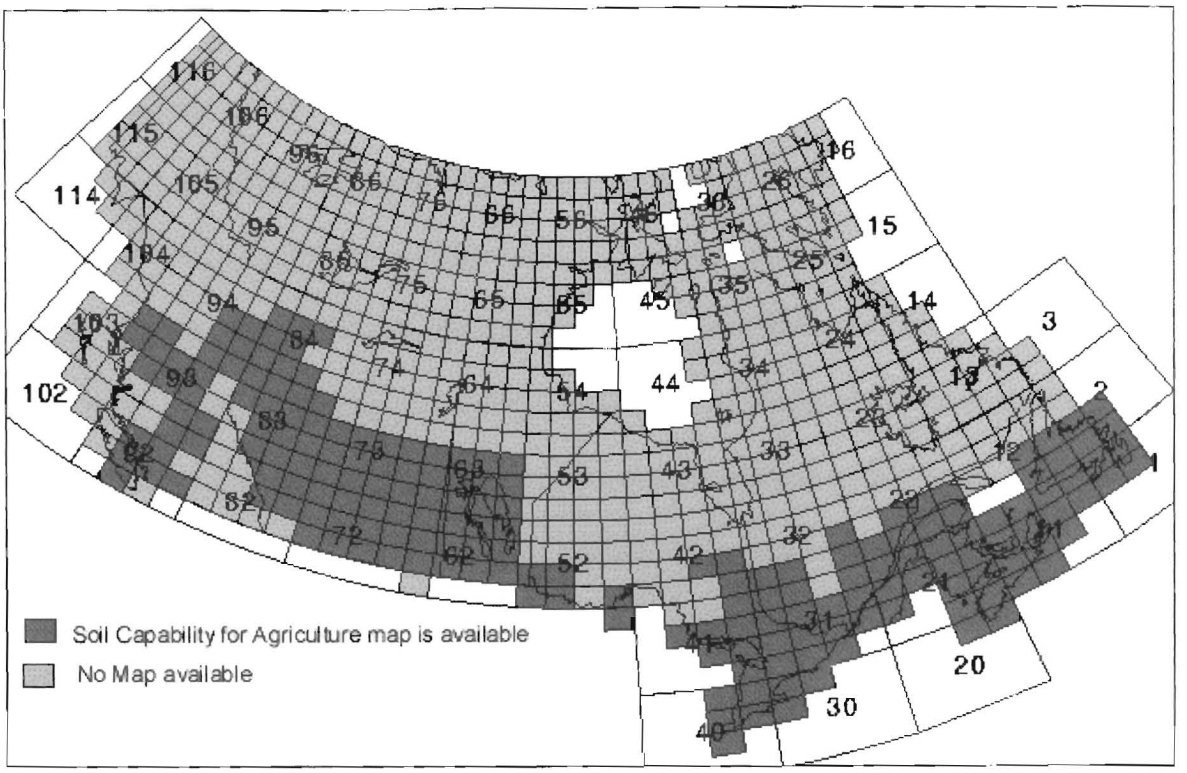


Figure 2. Canada Land inventory (CLI) soils mapping coverage

The information was gathered over a number of years during the 1960's, 1970's and early parts of the 1980's and assembled into the corresponding mapping information available today. While the information was collected many years ago, AAFC, (2011) assert that their accuracy and validity remain. This initial mapping has been improved through ongoing work acquired during more recently conducted soil survey evaluations. This data has proven to be practical and beneficial for a variety of land use planning purposes.

With respect to agricultural land capability, the researchers and technicians responsible for the development of the CLI data related to agriculture, created a rating system that assigns the lands a value within a range of 1-7 (see Figure 1). CLI Class 1 is deemed to be the best land within no limitations and CLI Class 7 is assigned to lands that have the lowest capability for agricultural land use activities (Agriculture and Agri-Food

Canada, 2008). Furthermore, other details about land attributes are also provided where available/applicable. The capability is assessed upon their ability to sustain agriculture which is based upon historical scientific research that has determined their potential. Regardless of the science behind the information, land use planners utilize the information to make informed recommendations as to the appropriateness of certain lands when considering the designation of agricultural areas.

Project Summary Soils

The Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) and Agriculture and Agri-Food Canada (AAFC), in cooperation with Ontario Ministry of Natural Resources (MNR) have taken on the role of compiling the decades old soil survey information, and automating them into detailed, high quality, digital geospatial soils database. Within Ontario, OMAFRA is acknowledged as the custodian of the data through a Memorandum of Understanding with AAFC (OMAFRA, 2011).

For the Province of Ontario, this involved the transfer of information from 44 hard copy soil reports and accompanying maps from Southern Ontario combined with 12 additional areas of soil mapping that exists for Northern Ontario. This information has been electronically assembled to create a single digital coverage that is available today (OMAFRA, 2011). This has proven constructive for contemporary land use planning mapping exercises by taking advantage of capabilities enabled through modern Geographical Information Systems (GIS) programs. This work was done to establish a spatially accurate digital database that is consistent across the Province and accessible in both digital and paper format. The availability of this information helps inform decision making by providing a clear visual representation of the respective subject matter (soil

resource distribution) that can be extremely valuable for the proper identification of various resource lands which is important as the specific designations invoke corresponding land use policies aimed to protect and optimally manage resources.

OMAFRA and AAFC scientists have been utilizing the latest advances in geographical information science, artificial intelligence, and the newly available high resolution data layers to apply processes that can resolve correlation issues for data that crosses municipal administrative boundaries (OMAFRA, 2010). This 'stitching' makes it easier to analyze areas that are made up of more than one map sheet. This can be very important during assessment processes as the benefit of having adjacent mapping info may expose areas of high quality soil that may appear small in area to actually be part of a larger soil complex and therefore potentially justified for an Agricultural designation. The current availability of this digital data is shown below (see Figure 3).

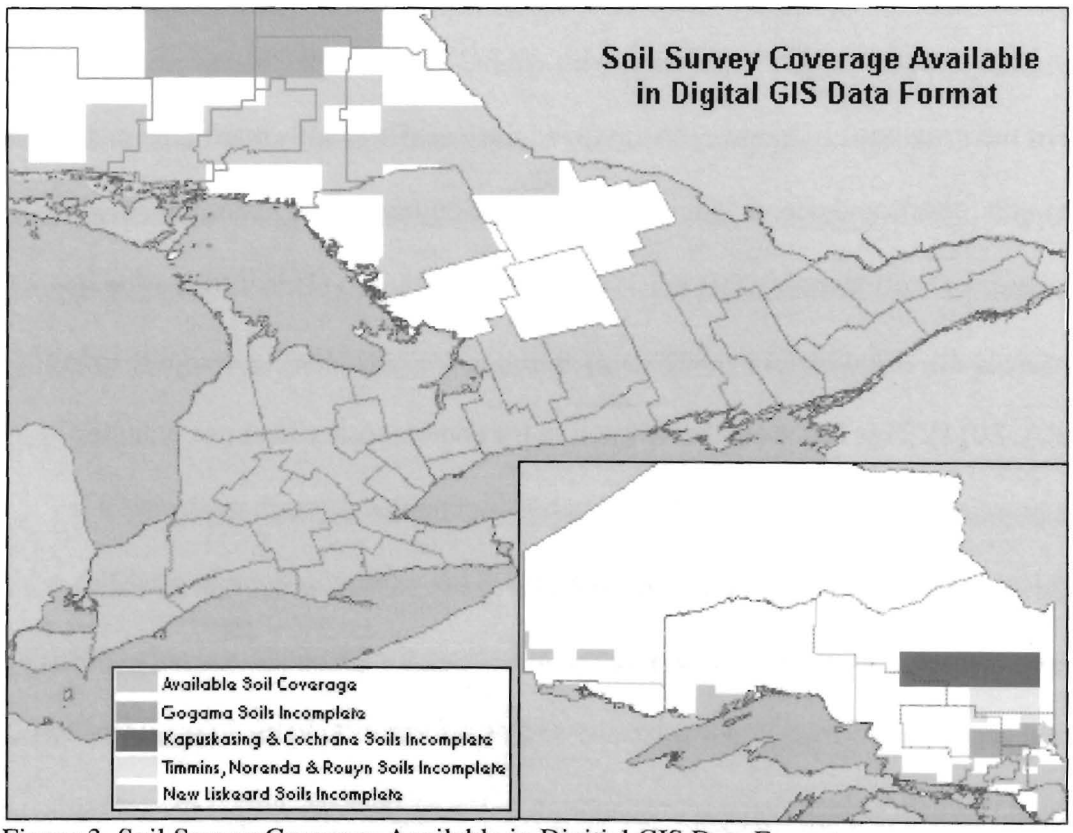


Figure 3. Soil Survey Coverage Available in Digitial GIS Data Format

Provincial Guidelines for the identification of Prime Agricultural Areas

The Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) is the lead provincial ministry that deals with Section 2.3 (Agriculture) of the PPS and is responsible for supporting the Ministry of Municipal Affairs and Housing (MMAH) by offering recommendations and providing technical advice related to land use planning matters with agricultural interest(s). As well, OMAFRA provides support to local approval authorities during their updating or creation of official plan documents. This includes support for policy development and guidance related to the identification of 'prime agricultural areas'.

As previously mentioned the evaluation process is heavily influenced by the soil conditions found in the area, as well as an assessment of whether or not there is a strong presence of existing agricultural infrastructure and/or investment. But beyond those elements, OMAFRA also provides further direction concerning other elements that should be factored into the identification process. First off is the suggestion that only large contiguous areas approximately 250ha in size that predominately contain prime agricultural land (Class 1,2 and 3) and/or a combination of existing farm infrastructure and investment should be present to be considered for an agricultural designation. Also it is deemed appropriate to disqualify areas if there has been extensive lot fragmentation which can drastically hinder farming operations or if a great proportion of the area has been developed for non-agricultural uses.

The literature exposes the long history of agriculture. Since its inception nearly 10, 000 years ago, the practice of agriculture has profoundly altered society relationship with food. Its capacity to facilitate the production of one of life's essential elements necessary for survival on a grand scale, has embedded agriculture as an issue that requires attention to help create an environment to sustain its success. The collection of academic and grey literature reviewed illustrates societal conditions and the efforts that have been made to address agricultural issues. Now more than ever, we are aware of the quantity of productive land that is being lost, but also recognizing the potential and need to better preserve agricultural land.

Faced with this reality and the expanded knowledge we have about what can be done on marginal lands, it is imperative that current land use policy be reconsidered. In particular there is a need to reconsider the value of marginal lands and a potential amendment to existing policy to expand the range of lands that would directly be deemed as prime and therefore more likely to be protected. While concern is rising literature suggests that there are options available to mitigate this predicament. Using this context, this report explores the current identification and protection measures that have been deployed vs. alternate criteria that place greater value on CLI Class 4 soils, as demonstrated in a portion of Peterborough County.

3.0 METHOD

Land use planning practices have long been utilized to help manage development and resource issues. Recently, in response to mounting concerns, additional attention has been extended to further address issues related to agriculture. However, with the continued decline of the finite supply of agricultural land capable of providing food for our increasing population, there is a pressing need to re-evaluate what is being done to alleviate this troublesome trend. Responding to society's increasingly vocal interest over the use of resources such as agricultural land, decision makers from federal, provincial and municipal governments have all attempted to enhance their contribution and involvement with respect to the development of future agricultural policy(s). The prominence of this situation can be illustrated by the example of the federal government's recent endeavour seeking to create a National Food Strategy (NFS). However, all levels of government (as well as other interested stakeholders) are also simultaneously pursuing their own opportunities to participate in the debate.

This research is an investigation into the effectiveness of current agricultural planning systems, the appropriateness of the value placed on Canada Land Inventory (CLI) Class 4 soils, and the potential impact of elevating the status of CLI Class 4 soils to qualify as 'prime agricultural land'. This research will consider the merits of protecting CLI Class 4 soils by accessing secondary research that will help inform our understanding of the state of agricultural affairs and policy. Information collected during the literature review came from a combination of academic and grey literature sources that supply a host of qualitative and quantitative data which will assist with the critical examination of existing practices and positions on agriculturally-related matters. In

particular, materials that enlighten the evaluation frameworks and criteria in place to protect agricultural resources in the Province of British Columbia and the Province of Manitoba have been identified to explore how other jurisdictions address the issue.

The evaluation will be supplemented by the use of digital mapping data and application of Geographic Information Systems (GIS) technology that is intended to demonstrate the potential impacts of changing existing policy and identify potential outcomes resulting from such a change. To achieve this, and described in further detail below, maps will be prepared for a selected municipality (Smith – Ennismore – Lakefield, Peterborough County) by layering parcel fabric and CLI soils data which are intended to provide visual, spatial representations of the differences in land area that would be deemed 'prime agricultural land' if the current CLI Class 1, 2, and 3 model is employed vs. the land area that would be included if the 'prime agricultural land' is expanded to include CLI Class 4 soils.

In order to comprehensively explore this issue, actions taking place domestically and abroad, by governments, organizations and individuals alike, will be reviewed to gain a more comprehensive understanding of what is being proposed by numerous stakeholders and what is happening across multiple jurisdictions. This broad assessment will include materials from multiple stakeholders and jurisdictions; however the focus of the report is intended to consider the system(s) currently implemented in Ontario. In addition, this research will provide observations and make recommendations related to the valuation assigned to CLI Class 4 soils and how this relates to agricultural land use planning in Ontario.

In Ontario, the requirement to identify and protect agricultural lands is imposed by the policies found in Section 2.3 (Agriculture) of the Provincial Policy Statement (PPS), and the corresponding definitions applicable to those policies. Although there are provincial guidelines that inform how an evaluation process should be conducted, there is no definitive step by step process or exact science that can applied. Each evaluation will differ based on local conditions and the need to employ ones' own discretion when carrying out the exercise of identifying 'prime agricultural areas' where judgement calls are necessary.

That said, the PPS definitions provide specific wording as to what qualifies as 'prime agricultural land' worthy of protection. Currently the definition for 'prime agricultural lands' only includes Canada Land Inventory (CLI) Class 1, 2, and 3 soils. While the 'prime agricultural area' definition indicates that lower class CLI soils may be considered, there is no absolute requirement to protect CLI Class 4 lands. It is this omission of CLI Class 4 soils that will be explored by investigating academic and grey literature to identify what may be possible on those lands, as well as how the inclusion of CLI Class 4 soils as part of the 'prime agricultural land' definition may impact the identification process and ultimately, how this may alter the area of agricultural land protected.

As mentioned, to help exhibit how the above elements can come together to assess the potential impacts of including CLI Class 4 soils as part of lands that qualify as 'prime agricultural land', a portion of the Township of Smith – Ennismore – Lakefield in Peterborough County, located approximately 100km north and east of the City of Toronto will be selected to serve as a test area to conduct a critical assessment as to how this may

impact the planning exercise of identifying prime agricultural areas within an administrative boundary and subsequently affect the future prospects for agriculture in the area.

The Township of Smith – Ennismore – Lakefield has been selected following a scan of CLI soils mapping data and official plan schedule for the area as it appeared to be a suitable sample study area for two reasons. First, the variable soils composition found throughout the Township includes a visible amount of CLI Class 4 soils is observed on the CLI map sheet. Secondly, when comparing the soils complex mapping with the County Official Plan land use schedule displaying land use designations for a variety of features including agriculture, it was observed that there may be some areas where, if higher regard or value is given to CLI Class 4 lands, it may result in a larger agricultural designation. Ultimately, the research will consider the impacts of providing a higher-level of protection for these lands, which are not currently afforded the same protections through provisions connected to the existing rural land use designation.

4.0 ANALYSIS

4.1 Policy Review of Practice and Critical Analysis of PPS Definitions

To understand the Provincial position as to what is considered the best agricultural land to be protected, and to comprehend how this regard impacts the designation of agricultural areas, it is particularly important to recognize the distinctions between the PPS definitions for 'prime agricultural lands' and 'prime agricultural areas'. Generally speaking other than 'specialty crop areas' which is the term given to lands that have special soil and climatic conditions and/or prominence of farmer skill and infrastructure to produce locally specialized products such an assortment of tender fruits and vegetables, the defining characteristics to qualify as 'prime agricultural land' is if the Canada Land Inventory (CLI) soil capability mapping identifies the subject lands as either CLI Class 1, 2 or 3 (MMAH, 2005). The specifics for 'prime agricultural land' are relatively clear as it can be understood directly from the text of the PPS definition.

Agriculture and Agri-Food Canada (AAFC) provides information about the CLI classification methodology which includes a written description of the expected crop capability and potential limitations for each of the soils classes. AAFC indicates that soils with a CLI Class 4 rating are likely to have severe limitations that restrict the range of crops that may be grown, as well, may also require special conservation practices to make these lands productive (Agriculture and Agri-Food Canada, 2008). However despite the challenges that may be experienced if attempting to use these lands for agriculture as compared to what may be expected on CLI Class 1, 2, or 3 soils, agricultural operations exist that have demonstrated that these lands can still be utilized as part of their agricultural operation.

The PPS definition for 'prime agricultural area' (upon which the actual planning evaluation exercise to determine the potential inclusion of lands in an agricultural designation is intended to be based) is less rigid and open to interpretation through defining language indicating that lower quality soils, such as CLI Classes 4-7 may be considered for inclusion as part of a 'prime agricultural area'.

With a diminishing agricultural resource land base it appears that a greater appreciation for the capability of the land resources that remain is justified, even if the lands are currently considered lower quality marginal agricultural lands. Recognizing the potential of CLI Class 4 soils for the important role they play as part of the overall agricultural system should stimulate debate about the appropriateness of including CLI Class 4 soils as part of the PPS 'prime agricultural land' definition. This is especially imperative considering the impact a modification to the definition would cause during the process used to identify and designate prime agricultural areas. Such a change to the definition (to include CLI Class 1, 2, 3, and 4) would affect the area of land that automatically satisfies the criteria to be 'prime agricultural land' to be protected. Inevitably the addition of CLI Class 4 would reduce the amount of agricultural land requiring further discretionary judgement when attempting to interpret the validity of designating land on an official plan schedule.

As illustrated by Bray (1980), stemming from research completed nearly thirty years ago, marginal soils can be used for agriculture, but are considered as the break even point for commercial agriculture. Regardless of the date of this opinion, it helps exhibit how the prevailing value of the land is often based upon current economic conditions as to whether or not it is financially feasible to use the land for agriculture. Beyond

economic issues, over time changing social and environmental conditions as well as technological change could also play a large part in determining their capability and value. Marginal lands still have the potential to be used for some common crops/uses and as found in Caldwell (1995) the Ontario Foodland Guidelines called for the protection of a wider range of agricultural lands as the emphasis was placed on CLI Class 1 – 4 soils.

While market conditions of the day or current farm practices may have caused many properties with CLI Class 4 soils to be abandoned and not actively farmed, leaving their immediate and future use uncertain, protecting these lands from non-agricultural development may help foster the exploration of non-traditional uses. Recent innovation and research looking at the possibility of growing crops intended to be harvested as biomass to be used for green energy production facilities is helping encourage trials to assess the feasibility. It is possible that biomass crops grown in these locations could be used to support green energy technologies such as biomass facilities that are able to utilize various crops as feed stock to produce clean, renewable energy, (Hoogwijk, Faaij, Eickhout, de Vries, and Turkenburg, 2005). Often marginal lands are left uncultivated and can revert to brush through natural succession. As described by Todd (2009) marginal lands in upstate New York have been targeted as potential sites for the growth of crops for biofuels, Not only is this experiment something that can add to the range of potential uses on agricultural lands, it is a use that preserves the land base, but it is also viewed as an appropriate use as these underutilized lands would not typically compete with land dedicated for food production.

There may be other agricultural uses that could be facilitated on lands with lower CLI Class soils and the need to research these opportunities is pressing now more than

ever. As pointed out by Beddington (2010) the global population is expected to climb by a third to 9 billion by 2050 at the same time as changing diets and an increase in affluence is likely to raise the demand for food. Therefore questions should be raised as to whether a wider definition of 'prime agricultural lands' to include CLI Class 4 soils, may be justified to assist with the preservation of larger agricultural land areas that, while perhaps not the highest quality, can still prove to be productive lands capable of advancing the agriculture and food system locally and beyond.

This expanded notion of what lands may be worthy of agricultural protection may impact future mapping exercises in multiple ways. These impacts may be realized either through the identification and protection of large contiguous areas of CLI Class 4 lands that may have been previously dismissed as deserving of an agricultural designation or perhaps by enhancing the probability that higher quality areas with only moderate proportions of CLI Class 1, 2, and 3 soils that may be disregarded during designation procedures due to a high or even sporadic presence of CLI Class 4 soils may now be viewed as satisfying the requirement to be 'prime agriculturally land' This would essentially increase the size and number of areas where 'prime agricultural land' would predominate, as more of the land area would directly meet the defining criteria.

With the assistance of modern Geographical Information Systems (GIS) technology, an assessment of how the inclusion of CLI Class 4 soils as 'prime agricultural land' can be conducted with the right knowledge with relative ease. By utilizing GIS tools that permit the layering of data such as parcel fabric and soils info onto a single map and generating spatial analysis figures, the CLI soils data available today can be analyzed to create a clear picture about the distribution of our soil resources.

This may supply the justification needed to support the inclusion of larger productive land areas that would gain protection. With this information is available and if CLI Class 4 lands were given a higher priority for protection, the ability to actually protect them becomes a strong possibility as facilitated by the support of PPS policy and the proper implementation of the OMAFRA guidelines for the identification of 'prime agricultural areas'.

4.2 A Select Stakeholder Analysis to see what Issues are being Advocated for

A notable number of groups, organizations, and governments within Ontario and from around the world are continuously participating in discussions regarding agriculture and food issues in efforts to establish policies that will better support the agri-food industry. A scan of these undertakings provides an impression that these dealings are often focused on issues involving issues related to trade, marketing, and food safety and with limited attention dedicated to the identification and protection of the land resources that agriculture depends.

With public interest in agricultural issues continuing to escalate, a corresponding increase in the number of organizations and government bodies providing input into agricultural debates could be observed. The level of participation varied and came in a variety of formats including the production of reports highlighting actual and perceived dilemmas that normally offered recommendations for courses of action believed to be necessary in order to improve the state of the agri-food industry. These opinions have been brought forth by organizations of all types and sizes such as charitable and third-party groups like the Neptis Foundation, an abundant number of municipally/regionally based local food movements, provincial scale focused groups like the Christian Farmers

Federation of Ontario (CFFO), national bodies like the Canadian Federation of Agriculture (CFA) and multinational groups such as the European Union (EU).

Despite the broad geographic range of interest amongst these groups and their varying priorities and agendas, one common theme that can be identified throughout the collection of material is that the agriculture and food sector is experiencing many challenges that are making it increasingly difficult for farmers to reasonably sustain their respective operations. Also of note, is that the difficulties being faced are not partial to a few select regions but are being experienced around the globe. Furthermore these challenges are not limited to locations with serious social, environmental and economic impediments, but are also being experienced in agriculture rich areas like Ontario where the conditions and/or potential for the prosperity of agriculture is rather high due to the high quality land resources and accompanying farm infrastructure and investment present.

While the ultimate goal of improving agriculture is universal amongst the numerous stakeholders involved with agriculture, the specific issues given priority and allocated resources by each varies. The Christian Farmers Federation of Ontario (CFFO) is one group that seeks to influence the state of agriculture by providing input to influence the development of public policy and through the delivery of education and other communication materials. CFFO has established 4 key Strategic Focus Areas.

1. Public Policy Formation
2. Education/Communication
3. Membership Advancement
4. Alternative Vision for Ontario Agriculture

(Christian Farmers Federation of Ontario (CFFO), 2011)

The CFFO has released a number of statements and papers indicating their position(s) concerning a variety of agricultural issues. Typically they are in response to the most pressing issues facing the industry at the time. Over the years they have focused on issues such as food labelling, regulation of abattoirs, nutrient management, impacts on water resources, and addressing a variety of trade and marketing issues.

A recent discussion document titled "A Place for All; Addressing the Policy Implications of Farm Size" effectively highlights issues pertaining to farm scale. In the document, one key point that is raised that somewhat speaks to the protection of agricultural lands but does not directly indicate how this would be accomplished is a comment recommending that agriculture near urban areas should be helped to take advantage of proximity to market and associated infrastructure such as delivery systems (CFFO, 2009).

Despite the lack of direct documentation in "A Place for All" or many of the other reports that the CFFO has released which speak to the protection of the agricultural land base itself, there is one specific CFFO position statement that clearly advocates for the protection of quality soil land resources. The position adopted in 2009, titled "The CFFO on the use of Prime Farmland in Ontario for Green Energy Projects", clearly acknowledges that prime agricultural lands are a finite resource, their desire to protect from non-agricultural uses (such as certain renewable energy projects) and that regulations be developed for the *Green Energy Act* that restrict the size and types of projects that would be permitting on certain agricultural lands (CFFO, 200)

In 2001 the Ontario provincial government introduced an initiative known as 'Smart Growth'. This plan was created to strategically identify priorities as to where and

how development should occur and strived to make sure any development decisions carefully considered all relevant variables that could impact growth such as transportation, the environment and infrastructure. The development of 'Smart Growth' included input from many interested stakeholders. One notable contribution relevant to agricultural issues was a report titled "Agriculture in the Central Ontario Zone" prepared and submitted in 2003 by Margaret Walton of the Neptis Foundation. The report acknowledges "that one of the most effective tools for preserving agricultural land is economic prosperity for the industry" (Walton, 2003). While economic issues are critical in determining the success or failure of the agricultural operations many of the potential policies and programs that are or could be implemented are typically addressed through various tax structures, funding support of other financial incentives as opposed to the land use planning system. While the importance of these issues can not be ignored efforts to optimize the economic climate of the agricultural industry needs to be balanced with appropriate long term land use planning policy that can be implemented to help attain the widespread societal benefits of protecting agricultural resource lands from other types of development.

One encouraging sign that has been observed during the review of various stakeholder positions and recommendations that have been brought forward, is a recognition that regardless of the specifics ultimately found in proposals to deal with agriculture issues, a recognition that planning time frames need to look further into the future. There is a greater call to move away from short-term plans/thinking and progress towards the development and implementation of long-term plans and strategies.

In Canada, agriculture and food matters have long been concentrated on at the federal level but the prominence of agricultural issues has been gaining momentum. An indication of this is a project initiated by the Canadian Federation of Agriculture (CFA) to create a National Food Strategy (Canadian Federation of Agriculture (CFA), 2010). Previously Canada's approach was to develop and execute policy based on 5-year plans. From a land resource preservation perspective this approach seems inadequate for setting a clear long-term commitment for the objectives to be effective.

The objective of the CFA National Food Strategy is to set a mission and long-term strategy for the Canadian food system. The document makes known its aim to become the focal point for agriculture, processing, distribution and customer sectors, in order to contribute towards a sustainable food sector and healthier economy, environment and population. After highlighting a number of domestic and global arguments to justify the development of the NFS, six guiding principles are identified.

- A NFS is required
- Sustainability
- Expansion of sustainable production capacity is needed
- Maintaining competitiveness is critical
- Competitiveness must be a holistic consideration
- Success requires collaborative action

(CFA, 2010)

While each principle is expanded upon and have merit, they seem to lack adequate direction as to how to treat the land resources used for production. Perhaps it is due to jurisdictional issues related to the federal government's authority (or lack thereof) in regulating the use of agricultural lands as day-to-day land use planning in Canada is for the most part implemented by provincial and municipal authorities. That said the strategy could still benefit even from a symbolic reference to the importance of protecting

lands with reasonable capability for agricultural uses. The NFS has the potential to influence the direction other regulating bodies take during their policy development for years to come. This provides further justification as to why it is critical that the finest provincial policies are in place because of the authority the Province is afforded through the land use planning system in Ontario.

It is reasonable to say that under the current planning system, the Ministry of Municipal Affairs and Housing (MMAH) in collaboration with partner ministries are privileged with the opportunity to play a strong role in determining if land resources including prime agricultural areas, will be protected or continue to diminish. To be fair, much credit can be given for the work that has been done to date related to this issue as policy amendments over the years have generally become more restrictive in terms of the ability to use or redesignate agricultural lands for other purposes.

As described above many organizations can make recommendations as to what needs to be done but beyond making their voices heard (which is good and can influence change) they often have little if any decision making powers beyond within their own organizations. Policy development should continue to be supported by continued consultation and interaction to support approaches developed to identify and protect the Provinces prime agricultural land resources

From a review of perspectives raised by numerous stakeholders, dialogue seems to be lacking that contains adequate consideration to make certain frameworks exist that; determine what prime agricultural land resources are, if they should be protected from alternate development pressures, and if so, what measures need to be in place or followed to accomplish this.

While there is no dispute that the above mentioned economic issues also need to be part of the overall action(s) to help the industry, it would be rather short-sighted to continue to place a disproportionate amount of resources working to develop other policies and programs if an essential element of the system (lands capable of agricultural production) are not satisfactorily managed and available not only to allow agriculture to prosper but also exist. There is some agreement about what issues exist and how they are hindering agriculture but in most cases the proposed course of action is either not directly connected to the preservation of the land resource, and if it is, it often lacks concrete solutions as to how it may be achieved.

4.3 Comparative Analysis of Ontario's Agricultural Land Protection to Approaches used in British Columbia and Manitoba

In jurisdictions outside of Ontario, land use planning dealing with agriculture and food issues has been dealt with in various ways. These differences can be the result of government decisions that set priorities, but are impacted by the planning framework or system that exists or has been developed in their respective jurisdictions. In order to gain an understanding of what is happening elsewhere, the approaches utilized in the provinces of British Columbia (B.C.) and Manitoba have been reviewed.

In B.C. the province lacks a provincial policy statement comparable to what is found in Ontario. Instead a separate system known as the 'Agricultural Land Reserve' (ALR) has been established to identify and protect agricultural lands. Meanwhile in Manitoba, their approach to identifying and protecting agricultural lands is more similar to Ontario's approach as they utilize Provincial Land Use Policies (PULP's) that are implemented under the recently passed Provincial Planning Regulation which came into effect on June 20th, 2011. Manitoba's approach is more comparable to Ontario's as it is

implemented through the provinces *Planning Act* and not through a separate Act and operational structure as found in B.C.

British Columbia Agricultural Land Reserve

History and Development

The province of British Columbia (B.C.) has chosen to implement a different approach for managing their agricultural land resources. While the legislative instruments that are used to manage agricultural lands differ, the data that is compiled and evaluated to assess if certain areas are suitable for an agriculture land status is quite similar as B.C.'s efforts to protect agricultural land also relies heavily upon the soils information obtained from the Canada Land Inventory (CLI) soils mapping to inform the decision making process. After observing the loss of nearly 6000 hectares of prime agricultural land to other forms of development, the Provincial government responded to this considerable diminishment by introducing the *British Columbia Land Commission Act (BCLCA)* on April 18th, 1973 (Province of British Columbia (B.C.), 2002).With the passing of the *BCLACA*, a commission was appointed by the Provincial government with a mandate to identify and protecting the Provinces prime agricultural lands. To achieve this goal, the ALR Commission decided to create a zone labelled as "Agricultural Land Reserve' (ALR) that would be assigned to identify prime agricultural lands.

Development controls in BC involving planning matters such as zoning and subdivision powers do not adhere to a planning act like Ontario, but rather through other similar legislation known as the *Community Charter and Local Government Act.* Despite utilizing a legislative model that differs in design from what is found in Ontario's *Planning Act,* the B.C. government was still able to recognize the need to protect

agricultural lands and decided to take progressive measures to ensure that agricultural resources were protected. The work to establish the ALR was a multiyear process between 1974 and 1976, achieved through a collaborative effort amongst regional districts and municipalities across B.C. This was also supplemented by numerous public hearings that were held to enhance the ALR system design by acquiring local knowledge about the subject lands. In the end approximately 4.7 million hectares of land, or roughly 5% of the Provincial land base was identified as part of the ALR (B.C., 2002). Once mapped as part of the ALR, accompanying provisions meant to support agriculture and protect the land resource are applicable.

Utilizing Soils Mapping

The ALR method to assess the appropriateness of identifying agricultural lands are heavily based upon soils mapping that classify lands according to their capability for growing common field crops. The development of the B.C. system drew heavily on the Canada Land Inventory (CLI) soils data produced in 1965, but was also supported by other soil survey documents covering parts of B.C. in existence at the time. Since the inception of Geographic Information Systems (GIS) technology, the ALR boundaries across the Province have been digitized into GIS format.

The most current guideline document relies upon an agricultural land assessment approach that is modelled on a classification system known as the "Land Capability Classification for Agriculture in British Columbia". This system was developed by the Ministry of Environment – Surveys and Resource Mapping Branch and the Ministry of Agriculture and Food – Soils Branch in April 1983. Essentially it follows what has been

produced by the CLI project of 1965, except that it has customized mapping from the CLI data that was modified to incorporate British Columbia's own expertise and knowledge related to it soils conditions. It is an interpretive system that also groups mineral and organic soils according to an ordinal seven class rating system where Class 1 represents the best soils with little to no limitations for crop production (B.C., 2002).

What is deemed to be Agricultural Lands

The B.C. ALR evaluates agricultural lands by using comparable data sources and similar criteria but also indicates the possibility that other lands that may not obviously be credited as worthy of protection may in fact deserve it. ALR documentation highlights the value of 'arable' agricultural activities and notes that even Class 6 and Class 7 lands may still be agriculturally productive, where conditions such as topography and climate may be suitable (B.C., 2002). As well candidate areas could be places where agricultural activities dedicated to closed agricultural systems such as greenhouses that may benefit from locating on these lands due to the proximity to other agricultural operations and agricultural support products and business.

As pointed out in the "Land Capability Classification for Agriculture in British Columbia", while the range of crops that are suitable to be grown generally decreases on lands with class 1 to class 7 soils, and that increased inputs or management practices would be required from class 1 – class 7, that does not necessarily make a particular area worthless for agricultural purposes. Situations exist where a combination of factors such as the presence and investment in agriculture infrastructure can prove successful on lands deemed to be of lower quality. Other external factors influence if lands can sustain

agricultural use and activity. Business costs, closeness to transportation networks, and the state of the marketplace can influence agricultural production (B.C., 2002).

Application Process for Development

The success of this system has been questioned as the Agricultural Land Commission enables people to make proposals to use ALR lands for other purposes. The Agricultural Land Commission (ALC) has staff dedicated to review applications for non-agricultural use and also compliance and enforcement inquiries for actions/uses that contravene the rules. So while BC has established the ALR, opportunity still exists for lands within it to be removed and permit other uses. The ALR are expecting increased compliance and enforcement activities as well as increased applications to permit other uses at the same time as searching for ways to reduce costs and maintaining the delivery of timely decisions.

Manitoba Draft Provincial Policy

The Province of Manitoba has a planning framework that resembles the Ontario system. Manitoba's statutory framework was created through the Manitoba legislatures passing of their own *Planning Act* but is also similar in that it features the *Municipal Board Act* which establishes an appeal mechanism comparable to the Ontario Municipal Board (OMB). Regulation 184/94 established and put into effect a collection of Provincial Land Use Policies (PLUP's) that address matters that have been deemed to be of provincial interest and includes a section exclusively devoted to agriculture (Province of Manitoba, 2011).

Manitoba recently conducted a review of its planning policies. It involved a review of its PLUP's but also a more comprehensive review of their planning system by

including the *Planning Act* as part of the review exercise. On July 20th, 2011, the newly revised policies which fall under the name 'Provincial Planning Regulation' came into effect. Prior to the passing of this regulation, the PLUP's used to be a separate set of policies that fell under an exclusive regulation. Under the new name and approach, things remain similar except the new regulation includes not only the Provincial Land Use Policies but also other planning issues namely Development Plan requirements and Livestock Operation requirements; so that a single regulation could be address all the issues (Province of Manitoba, 2011).

Manitoba's documentation includes a number of reasons for why agricultural land should be preserved. The Province recognizes that farms of all sizes are of value and can play an important role in the local and provincial economy by creating many jobs as well as providing safe and affordable food. As well Manitoba's projections about future conditions impacted their policy development. Their vision indicates they anticipate "that rising fuel costs and climate change may place increased demand on the production and protection of local food sources" (Province of Manitoba, 2011).

Manitoba's support for the protection of agricultural lands can be witnessed by observing the language that is presented through government documents including the statement that, "Agricultural land is a valuable and limited natural resource and is the foundation of all agricultural activities in Manitoba" (Province of Manitoba, 2011). Even though this particular statement is not policy, the recognition that agricultural lands both 'limited' and serve as the 'foundation' of all agricultural activities is significant.

Despite the language that purports the importance of agricultural lands, Manitoba does not seem to place much emphasis on lands that do not contain soils with either a

Canada Land Inventory (CLI) rating of 1, 2, 3 or a combination thereof. As it stands lands may qualify as being prime agricultural lands if they satisfied the following definition.

> ***"prime agricultural land"*** means land composed of mineral soil determined by the Province to be of dryland Agricultural Capability Class 1, 2 or 3 and includes a land unit of one quarter section or more or a river lot, 60% or more of which is comprised of land of dryland Agricultural Capability Class 1, 2, or 3. In certain circumstances, land composed of organic soil determined by the Province to be of dryland Agricultural Capability Class O1, O2, or O3 or land determined by the Province to be of Irrigation Suitability Class 1A, 1B, 2A or 2B may also be considered to be prime agricultural land.
>
> (Province of Manitoba, 2001)

This approach mirrors traditional conceptions that consider CLI Class 1, 2, and 3 soils as being required in order to be accepted as prime agricultural land. This approach discounts the value of lower class soils and may diminish the value of lands with relatively good distribution of prime soils that fall short of the required 60% threshold. Manitoba also trumpets the need for land use planning to protect agricultural lands from conversion to non-farm uses.

In looking at British Columbia and Manitoba's approaches it demonstrates that different planning frameworks that are developed out their own legislative conditions can be employed to tackle the undertaking of protecting agricultural land resources. In each case the government decided that agricultural land resources are important and that actions were needed to protect them.

Both provinces utilize CLI soils data to inform the decision making process related to the identification of agricultural lands to be protected but seem to place only CLI Class 1, 2, and 3 soils as worthy of protection, despite some of the language associated with the protection measures that suggest other lands can be valuable for

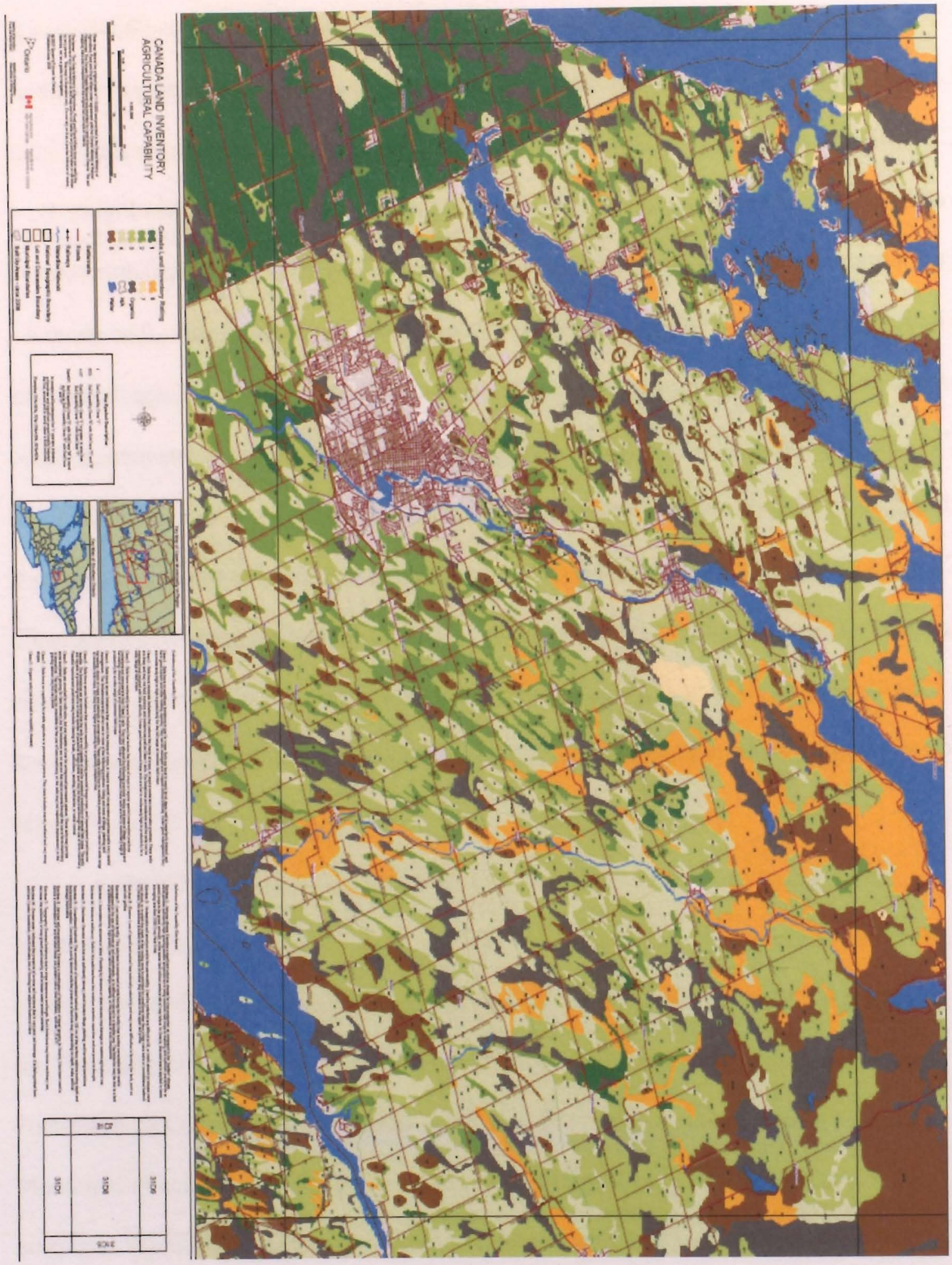
agriculture. So while there is some expressed recognition for agriculture potential for lands with lower rated CLI soils, neither province has taken the step of identify Class 4 and lower soils as being mandatory for protection.

4.4 Site Specific Analysis of the Inclusion of CLI Class 4 soils (Township of Smith – Ennismore – Lakefield, Peterborough County)

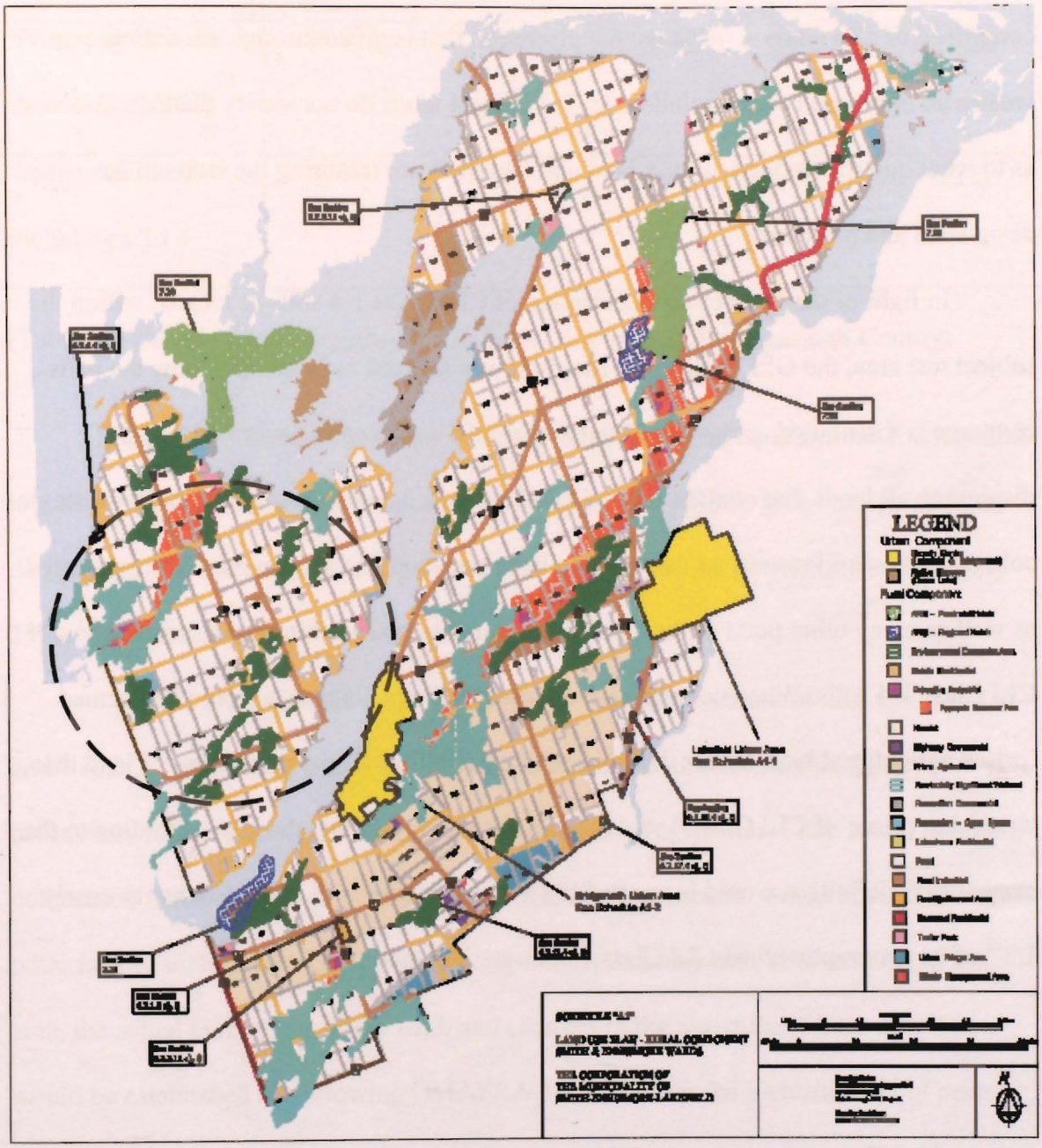
In order to assess how the inclusion of CLI Class 4 soils as 'prime agricultural land' may impact the amount of land assigned an agricultural designation during evaluation exercises during the creation of municipal official plan schedules, an analysis of a real location within Ontario has been conducted to illustrate the potential outcome. To help demonstrate, a portion of Peterborough County, located approximately 100km north and east of the City of Toronto has been selected to serve as a test area to perform a critical assessment as to how the inclusion of CLI Class 4 soils as 'prime agricultural land' may influence the quantity of land that could be agriculturally designated within a selected portion s of the subject area.

It should be noted that while Peterborough County was chosen as a suitable location to assess the impact of deeming CLI Class 4 lands as a component of the 'prime agricultural land' definition, the sample evaluation has only been carried for a portion of the Township of Smith-Ennismore-Wakefield, one of the three townships that make up Peterborough County. The focus area (see Figure 5) is located along the west side of the Municipality and is surrounded by Chemong Lake to the South, Buckhorn Lake to the north and Pigeon Lake to the west. Additionally this area was selected for further investigation as it is currently designated Rural on the official plan schedule.

Peterborough County and specifically the Township of Smith-Ennismore-Lakefield was identified as a desirable candidate site to conduct such an analysis as the CLI soils mapping found on CLI map sheet 31D8 which covers this area, reveals a variable soils composition with a detectable amount of CLI Class 4 soils (see Figure 4). Furthermore the corresponding Smith-Ennismore-Lakefiled official plan schedule (see Figure 4) shows much of these lands to have been given a rural designation. The general area to be evaluated has been highlighted by a dashed circle on Figure 5. Even though the CLI mapping seems to indicate the presence of a relatively large contiguous area of CLI class 1, 2, and 3 soils, the CLI mapping also displays that a number of pockets of CLI Class 4 soils are present. Although it cannot be assumed that this was the rationale for not designating these lands agriculture, it is quite possible that the presence of the CLI Class 4 soils discounted the area as a whole during the evaluation and resulted in the Rural designation that exists today.



(Figure 4 Canada Land Inventory Soils Map – Sheet 31D8)



(Figure 5 Smith - Ennismore - Lakefield Official Plan Schedule A1. Focus area circled.)

While the 'prime agricultural area' definition that is utilized to make decisions about which lands qualify identifies the possibility to include lands that are partially comprised of CLI Class 4 – 7 soils, the discretion that is given through the definition creates an opportunity to conclude that CLI Class 4 lands do not satisfy the PPS direction as to what qualifies as agricultural land and therefore not requiring the lands to be designated and protected.

In light of the apparent concentration of CLI Class 1-4 soils in located within the subject test area, the GIS application MapInfo was utilized to investigate how the soils coverage is distributed across the County. MapInfo was used to generated a map displaying all lands that contain either CLI Class 1, 2, 3 or 4 to be represented by a single colour (red) (see Figure 6) As can be seen from this map, the subject area being assessed, as well as many other parts of the County are found to be comprised of a combination of CLI Class 1-4 soils. When comparing the County soil coverage that would be deemed 'prime agricultural land' under the current PPS definition vs. the percentage of land that would be 'prime' if CLI Class 4 was included, it was found that the area according to the current PPS definition would increase from approximately $1/5^{th}$ of the County to nearly $1/3^{rd}$ of its geography when CLI Class 4 soils are included (see Table 1).

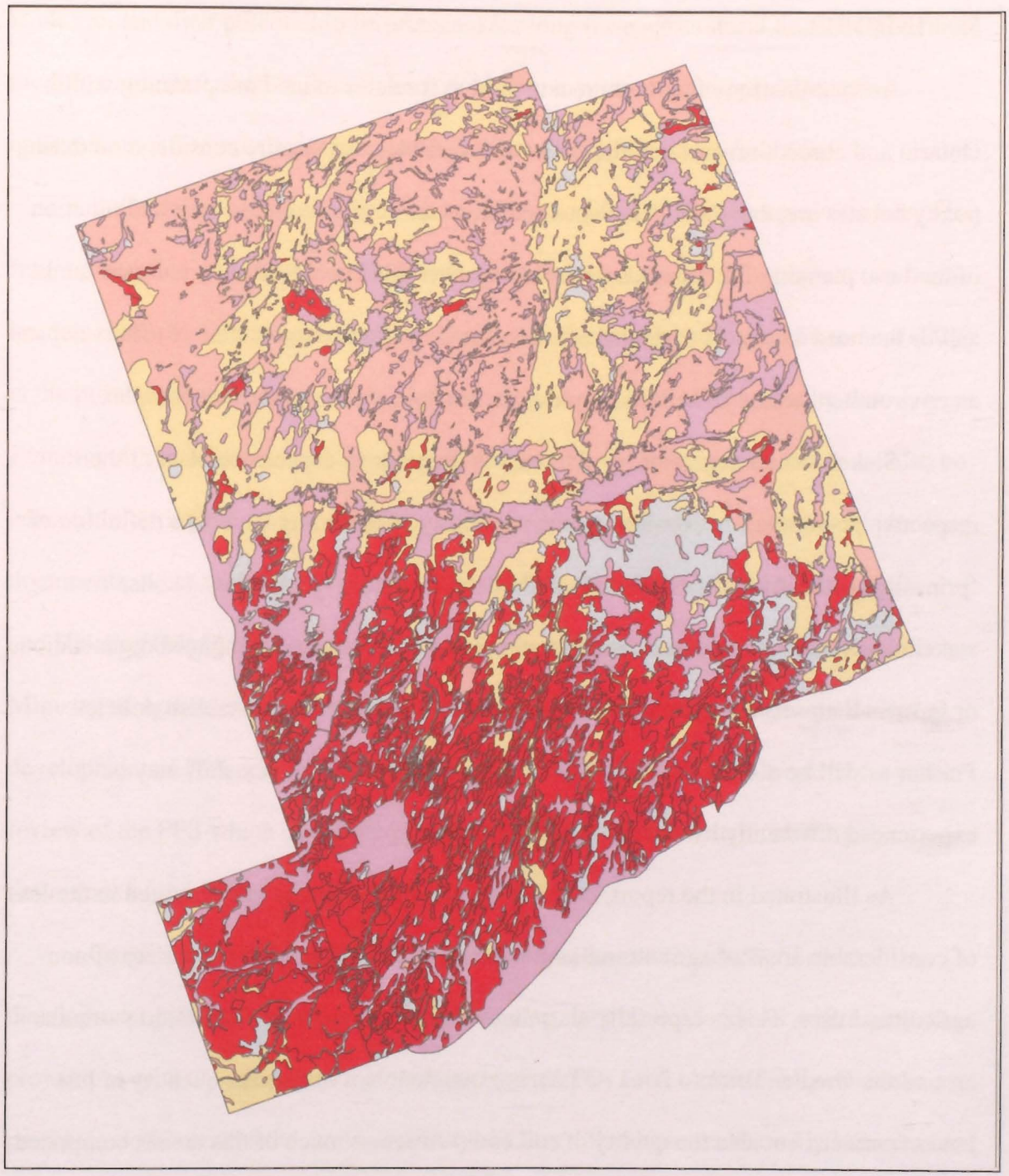
	% CLI 1	% CLI 2	% CLI 3	% CLI 4	% Totals
'Prime Ag Land' Current Definition	4.40	3.14	11.0	-	18.54
'Prime Ag Land' Including CLI 4	4.40	3.14	11.0	10.87	29.41

(Table 1 – Canada Land Inventory (CLI) Soils Distribution, Peterborough County)

If CLI Class 4 soils were to be included in the 'prime agricultural land' definition it is likely that a much greater proportion of the County would be given an agricultural designation. For the circled area on Figure 4 alone, this has the potential to add roughly 15km^2 of agriculturally designated lands.

While the generated map (see Figure 6) reveals the extent of CLI Class 1, 2, 3 and 4 soils, as well as their distribution, it is important to understand that this does not necessarily reflect the exact area that may be designated agriculture. The actual mapping delineation that would be completed for an official plan schedule would need to take into other factors such as possible alternate designations that may also be warranted in the area, the actual current use of the land, and changes in the agricultural boundary that would be established by following OMAFRA guidelines for the identification of prime agricultural areas, such as generally being at least 250ha in contiguous area and by utilizing property boundaries (as opposed to soils polygons) to serve as the perimeter of the designation.

Regardless of the exact increase in area that may be given an agricultural designation any increase can have positive impacts for the future preservation of agriculturally productive lands and the agri-food industry. An agricultural designation would reduce the amount of land fragmentation that would be permitted as severances are generally discouraged on agricultural lands and the limited occurrences that may be permitted must satisfy a number of conditions that are place to further protect the viability of agricultural lands. As well by maintaining additional lands, there is heightened potential to utilize these additional lands to support local food initiatives that are growing in popularity across Ontario.



(Figure 6 Land Area within Peterborough County containing CLI Class 1-4 soils (coloured red))

5.0 FINDINGS

An examination of agriculture and food as it relates to land use planning within Ontario and abroad, reveals that the issues and variables that require consideration during policy debates are abundant. Whether discussions are connected to the role and function of land use planning frameworks, deliberations over what qualifies as agricultural lands, and/or the need to protect agricultural areas, a review of the current state of affairs depicts an environment where stakeholders questions are not only numerous but complex.

Stakeholder's degree of involvement in discussions depends on each of their respective position(s). In considering the possibility of amending Ontario's definition of 'prime agricultural land' to include Canada Land Inventory (CLI) Class 4 soils, stakeholders respective roles as either representing government, an engaged organization, or farmers themselves has an impact on their ability to inform and establish policies. Further as will be discussed below, the implications of such a policy shift may be experienced differently by each of the stakeholders.

As illustrated in the report, ongoing development patterns have resulted in the loss of considerable areas of agricultural land in order to provide space for a variety of non-agricultural uses. This is especially alarming when the situation in Ontario, in particular around the Greater Toronto Area (GTA), is examined. Not only is the quantity of lost land of concern but also the quality of soil composition as much of this area is comprised of some of the highest ranked soils anywhere in Canada, according to the Canada Land Inventory (CLI) soils data. This situation coupled with projections associated with population and society's ability to feed ourselves should stimulate a re-evaluation of priorities related to agriculture especially when it comes to deciding what agricultural

lands are, and their potential to be protected for long-term agricultural use. The potential modifications described in this research are likely to alter planning practice and engagement differently depending on the role of each particular stakeholder.

In Ontario, the stakeholder with arguably the greatest ability to play a role in the future protection of agricultural lands is the provincial government. In conjunction with implementation of municipal planning documents, the Provincial Policy Statement (PPS) is the provincially mandated, policy-led planning framework, empowered by the *Planning Act* that addresses matters deemed to be of provincial interest and must also be adhered to during the review of development proposals and when creating local planning documents. As the ministry responsible for the PPS, the Ministry of Municipal Affairs and Housing (MMAH) in cooperation with partner ministries particularly the Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA), play a leading role in the development of PPS policy. The Province is currently conducting the required 5 –year review of the PPS which opens the possibility to make amendments, including the definitions of the PPS.

Conditions highlighted in this report speak to the consequences of current development patterns which are rapidly consuming agricultural land. As well it presents projections related to population growth and demand for food. Additionally evidence presented demonstrates that soils such as CLI Class 4 that have traditionally been deemed 'marginal' can be agriculturally productive. This combination of factors may provide sufficient motivation for the Province to re-evaluate the criteria of the PPS 'prime agricultural land' definition to include CLI Class 4. If the Province were to consider a change to include CLI Class 4 soils as part of the 'prime agricultural land' definition, the

amendment would be made to the PPS, however it would have implications for municipalities, farmers, and may influence the issues that non-governmental organizations dedicate their resources towards.

As pointed out earlier, local approval authorities (municipalities) are responsible for implementing the PPS policies during the review of site specific *Planning Act* applications, as well as during an update or creation of a municipal official plan. Most municipalities have official plan documents of assorted vintages and many currently have lands designated agriculture where the conditions satisfy the assessment criteria in effect at the time evaluation was done. If the PPS 'prime agricultural land' definition is amended as discussed, this could result in three possible outcomes for municipalities.

The first scenario may see no change in the quantity of land assigned an agricultural designation. This may occur in jurisdictions such as those predominately situated within the Canadian Shield were agriculturally productive soils are limited in scale or non-existent, and adding CLI Class 4 may not change the potential amount of land designated agriculture. The other two scenarios may see municipalities with no previous agricultural designation have areas that qualify as a candidate to be designated as there may be sufficient land area with CLI Class 4 soils to justify designating them as agriculture. In these locations this may help protect the only agriculturally viable areas within their jurisdiction. The third scenario has the potential to increase the quantity of land designated agriculture in situations where the previous exercises to map agricultural lands downplayed the value of CLI Class 4 lands and therefore did not include them.

While the impact of amending the PPS definition was illustrated in the sample study of the Township of Smith – Ennismore – Lakefield completed for this report, the

results exhibit how the land area that may be identified 'prime agricultural areas' is likely to increase therefore protecting more lands for long-term agricultural use, the impacts of the corresponding policy can be cause implementation challenges at the local level as land owners may be quite opposed to the added land use restrictions that take effect though the corresponding PPS policy.

While much of the land area within an agricultural designation would be part of a farm operation, it is also possible that other non-farming land owners may have property within areas that are designated agriculture and therefore other citizens, not just farmers, may oppose the designation of their lands. This opposition can be understood as the agricultural policies drastically limit land use options including the range of permitted uses and the ability to subdivide the property. Government imposed restrictions on individuals property rights has always been a controversial issue. While this opposition alone should not necessarily be enough to dismiss the inclusion of CLI Class 4 soils, it provides more reason why such a change should be carefully considered. When making decisions it is important to undertake a balanced assessment of the benefit or detriment of the modification on individuals vs. the greater public good.

A number of non-governmental organizations and researchers from academia have been recognized for their research into agricultural issues. Often times they undertake studies that have not been considered by government and/or perhaps were not pursued because of inadequate resources. While the research to date has provided some very useful data and generated practical recommendations to help the agriculture and food industry, the debate around what is considered 'prime agricultural land' may benefit from more attention being devoted to the issue to help determine what should be

considered 'prime'. As well the materials produced also have the potential to rationalize why certain positions have been decided and could also serve as educational materials to inform the public about the issue.

Despite the challenges faced today with respect to the preservation of agricultural land and the challenges that lay ahead, the Province of Ontario benefits from the powers afforded through the *Ontario Planning Act* to enact measures to reduce the loss of agricultural land. Although not the only measure that can be employed to help protect agricultural land resources, the 5 - year review of the PPS provides a timely opportunity to make adjustments. Fortunately there are options available. The research has shown that CLI Class 4 lands can be agriculturally productive and exercises demonstrating the impact of including CLI Class 4 soils as part of the 'prime agricultural land' definition may be able to boost amount of agricultural land that qualifies as part of a 'prime agricultural area' and therefore protected.

One final observation is the apparent need for those involved in making decisions that impact agriculture to have a comprehensive understanding of many aspects connected to agriculture of all types and sizes. This may include making use of the most current data (such as CLI mapping) to best inform decisions. With shifts in population, food demand, climate, innovation and emerging priorities being expressed by the public, it will be important that decision makers continue to keep an open mind about what the future may hold and set policy that adopts long-term strategy as marginal lands may not only be viable but could potentially be depended upon in the near future.

6.0 CONCLUSION

While it appears there is consensus amongst all levels of government across Canada and other involved stakeholders as to the pressing need to better support the agriculture of scales, there remains no solitary approach that is implemented to identify and protect the soil resources upon which agricultures sustained success depends. Ideally any policy direction pursued will aim to support existing and new farmer's alike as well as agricultural operations of all types and sizes. Stakeholders interested in these issues are vocal about many issues but few seem to express opinions as to whether the appropriate lands are being protected.

From an Ontario perspective, the land use planning framework provides the statutory powers and corresponding policies that can effectively protect agricultural land resources. The protection of agricultural lands has been strengthened by recent *Planning Act* amendments that require decisions "shall be consistent" for applications pursued under the *Planning Act*. However in spite of these powers, the amount of agricultural land continues to decline, at the same time as populations and the demand for food continue to climb.

For this reason, it is worth considering if the current practice of only considering Canada Land Inventory Class 1, 2, and 3 soils are all that should be identified as 'prime' or if the inclusion CLI Class 4 soils should be considered as prime. This could prove important towards the protection of additional productive lands for more than just the verbal or written recognition this would entail as it is the PPS definitions that strongly

influence the evaluation process and subsequent potential designation of lands as being intended for agricultural use.

While this is a limited analysis of the potential value of protecting agricultural land resource base comprised of CLI Class 4 soils that have traditionally been considered marginal and not valued of prime agricultural land a position to include CLI Class 4 soils could be justified as taking a precautionary approach with this issue as we still have yet to fully understand the value and potential of these lands which is extremely important since our agricultural land resources are limited and once they are developed for other purposes, that area is essentially permanently removed for agricultural potential.

Before this should be considered there is much more to discuss. The designation may be effective in protecting the land for agricultural use, but the policies the designation invokes are considerably more restrictive than what would be permitted under a rural designation and therefore can reduce a farms flexibility to use the property as they see fit. This may limit a farms ability to pursue the establishment of other uses that could be operated on the property to provide supplemental on-farm income, which can be a source of extremely vital financial support. Further consideration should be given to the impediments this may cause and explore the potential for some additional ways to compensate landowners who are forced to protect the land resources ultimately for the benefit of the community. One approach may be the further investigation into the potential to adopt some form of framework or program such as the Ministry of Natural Resources (MNR) current work and study known as Agricultural Land Use Services (ALUS) that attempts to put a value on the ecological services that are derived from

protecting various lands from other uses so that land owners can be compensated for their contributions.

The importance of protecting agricultural lands is undeniable, however identifying which lands are appropriate to protect remains undecided. There is evidence to suggest that CLI Class 4 lands can be reasonably productive for traditional crops and new experimental crops as well as helping to maintain the agricultural land infrastructure to support agricultural systems locally and consequentially abroad. As the resource diminishes decision makers have to utilize the most up to date information and knowledge to inform policy and do their best to effectively develop and modify planning documents and procedures to adapt to evolving challenges like the loss of agricultural land and the need to feed our growing populations.

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GLOSSARY

Prime agricultural land:
means land that includes specialty crop areas and/or Canada Land Inventory Classes 1, 2, and 3 soils, in this order of priority for protection.

Prime agricultural area:
means areas where prime agricultural lands predominate. This includes: areas of prime agricultural lands and associated Canada Land Inventory Class 4-7 soils; and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. Prime agricultural areas may be identified by the Ontario Ministry of Agriculture and Food using evaluation procedures established by the Province as amended from time to time, or may also be identified through an alternative agricultural land evaluation system approved by the Province.

Specialty crop area:
means areas designated using evaluation procedures established by the province, as amended from time to time, where specialty crops such as tender fruits (peaches, cherries, plums), grapes, other fruit crops, vegetable crops, greenhouse crops, and crops from agriculturally developed organic soil lands are predominantly grown, usually resulting from:

a. soils that have suitability to produce specialty crops, or lands that are subject to special climatic conditions, or a combination of both; and/or
b. a combination of farmers skilled in the production of specialty crops, and of capital investment in related facilities and services to produce, store, or process specialty crops.

(MMAH, 2005)